Active Read/Write Radio Frequency Identification (RFID)
Typical & Guaranteed Read/Write Ranges

(inches/mm)*

Antennas		Tags LRP820-08 / LRP830-08	LRP820-04 / LRP830-04 without metal	LRP820-04 / LRP830-04 with metal
LRP125(HT)	Typ.	8.00/203	3.00/76	2.50/64
	Guar.	7.00/178	2.25/57	2.00/51
LRP250(HT)	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP250HT-FLX	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP-P125	Typ.	8.00/203	3.00/76	2.50/64
	Guar.	7.00/178	2.25/57	2.00/51
LRP-P3858	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP-P5050	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP-L5555	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP-L4982	Typ.	17.00/432	8.50/216	7.00/178
	Guar.	15.00/381	7.50/191	6.00/152
LRP-L2666	Typ.	16.00/406	7.00/178	6.00/152
	Guar.	13.00/330	6.00/152	5.00/127
LRP-L90140	Typ.	25.00/635	12.00/305	9.00/229
	Guar.	22.00/559	11.00/279	8.00/203

*Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

ESCORT MEMORY SYSTEMS
FastTrack™
RFID

FastTrack™ Series RFID Tags

LRP125(HT) / LRP250(HT)

Features

- High-Temperature Surviving RFID Tags
- No Batteries
- 25mm Diameter and 50 x 50mm Sizes
- No Moving Parts
- Easy to Mount
- Reusable or Disposable

Applications

- Paint Ovens
- Material Handling
- Manufacturing

Use With

- FastTrack™ Long-Range Conveyor Reader/Writer (LRP820-04)
- FastTrack™ Long-Range DeviceNet Conveyor Reader/Writer (LRP830-04)
- FastTrack™ Long-Range Reader/Writer (LRP820-08)
- FastTrack™ Long-Range DeviceNet Reader/Writer (LRP830-08)

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office parcel tracking applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/Writers deliver on all of your data collection and tracking demands.

The FastTrack™ family of RFID Tags/Labels/PCBs use Philips Semiconductor I-CODE chips, but most important, use EMS' unique, patented design and manufacturing technology to create the most advanced industrial RFID Tags.

EMS' reusable (or disposable) FastTrack™ Series Passive Read/Write RFID Tags, LRP125HT/LRP250HT, are specifically designed for demanding manufacturing environments. The Tags are available in either a 25mm diameter or 50 x 50mm square versions. The FastTrack™ Tags also feature normal temperature surviving Tags (LRP125 / LRP250) in addition to the high-temperature Tags (LRP125HT/LRP250HT).

HIGH TEMPERATURE SURVIVING RFID TAGS

Long-Range Read and Write distances, Multiple-Tag-In-Field Read/Write technology, industrial Antennas, DeviceNet Reader/Writers, RFID Labels, high-temperature disposable FLX Tags…EMS' FastTrack™ family of products is your RFID solution.

FastTrack™ Series RFID Tags

FastTrack™ – LRP125(HT)

Features

LRP125

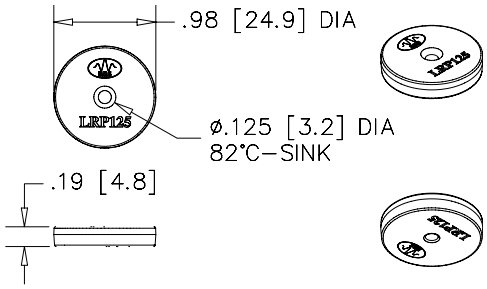
Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

LRP125HT (High-Temperature)

Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-40° to 200°F (-40° to 93°C)
Storage Temperature	-40° to 392°F (-40° to 200°C)
Protection Class	NEMA 6P/13 (IP68)

Note: Operating Temperature is the range of temperatures at which read, write and fill operations can be performed. Storage time prior to LRP125HT tag failure is not indefinite. Storage time must be established via testing in the actual working environment.

Mechanical Dimensions



FastTrack™ – LRP250(HT)

Features

LRP250

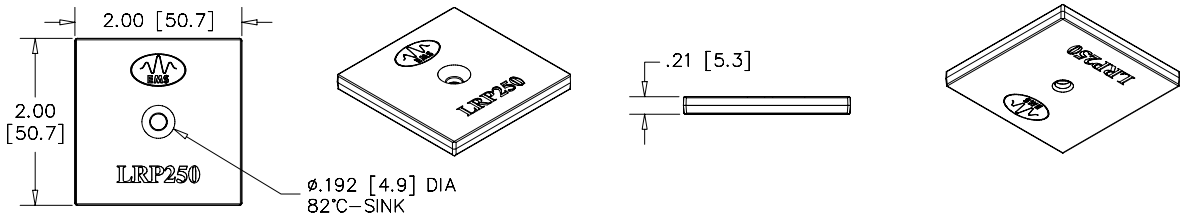
Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

LRP250HT (High-Temperature)

Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-40° to 200°F (-40° to 93°C)
Storage Temperature	-40° to 392°F (-40° to 200°C)
Protection Class	NEMA 6P/13 (IP68)

Note: Operating Temperature is the range of temperatures at which read, write and fill operations can be performed. Storage time prior to LRP250HT tag failure is not indefinite. Storage time must be established via testing in the actual working environment.

Mechanical Dimensions



LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)
Typical Range (Z) (inches/mm)*	2.50/64	7.00/178
Guaranteed Operating Range	2.00/51	6.00/152

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)
Typical Range (Z) (inches/mm)*	3.00/76	8.50/216
Guaranteed Operating Range	2.25/57	7.50/191

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)
Typical Range (Z) (inches/mm)*	8.00/203	17.00/432
Guaranteed Operating Range	7.00/178	15.00/381

FastTrack™ Series RFID Tags
LRP125(HT) / LRP250(HT)

Available Models

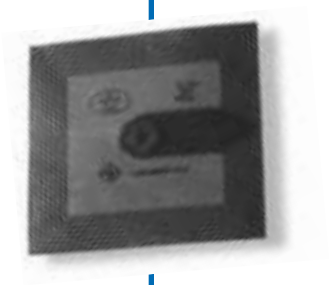
Model	Description
LRP125	Passive Read/Write Tag, 25mm diameter, 48 Bytes
LRP125HT	Passive Read/Write High-Temperature Tag, 25mm diameter, 48 Bytes
LRP250	Passive Read/Write Tag, 50 x 50mm, 48 Bytes
LRP250HT	Passive Read/Write High-Temperature Tag, 50 x 50mm, 48 Bytes

Compatible Products

Model	Description
LRP820-04	Long-Range Conveyor Reader/Writer
LRP830-04	Long-Range DeviceNet Conveyor Reader/Writer
LRP820-08	Long-Range Reader/Writer
LRP830-08	Long-Range DeviceNet Reader/Writer

Accessories

Model	Description
00-1127	Mounting Hardware Kit for LRP250HT, 10 Ceramic Spacers, 10 Screws



ESCORT MEMORY SYSTEMS
FastTrack™
RFID

FastTrack™ RFID FLX Tag

LRP250HT-FLX

Features
- High-Temperature Survival
- Adhesive Backing
- Flexible, Easy to Mount Tag
- No Batteries
- 50 x 50mm Size
- No Moving Parts
- Reusable or Disposable

Applications
- Material Handling
- Automotive Paint Ovens
- Vehicle Tracking

Use With
- FastTrack™ Long-Range Conveyor Reader/ Writer (LRP820-04)
- FastTrack™ Long-Range DeviceNet Conveyor Reader/Writer (LRP830-04)
- FastTrack™ Long-Range Reader/Writer (LRP820-08)
- FastTrack™ Long-Range DeviceNet Reader/Writer (LRP830-08)

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail!

EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/Writers deliver on all of your data collection and tracking demands.

The FastTrack™ family of RFID Tags/ Labels/PCBs use Philips Semiconductor I-CODE chips, but most important, use EMS' unique, patented design and manufacturing technology to create the most advanced industrial RFID identifiers.

EMS' disposable (or reusable) LRP250HT-FLX Passive Read/Write RFID Tags are specifically designed for paint oven applications. The 50 x 50mm square Tag can easily bend to adhere to any curved surface. An automotive wheel well is a perfect application in which the FastTrack™ FLX Tag can be peeled off and placed onto a Tag holder which can then be easily affixed to an already existing mounting hole in the wheel well area (contact EMS for application case study details). The adhesive backing of the FLX Tag ensures an easy-to-install solution.

Flexible RFID Tag Survives Paint Oven Applications

EMS is providing two versions of LRP250HT-FLX Tag. The LRP250HT-FLX-01 does not have a protective ring around the chip. This gives the Tag a lower profile. The LRP250HT-FLX-02 has a protective ring around the chip, offering a more durable alternative.

Long-Range Read and Write distances, Multiple-Tag-In-Field Read/Write technology, industrial Antennas, DeviceNet Reader/ Writers, RFID Labels, high-temperature FLX disposable Tags…EMS' FastTrack™ family is your industrial RFID solution.

FastTrack™ RFID FLX Tag

FastTrack™ – LRP250HT-FLX

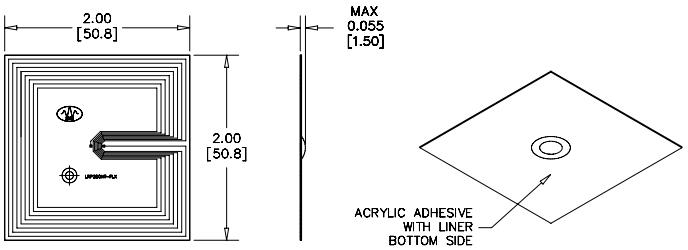
Features

	LRP250HT-FLX
Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-40° to 200°F (-40° to 93°C)
Storage Temperature	-40° to 392°F (-40° to 200°C)*
Protection Class	NEMA 6P/13 (IP68)

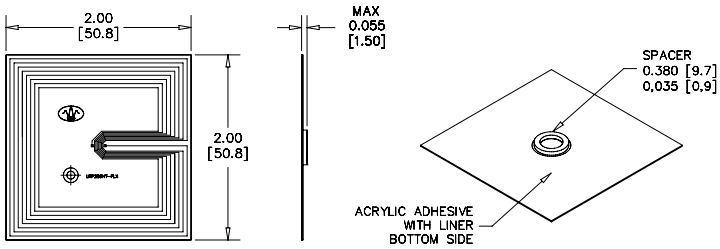
Note: Operating Temperature is the range of temperatures at which read, write and fill operations can be performed.

* When using LRP250HT-FLX in a disposable application, the Tag will survive a minimum of 9 cycles at 200°C for 2 hour durations.

LRP250HT-FLX-01



LRP250HT-FLX-02



Typical & Guaranteed Read/Write Ranges

(inches/mm)*

Readers/Writers		Tag LRP250HT-FLX	
LRP820-04 / LRP830-04 Long-Range Conveyor Reader/Writers	(mounted between metallic rollers)	Typ. Guar.	7.00/178 6.00/152
LRP820-04 / LRP830-04 Long-Range Conveyor Reader/Writers	(free air/non-metallic environment)	Typ. Guar.	8.50/216 7.50/191
LRP820-08 / LRP830-08 Long-Range Reader/Writers		Typ. Guar.	17.00/432 15.00/381

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
LRP250HT-FLX-01	Passive Read/Write Flexible Tag, 50 x 50mm, 48 Bytes (no protective ring around chip)
LRP250HT-FLX-02	Passive Read/Write Flexible Tag, 50 x 50mm, 48 Bytes (with protective ring around chip)

Compatible Products

Model	Description
LRP820-04	Long-Range Conveyor Reader/Writer
LRP830-04	Long-Range DeviceNet Conveyor Reader/Writer
LRP820-08	Long-Range Reader/Writer
LRP830-08	Long-Range DeviceNet Reader/Writer

ESCORT MEMORY SYSTEMS
FastTrack™
RFID

FastTrack™ Series RFID PCBs

Features

- RFID PCBs are Embedded into All Types of Carriers
- No Batteries
- Custom Sizes available
- Reusable or Disposable

Applications

- Manufacturing
- Material Handling
- Carrier Tracker

Use With

- FastTrack™ Long-Range Conveyor Reader/Writer (LRP820-04)
- FastTrack™ Long-Range DeviceNet Conveyor Reader/Writer (LRP830-04)
- FastTrack™ Long-Range Reader/Writer (LRP820-08)
- FastTrack™ Long-Range DeviceNet Reader/Writer (LRP830-08)

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS' FastTrack™ line of RFID PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/Writers deliver on all of your data collection and tracking demands.

The FastTrack™ family of RFID PCBs use Philips Semiconductor I-CODE chips, but most important, use EMS' unique, patented design and manufacturing technology to create the most advanced industrial RFID PCBs.

EMS' FastTrack™ RFID (Passive Read/Write) PCBs are low-cost, high-volume oriented data collection devices. The FastTrack™ RFID PCBs can be embedded in totes, pallets and carriers, making them value-added tools for the entire Supply Chain. Contact EMS for complete details of field-proven embedded applications.

FIELD-PROVEN FOR PALLET TRACKING APPLICATIONS

Long-Range Read and Write distances, Multiple-Tag-In-Field Read/Write technology, industrial Antennas, DeviceNet Reader/Writers, RFID Labels, high-temperature disposable Tags…Escort Memory Systems' FastTrack™ family is your RFID solution.

FastTrack™ Series RFID PCBs
RFID PCBs

Features

Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	PCBs are not designed to withstand outdoor environments and must be encapsulated in order to be protected from outdoor harsh weather conditions. Speak to your local Sales Engineer for best protection recommendations

Note: Operating Temperature is the range of temperatures at which read, write and fill operations can be performed.

RFID Field and Read/Write Ranges

LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	2.50/64	7.00/178	7.00/178
Guaranteed Operating Range	2.00/51	6.00/152	6.00/152

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	3.00/76	8.50/216	8.50/216
Guaranteed Operating Range	2.25/57	7.50/191	7.50/191

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	8.00/203	17.00/432	17.00/432
Guaranteed Operating Range	7.00/178	15.00/381	15.00/381

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
LRP-P125	Passive Read/Write RFID PCB, 25mm diameter, 48 bytes
LRP-P3858	Passive Read/Write RFID PCB, 38 x 58mm, 48 bytes
LRP-P5050	Passive Read/Write RFID PCB, 50 x 50mm, 48 bytes

Compatible Products

Model	Description
LRP820-04	Long-Range Conveyor Reader/Writer
LRP830-04	Long-Range DeviceNet Conveyor Reader/Writer
LRP820-08	Long-Range Reader/Writer
LRP830-08	Long-Range DeviceNet Reader/Writer

ESCORT MEMORY SYSTEMS
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ESCORT MEMORY SYSTEMS
FastTrack™
RFID

FastTrack™ Series RFID Labels

Features

- RFID Labels
- Low-cost
- Adhesive Backing
- Disposable – Mount to Anything
- No Batteries
- Custom Sizes available
- Reusable or Disposable

Applications

- Material Handling
- Access Entry
- Post-Sales Service

Use With

- FastTrack™ Long-Range Conveyor Reader/Writer (LRP820-04)
- FastTrack™ Long-Range DeviceNet Conveyor Reader/Writer (LRP830-04)
- FastTrack™ Long-Range Reader/Writer (LRP820-08)
- FastTrack™ Long-Range DeviceNet Reader/Writer (LRP830-08)
- FastTrack™ Tunnel Antenna (LRP820-10)
- FastTrack™ DeviceNet Tunnel Antenna (LRP830-10)

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/Writers deliver on all of your data collection and tracking demands.

EMS' FastTrack™ RFID (Passive Read/Write) Labels are for low-cost, high-volume oriented applications. With an easy to peel off adhesive backing, the FastTrack™ RFID Label can be adhered to any tote, pallet, carrier and even the product itself, making them value-added tools for the entire Supply Chain.

FastTrack™ RFID Labels are a low-cost alternative to Bar Coding

Long-Range Read and Write distances, Multiple-Tag-In-Field Read/Write technology, industrial Antennas, DeviceNet Reader/Writers, RFID Labels, high-temperature disposable Tags…EMS' FastTrack™ family is your RFID solution.

Features

Memory	48 Bytes
Data Transfer Rate	Read Speed 1200 Bytes/Second Write Speed 500 Bytes/Second
Operating Temperature	-40° to 120°F (-2° to 49°C)
Storage Temperature	-40° to 120°F (-2° to 49°C)
Protection Class	Depends on Application

Note: Operating Temperature is the range of temperatures at which read, write and fill operations can be performed.

RFID Field and Read/Write Ranges

LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	7.00/178	7.00/178	6.00/152	9.00/229
Guaranteed Operating Range	6.00/152	6.00/152	5.00/127	8.00/203

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	8.50/216	8.50/216	7.00/178	12.00/305
Guaranteed Operating Range	7.50/191	7.50/191	6.00/152	11.00/279

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	17.00/432	17.00/432	16.00/406	25.00/635
Guaranteed Operating Range	15.00/381	15.00/381	13.00/330	22.00/559

LRP820-10 / LRP830-10 Tunnel Antennas

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

See EMS for Application Specific Labels – LRP-L90140

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
LRP-L5555	Passive Read/Write RFID Label, 55 x 55mm, 48 bytes
LRP-L4982	Passive Read/Write RFID Label, 49 x 82mm, 48 bytes
LRP-L2666	Passive Read/Write RFID Label, 26 x 66mm, 48 bytes
LRP-L90140	Passive Read/Write RFID Label, 90 x 140mm, 48 bytes

Compatible Products

Model	Description
LRP820-04	Long-Range Conveyor Reader/Writer
LRP830-04	Long-Range DeviceNet Conveyor Reader/Writer
LRP820-08	Long-Range Reader/Writer
LRP830-08	Long-Range DeviceNet Reader/Writer
LRP820-10	Tunnel Antenna with Controller (for use with LRP-L90140 Label only)
LRP830-10	DeviceNet Tunnel Antenna with Controller (for use with LRP-L90140 Label only)

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

ESCORT MEMORY SYSTEMS
FastTrack™
RFID

Long-Range Conveyor Reader/Writers

LRP820-04 / LRP830-04

DeviceNet™

Features

- RFID Conveyor Reader/Writer – Perfect for Material Handling Applications
- Read and Write to Many Tags Simultaneously (Multiple-Tag-In-Field)
- Industrial Strength Reader/Writer (IP66)
- International Recognized Frequency of 13.56 MHz
- RS232/RS422/Mux32 (RS485) Bus Interfaces
- Four Industrial Input Points and Four Output Points
- LRP830-04 Long-Range DeviceNet Conveyor Reader/Writer

Applications

- Paint Ovens
- Parcel/Baggage Handling
- Pallet Tracking

Use With

- FastTrack™ Series Passive Read/Write Tags/Labels/PCBs
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 Automatic ID Module
- CM1000 Automatic ID PLC Module
- CM1746 RFID Module
- MM80 MicroMux Bus Module
- Any RS232 or RS422 Hosts

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EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office parcel tracking applications, the FastTrack™ family of RFID Tags/Labels/PCBs deliver on all of your data collection and tracking demands.

The FastTrack™ Long-Range Conveyor Reader/Writer (LRP820-04) is part of the FastTrack™ RFID family of Reader/Writers. The long-range, read/write capabilities make the Conveyor Reader/Writer ideal for communicating to EMS' FastTrack™ family of Tags/Labels/PCBs.

In the past, the positioning of a Reader/Writer relative to passing totes was critical. Read/Write ranges had to accommodate different size totes or the totes had to be positioned near the Reader/Writer. EMS solves this concern since the Reader/Writer can now be snugly mounted underneath the path of the tote. The 14.5-inch wide Reader/Writer can substitute a roller's position or may even be installed between the conveyor rollers.

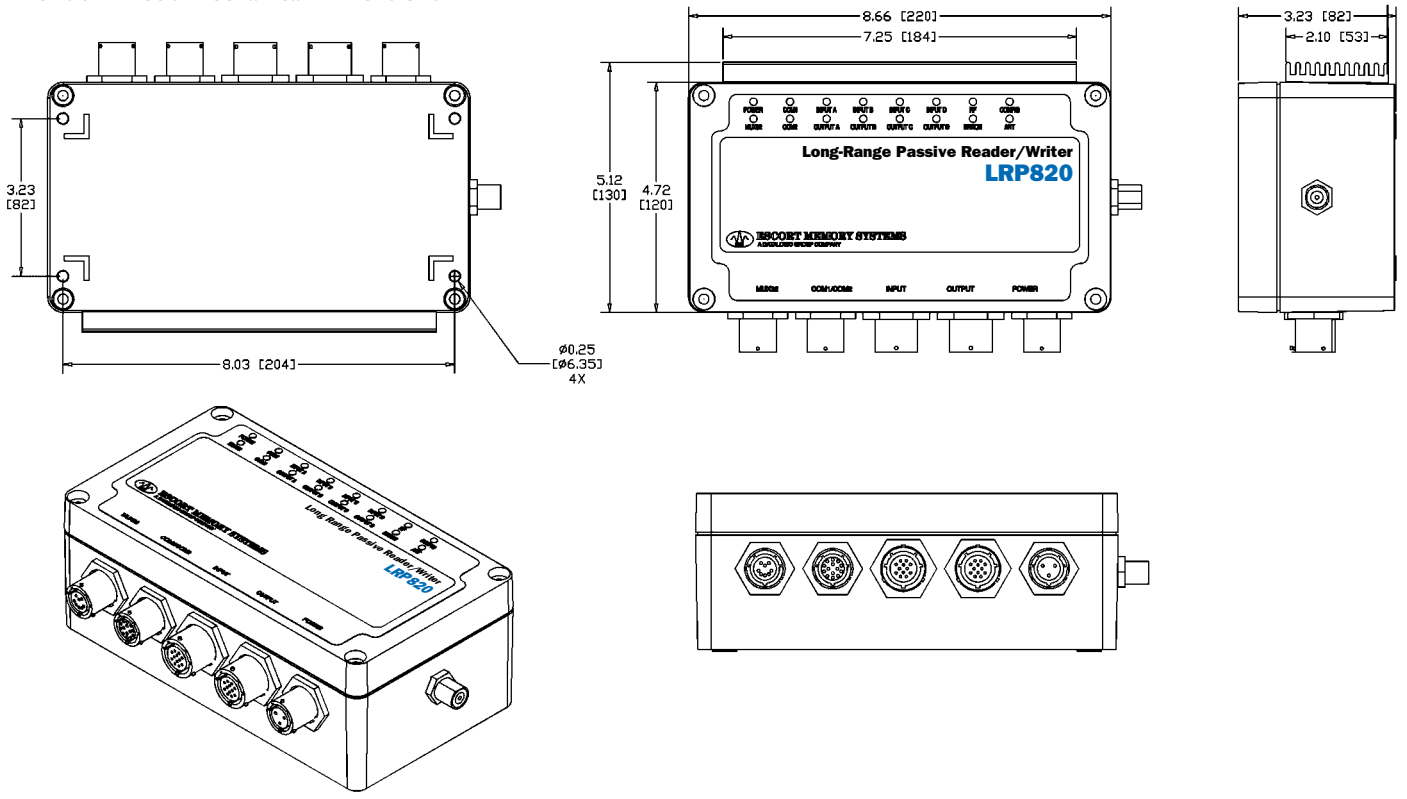
Field-Proven for Pallet Tracking Applications

The DeviceNet Conveyor Reader/Writer (LRP830-04) provides all the same benefits as the LRP820-04 with the added advantage of an integrated DeviceNet interface module. If your application involves a DeviceNet bus network, and you demand absolute data capture accuracy, then the all-in-one FastTrack™ Long-Range Conveyor DeviceNet Reader/Writer is the perfect solution.

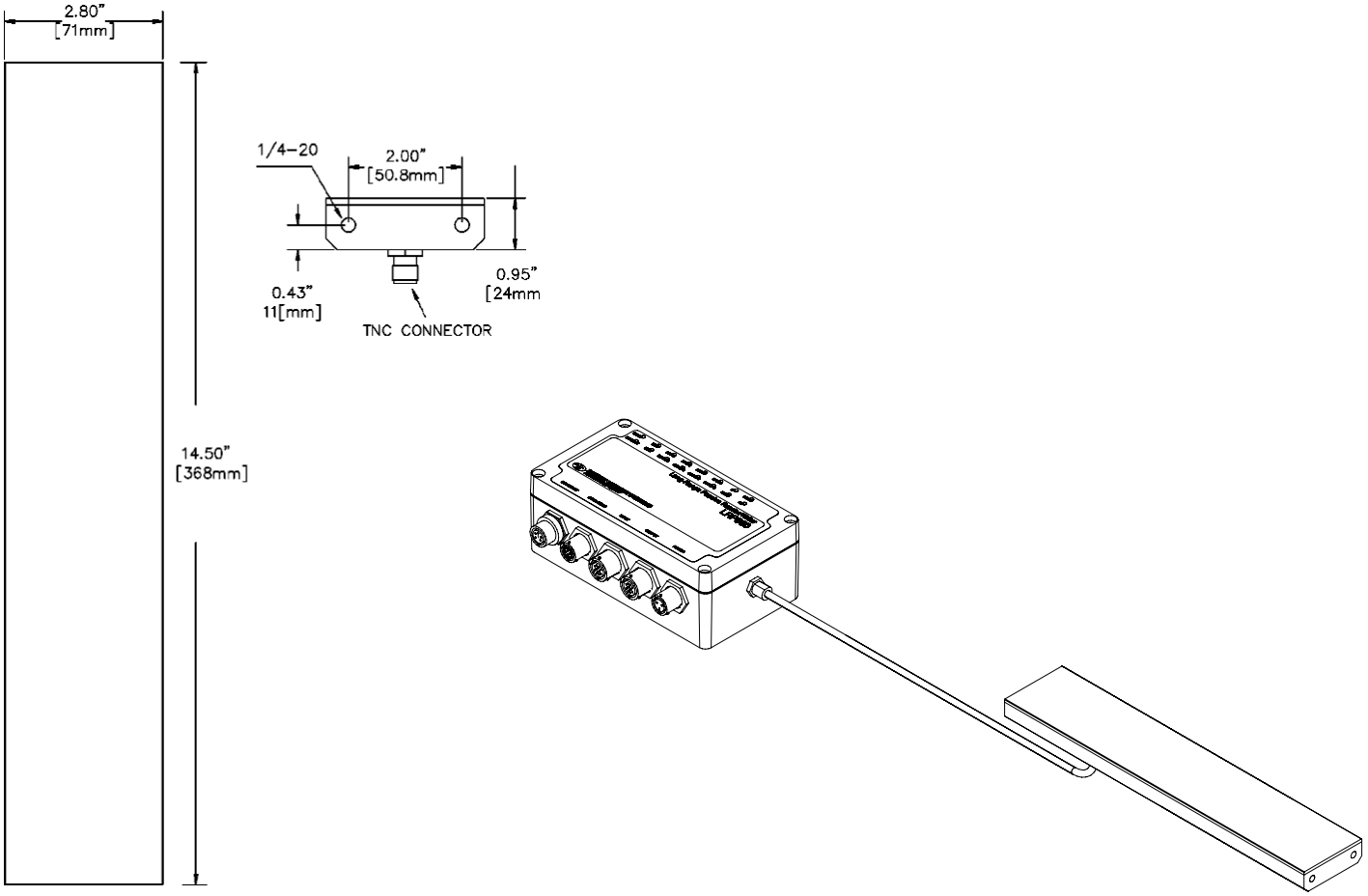
FastTrack™ Long-Range Conveyor Reader/Writers
LRP820-04 / LRP830-04

Electrical	Supply Voltage	18-30VdC
	Power Consumption	31W (1.3A @ 24VdC)
Memory	60KB Program Memory (System)	
	16KB Data Read/Write Memory	
	96KB Paged Data Read/Write Memory (32KB x 3)	
RFID Interface	LRP820-04 Long-Range Conveyor Reader/Writer, 2 Meter Cable	
	LRP830-04 Long-Range DeviceNet Conveyor Reader/Writer, 2 Meter Cable	
Interface	**COM1**	
	RS232	
	RS422	
	Mux32	
	Bus Interfaces:	
	Mux32 Optoisolated (LRP820-04)	
	DeviceNet Interface (LRP830-04)	
	COM2	
	RS232	
	Baud Rate	
	RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400 bps
	RS232 (COM2)	1200, 2400, 4800, 9600, 19200 bps
	RS485/Mux32 (COM1)	9600 or 346K bps
	Inputs	
	Four Industrial-Level Inputs	
	Voltage Input Range	4.5 -30VdC
	Imax	25mA
	Output	
	Four Industrial-Level Outputs	
	Vmax	30 VdC
	Imax	500mA
Mechanical Specifications	**LRP820 Dimensions**	
	(L x W x H)	8.66 x 4.72 x 3.22in. (220 x 120 x 82mm)
	Weight	3.5lbs. (1.59kg)
	Enclosure	Cast Aluminum Alloy
	Conveyor Reader/Writer	
	(L x W x H)	14.50 x 2.80 x 0.95in. (368 x 71 x 24mm)
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-41° to 158°F (-20° to 70°C)
	Humidity	95% Non-Condensing
	Vibration Resistance	IEC 68-2-6 Test FC 1.5mm 10 to 55Hz: 2 Hours each Axis
	Shock Resistance	IEC 66-2-27 Test EA 30g; 11 msec: 3 Shocks each Axis
	Protection Class	NEMA 4 (IP66)

LRP820 / LRP830 Mechanical Dimensions



Conveyor Reader/Writer Mechanical Dimensions



FastTrack™ Long-Range Conveyor Reader/Writers LRP820-04 / LRP830-04

RFID Field and Read/Write Ranges

LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)	LRP250HT-FLX
Typical Range (Z) (inches/mm)*	2.50/64	7.00/178	7.00/178
Guaranteed Operating Range	2.00/51	6.00/152	6.00/152

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)	LRP250HT-FLX
Typical Range (Z) (inches/mm)*	3.00/76	8.50/216	8.50/216
Guaranteed Operating Range	2.25/57	7.50/191	7.50/191

LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	7.00/178	7.00/178	6.00/152	9.00/229
Guaranteed Operating Range	6.00/152	6.00/152	5.00/127	8.00/203

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	8.50/216	8.50/216	7.00/178	12.00/305
Guaranteed Operating Range	7.50/191	7.50/191	6.00/152	11.00/279

LRP820-04 / LRP830-04 Passive Reader/Writers (mounted between metallic rollers)

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	2.50/64	7.00/178	7.00/178
Guaranteed Operating Range	2.00/51	6.00/152	6.00/152

LRP820-04 / LRP830-04 Passive Reader/Writers (free air/non-metallic environment)

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	3.00/76	8.50/216	8.50/216
Guaranteed Operating Range	2.25/57	7.50/191	7.50/191

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
LRP820-04†	Long-Range Conveyor Reader/Writer
LRP830-04†	Long-Range DeviceNet Conveyor Reader/Writer

† Mating Connectors not included. Must be ordered separately (part #00-1122).

Accessories

Model	Description
00-1122	Connector Kit, LRP820, 5 pieces, Mux32, COM1/2, Input, Output, PWR
00-1123	Connector Kit, LRP830, 4 pieces (COM1/2, Input, Output, PWR)
CBL-1452	Cable Assembly, LRP Demo (COM1/2 to DE-9)
CBL-1454	Cable Assembly, Power Supply for LRP Demo
17-1269	Manual, LRP820
17-1271	Manual, LRP830

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

ESCORT MEMORY SYSTEMS
FastTrack™
RFID

Long-Range Reader/Writers

LRP820-08 / LRP830-08

DeviceNet™

Features

- Read and Write to Dozens of Tags Simultaneously (Multiple-Tag-In-Field)
- Industrial Strength Reader/Writer (IP66)
- Long-Range Read/Write
- International Recognized Frequency of 13.56 MHz
- RS232/RS422/Mux32 (RS485) Bus Interfaces
- Four Industrial Input Points and Four Output Points
- LRP830-08 DeviceNet Reader/Writer

Applications

- Paint Ovens
- Automotive Manufacturing
- Parcel/Baggage Handling

Use With

- FastTrack™ Series Passive Read/Write Tags/Labels/PCBs
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 Automatic ID Module
- CM1000 Automatic ID PLC Module
- CM1746 RFID Module
- MM80 MicroMux Bus Module
- Any RS232 or RS422 Hosts

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office parcel tracking applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/ Writers deliver on all of your data collection and tracking demands.

The Long-Range Reader/Writer (LRP820-08) is part of the FastTrack™ RFID family of Reader/Writers. The long-range, read/write capabilities make the LRP820-08 ideal for communicating to EMS' FastTrack™ family of Tags/Labels/PCBs. The LRP820 refers to the tough, IP66 encased, industrial controller and is equipped with four input points and four output points. Sensors, light towers and photo eye switches can be directly hooked up to the LRP controller – greatly reducing wiring installations to the host PC/PLC.

Read and Write to Dozens of Tags Simultaneously (Multiple-Tag-In-Field)

The Long-Range DeviceNet Reader/Writer (LRP830-08) provides all the same benefits as the LRP820-08 with the added advantage of an integrated DeviceNet interface module. If your application involves a DeviceNet bus network, and you demand absolute data capture accuracy, then the all-in-one FastTrack™ DeviceNet Reader/Writer is the perfect solution.

FastTrack™ Long-Range Reader/Writers
LRP820-08 / LRP830-08

Electrical

Supply Voltage	18-30VdC
Power Consumption	31W (1.3A @ 24VdC)

Memory

60KB Program Memory (System)
16KB Data Read/Write Memory
96KB Paged Data Read/Write Memory (32KB x 3)

RFID Interface

LRP820-08 Long-Range Reader/Writer, 2 Meter Cable
LRP830-08 Long-Range DeviceNet Reader/Writer, 2 Meter Cable

Interface

COM1
RS232
RS422
Mux32
Bus Interfaces:
Mux32 Optoisolated (LRP820-08)
DeviceNet Interface (LRP830-08)

COM2
RS232

Baud Rate

RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400 bps
RS232 (COM2)	1200, 2400, 4800, 9600, 19200 bps
RS485/Mux32 (COM1)	9600 or 346K bps

Inputs

Four Industrial-Level Inputs	
Voltage Input Range	4.5 – 30VdC
Imax	25mA

Output

Four Industrial-Level Outputs	
Vmax	30 VdC
Imax	500mA

Mechanical Specifications

LRP820 Dimensions

(L x W x H)	8.66 x 4.72 x 3.22in. (220 x 120 x 82mm)
Weight	3.5lbs. (1.59kg)
Enclosure	Cast Aluminum Alloy

Wide Plate Antenna (L x W x H)	13.78 x 11.80 x 0.91in. (350 x 300 x 23mm)

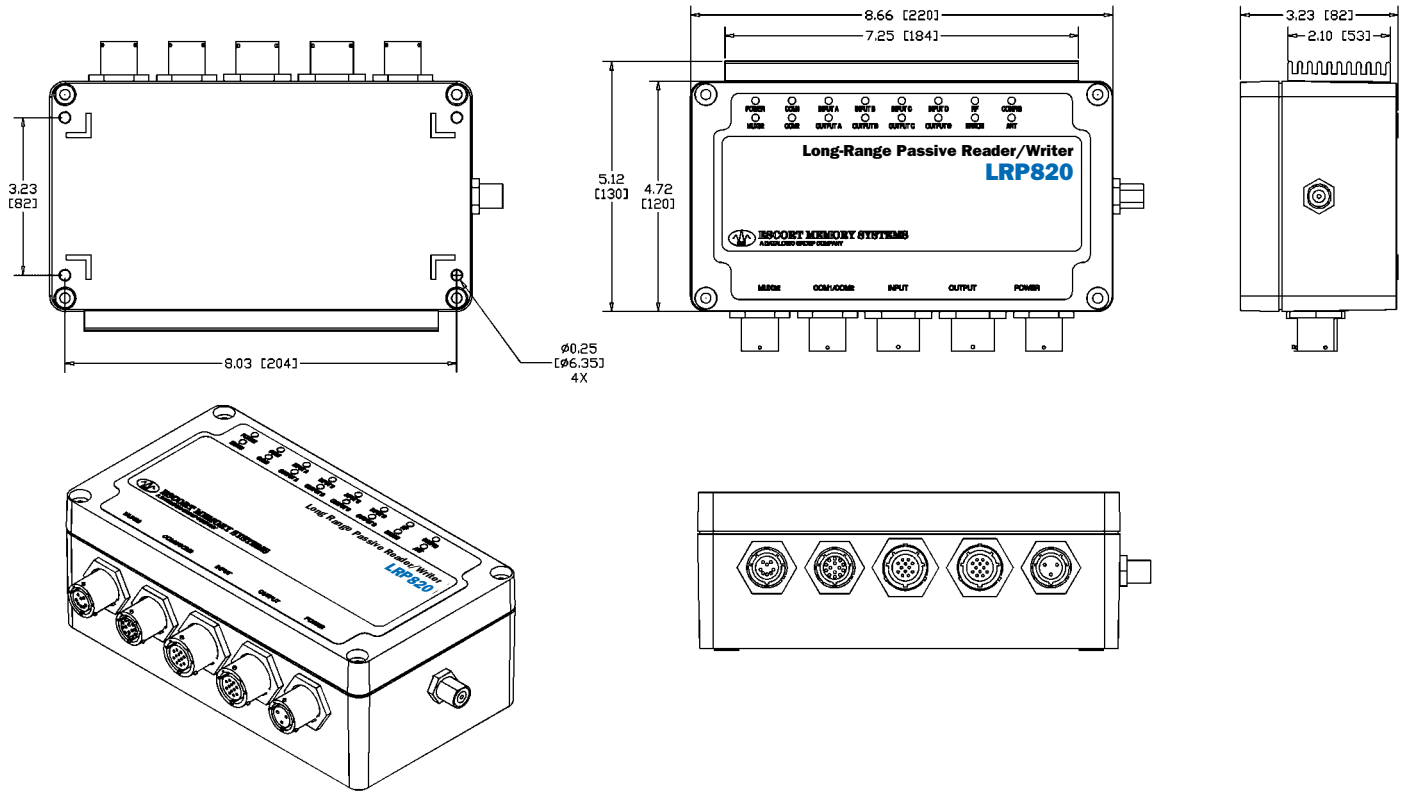
Environment

Operating Temperature	32° to 120°F (0° to 49°C)
Storage Temperature	-41° to 158°F (-20° to 70°C)
Humidity	95% Non-Condensing
Vibration Resistance	IEC 68-2-6 Test FC 1.5mm 10 to 55Hz: 2 Hours each Axis
Shock Resistance	IEC 66-2-27 Test EA 30g: 11 msec: 3 Shocks each Axis
Protection Class	NEMA 4 (IP66)

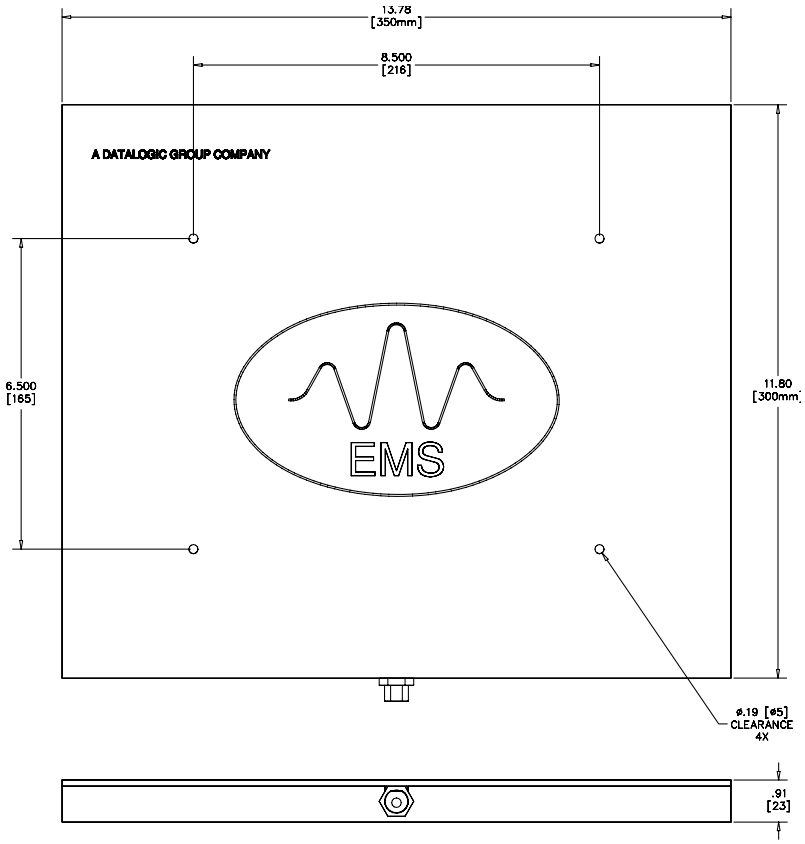
Wide-Plate Antenna Spacing

Minimum Antenna to Antenna Spacing	15ft. (4.57m)
Minimum Antenna Spacing from Metal	6 in. (152mm)

LRP820 / LRP830 Mechanical Dimensions

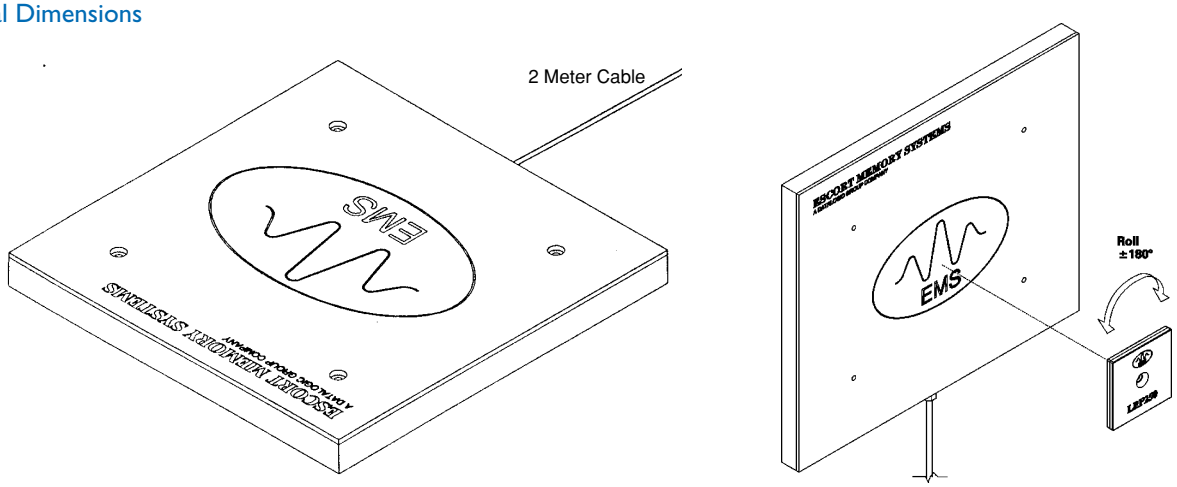


Wide-Plate Antenna Mechanical Dimensions



FastTrack™ Long-Range Reader/Writers
LRP820-08 / LRP830-08

Mechanical Dimensions



RFID Field and Read/Write Ranges

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write TAGS

	LRP125(HT)	LRP250(HT)	LRP250HT-FLX
Typical Range (Z) (inches/mm)*	8.00/203	17.00/432	17.00/432
Guaranteed Operating Range	7.00/178	15.00/381	15.00/381

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write LABELS

	LRP-L5555	LRP-L4982	LRP-L2666	LRP-L90140
Typical Range (Z) (inches/mm)*	17.00/432	17.00/432	16.00/406	25.00/635
Guaranteed Operating Range	15.00/381	15.00/381	13.00/330	22.00/559

LRP820-08 / LRP830-08 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write PCBs

	LRP-P125	LRP-P3858	LRP-P5050
Typical Range (Z) (inches/mm)*	8.00/203	17.00/432	17.00/432
Guaranteed Operating Range	7.00/178	15.00/381	15.00/381

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
LRP820-08†	Long-Range Reader/Writer
LRP830-08†	Long-Range DeviceNet Reader/Writer
00-1131	FastTrack™ LRP820-08 Long Range Reader/Writer Demo Kit. Includes LRP820-08, Demo Cables, LRP-L90140-SMP RFID Labels, Tags, Visual Basic Program and a Demo Suitcase

† Mating Connectors not included. Must be ordered separately (part #00-1122).

Accessories

Model	Description
00-1122	Connector Kit, LRP820, 5 pieces, Mux32, COM1/2, Input, Output, PWR
00-1123	Connector Kit, LRP830, 4 pieces (COM1/2, Input, Output, PWR)
CBL-1452	Cable Assembly, LRP Demo (COM1/2 to DE-9)
CBL-1454	Cable Assembly, Power Supply for LRP Demo
17-1269	Manual, LRP820
17-1271	Manual, LRP830

ESCORT MEMORY SYSTEMS
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FastTrack™
RFID

Tunnel Antennas

LRP820-10 / LRP830-10

DeviceNet™

Features

- RFID Tunnel Antenna – Perfect for Material Handling/Postal Applications
- Read and Write to Dozens of Tags Simultaneously (Multiple-Tag-In-Field)
- Industrial Strength Reader/Writer (IP66)
- Large Read/Write Area
- International Recognized Frequency of 13.56 MHz
- RS232/RS422/Mux32 (RS485) Bus Interfaces
- Four Industrial Input Points and Four Output Points
- LRP830-10 DeviceNet Tunnel Antenna

Applications

- Postal/Courier
- Parcel/Baggage Handling
- Manufacturing

Use With

- FastTrack™ Series Passive Read/Write Tags/Labels/PCBs
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 Automatic ID Module
- CM1000 Automatic ID PLC Module
- CM1746 RFID Module
- MM80 MicroMux Bus Module
- Any RS232 or RS422 Hosts

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS' FastTrack™ line of RFID Tags/Labels/PCBs and Reader/Writers (or Antennas) provides outstanding RFID solutions for demanding industrial environments. From scorching paint ovens to post office parcel tracking applications, the FastTrack™ family of RFID Tags/Labels/PCBs and Reader/Writers deliver on all of your data collection and tracking demands.

The Tunnel Antenna (LRP820-10) is part of the FastTrack™ RFID family of Reader/Writers. Mount the cube-shaped Tunnel Antenna snugly over the conveyor and read/write data to the FastTrack™ Passive Read/Write Labels as they pass through the field.

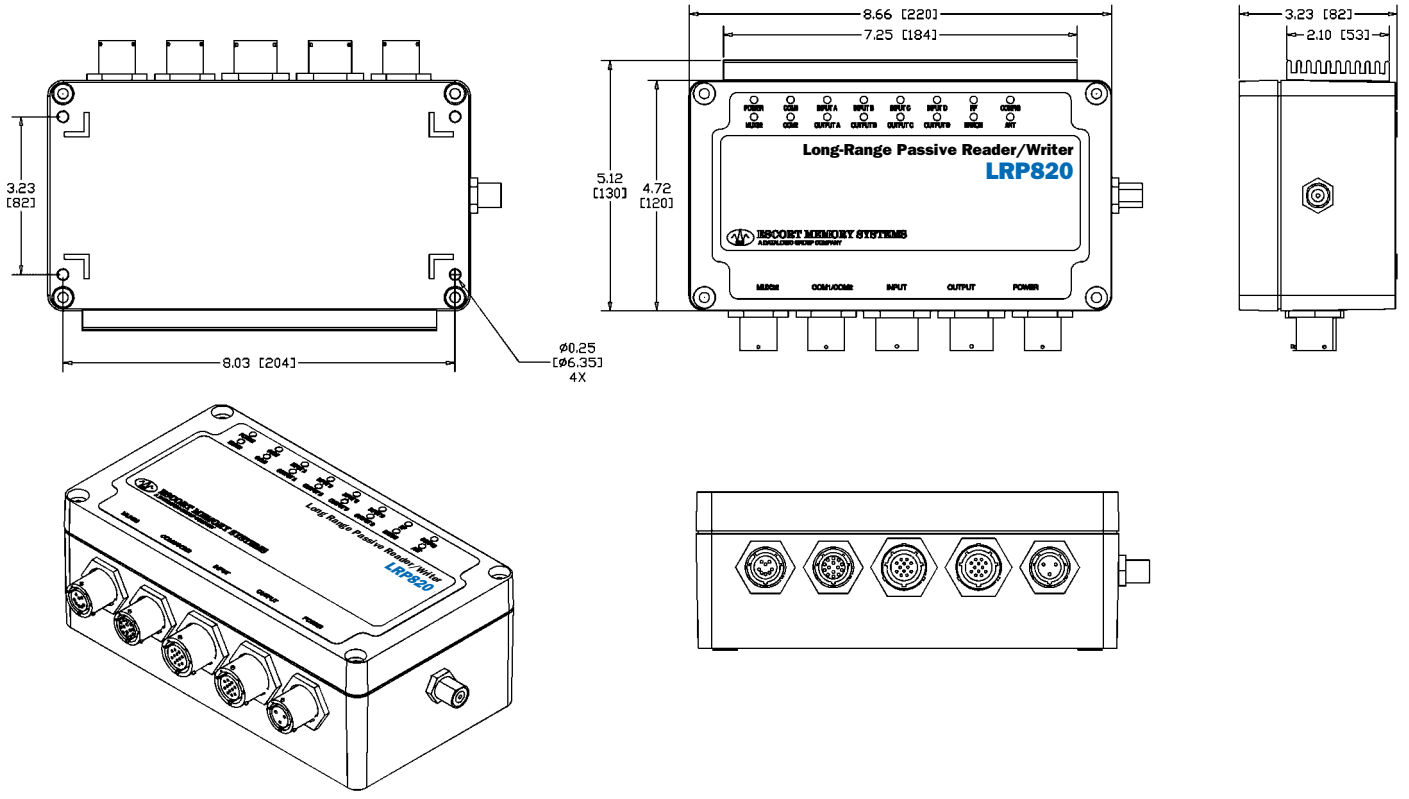
PROVEN POST OFFICE INSTALLATIONS WITH THE TUNNEL ANTENNA

The DeviceNet Tunnel Antenna (LRP830-10) provides all the same benefits as the LRP820-10 with the added advantage of an integrated DeviceNet interface module. If your application involves a DeviceNet bus network, and you demand absolute data capture accuracy, then the all-in-one FastTrack™ DeviceNet Tunnel Antenna is the perfect solution.

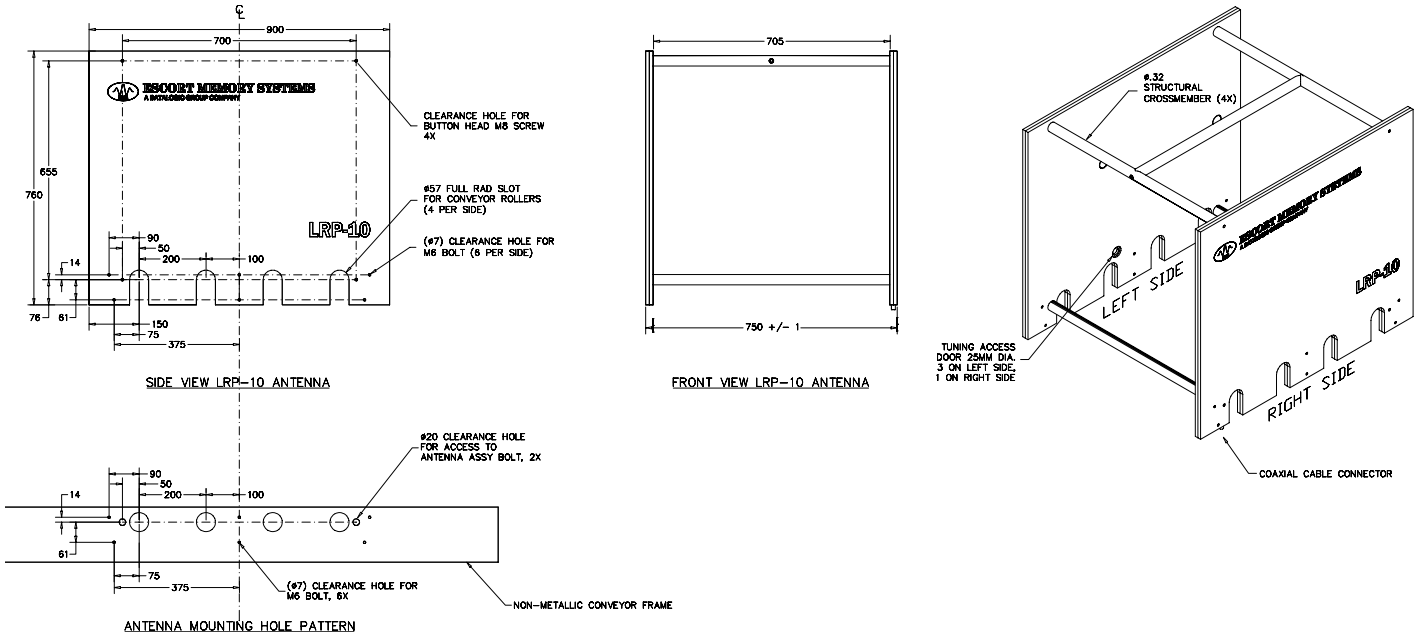
FastTrack™ Tunnel Antennas
LRP820-10 / LRP830-10

Electrical	Supply Voltage	18-30Vdc
	Power Consumption	31W (1.3A @ 24Vdc)
Memory	60KB Program Memory (System)	
	16KB Data Read/Write Memory	
	96KB Paged Data Read/Write Memory (32KB x 3)	
RFID Interface	LRP820-10 Tunnel Antenna, 2 Meter Cable	
	LRP830-10 DeviceNet Tunnel Antenna, 2 Meter Cable	
Interface	**COM1**	
	RS232	
	RS422	
	Mux32	
	Bus Interfaces:	
	Mux32 Optoisolated (LRP820-10)	
	DeviceNet Interface (LRP830-10)	
	COM2	
	RS232	
	Baud Rate	
	RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400 bps
	RS232 (COM2)	1200, 2400, 4800, 9600, 19200 bps
	RS485/Mux32 (COM1)	9600 or 346K bps
	Inputs	
	Four Industrial-Level Inputs	
	Voltage Input Range	4.5 – 30Vdc
	Imax	25mA
	Output	
	Four Industrial-Level Outputs	
	Vmax	30 Vdc
	Imax	500mA
Mechanical Specifications	**LRP820 Dimensions**	
	(L x W x H)	8.66 x 4.72 x 3.22in. (220 x 120 x 82mm)
	Weight	3.5lbs. (1.59kg)
	Enclosure	Cast Aluminum Alloy
	Tunnel Antenna (L x W x H)	35.43 x 29.52 x 29.92in. (900 x 750 x 760mm)
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-41° to 158°F (-20° to 70°C)
	Humidity	95% Non-Condensing
	Vibration Resistance	IEC 68-2-6 Test FC 1.5mm 10 to 55Hz: 2 Hours each Axis
	Shock Resistance	IEC 66-2-27 Test EA 30g; 11 msec: 3 Shocks each Axis
	Protection Class	NEMA 4 (IP66)

LRP820 / LRP830 Mechanical Dimensions

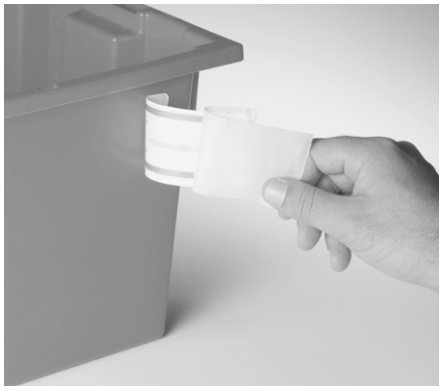


Tunnel Antenna Mechanical Dimensions



FastTrack™ Tunnel Antennas
LRP820-10 / LRP830-10

Mechanical Dimensions



RFID Field and Read/Write Ranges

LRP820-10 / LRP830-10 Passive Reader/Writers

Reading & Writing Ranges with FastTrack™ Passive Read/Write Labels

Labels – LRP-L90140

See EMS for Application Specific Requirements

Available Models

Model	Description
LRP820-10†	Tunnel Antenna with Controller
LRP830-10†	DeviceNet Tunnel Antenna with Controller
00-1132	FastTrack™ LRP820-10 Tunnel Antenna Demo Kit. Includes LRP820-10, Demo Cables, LRP-L90140-SMP RFID Labels, Visual Basic Program and a Demo Suitcase

† Mating Connectors not included. Must be ordered separately (part #00-1122).

Accessories

Model	Description
00-1122	Connector Kit, LRP820, 5 pieces, Mux32, COM1/2, Input, Output, PWR
00-1123	Connector Kit, LRP830, 4 pieces (COM1/2, Input, Output, PWR)
CBL-1452	Cable Assembly, LRP Demo (COM1/2 to DE-9)
CBL-1454	Cable Assembly, Power Supply for LRP Demo
17-1269	Manual, LRP820
17-1271	Manual, LRP830

Passive Read/Write Radio Frequency Identification (RFID)
Typical & Guaranteed Read/Write Ranges

(inches/mm)*

Readers/Writers		Tags HMS108	HMS112	HMS125(HT)	HMS150(HT)
HMS800	Typ.	**	**	1.10/28	2.75/70
	Guar.	**	**	0.87/22	2.20/56
HMS805	Typ.	0.43/11	0.67/17	1.14/29	1.38/35
	Guar.	0.35/9	0.55/14	0.91/23	1.10/28
HMS810	Typ.	**	**	1.10/28	2.75/70
	Guar.	**	**	0.87/22	2.20/56
HMS815	Typ.	0.43/11	0.67/17	1.14/29	1.38/35
	Guar.	0.35/9	0.55/14	0.91/23	1.10/28
HMS814	Typ.	0.28/7	0.35/9	0.63/16	0.59/15
	Guar.	0.24/6	0.28/7	0.51/13	0.47/12
HMS816	Typ.	0.28/7	0.35/9	0.63/16	0.59/15
	Guar.	0.24/6	0.28/7	0.51/13	0.47/12
HMS820	Typ.	**	**	1.10/28	1.97/50
	Guar.	**	**	0.87/22	1.57/40
HMS820-05	Typ.	0.39/10	0.59/15	0.91/23	1.38/35
	Guar.	0.31/8	0.47/12	0.70/18	1.10/28
HMS820-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS830-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS820-08	Typ.	**	**	1.18/30	5.00/127
	Guar.	**	**	0.94/24	4.02/102
HMS830-08	Typ.	**	**	1.18/30	5.00/127
	Guar.	**	**	0.94/24	4.02/102
HMS830	Typ.	**	**	1.10/28	1.97/50
	Guar.	**	**	0.87/22	1.57/40
HMS830-05	Typ.	0.39/10	0.59/15	0.91/23	1.38/35
	Guar.	0.31/8	0.47/12	0.70/18	1.10/28
HMS827-Vert.	Typ.	0.43/11	0.67/17	1.18/30	1.89/48
	Guar.	0.35/9	0.55/14	0.94/24	1.50/38
HMS827-Horiz.	Typ.	0.39/10	0.55/14	0.98/25	1.57/40
	Guar.	0.31/8	0.43/11	0.79/20	1.26/32
HMS827-03	Typ.	0.35/9	0.47/12	0.79/20	**
	Guar.	0.28/7	0.39/10	0.63/16	**
HMS827-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS827-06	Typ.	0.47/12	0.59/15	1.06/27	0.83/22
	Guar.	0.39/10	0.47/12	0.87/22	0.70/18

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended

HMS100-Series Passive Read/Write Tags

Features
- Extremely Durable
- No Batteries
- Small and Easy to Mount
- Long Life
- No Moving Parts
- High Temperature Capability

Applications
- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With
- HMS800 / HMS805 Passive Reader/Writers
- HMS810 / HMS815 Passive Reader/Writers
- HMS814 / HMS816 Portable Reader/Writers
- HMS820 / HMS830 Passive Reader/Writers
- HMS820 / HMS830-04 Passive Conveyor Reader/Writers
- HMS820 / HMS830-08 Passive Wide-Plate Reader/Writers
- HMS827-Series Passive Reader/Writers
- HMS827-04 Passive Conveyor Reader/Writers

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' HMS Series is the latest in the EMS line of high performance, industrial RFID equipment. The passive design of the HMS Read/Write system uses the RF field from the Antenna to power the Tag, eliminating the need for batteries.

The HMS100-Series Tags are available in six versions, varying in range, size and operating temperature. The effective range is determined by the Tag coil size. The HMS150 has a larger coil and subsequently offers a longer Read/Write range than the HMS108.

The HMS100-Series Tags are unique compared to other Tags since they do not experience power-on delays. Typically, Tags have capacitors on the coil that must be charged up before data communication can begin. The HMS100-Series Tags do not rely on capacitors, thereby reducing precious Read/Write time needed to communicate information to and from the Tag. The HMS 100-Series Tags are powered up almost instantaneously, allowing the end-user to speed up the conveyor or assembly process and reduce manufacturing time. When researching Tags, this is an often overlooked but extremely important feature.

HMS125HT and HMS150HT Tags Can Withstand Temperatures Up To 240°C

Escort Memory Systems' HMS100-Series Tags are very durable, small in size and resistant to high temperature applications. Our patent-pending HMS125HT and HMS150HT Tags can survive temperatures up to 464°F (240°C), perfect for paint oven or hot chemical bath applications.

HMS100-Series Passive Read/Write Tags

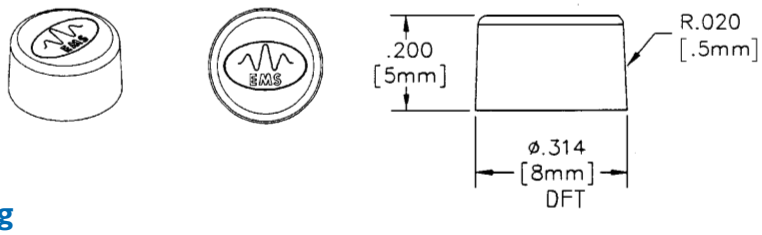
HMS108 Passive Read/Write Tag

Features

Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

Note: "Operating Temperature" is the range of temperatures at which read, write and fill operations can be performed

Mechanical Dimensions



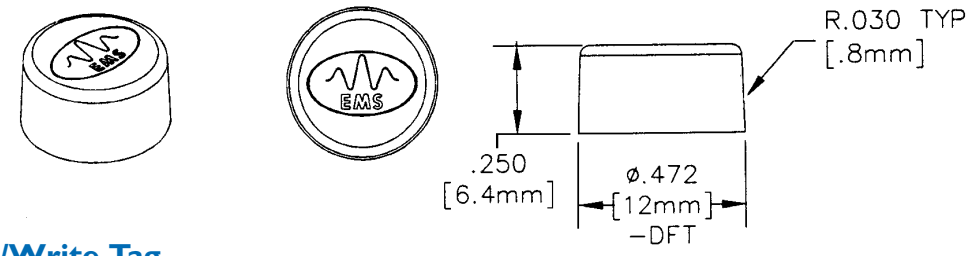
HMS112 Passive Read/Write Tag

Features

Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

Note: "Operating Temperature" is the range of temperatures at which read, write and fill operations can be performed

Mechanical Dimensions



HMS125(HT) Passive Read/Write Tag

Features

HMS125

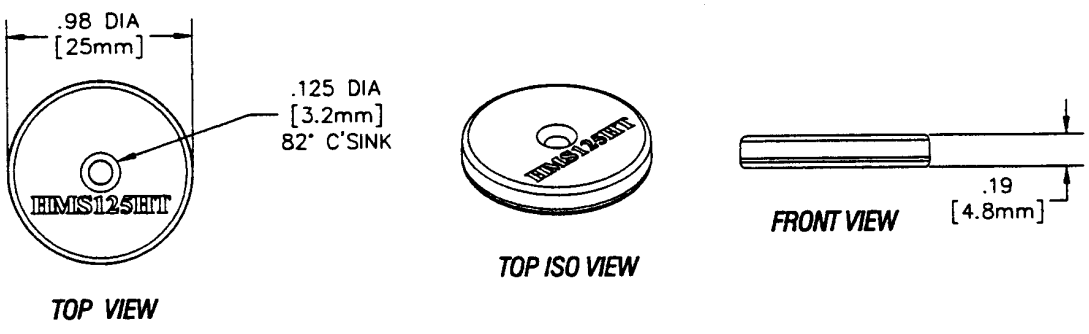
Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

HMS125HT

Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-40° to 275°F (-40° to 135°C)
Storage Temperature	-40° to 464°F (-40° to 240°C)
Protection Class	NEMA 6P/13 (IP68)

Note: "Operating Temperature" is the range of temperatures at which read, write and fill operations can be performed

Mechanical Dimensions



HMS150(HT) Passive Read/Write Tag

Features

HMS150

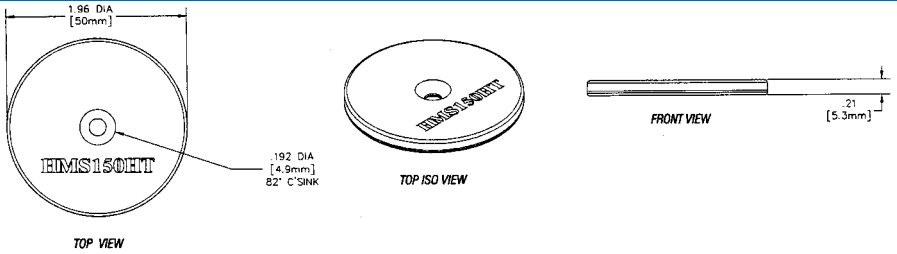
Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-4° to 185°F (-20° to 85°C)
Storage Temperature	-40° to 185°F (-40° to 85°C)
Protection Class	NEMA 6P/13 (IP68)

HMS150HT

Memory	736 Bytes
Data Transfer Rate	1000 Bytes/Second
Operating Temperature	-40° to 275°F (-40° to 135°C)
Storage Temperature	-40° to 464°F (-40° to 240°C)
Protection Class	NEMA 6P/13 (IP68)

Note: "Operating Temperature" is the range of temperatures at which read, write and fill operations can be performed.

Mechanical Dimensions



Typical & Guaranteed Read/Write Ranges (inches/mm)*

Readers/Writers		Tags HMS108	HMS112	HMS125(HT)	HMS150(HT)
HMS800	Typ.	**	**	1.10/28	2.75/70
	Guar.	**	**	0.87/22	2.20/56
HMS805	Typ.	0.43/11	0.67/17	1.14/29	1.38/35
	Guar.	0.35/9	0.55/14	0.91/23	1.10/28
HMS810	Typ.	**	**	1.10/28	2.75/70
	Guar.	**	**	0.87/22	2.20/56
HMS815	Typ.	0.43/11	0.67/17	1.14/29	1.38/35
	Guar.	0.35/9	0.55/14	0.91/23	1.10/28
HMS814	Typ.	0.28/7	0.35/9	0.63/16	0.59/15
	Guar.	0.24/6	0.28/7	0.51/13	0.47/12
HMS816	Typ.	0.28/7	0.35/9	0.63/16	0.59/15
	Guar.	0.24/6	0.28/7	0.51/13	0.47/12
HMS820	Typ.	**	**	1.10/28	1.97/50
	Guar.	**	**	0.87/22	1.57/40
HMS820-05	Typ.	0.39/10	0.59/15	0.91/23	1.38/35
	Guar.	0.31/8	0.47/12	0.70/18	1.10/28
HMS820-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS830-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS820-08	Typ.	**	**	1.18/30	5.00/127
	Guar.	**	**	0.94/24	4.02/102
HMS830-08	Typ.	**	**	1.18/30	5.00/127
	Guar.	**	**	0.94/24	4.02/102
HMS830	Typ.	**	**	1.10/28	1.97/50
	Guar.	**	**	0.87/22	1.57/40
HMS830-05	Typ.	0.39/10	0.59/15	0.91/23	1.38/35
	Guar.	0.31/8	0.47/12	0.70/18	1.10/28
HMS827-Vert.	Typ.	0.43/11	0.67/17	1.18/30	1.89/48
	Guar.	0.35/9	0.55/14	0.94/24	1.50/38
HMS827-Horiz.	Typ.	0.39/10	0.55/14	0.98/25	1.57/40
	Guar.	0.31/8	0.43/11	0.79/20	1.26/32
HMS827-03	Typ.	0.35/9	0.47/12	0.79/20	**
	Guar.	0.28/7	0.39/10	0.63/16	**
HMS827-04	Typ.	**	**	0.71/18	1.57/40
	Guar.	**	**	0.55/14	1.26/32
HMS827-06	Typ.	0.47/12	0.59/15	1.06/27	0.83/22
	Guar.	0.39/10	0.47/12	0.87/22	0.70/18

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended

HMS100-Series Passive Read/Write Tags

Available Models*

Model	Description
HMS108	Passive Read/Write Tag, 8mm, 736 Bytes; -40° to 185°F (-40° to 85°C) Storage Temperature
HMS112	Passive Read/Write Tag, 12mm, 736 Bytes; -40° to 185°F (-40° to 85°C) Storage Temperature
HMS125	Passive Read/Write Tag, 25mm, 736 Bytes; -40° to 185°F (-40° to 85°C) Storage Temperature
HMS125HT	High-Temperature Passive Read/Write Tag, 25mm, 736 Bytes; -40° to 464°F (-40° to 240°C) Storage Temperature
HMS150	Passive Read/Write Tag, 50mm, 736 Bytes; -40° to 185°F (-40° to 85°C) Storage Temperature
HMS150HT	High-Temperature Passive Read/Write Tag, 50mm, 736 Bytes; -40° to 464°F (-40° to 240°C) Storage Temperature

* Note: For complete chemical resistancy chart, refer to Appendix D on page XXX.

Compatible Products

Model	Description
HMS800	Passive Reader/Writer, RS232 Communications
HMS805	Passive Reader/Writer, RS232 Communications, 30mm Tubular Remote Antenna
HMS810	Passive Reader/Writer, RS485/Mux32 Communications
HMS815	Passive Reader/Writer, RS485/Mux32 Communications, 30mm Tubular Remote Antenna
HMS814	Portable RF Reader/Writer
HMS816	Portable RF Reader/Writer with RS232 Interface
HMS814 J003	Portable Reader/Writer Kit includes: HMS814 Passive Reader/Writer, PC2420 Hand-Held Terminal, 00-1099 Battery and 00-1102 Battery Charger
HMS814 J024	Portable Reader/Writer Kit includes: HMS814 Passive Reader/Writer, PC2425 Hand-Held Terminal, 00-1099 Battery and 00-1102 Battery Charger
HMS820	Passive Reader/Writer
HMS820-04	Passive Conveyor Reader/Writer
HMS830-04	Passive Conveyor Reader/Writer with DeviceNet Interface
HMS820-05	Passive Reader/Writer with 30mm Remote Antenna
HMS820-08	Passive Wide-Plate Reader/Writer
HMS830-08	Passive Wide-Plate Reader/Writer with DeviceNet Interface
HMS830	Passive Reader/Writer with DeviceNet Interface
HMS830-05	Passive Reader/Writer with DeviceNet Interface, 30mm Remote Antenna
HMS827	Passive Reader/Writer
HMS827-03	Passive Reader/Writer with 18mm Tubular Remote Antenna
HMS827-04	Passive Conveyor Reader/Writer
HMS827-06	Passive Reader/Writer with 30mm x 40mm x 12mm Remote Antenna

Accessories

Model	Description
00-1116	Spacer Kit for HMS125 Passive Read/Write Tag, 10 Spacers and 10 Screws
00-1117	Spacer Kit for HMS150 Passive Read/Write Tag, 10 Spacers and 10 Screws
00-1118	Spacer Kit for HMS125HT Passive Read/Write Tag, Teflon, 10 Spacers and 10 Screws
00-1119	Spacer Kit for HMS150HT Passive Read/Write Tag, Teflon 10 Spacers and 10 Screws
00-1129	Ceramic Spacer Kit for HMS150HT Passive Read/Write Tag, 10 Spacers and 10 Screws

HMS800-Series Passive Reader/Writers

Features

- High Data Transfer Speed, 1000 Bytes/Second
- Serial Reader/Writer with Integrated Antenna
- Passive Tag, Requires No Batteries
- Meets FCC and International Specifications
- Simple Interface to Host Systems

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80 MicroMux Bus Module
- Any RS232 and RS485 Host

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' HMS Series is the latest in the EMS line of high performance, industrial RFID equipment. The passive design of the HMS Reader/Writer system uses the RF field from the Antenna to power the Tag, eliminating the need for batteries.

The HMS Passive Reader/Writer system is designed to provide cost effective RFID data collection and control solutions to demanding automation applications.

Technical Description

The HMS800 and HMS810 Reader/Writers contain an integrated, ferrite shielded Antenna encased in a NEMA 2 rated plastic housing with a metal backplate. The HMS805 and HMS815 feature a 30mm tubular remote Antenna for reaching restricted locations. The HMS system uses the internationally recognized ISM frequency of 13.56 MHz to both power the Tag, and to establish a radio link to transfer the information.

Integrated Controller and Antenna

The HMS800 and HMS805 Reader/Writers are stand alone units that communicate to the host via an RS232 interface. The HMS800's standard program supports the well established ABx protocol and includes all the command functions for efficient serial and RFID communications.

The HMS810 and HMS815 offer multidrop capabilities, enabling up to 32 of these Reader/Writers to be networked together in slave mode via an RS485 and a proprietary Mux32 communication protocol.

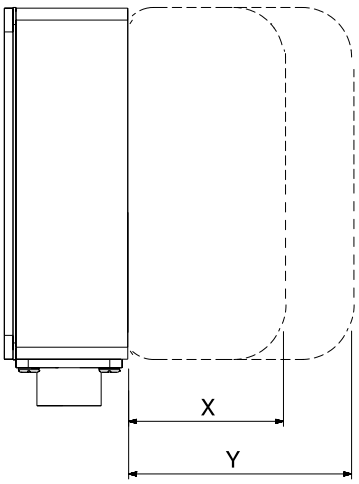
The HMS800-Series Reader/Writers feature built-in CRC error detection and parity checking to provide data security and system confidence.

The HMS-Series Passive Read/Write Tags provide 736 bytes of re-programmable memory, and are specifically designed to communicate to the HMS800-Series Reader/Writers.

HMS800-Series Passive Reader/Writers

Electrical	Supply Voltage	14-30VDC
	Current	300mA
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	
	HMS800 / HMS810	Integrated, Ferrite-shielded
	HMS805 / HMS815	30mm Tubular Remote
Serial Host Interface	HMS800 / HMS805	RS232
	HMS805 / HMS815	RS485/Mux32
	Baud Rate	9600 and 19200
Mechanical Specifications	Dimensions (W x H x D)	5.50 x 3.70 x 1.30in. (140 x 94 x 33mm)
	Remote Antenna (Dia. x L)	1.18 x 2.5 (30 x 64mm), Thread Pitch .5mm
	Remote Antenna Cable Length	3.3ft. (1m)
	Weight	19oz. (538g)
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-4° to 158°F (-20° to 70°C)
	Humidity	90% Non-condensing
	Protection Class	NEMA 2 (IP11)
		NEMA 4 (IP66) - Remote Antenna

Read/Write Ranges



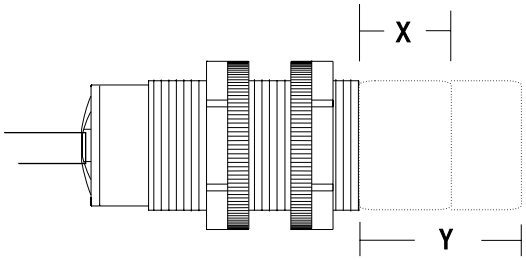
HMS800 / HMS810 Passive Reader/Writers

Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Y) (inches/mm)*	**	**	1.10/28	2.75/70
Guaranteed Operating Range (X)	**	**	0.87/22	2.20/56

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

** Not recommended.



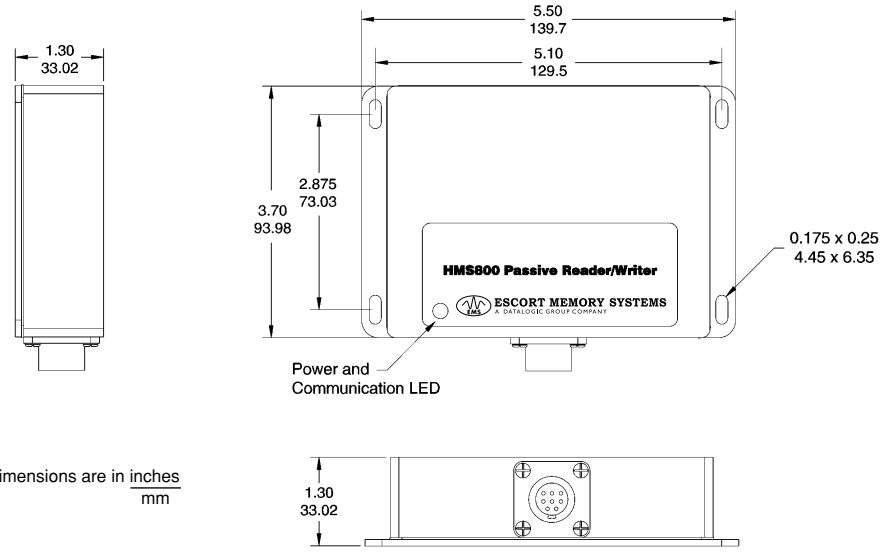
HMS805 / HMS815 Passive Reader/Writers

Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Y) (inches/mm)*	0.43/11	0.67/17	1.14/29	1.38/35
Guaranteed Operating Range (X)	0.35/9	0.55/14	0.91/23	1.10/28

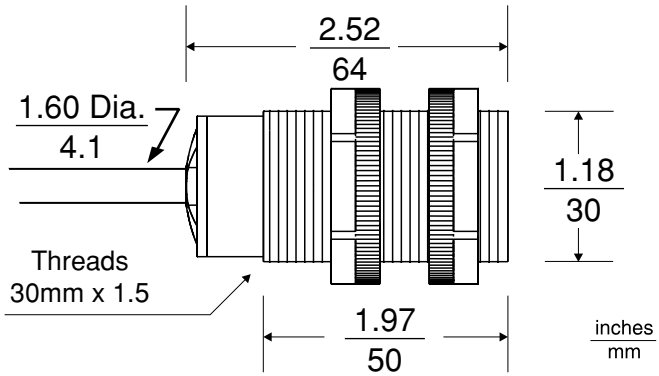
* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Mechanical Dimensions
Reader/Writer



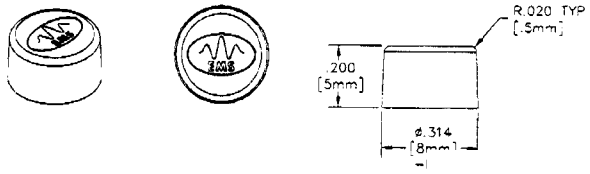
Dimensions are in inches / mm

Mechanical Dimensions
Remote Antenna

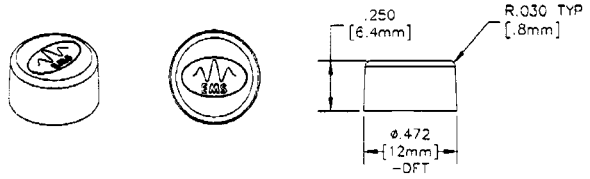


Dimensions are in inches / mm

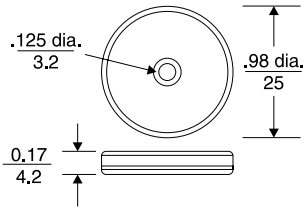
Mechanical Dimensions
HMS100-Series Passive Read/Write Tags



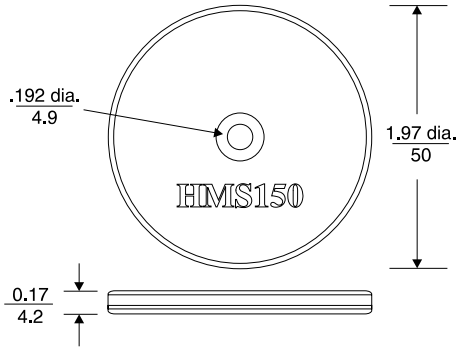
HMS108



HMS112



HMS125/HMS125HT



HMS150/HMS150HT

HMS800-Series Passive Reader/Writers

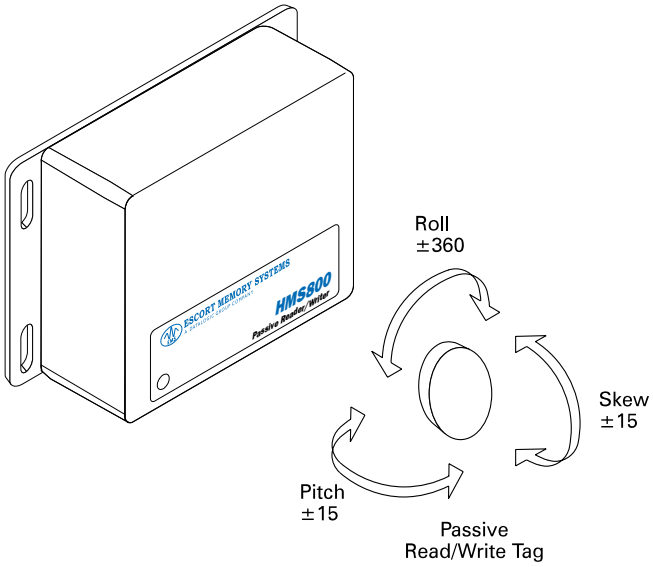
Available Models

Model	Description
HMS800	Passive Reader/Writer, RS232 Communications
HMS805	Passive Reader/Writer, RS232 Communications, 30mm Tubular Remote Antenna
HMS810	Passive Reader/Writer, RS485/Mux32 Communications
HMS815	Passive Reader/Writer, RS485/Mux32 Communications, 30mm Tubular Remote Antenna

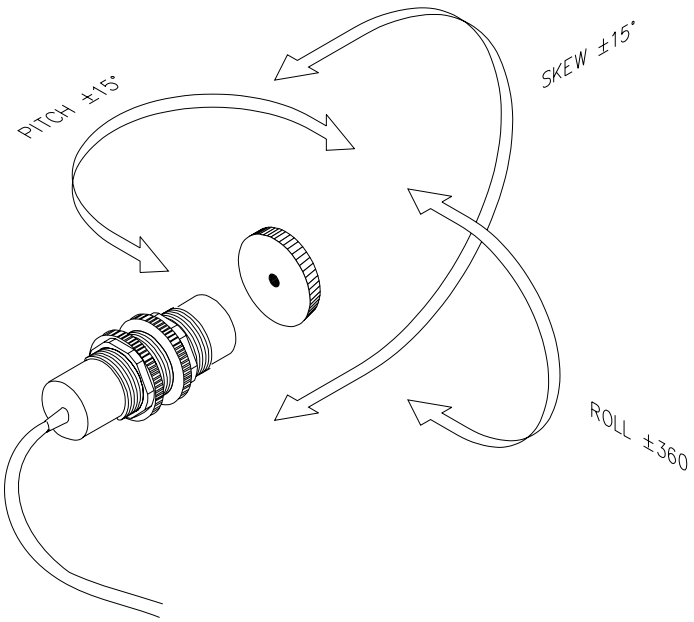
Accessories

68-5001	Crimping Tool for HMS800-Series Mating Connector

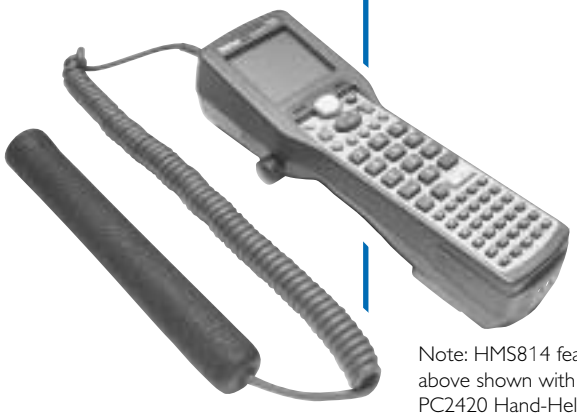
Tag-to-Reader/Writer Orientation



HMS800 / HMS810 to Tag



HMS805 / HMS815 to Tag



Note: HMS814 featured above shown with the PC2420 Hand-Held Terminal

HMS814 / HMS816 Portable Reader/Writers

Features

- Epoxy Encapsulated
- Unaffected by Paint, Dust, Dirt and Solvents
- Uses Safe, Reliable, Low-Frequency Radio Waves
- Passive Tag Requires No Batteries
- Automatic Program Start-up

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

EMS has recently teamed up with Intermec to launch an exciting new product line of Portable Reader/Writers. Escort Memory Systems' Read/Write Antenna, the HMS814, can be plugged into Intermecs' PC2420-Series Hand-Held Terminals (PC2420 and PC2425) to provide portable Read/Write capabilities. For added flexibility, Escort Memory Systems also offers the HMS816 Reader/Writer, which provides a direct host interface (e.g. laptop, palmtop).

The HMS814 Portable Reader/Writer is a fully encapsulated wand housed in an industrial enclosure and has a cushioned exterior for comfort and shock resistance. The HMS814 plugs into the Intermec Hand-Held Terminal to allow for portable Reading and Writing to the HMS-Series Tags. The HMS814 is powered by the Terminal.

The HMS816 Portable Reader/Writer is unique from the HMS814 in that it interfaces to the host (e.g. laptop, palmtop) via an RS232 serial port. The HMS816 uses an external power supply, and it features the same rugged characteristics of the HMS814. Included with the HMS816 Reader/Writer is a complete user software guide and a disk with demonstration programs.

Intermec offers two Terminals to interface with Escort Memory Systems' Reader/Writers – the PC2420 and the PC2425. The PC2420 is a powerful microcomputer which features a CGA compatible back-lit LCD displaying 16 lines of 20 characters per line. The PC2420 also has a full alpha-numeric keypad, long battery life, and a rugged design suitable for use in industrial environments. The PC2425 Terminal shares all the above characteristics as the PC2420 but also provides the added benefit of an RF link to the host.

PASSIVE READER/WRITER IS NOW PORTABLE

Technical Description

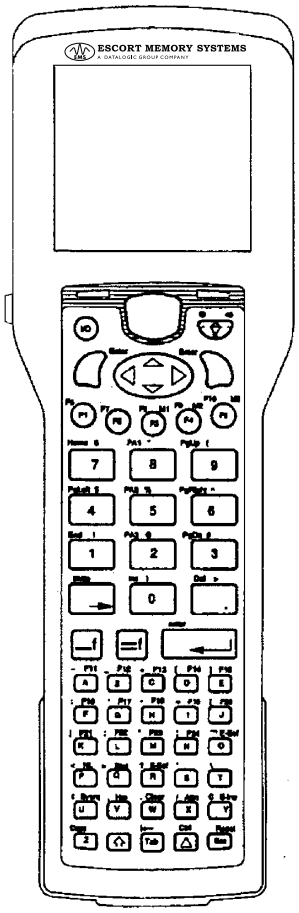
The HMS814 / HMS816 Portable Reader/Writers contains its own microprocessor and memory subsystems to manage communication with the HMS-Series Tags. Communication between the PC2420 (or PC2425) Terminal and the HMS814 is in serial asynchronous form. The RF communications with the Tag is on the internationally recognized ISM frequency of 13.56 MHz.

HMS814 / HMS816 Portable Reader/Writers

PC2420-Series Hand-Held Terminals

Electrical	Supply Voltage	Lithium Ion Battery Pack
	Memory Backup	Rechargeable NiCad Battery Pack
	RAM Memory	1 MB Total, 512KB Available
	Extended Memory	2MB SRAM
Mechanical Specifications	Dimensions (W x H x D)	10.6 x 3.2 x 2.8in. (269 x 82 x 71mm)
	Weight	22oz. (620g) Including Battery
Environment	Operating Temperature	-4° to 122°F (-20° to 50°C)
	Storage Temperature	-4° to 140°F (-20° to 60°C)
	Humidity	95% Non-Condensing
Display		CGA Compatible Backlit LCD Displaying 16 Lines of 20 Characters Per Line (160 x 128 Dot Matrix) Plus Graphic Status Icons Full 25 x 80 Virtual Screen with Viewporting
Keyboard		Elastomeric 56-key with Full Alphanumeric Set, Function Keys and Oversized Numeric. Options for U.S. and Multilingual European

PC2420-Series Hand-Held Terminals



HMS814 Portable Reader/Writer

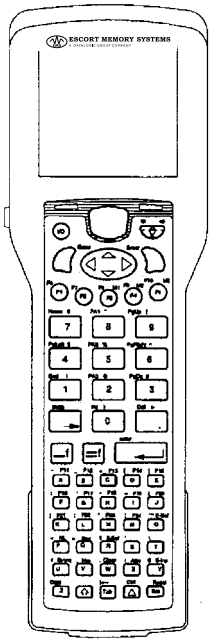
Electrical	Supply Voltage	7.2VDC
	Current	100mA Continuous
		400mA Peak
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	Internal
Interface	Serial Host Interface	TTL
	Baud Rate	9600
	Connector	RJ45 - 10 Pin for PC2420
Mechanical Specifications	Cable Length	6ft. (2m)
	Antenna Body (L x W)	8.25 x 1.22in. (210 x 31mm)
Environment	Operating Temperature	32° to 140°F (0° to 60°C)
	Storage Temperature	-4° to 158°F (-20° to 70°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)

HMS816 Portable Reader/Writer

Electrical	Supply Voltage	12VDC
	Current	100mA Continuous
		400mA Peak
Interface	Serial Host Interface	RS232
	Baud Rates	9600, 19200
	Connector	DE9S with DC
		Power Jack
Mechanical Specifications	Cable Length	6ft. (2m)
	Antenna Body (L x W)	8.25 x 1.22in. (210 x 31mm)
Environment	Operating Temperature	32° to 140°F (0° to 60°C)
	Storage Temperature	-4° to 158°F (-20° to 70°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)

HMS814 / HMS816 Portable Reader/Writers and
PC2420-Series Hand-Held Terminals

Mechanical Dimensions



Read/Write Ranges

HMS814 / HMS816 Portable Reader/Writers

Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Y) (inches/mm)*	0.28/7	0.35/9	0.63/16	0.59/15
Guaranteed Operating Range (X)	0.24/6	0.28/7	0.51/13	0.47/12

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HMS814	Portable RF Reader/Writer
HMS816	Portable RF Reader/Writer with RS232 Interface
HMS814 J003	Kit Includes: HMS814 Reader/Writer, PC2420 Hand-Held Terminal 00-1099 Battery and 00-1102 Battery Charger

(Note: HMS814 will require a Hand-Held Terminal, a Battery and Battery Charger. See Accessories below.)

Accessories – PC2420

Model	Description
PC2420	Hand-Held PC Terminal
PC2425	Hand-Held PC Terminal with RF Link
00-1099	Battery, PC2420 7.2V, 1350mAh
*00-1100	Comm. Dock/Charger, PC2420 (Note: Requires CBL-1443 or CBL-1444 Cables and 00-1101 Power Supply)
*00-1101	Power Supply for 00-1100
00-1102	Battery Charger for Two Batteries 00-1099
*00-1111	Software Microsoft Visual C++ V1.52
00-1112	Hand Strap for PC2420 and PC2425
*00-1113	Software Development Kit PC2420 (Note: Requires Visual C/C++ V1.0 or V1.5X or V4.X)
*CBL-1443	RS232 Cable, DE9S to DE9S, Null Modem, 5-Wire
*CBL-1444	RS232 Cable, DE9S to DB25P, Null Modem, 3-Wire
17-1265	Manual, PC2420/25

* Recommended Accessories for Development of Custom PC2420 Applications.

DeviceNet™

HMS820 / HMS830 Passive Reader/Writers

Features

- Serial Reader/Writer with Integrated Antenna
- Four Input Points and Four Output Points
- Host Interface (COM1): RS232/RS422 /Mux32 (HMS820)
- Host Interface (COM1): RS232/RS422 and DeviceNet Interface (HMS830)
- Auxiliary RS232 Serial Port
- 1000 Bytes/Second Data Transfer Speed
- NEMA 4 (IP66)

Applications

- Material Handling
- Sortation Systems
- Work-In-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 or RS422 Hosts

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' HMS-Series is the latest in the EMS line of high performance, industrial RFID equipment. The passive design of the HMS Reader/Writer system uses the RF field from the Antenna to power the Tag, eliminating the need for batteries.

The HMS820 and HMS830 Passive Reader/Writers are extremely compact solid state devices housed in durable two part ABS plastic NEMA 4 enclosures. The HMS820 is available with a RS485 multidrop interface (Mux32 protocol) and a RS232/RS422 point-to-point interface. The HMS830 is available with a DeviceNet interface and a RS232/RS422 point-to-point interface. Both the HMS820 and HMS830 achieve Tag to Antenna data transfer speeds of 1000 bytes/second.

In addition, the HMS820 and HMS830 have a slave serial port which can serve many purposes including writing Tag information to a marquis or accepting barcode scanner inputs.

READER/WRITER WITH SELF-CONTAINED I/O

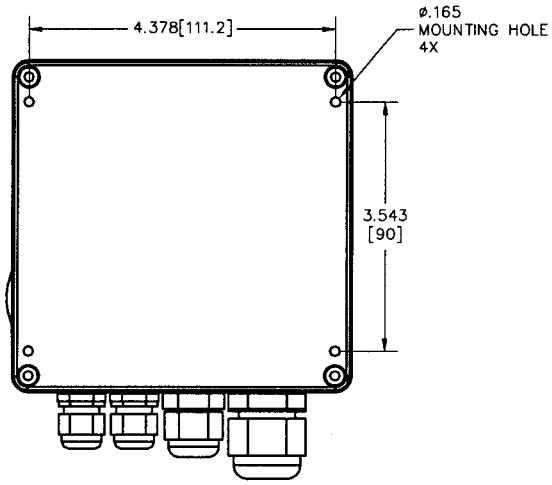
Reduced interface expenditures, faster identification/tracking response times and powerful memory capabilities will allow your assembly or production environment to realize noticeably greater productivity, efficiency and quality results.

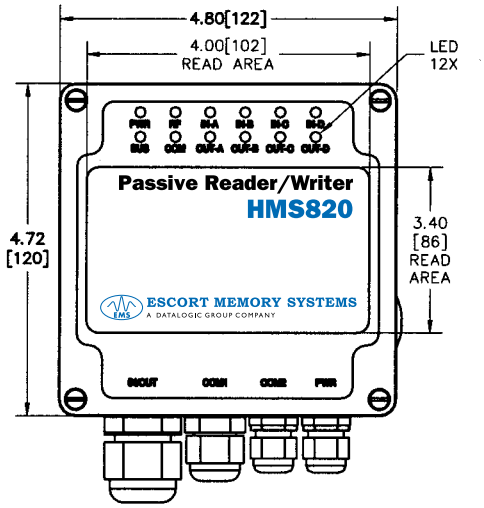
HMS820 / HMS830 Passive Reader/Writers

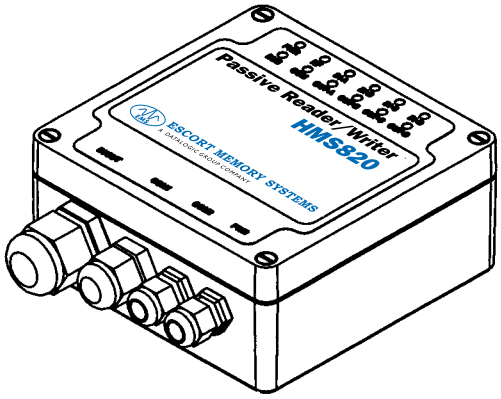
Electrical	Supply Voltage	18-30VDC
	Current	270mA@24VDC
Memory	60KB Program Memory (System + User)	
	20KB Data Read/Write Memory (Flat)	
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	
	(HMS820 / HMS830)	Integrated Antenna
	(HMS820-05 / HMS830-05)	External 30mm Antenna
Interface	**COM1**	
	RS232	
	RS422	
	Bus Interfaces:	
	Mux32 Optoisolated (HMS820/05)	
	DeviceNet Interface (HMS830/05)	
	COM2	
	RS232 (Use for Barcode Scanner Input, Program Downloading, Downloading Configuration Parameters)	
	Baud Rate	
	RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400
	RS232 (COM2)	1200, 2400, 4800, 9600, 19200
	RS485/Mux32 (COM1)	9600 or 346K
	I/O	
	Input	
	Voltage Input Range	4.5-30VDC
	Imax	25mA
	Output	
	Vmax	30VDC
	Imax	500mA
Mechanical Specifications	Dimensions (W x H x D)	4.72 x 4.80 x 2.17in. (122 x 120 x 55mm)
	Weight	24oz. (676g)
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)

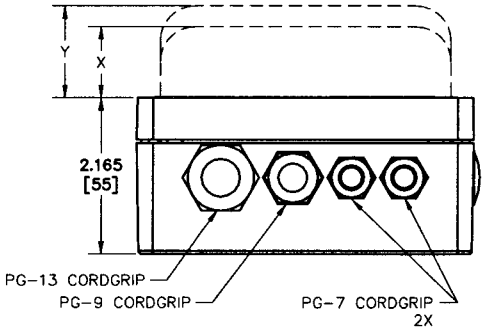
Mechanical Dimensions

HMS820 / HMS830 Passive Reader/Writers

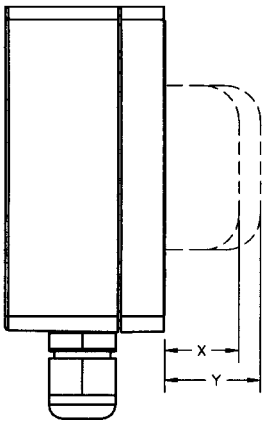








Read/Write Ranges



HMS820 / HMS830 Passive Reader/Writers

Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

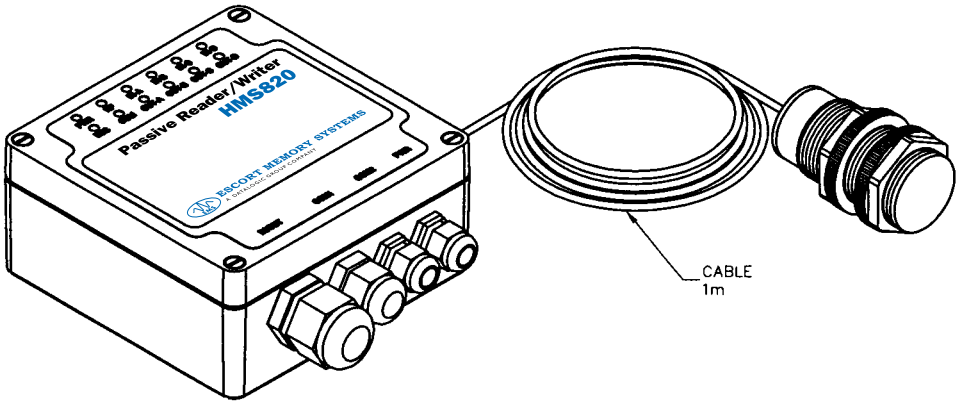
	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Y) (inches/mm)*	**	**	1.10/28	1.97/50
Guaranteed Operating Range (X)	**	**	0.87/22	1.57/40

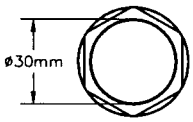
* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

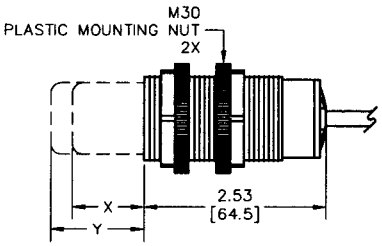
** Not recommended.

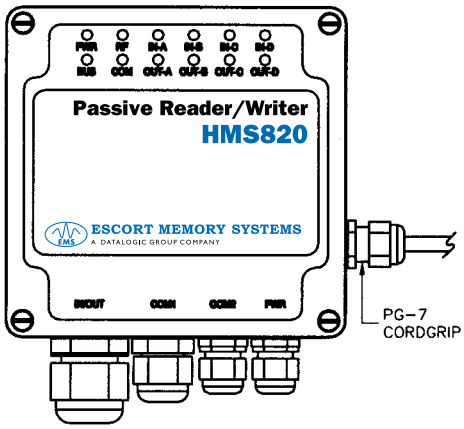
Mechanical Dimensions

HMS820-05 / HMS830-05 Passive Reader/Writers with 30mm Remote Antenna









Read/Write Ranges

HMS820-05 / HMS830-05 Passive Reader/Writers

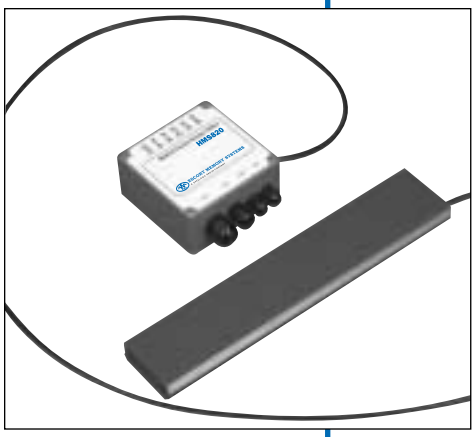
Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Y) (inches/mm)*	0.39/10	0.59/15	0.91/23	1.38/35
Guaranteed Operating Range (X)	0.31/8	0.47/12	0.70/18	1.10/28

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HMS820	Passive Reader/Writer
HMS820-05	Passive Reader/Writer with 30mm Remote Antenna
HMS830	Passive Reader/Writer with DeviceNet Interface
HMS830-05	Passive Reader/Writer with DeviceNet Interface, 30mm Remote Antenna



ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

HMS820-04/ HMS830-04 Series Passive Conveyor Reader/Writers

Features

- Four Input Points and Four Output Points
- Host Interface (COM1): RS232/RS422/Mux32 (HMS820-04)
- Host Interface (COM1): RS232/RS422 and DeviceNet Interface (HMS830-04)
- Auxiliary RS232 Serial Port
- 1000 Bytes/Second Data Transfer Speed
- NEMA 4 (IP66)
- 13.5″ Wide Reading Field
- Easily Mounts Underneath Conveyor
- No Moving Parts
- Long-Life Passive Tags
- Passive Tag, Requires No Batteries

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Module
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 or RS485 Host

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The HMS820-04 Passive Conveyor Reader/Writer is designed to provide cost effective RFID data collection to demanding material handling and automation applications.

The patent pending design of the Conveyor Reader/Writer addresses a prominent concern which has vexed the material handling industry for years. In the past, the positioning of a Reader/Writer relative to the passing totes was critical. Read/Write ranges had to accommodate different sized totes or the totes had to be positioned to pass near the Reader/Writer. Escort Memory Systems' Conveyor Reader/Writer solves this concern since the Reader/Writer can now be snugly mounted underneath the path of the tote. The 14.0″ wide Reader/Writer can substitute a roller's position or may even be installed between the conveyor rollers. Reader/Writer adjustments are a thing of the past, since the Conveyor Reader/Writer can track any size tote/pallet on the same path without time-consuming adjustments.

Conveyor Reader/ Writer with Self-Contained I/O

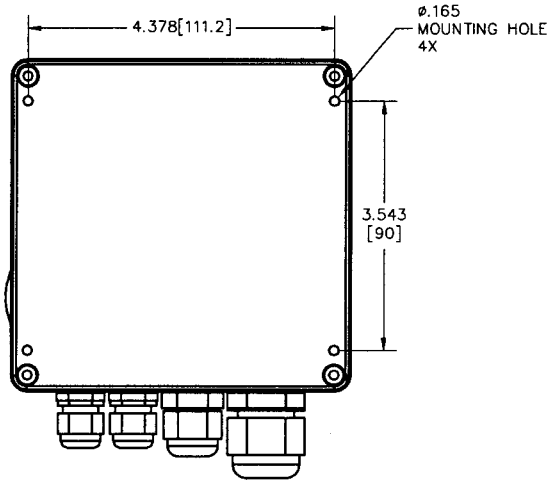
Equally important, the HMS820-04 Reader/ Writer is compatible with Escort Memory Systems' HMS100-Series Passive Read/Write Tags. These Tags are extremely durable, low-cost electronic identifiers that can be attached to any object, even in the harshest environments. The Read/ Write Tags do not contain moving parts, and provide practically unlimited life with no maintenance requirements. In a typical application, the Read/Write Tag is attached to a tote/pallet in a material handling process. Once attached, the Tag allows the RFID Reader/Writer to identify the pallet at any point in the process.

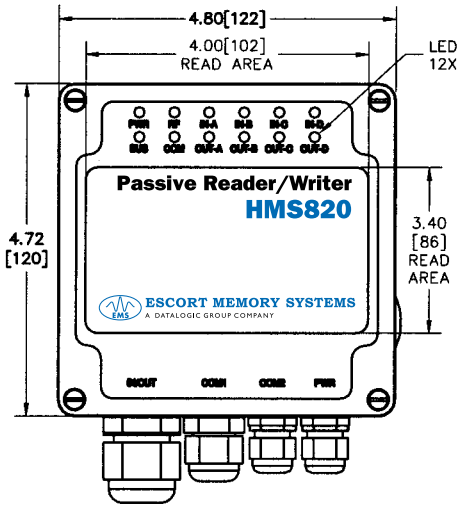
The HMS830-04 is available with a DeviceNet interface and a RS232/RS422 point-to-point interface.

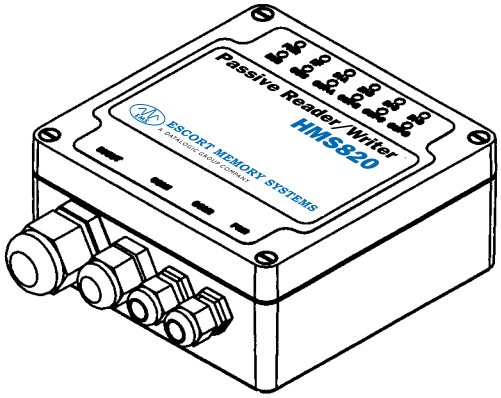
HMS820-04 / HMS830-04 Series Passive Conveyor Reader/Writers

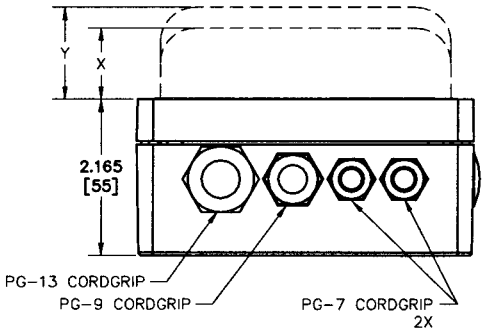
Electrical	Supply Voltage	18-30VDC
	Current	270mA@24VDC
Memory	60KB Program Memory (System + User)	
	20KB Data Read/Write Memory (Flat)	
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	
	HMS820-04	356mm Rectangular Antenna, 2 Meter Cable
Interface	**COM1**	
	RS232	
	RS422	
	Bus Interfaces:	
	Mux32 Optoisolated (HMS820-04)	
	DeviceNet Interface (HMS830-04)	
	COM2	
	RS232 (Use for Barcode Scanner Input, Program Downloading, Downloading Configuration Parameters)	
	Baud Rate	
	RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400
	RS232 (COM2)	1200, 2400, 4800, 9600, 19200
	RS485/Mux32 (COM1)	9600 or 346K
	I/O	
	Input	
	Voltage Input Range	4.5-30VDC
	Imax	25mA
	Output	
	Vmax	30VDC
	Imax	500mA
Mechanical Specifications	HMS820 (W x H x D)	4.72 x 4.80 x 2.17in. (122 x 120 x 55mm)
	Conveyor Reader/Writer (W x H x D)	14.50 x 2.80 x 0.92in. (368 x 71 x 23mm)
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)

HMS820 / HMS830 Mechanical Dimensions

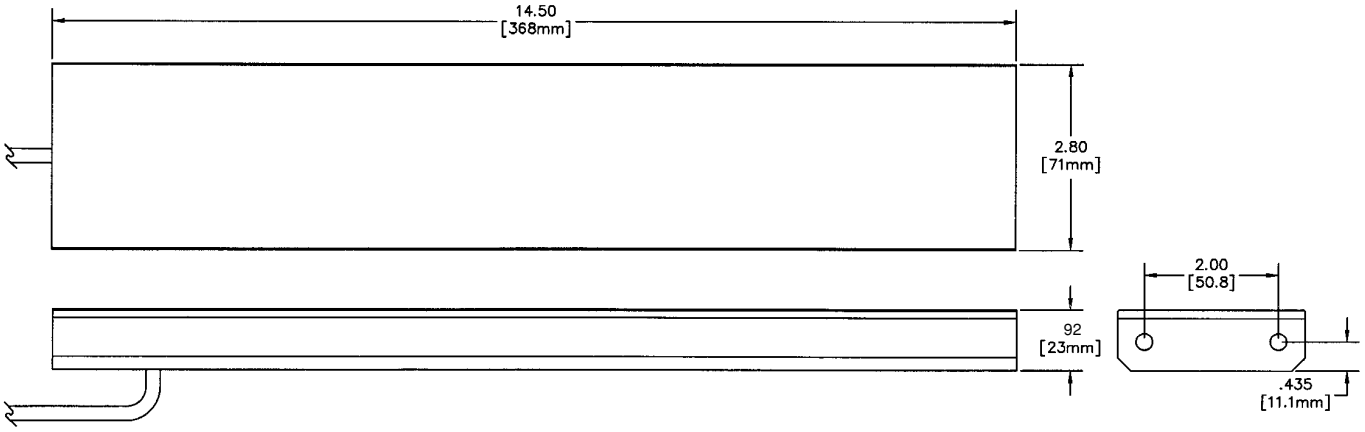






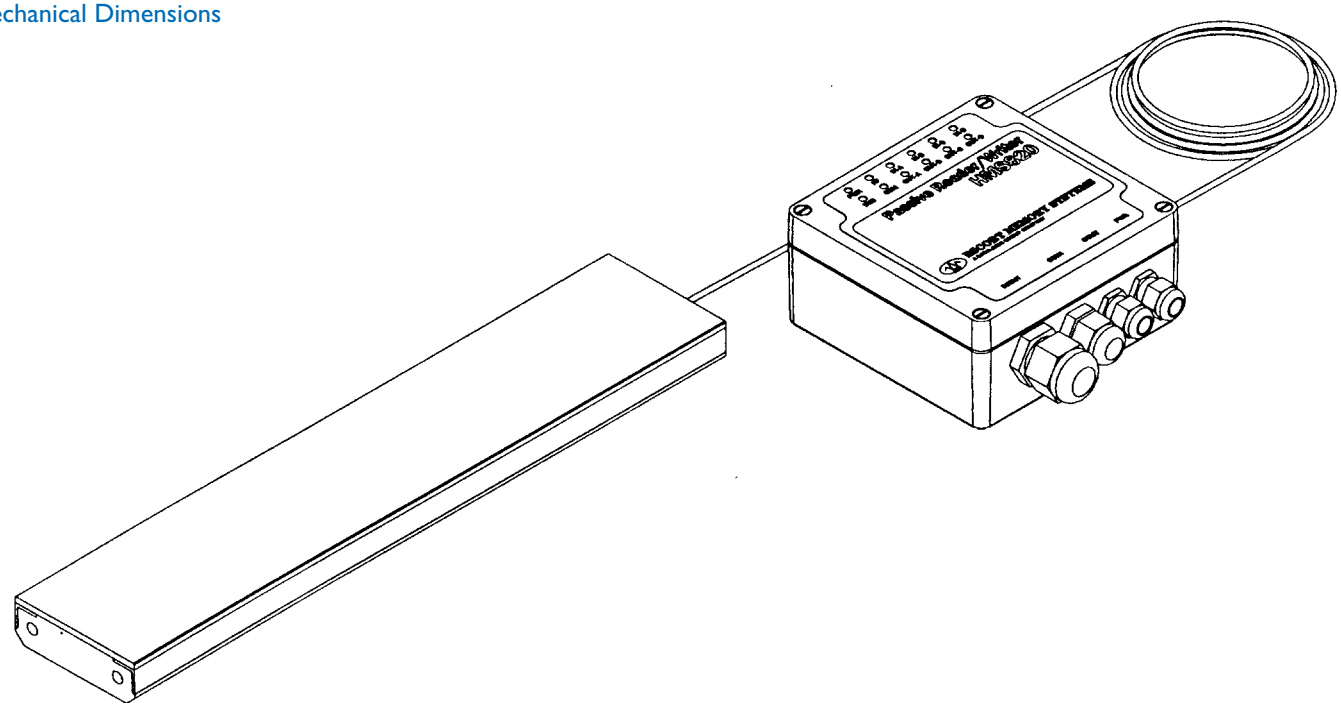


Conveyor Reader/Writer

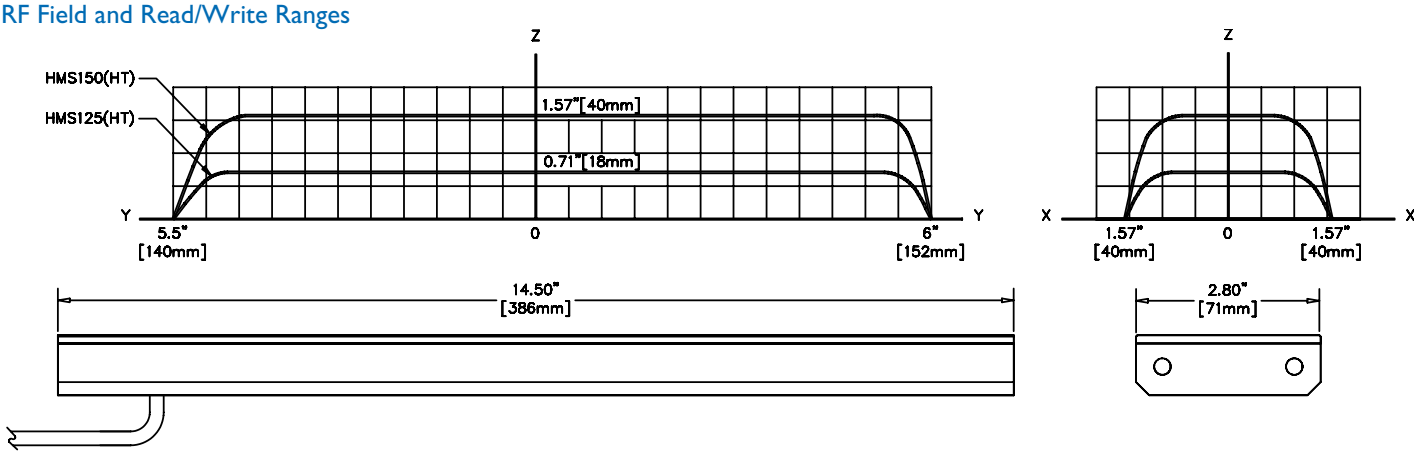


HMS820-04 / HMS830-04 Series Passive Conveyor Reader/Writers

Mechanical Dimensions



RF Field and Read/Write Ranges



HMS820-04 / HMS830-04 Series Passive Conveyor Reader/Writers

Reading/Writing Ranges with HMS100-Series Passive Read/WriteTags

Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Z) (inches/mm)*	**	**	0.71/18	1.57/40
Guaranteed Operating Range	**	**	0.55/14	1.26/32
Reading Field (Y)	**	**	11.50/292	11.50/292
Reading Field (X)	**	**	3.14/80	3.14/80

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended.

Available Models

Model	Description
HMS820-04	Passive Conveyor Reader/Writer
HMS830-04	Passive Conveyor Reader/Writer with DeviceNet Interface

DeviceNet™

HMS820-08/ HMS830-08 Passive Wide-Plate Reader/Writers

Features

- 81 Square Inches of Read/Write Field
- Four Input Points and Four Output Points
- Host Interface (COM1): RS232/RS422/Mux32 (HMS820-08)
- Host Interface (COM1): RS232/RS422 and DeviceNet Interface (HMS830-08)
- Auxiliary RS232 Serial Port
- 1000 Bytes/Second Data Transfer Speed
- NEMA 4 (IP66)

Applications

- Material Handling
- Sortation Systems
- Work-In-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 or RS422 Hosts

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' HMS-Series is the latest in the EMS line of high performance, industrial RFID equipment. The passive design of the HMS Reader/Writer system uses the RF field from the Antenna to power the Tag, eliminating the need for batteries.

The HMS820-08 / HMS830-08 Series Passive Reader/Writers are extremely compact solid state devices housed in a durable two-part ABS plastic NEMA 4 enclosure. The HMS820 is available with a RS485 multidrop interface (Mux32 protocol) and a RS232/RS422 point-to-point interface. The HMS820 / HMS830 achieves Tag to Antenna data transfer speeds of 1000 bytes/second.

In addition, the HMS820 / HMS830 have a slave serial port which can serve many purposes including writing Tag information to a marquis or accepting barcode scanner inputs.

WIDE-PLATE READER/ WRITERS WITH SELF-CONTAINED I/O

Excellent Read/Write Ranges of five inches can be attained with the patent pending Wide-Plate Reader/Writer with 81 square inches of Read/Write field.

Reduced interface expenditures, faster identification/tracking response times and powerful memory capabilities will allow your assembly or production environment to realize noticeably greater productivity, efficiency and quality results.

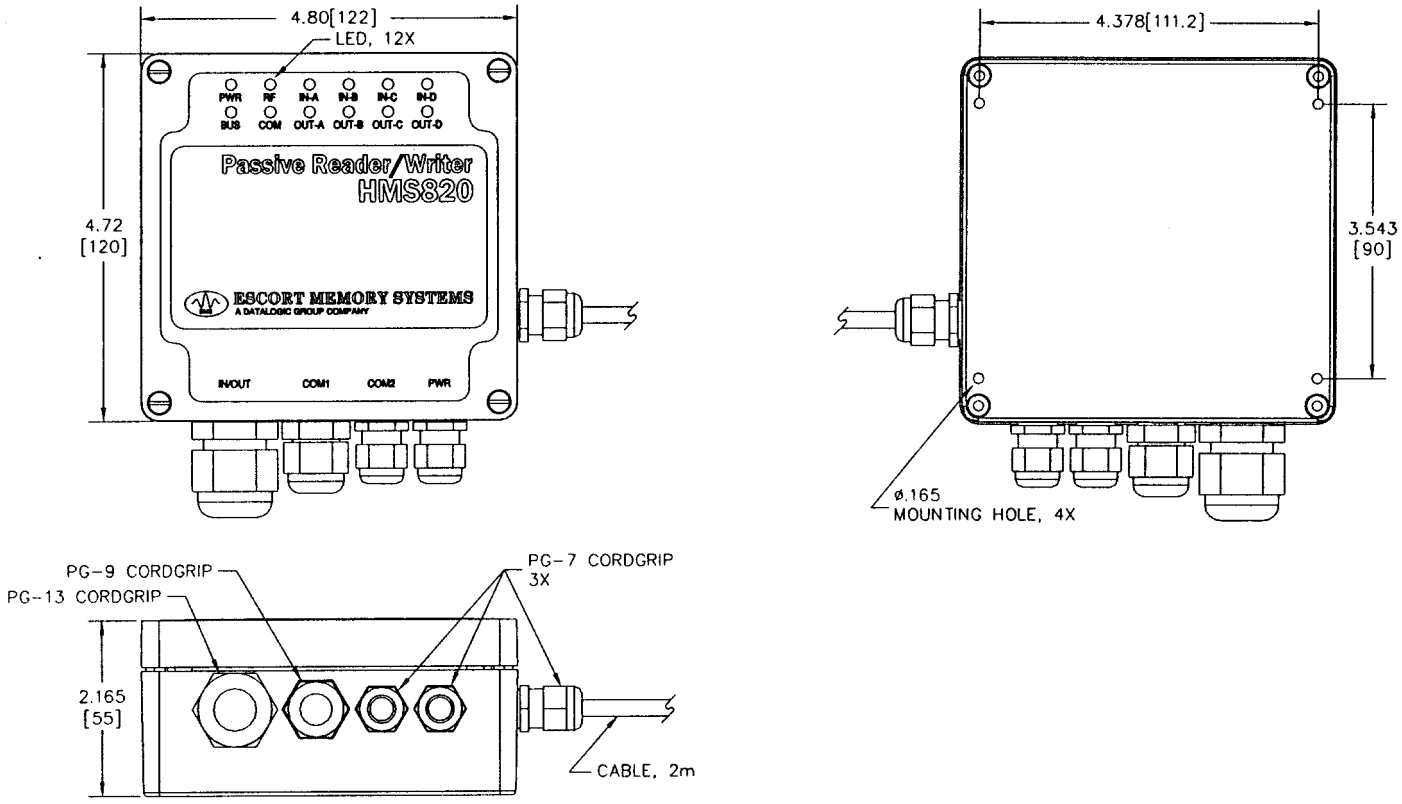
The HMS830-08 is also available with a DeviceNet interface and a RS232/RS422 point-to-point interface.

HMS820-08 / HMS830-08 Series Passive Wide-Plate Reader/Writers

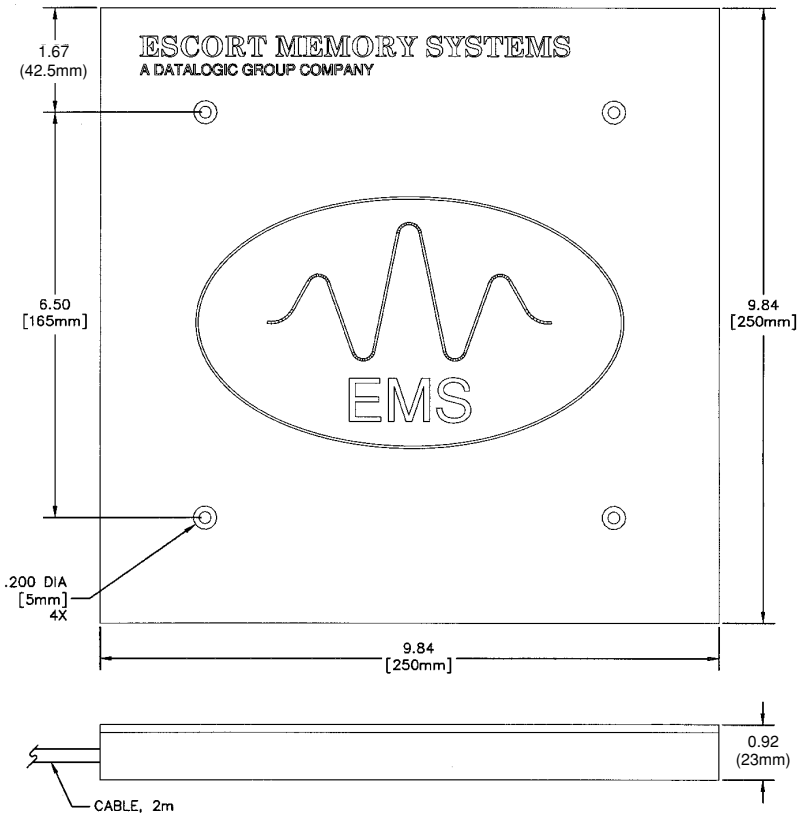
Electrical	Supply Voltage	18-30VDC
	Current	270mA@24VDC
Memory	60KB Program Memory (System + User)	
	20KB Data Read/Write Memory (Flat)	
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	
	HMS820 / HMS830-08	External 250mm Reader/Writer with 2 Meter Cable
Interface	**COM1**	
	RS232	
	RS422	
	Bus Interfaces:	
	Mux32 Optoisolated (HMS820-08)	
	DeviceNet Interface (HMS830-08)	
	COM2	
	RS232 (Use for Barcode Scanner Input, Program Downloading, Downloading Configuration Parameters)	
	Baud Rate	
	RS232/RS422 (COM1)	1200, 2400, 4800, 9600, 19200, 38400
	RS232 (COM2)	1200, 2400, 4800, 9600, 19200
	RS485/Mux32 (COM1)	9600 or 346K
	I/O	
	Input	
	Voltage Input Range	4.5-30VDC
	Imax	25mA
	Output	
	Vmax	30VDC
	Imax	500mA
Mechanical Specifications	HMS820 (W x H x D)	4.72 x 4.80 x 2.17in. (122 x 120 x 55mm)
	Wide-Plate Reader/Writer Dimensions (W x H x D)	9.84 x 0.92 x 9.84in. (250 x 23 x 250mm)
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)

HMS820 / HMS830 Dimensions

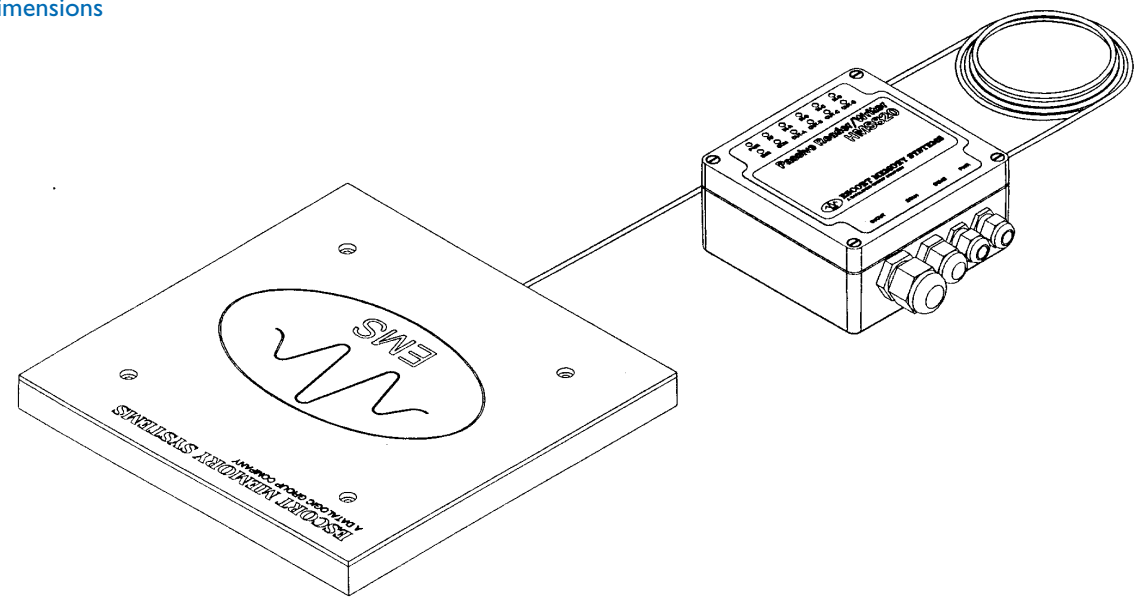
HMS820 / HMS830



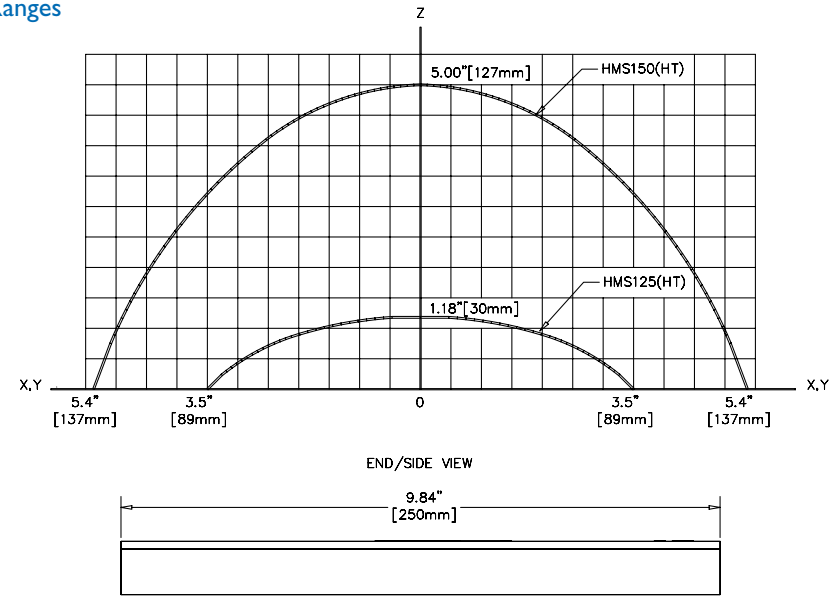
Wide-Plate Reader/Writer



Mechanical Dimensions



RF Field and Read/Write Ranges



HMS820-08 / HMS830-08 Series Passive Wide-Plate Reader/Writers

Reading & Writing Ranges with HMS100-Series Passive Read/Write Tags

Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Z) (inches/mm)*	**	**	1.18/30	5.00/127
Guaranteed Operating Range	**	**	0.94/24	4.02/102
Reading Field (Y)	**	**	7.00/178	10.80/274
Reading Field (X)	**	**	7.00/178	10.80/274

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended.

Available Models

Model	Description
HMS820-08	Passive Wide-Plate Reader/Writer
HMS830-08	Passive Wide-Plate Reader/Writer with DeviceNet Interface

HMS827-Series Passive Reader/Writers

Features

- Serial Reader/Writers with Integrated Antenna
- Menu Configurable RS232 and RS485 Multidrop Interface
- Dip Switch Configurable Horizontal and Vertical Reading
- 1000 Bytes/Second Data Transfer Speed
- Passive Tag Requires No Batteries
- NEMA 12 (IP65)
- 24VDC Operation

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 and RS485 Host

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Escort Memory Systems' HMS-Series is the latest in the EMS line of high performance, industrial RFID equipment. The passive design of the HMS Reader/Writer system uses the RF field from the Antenna to power the Tag, eliminating the need for batteries.

The HMS827-Series Passive Reader/Writers are extremely compact units housed in durable, two part ABS plastic enclosures. The HMS827 Reader/Writers are available with a RS485 multidrop interface (Mux32 protocol) and an RS232 point-to-point interface. The HMS827 Reader/Writers also have selectable horizontal and vertical read positions.

The patented industry standard limit switch body of the HMS827 Reader/Writers makes it ideal for use in factory automation environments where space is limited. The Reader/Writers are solid state devices and are housed in a NEMA 12, ABS enclosure.

The HMS827 incorporates two user selectable integrated Antennas, one for horizontal reading and the other for vertical reading. The patented head design provides the ability to read from the top or any of the four sides.

Technical Description

PATENTED ROTATING HEAD ALLOWS GREATER FLEXIBILITY

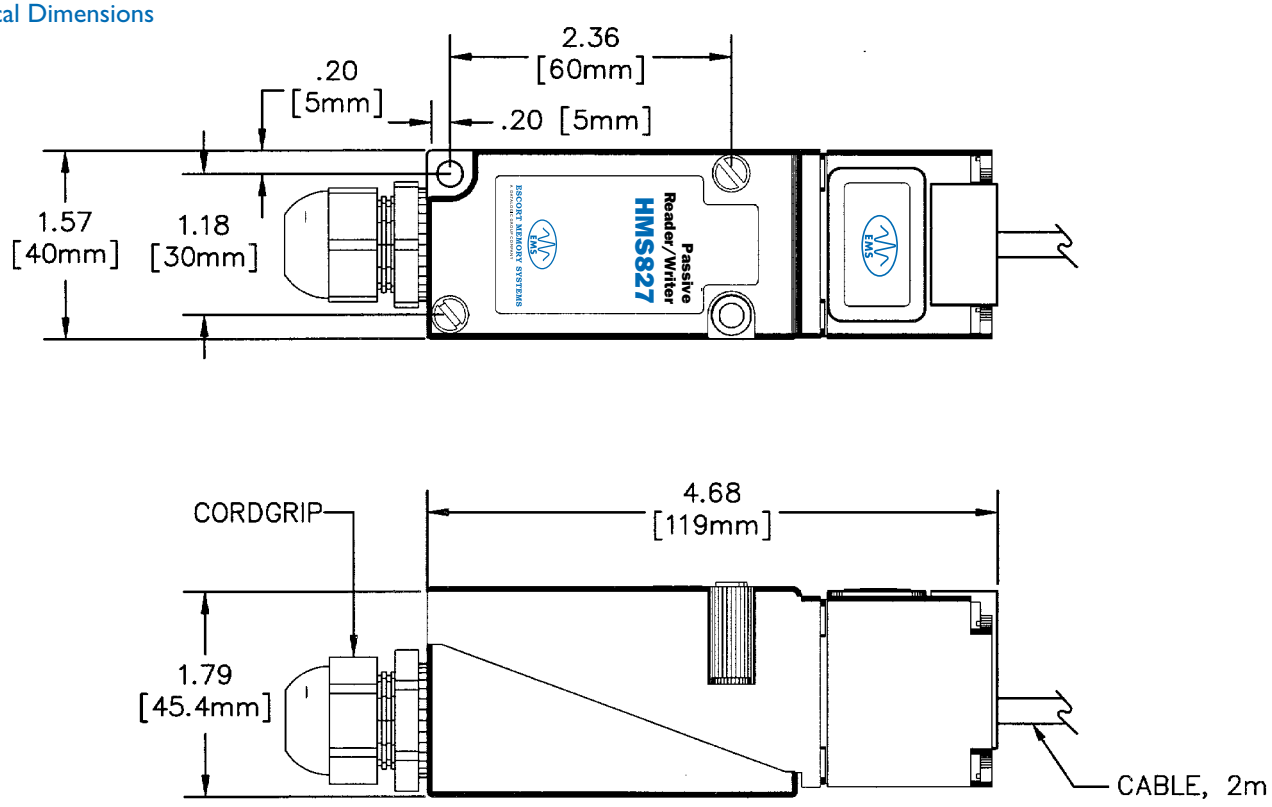
The HMS827 interface block contains the power supply, logic, serial interface and terminal blocks for external connections. The head block contains the integrated Antenna and the analog transmitter. The HMS827 Reader/ Writers uses the internationally recognized ISM frequency of 13.56 MHz to both power the Tag and to establish a radio link to transfer the data.

Error checking routines ensure that the Tag data is correctly received by the Antenna even in environments of heavy RF interference. A bi-color (red/green) LED provides continuous operational feedback. The HMS827's small size, multi-drop features and high data transfer speed, combined with a versatile assortment of Tags, provide a powerful solution for any application.

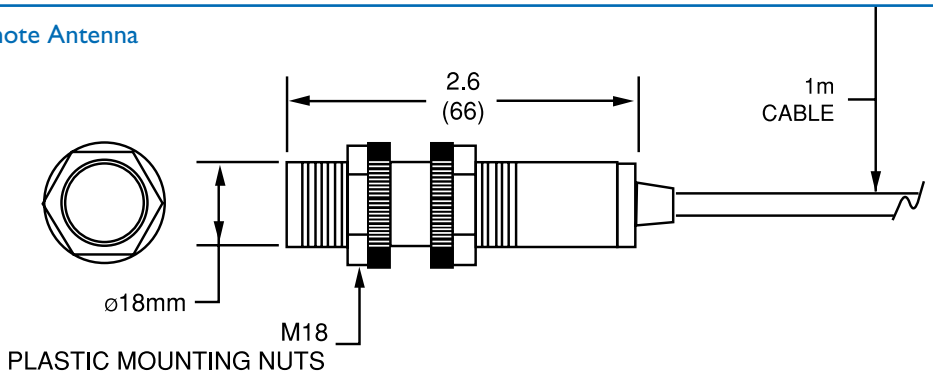
HMS827-Series Passive Reader/Writers

Electrical	Supply Voltage	18-30VDC ±10%
	Current	160mA@24VDC (3.84W)
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type	
	HMS827	Integrated 2 Axis, User Selectable Horizontal and Vertical Reading
	HMS827-03	18mm Tubular, 1Meter Cable
	HMS827-06	30 x 40 x 12mm Rectangular Remote Antenna
Interface	Serial Host Interface	RS232 RS485/Mux32
	Baud Rate (RS232)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
	Baud Rate (RS485/Mux32)	9600 or 346K
Mechanical Specifications	Dimensions (W x H x D)	4.68 x 1.79 x 1.57in. (119 x 45 x 40mm)
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 12 (IP65)

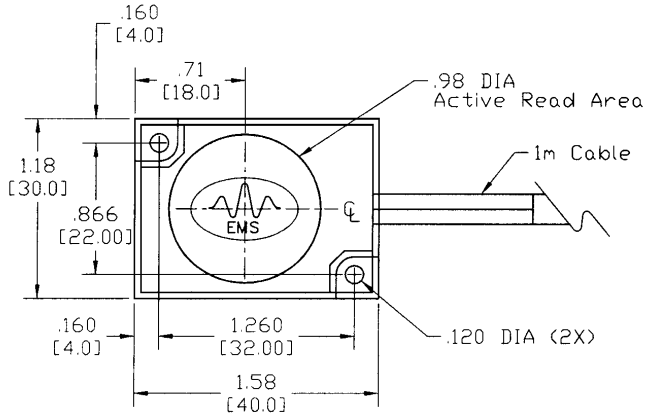
Mechanical Dimensions



HMS827-03 Tubular Remote Antenna



HMS827-06 30mm x 40mm x 12mm Remote Antenna



HMS827-Series Passive Reader/Writers

Typical & Guaranteed Read/Write Ranges

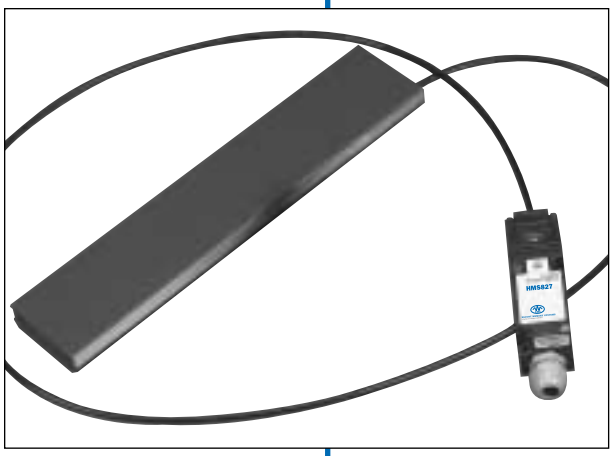
(inches/mm)*

Reader/Writers		Tags			
		HMS108	HMS112	HMS125(HT)	HMS150(HT)
HMS827-Vert.	Typ.	0.43/11	0.67/17	1.18/30	1.89/48
	Guar.	0.35/9	0.55/14	0.94/24	1.50/38
HMS827-Horiz.	Typ.	0.39/10	0.55/14	0.98/25	1.57/40
	Guar.	0.31/8	0.43/11	0.79/20	1.26/32
HMS827-03	Typ.	0.35/9	0.47/12	0.79/20	**
	Guar.	0.28/7	0.39/10	0.63/16	**
HMS827-06	Typ.	0.47/12	0.59/15	1.06/27	0.83/22
	Guar.	0.39/10	0.47/12	0.87/22	0.70/18

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended

Available Models

Model	Description
HMS827	Passive Reader/Writer
HMS827-03	Passive Reader/Writer with 18mm Tubular Remote Antenna
HMS827-04	Passive Conveyor Reader/Writer
HMS827-06	Passive Reader/Writer with 30mm x 40mm x 12mm Remote Antenna



ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

HMS827-04
Passive Conveyor Reader/Writer

Features

- Serial Reader/Writer
- Menu Configurable RS232 and RS485 Multidrop Interface
- 1000 Bytes/Second Data Transfer Speed
- NEMA 12 (IP65)
- 24VDC Operation
- 14.5″ Wide Reading Field
- Easily Mounts Underneath Conveyor
- No Moving Parts
- Long-Life Passive Tags
- Passive Tag Requires No Batteries

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HMS-Series Tags
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Interface Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 or RS485 Host

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The HMS827-04 Passive Conveyor Reader/Writer is designed to provide cost effective RFID data collection to demanding material handling and automation applications.

The patent pending design of the Conveyor Reader/Writer addresses a prominent concern which has vexed the material handling industry for years. In the past, the positioning of a Reader/Writer relative to the passing totes was critical. Read/Write ranges had to accommodate different sized totes or the totes had to be positioned to pass near the Reader/Writer. Escort Memory Systems' Conveyor Reader/Writer solves this concern since the Reader/Writer can now be snugly mounted underneath the path of the tote. The 14.5″ wide Reader/Writer can substitute a roller's position or may even be installed between the conveyor rollers. Reader/Writer adjustments are a thing of the past, since the Conveyor Reader/Writer can track any size tote/pallet on the same path without time-consuming adjustments.

Equally important, the HMS827-04 Reader/Writer is compatible with Escort Memory Systems' Read/Write HMS100-Series Tags. These Tags are extremely durable, low-cost electronic identifiers that can be attached to any object, even in the harshest environments. The Read/ Write Tags do not contain moving parts, and provide practically unlimited life with no maintenance requirements. In a typical application, the Read/Write Tag is attached to a tote/ pallet in a material handling process. Once attached, the Tag allows the RFID Reader/Writer to identify the pallet at any point in the process.

CONVEYOR ANTENNA ELIMINATES READING RANGE CONCERNS

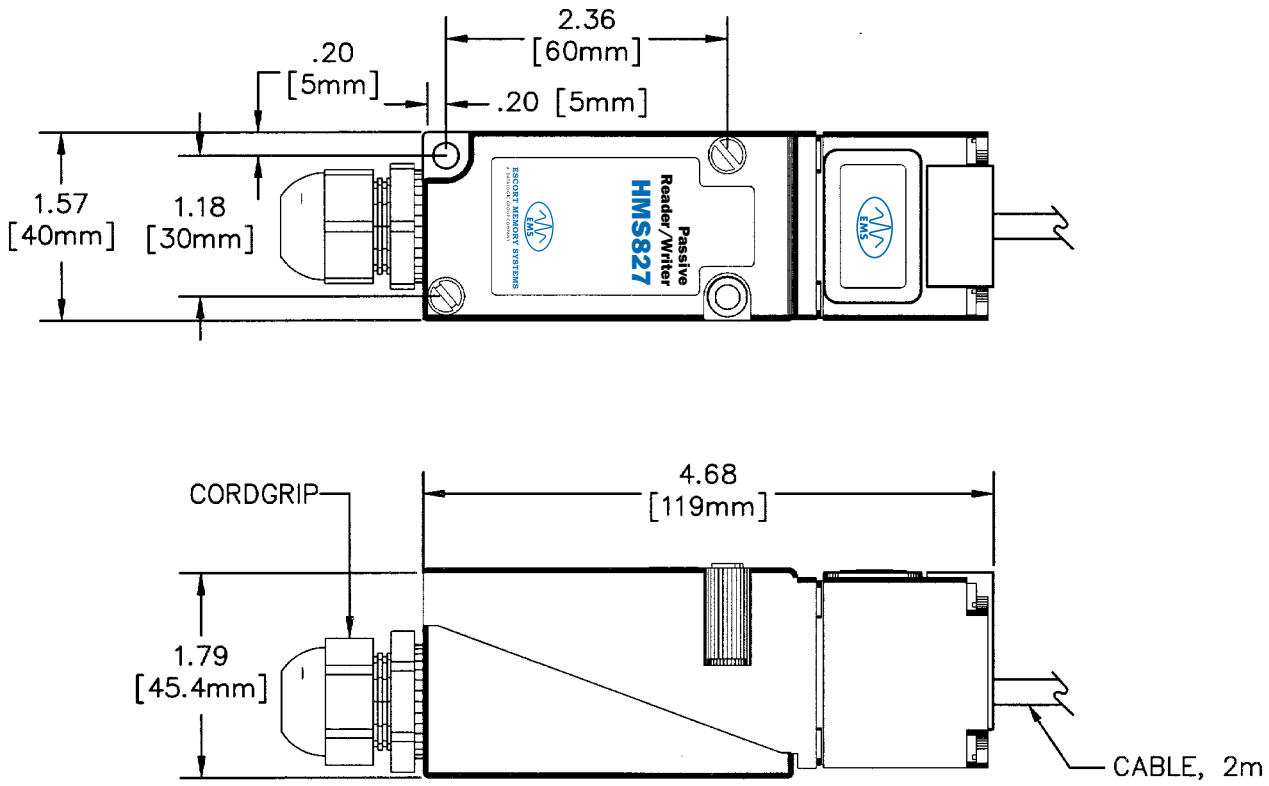
The Passive design of the HMS827-04 Conveyor Antenna uses its RF field from the Reader/Writer to power the Tag, eliminating the need for batteries. The HMS827 Reader/Writer uses the internationally recognized ISM frequency of 13.56 MHz to both power the Tag and to establish a radio link to transfer the data.

Error checking routines ensure that the Tag data is correctly received by the Antenna even in environments of heavy RF interference. A bi-color (red/green) LED provides continuous operational feedback. The HMS827's small size, multi-drop features and high data transfer speed, combined with a versatile assortment of Tags, provide a powerful solution for any application.

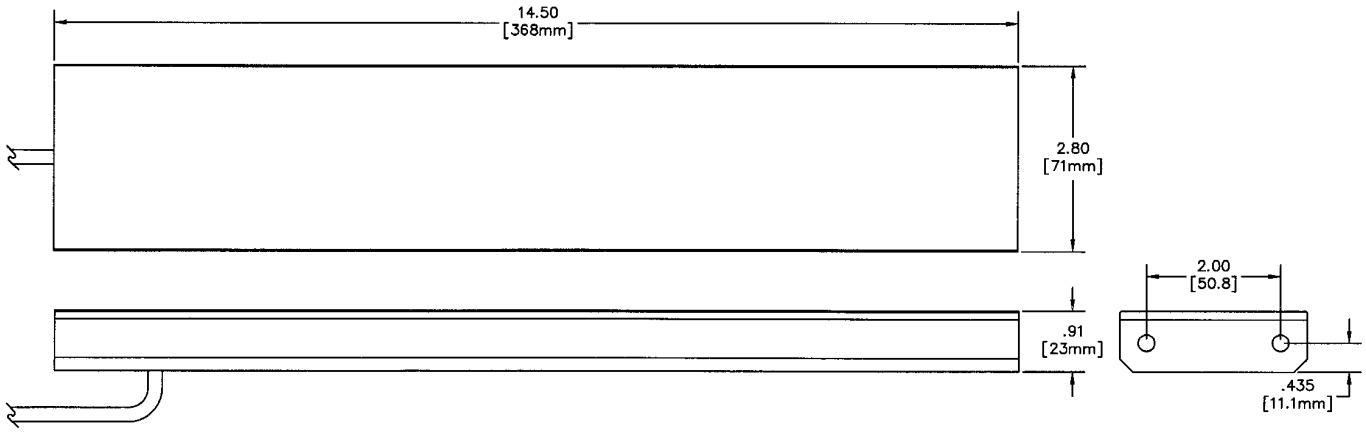
HMS827-04 Passive Conveyor Reader/Writer

Electrical	Supply Voltage	18-30VDC
	Current	160mA@24VDC (3.84W)
RF Interface	Data Transfer Rate	1000 Bytes/Second
	Error Detection	CRC and Parity Check
	Antenna Type HMS827-04	356mm Rectangular Remote Reader/Writer, 2 Meter Cable
Interface	Serial Host Interface	RS232 RS485/Mux32
	Baud Rate (RS232)	1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200
	Baud Rate (RS485/Mux32)	9600 or 346K
Mechanical Specifications	HMS827 (W x H x D)	4.68 x 1.79 x 1.57in. (119 x 45 x 40mm)
	Conveyor Reader/Writer (W x H x D)	14.50 x 2.80 x 0.91in. (368 x 71 x 23mm)
	Mounting	Four 1/4-20 x 3in. Screws Twelve 1/4-20, Hex Nuts
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 12 (IP65)

HMS827 Mechanical Dimensions

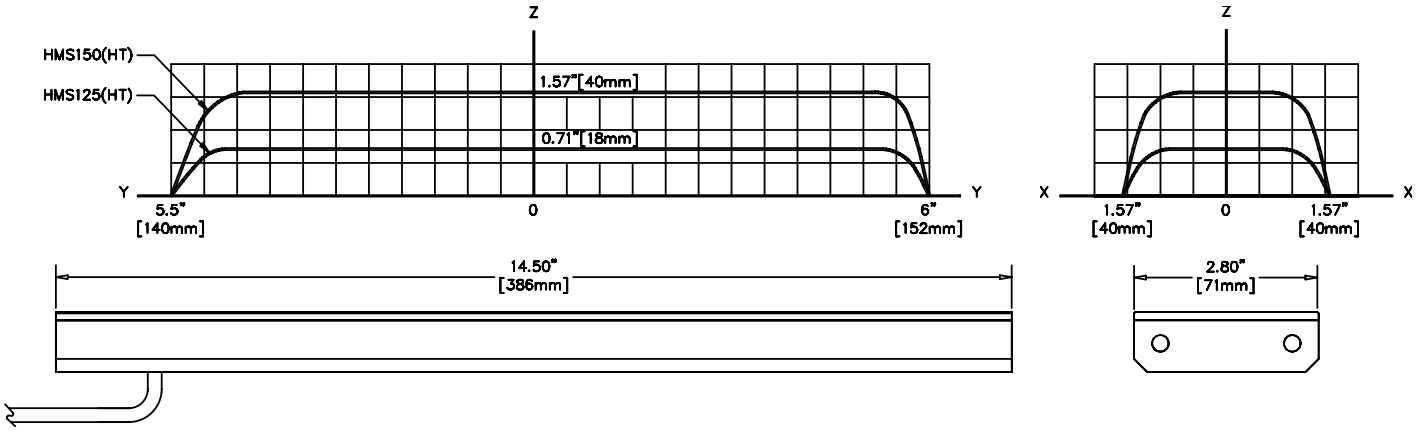


Conveyor Reader/Writer



HMS827-04 Passive Conveyor Reader/Writer

RF Field and Read/Write Ranges



HMS827-04 Passive Conveyor Reader/Writer

Reading/Writing Ranges with HMS100-Series Passive Read/WriteTags

Tags

	HMS108	HMS112	HMS125(HT)	HMS150(HT)
Typical Range (Z) (inches/mm)*	**	**	0.71/18	1.57/40
Guaranteed Operating Range	**	**	0.55/14	1.26/32
Reading Field (Y)	**	**	11.50/292	11.50/292
Reading Field (X)	**	**	3.14/80	3.14/80

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
** Not recommended.

Available Models

Model	Description
HMS827-04	Passive Conveyor Reader/Writer

Passive Read Only Radio Frequency Identification (RFID) Typical & Guaranteed Read Ranges

(inches/mm)*

Readers		Tags ES620(HT)	Tags ES650(HT)
RS427-01 (Vertical Read Head)	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-02 (Horizontal Read Head)	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-03 (Remote 18mm Tubular Antenna)	Typ.	1.77/45	2.76/70
	Guar.	1.42/36	2.20/56
RS427-04 (Conveyor Antenna)	Typ.	1.38/35	3.35/85
	Guar.	1.10/28	2.68/68

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

ES600-Series Read Only Tags

Features
- Small and Easy to Mount
- Low Cost
- Long Life
- No Moving Parts
- High Temperature Capability

Applications
- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With
- RS427-01
- RS427-02
- RS427-03
- RS427-04

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' Read Only Tags are extremely durable, low-cost electronic identifiers that can be attached to most any object in the harshest environments. Read Only Tags are best used in applications where fixed codes are required and bar code labeling is not appropriate. The Tags contain no moving parts, and provide practically unlimited life with absolutely no maintenance. In a typical application, the Read Only Tag is attached directly to a reusable pallet or specific part as that part is introduced into the production process. The Tag can last the lifetime of a pallet and allow the RFID Reader to identify the pallet at any point in the process.

Technical Description

The completely encapsulated ES600-Series Tags contain a custom IC and an inductive coil. When the Tag enters the RF field of an Antenna, the Antenna's RF emission causes an inductive current in the Tag coil that, in turn, powers the IC. The Tag then transmits a phase modulated signal containing the information stored in the Tag. Error checking routines ensure that the Tag data is correctly received by the Antenna, even in environments of heavy RF interference.

ES600-Series Tags are available in many versions, varying in range, data bits stored, and operating temperature. The effective range is determined by the Tag coil size. The ES650 has a larger coil, and so, a longer range than the ES620. The actual range in a particular application depends on the Reader or Antenna being used and the particular environmental conditions, such as surrounding metal and RF interference.

Compact Read Only Tags for Rugged Environments

The application flexibility of ES600-Series Tags is expanded by the high temperature versions, the ES620HT and ES650HT. These Tags are designed to retain data integrity after exposure to temperatures as high as 401°F (205°C). This resistance to high temperatures make the HT models ideal for paint oven and hot chemical bath applications.

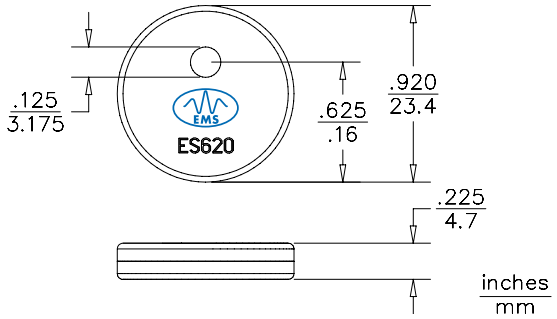
ES600-Series Read Only Tags

ES620(HT) Read Only Tags

Electrical	Power Supply	Powered by Inductive Coupling No Battery Required
Memory	20 Bits (1M Possible Codes)	
RF Interface	Data Transfer Rate	20 msec Per Read
Environment	Operating Temperature	
	ES620	-4° to 140°F (-20° to 60°C)
	ES620HT	-40° to 158°F (-40° to 70°C)
	Storage Temperature	
	ES620	-40° to 185°F (-40° to 85°C)
	ES620HT	-40° to 401°F (-40° to 205°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4 (IP66)

Note: "Operating Temperature" is the range of temperatures at which read and fill operations can be performed

Mechanical Dimensions



Read Ranges

ES620(HT) Read Only Tag

Reading Ranges

Readers

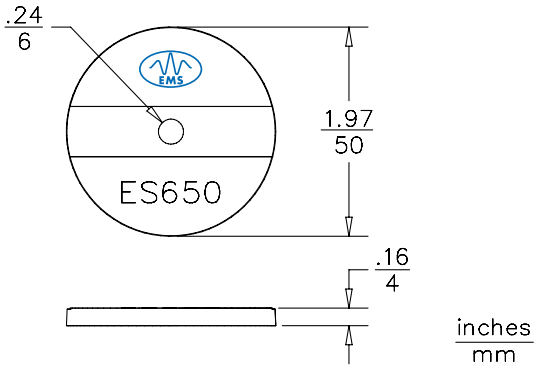
	RS427-01	RS427-02	RS427-03	RS427-04
Typical Range (Y) (inches/mm)*	1.57/40	1.57/40	1.77/45	1.38/35
Guaranteed Operating Range (X)	1.26/32	1.26/32	1.42/36	1.10/28

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

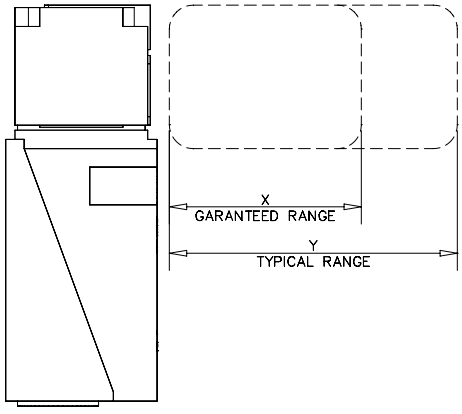
Electrical	Power Supply	Powered by Inductive Coupling No Battery Required
Memory	20 Bits (1M Possible Codes)	
RF Interface	Data Transfer Rate	20 msec Per Read
Environment	Operating Temperature	
	ES650	-4° to 140°F (-20° to 60°C)
	ES650HT	-40° to 158°F (-40° to 70°C)
	Storage Temperature	
	ES650	-40° to 185°F (-40° to 85°C)
	ES650HT	-40° to 401°F (-40° to 205°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4 (IP66)

Note: "Operating Temperature" is the range of temperatures at which read and fill operations can be performed

Mechanical Dimensions



Read Ranges



ES650(HT) Read Only Tag

Reading Ranges

Readers

	RS427-01	RS427-02	RS427-03	RS427-04
Typical Range (Y) (inches/mm)*	2.59/66	2.59/66	2.76/70	3.35/85
Guaranteed Operating Range (X)	2.09/53	2.09/53	2.20/56	2.68/68

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

ES600-Series Read Only Tags

Typical & Guaranteed Read Ranges
(inches/mm)*

Readers		Tags ES620(HT)	ES650(HT)
RS427-01 (Vertical Read Head)	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-02 (Horizontal Read Head)	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-03 (Remote 18mm Tubular Antenna)	Typ.	1.77/45	2.76/70
	Guar.	1.42/36	2.20/56
RS427-04 (Conveyor Antenna)	Typ.	1.38/35	3.35/85
	Guar.	1.10/28	2.68/68

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
ES620	Button Tag, 23mm diameter, factory programmed random sequence Read Only RFID Tag, 20 bit memory. Off-center mounting hole
ES620HT	High-Temperature Button Tag, 23mm diameter, factory programmed random sequence read only RFID tag, 20 bit memory. -40° to 401°F (-40° to 205°C) storage temperature. Central mounting hole
ES650	Button Tag, 50mm diameter, factory programmed random sequence Read Only RFID Tag, 20 bit memory. Central mounting hole
ES650HT	High-Temperature Button Tag, 50mm diameter, factory programmed random sequence Read Only RFID Tag, 20 bit memory. -40° to 401°F (-40° to 205°C) storage temperature. Central mounting hole

Compatible Products

Model	Description
RS427-01	Read Only Reader, Read Head, Top-Read (Vertical)
RS427-02	Read Only Reader, Read Head, Side-Read (Horizontal) Rotatable
RS427-03	Read Only Reader, Remote Read Head, 18mm Tubular, 1m Cable
RS427-04	Passive Read Only Conveyor Antenna
RS427-10	Read Only Reader, Interface Block, RS232
RS427-20	Read Only Reader, Interface Block, RS485/Mux32 Compatible

Accessories

00-1091	Mounting Hardware Kit for ES620 Tag, nylon, 10 spacers, 10 screws
00-1115	Mounting Hardware Kit for ES650 Tag, nylon, 10 spacers, 10 screws
00-1120	Mounting Hardware Kit for ES620HT Tag, teflon, 10 spacers, 10 screws
00-1121	Mounting Hardware Kit for ES650HT Tag, teflon, 10 spacers, 10 screws
00-1125	Mounting Hardware Kit for ES650HT Tag, ceramic, 10 spacers, 10 screws

RS427-Series Read Only Readers

Features

- Compact, Versatile Reader
- Menu Configurable (RS232)
- String Configurable (RS485)
- RS485 Multidrop Interface
- RS232 Point-to-Point Interface
- Low Cost
- No Moving Parts

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- ES600-Series Tags
- RS427-10 Read-Only Reader, RS232 Interface Block
- RS427-20 Read-Only Reader, RS485 Interface Block
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 and RS485 Host

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The RS427-Series Read Only Readers are extremely compact units housed in a durable, two part ABS plastic enclosure, able to withstand harsh environments. The RS427 is available with a RS485 multidrop interface (Mux32 protocol), or RS232 point-to-point interface, and either a horizontal or vertical read head. The two parts of the RS427, the interface block and the Read head block, are ordered separately to meet the needs of the specific application. The RS427 supports EMS' ES600-Series Read Only Tags and are best used in applications where fixed codes are required and bar code labeling is not appropriate. The Tags contain no moving parts, and provide practically unlimited life with absolutely no maintenance requirements. In a typical application, the Read Only Tag is attached to a pallet or part in a production process. Once attached, the Tag will last the lifetime of the pallet and allow the RFID Reader to identify the pallet at any point.

The small size and industry standard limit switch body of the RS427 Reader makes it ideal for use in factory automation environments where space is at a premium.

Compact Reader with Integrated Antenna

The RS427 Reader is the only interface necessary between the user's host computer and the information in the Read Only Tags. The RS232 version communicates through the serial port and features an easy to use set-up menu system. The RS485 version is string configurable through the serial port.

Technical Description

The RS427 interface block contains the power supply, logic, serial interface and the external connections. The Read head block contains the integrated Antenna and the analog transceiver. The built-in Antenna radiates a low frequency, low power signal which is captured by the Tag and used to power the Tag's internal custom IC. The Tag then returns a phase modulated signal containing the information stored in the Tag. Error checking routines ensure that the Tag data is correctly received by the Antenna even in environments of heavy RF interference. The RS427's small size, high performance and flexibility combined with the assortment of Read Only Tags make it a powerful solution to Read Only applications.

RS427-Series Read Only Readers

Electrical	Supply Voltage	24VDC ±15%
	Current	150mA
RF Interface	Data Transfer Rate	15msec Per Read
Interface	**RS232**	
	Baud Rate	2400, 4800, 9600, 19200
	Parity	Odd, Even, None
	Data Bits	8
	Stop Bits	1
	Max. Cable Length	50ft. (15m)
	RS485 (Mux32)	
	Baud Rate	9600
	Data Bits	8
	Stop Bits	1
	Max. Cable Length	4000ft. (1219m)
Mechanical Specifications	Dimensions (W x H x D)	4.68 x 1.79 x 1.57in. (119 x 45 x 40mm)
	Enclosure	ABS Plastic
Environment	Operating Temperature	-4° to 122°F (-20° to 40°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	5 to 95% Non-Condensing
	Protection Class	NEMA 4 (IP65)

Read Ranges

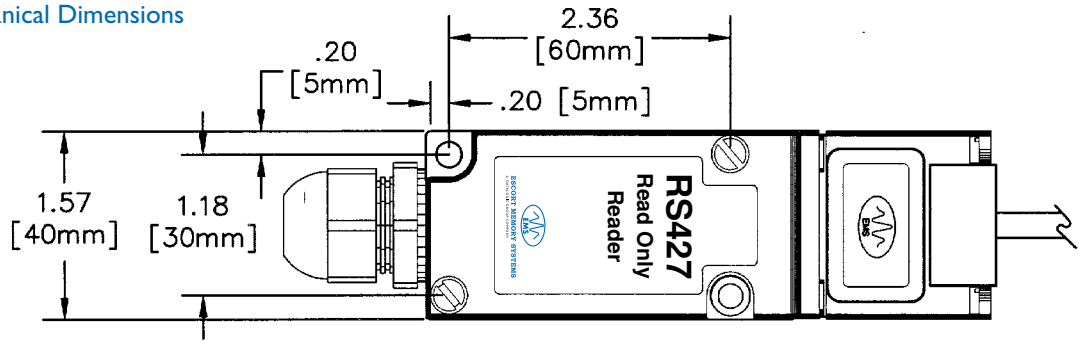
RS427-Series Read Only Readers

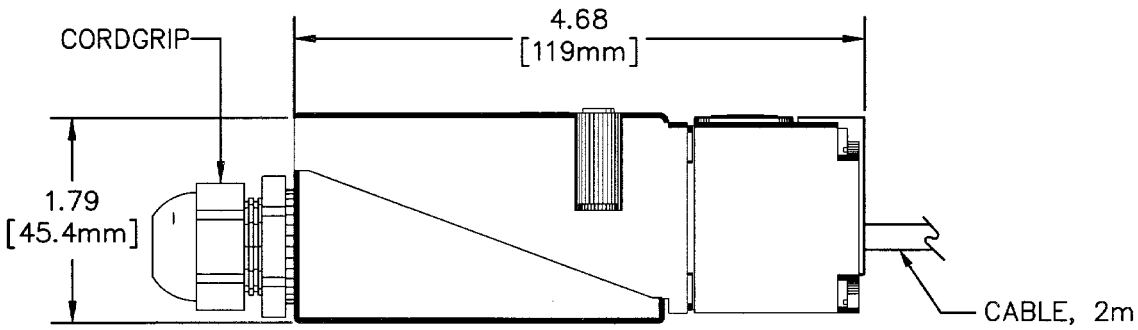
Reading Ranges with ES600-Series Read Only Tags (inches/mm)*

Readers		Tags ES620(HT)	Tags ES650(HT)
RS427-01	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-02	Typ.	1.57/40	2.59/66
	Guar.	1.26/32	2.09/53
RS427-03	Typ.	1.77/45	2.76/70
	Guar.	1.42/36	2.20/56
RS427-04	Typ.	1.38/35	3.35/85
	Guar.	1.10/28	2.68/68

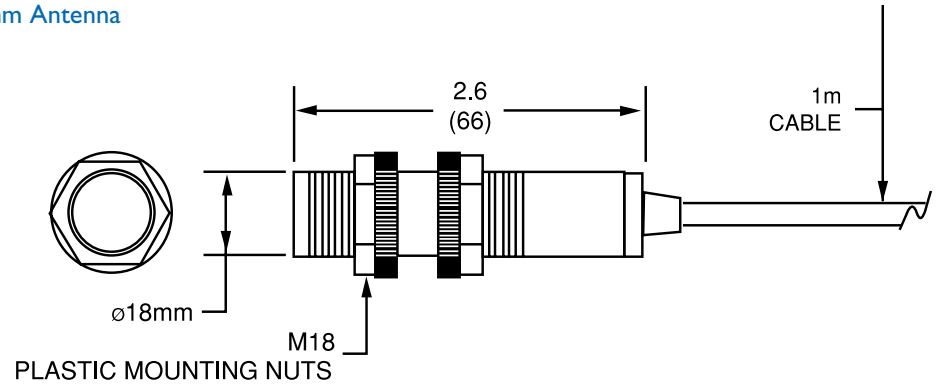
* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Mechanical Dimensions

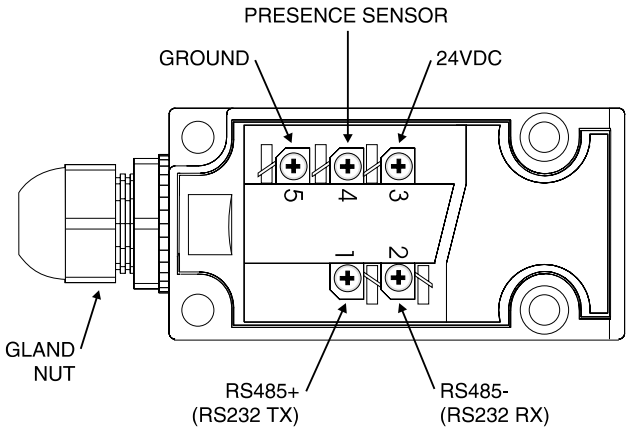




RS427-03 Tubular 18mm Antenna



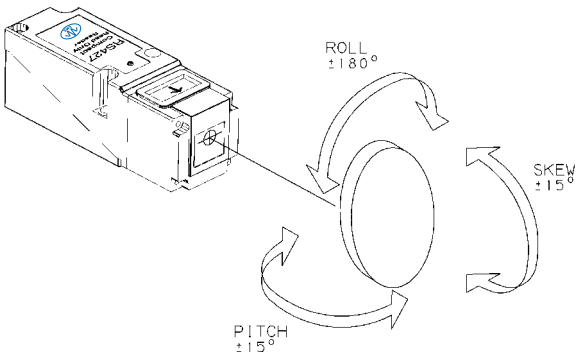
Electrical Connection



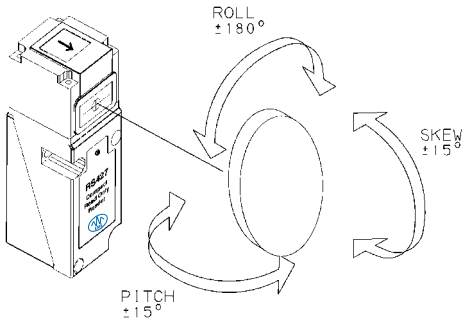
Terminal	Type	RS427-10	RS427-20
1	Output	RS232TX	RS485+
2	Input	RS232RX	RS485-
3	Power	+24VDC	+24VDC
4	Input	Presence	Presence
5	Power	Ground	Ground

RS427-Series Read Only Readers

Tag-to-Antenna Orientation



Vertical Read Head



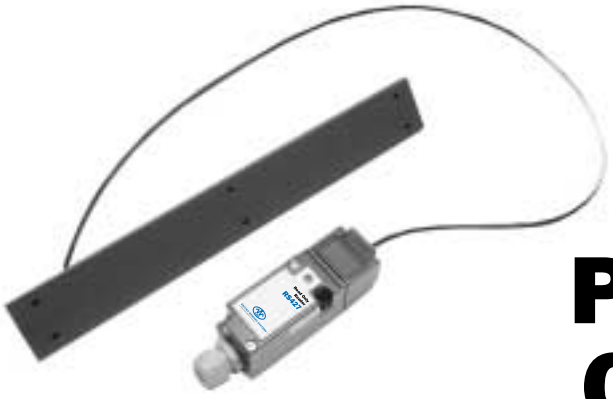
Horizontal Read Head

Available Models

Model	Description
RS427-01	Read Only Reader, Vertical Read Head
RS427-02	Read Only Reader, Horizontal Read Head
RS427-03	Read Only Reader, Remote 18mm Tubular Antenna
RS427-04	Read Only Reader Conveyor Antenna
RS427-10	Read Only Reader, RS232 Interface Controller Block
RS427-20	Read Only Reader, RS485 Interface Controller Block, Requires 00-1066 Programming Cable for Configuration

Accessories

Model	Description
00-1063	Demonstration Kit. Includes RS427-10, RS427-02, RS232 cable with DE-9 terminating connector, power supply
00-1128	Programmer, RS427-20, MM80. Includes Configuration Program, RS427-20 base, MM80, cabling and instructions. User supplied 24Vdc power source required
CBL-1230	Demonstration Cable for RS427-10. Includes RS232 cable with DE-9 terminating connectors, power supply, EC communication program



RS427-04
Passive Read Only Conveyor Antenna

Features
- 14.5″ Wide Reading Field
- Easily Mounts Underneath Conveyor
- No Moving Parts
- Long-Life Passive Tags
- Passive Tag, Requires No Batteries

Applications
- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With
- ES600-Series Tags
- RS427-10 Read-Only Reader, RS232 Interface Block
- RS427-20 Read-Only Reader, RS485 Interface Block
- CM01 Asynchronous Serial Interface Module
- CM11 / CM12 DeviceNet Modules
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Modules
- CM900 / CM1000
- CM1746 RFID Module
- MM80MicroMux Bus Module
- Any RS232 or RS485 Host

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The RS427-04 Passive Read Only Conveyor Antenna is designed to provide cost effective RFID data collection to demanding material handling and automation applications.

The patent pending design of the Conveyor Antenna addresses a prominent concern which has vexed the material handling industry for years. In the past, the positioning of an Antenna relative to the passing totes was critical. Read ranges had to accommodate different sized totes or the totes had to be positioned to pass near the Antenna. Escort Memory Systems' Conveyor Antenna solves this concern since the Antenna can now be snugly mounted underneath the path of the tote. The 14.5″ wide Antenna can substitute a roller's position or may even be installed between the conveyor rollers. Antenna adjustments are a thing of the past, since the Conveyor Antenna can track any size tote/pallet on the same path without time-consuming adjustments.

Equally important, the RS427-04 Antenna is compatible with Escort Memory Systems' Read-Only Tags. These Tags are extremely durable, low-cost electronic identifiers that can be attached to any object, even in the harshest environments. The Read-Only Tags contain no moving parts, and provide practically unlimited life with no maintenance requirements. In a typical application, the Read-Only Tag is attached to a tote/pallet in a material handling process. Once attached, the Tag allows the RFID Antenna to identify the pallet at any point in the process.

CONVEYOR ANTENNA ELIMINATES READING RANGE CONCERNS

Technical Description

The Passive design of the RS427-04 Conveyor Antenna uses its RF field from the Antenna to power the Tag, eliminating the need for batteries.

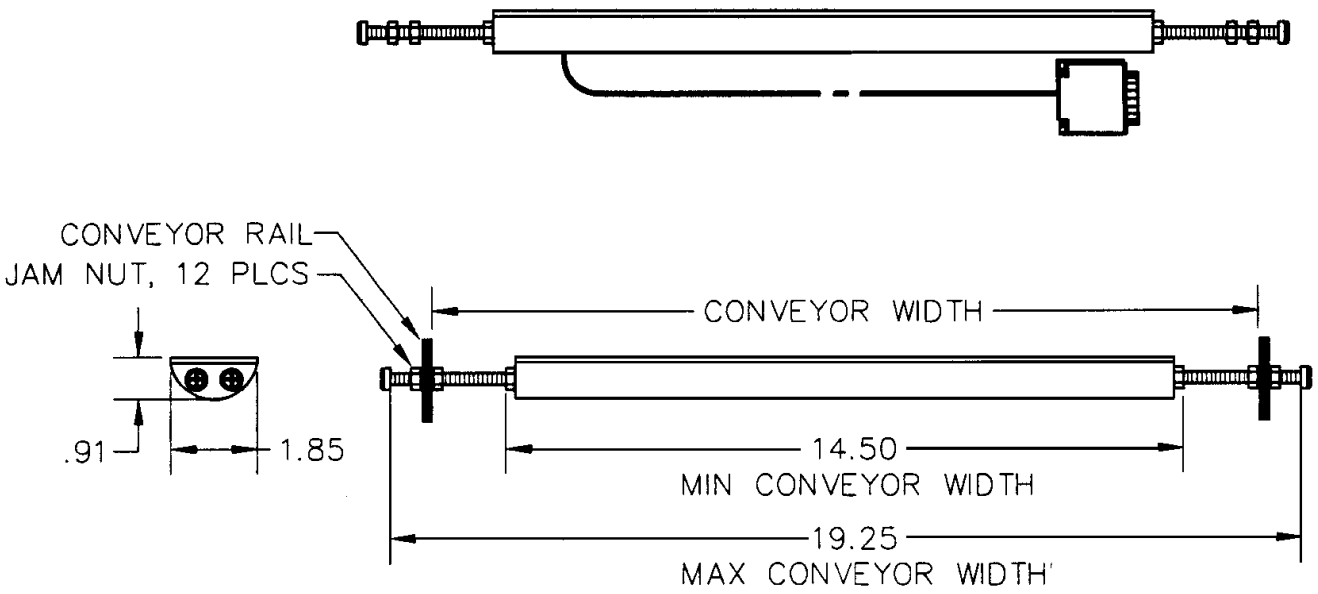
The Antenna radiates a low frequency, low power signal which is captured by the Tag and used to power the Tag's internal custom IC. The Tag then returns a phase modulated signal containing the I.D. stored in the Tag. This signal is captured by the Antenna and passed through to the RS427-10 or RS427-20 interface block. The interface block contains the power supply, logic, serial interface and external connections. The interface block digitizes the signal and error checks the transmitted Tag I.D. This error checking ensures the correct I.D. is read in environments of heavy RF interference.

RS427-04 Passive Read Only Conveyor Antenna

Antenna Specifications

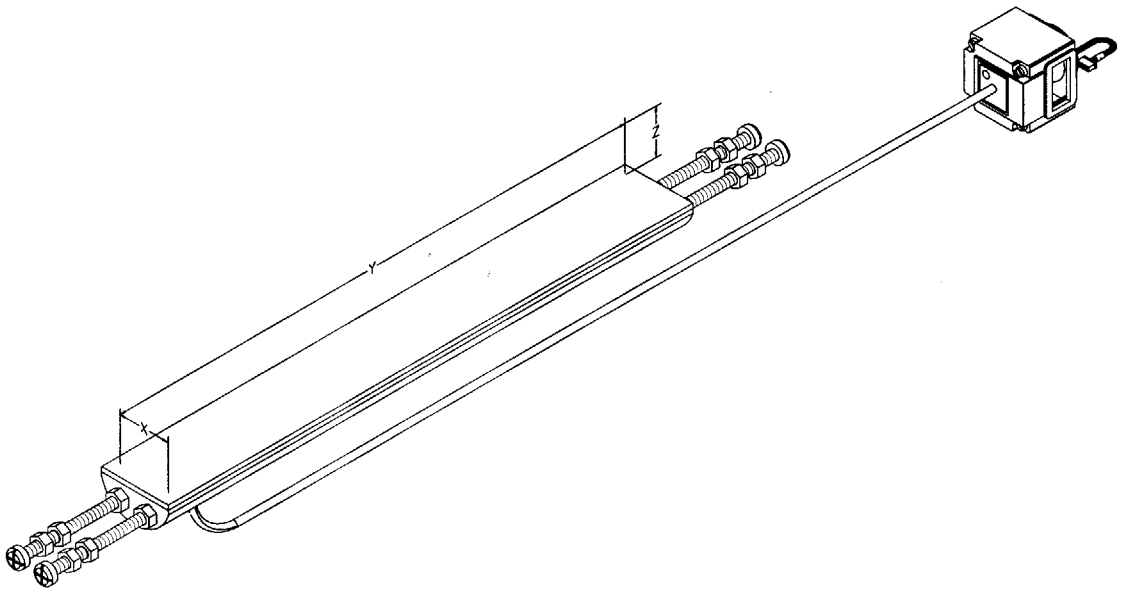
Mechanical Specifications	Dimensions (W x H x D)	14.50 x 1.85 x 0.91in. (363 x 46 x 23mm)
	Weight	16oz. (440g)
	Cable Length	3.33ft. (1m)
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Survival Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP65)

Mechanical Dimensions – Antenna

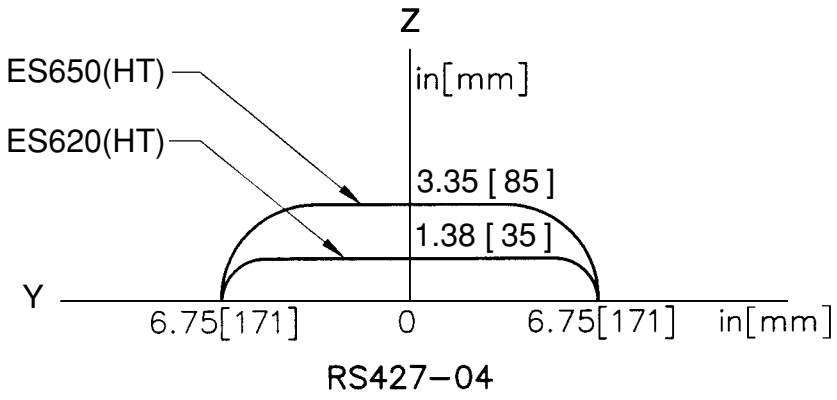


RS427-04 Passive Read Only Conveyor Antenna

Reading Field



RF Field/Read Ranges



RS427-04 Reading Field

RS427-04 Passive Read Only Conveyor Antenna

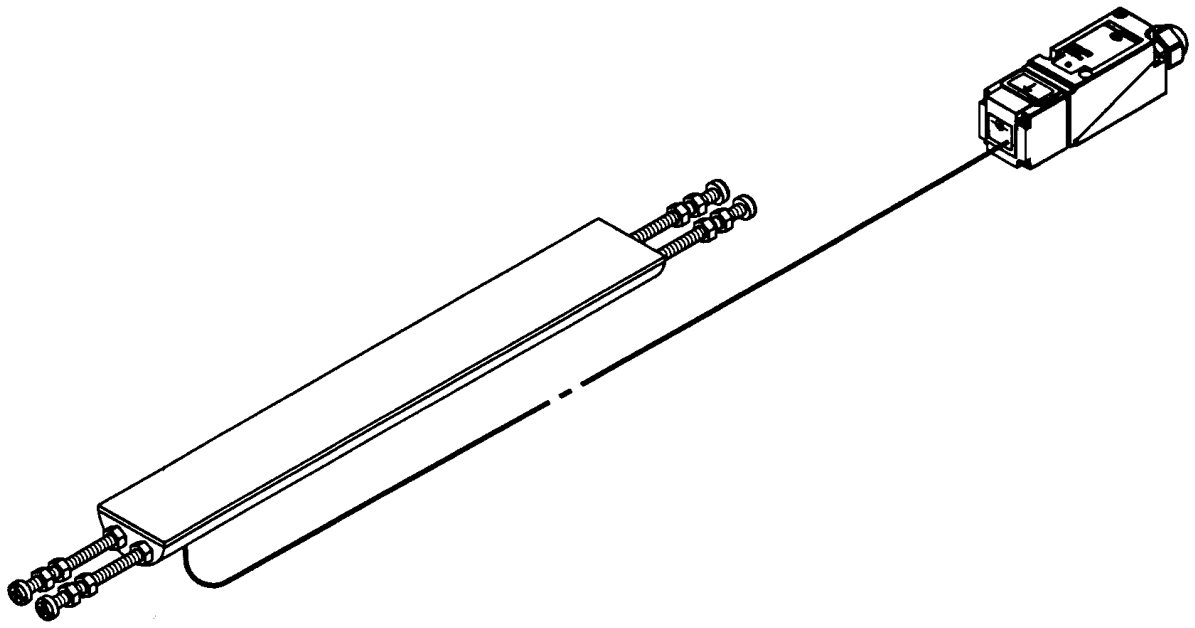
Reading Ranges with ES600-Series Read Only Tags

	Tags	
	ES620(HT)	**ES650(HT)**
Typical Range (Z) (inches/mm)*	1.38/35	3.35/85
Guaranteed Operating Range	1.10/28	2.68/68
Reading Field (Y)	13.50/342	13.50/342
Reading Field (X)	1.50/38	1.50/38

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

RS427-04 Passive Read Only Conveyor Antenna

RS427-04 Antenna and RS485 Interface Block



Note: RS232 and RS485 Interface Blocks Sold Separately.

Available Models

Model	Description
RS427-04	Passive Read Only Conveyor Antenna

Compatible Products

Model	Description
RS427-10	Read-Only Reader, RS232 Interface Block
RS427-20	Read-Only Reader, RS485 Interface Block

Active Read/Write Radio Frequency Identification (RFID) Typical & Guaranteed Read/Write Ranges

(inches/mm)*

Antennas		Tags HS200R-Series	HS200XL-Series	HS200LR-Series
HS500(A)	Typ.	5.91/150	5.71/145	18.70/475
	Guar.	4.72/120	4.57/116	15.00/380
HS501(A)	Typ.	5.00/127	5.00/127	13.00/330
	Guar.	4.02/102	4.02/102	10.40/264
HS510	Typ.	**	**	2.00-29.00/50-737
	Guar.	**	**	2.00-23.23/50-590
HS550A	Typ.	4.49/114	5.90/150	16.50/420
	Guar.	3.58/91	4.72/120	13.20/335
HS814	Typ.	1.77/45	1.77/45	1.77/45
	Guar.	1.42/36	1.42/36	1.42/36
HS816	Typ.	1.77/45	1.77/45	1.77/45
	Guar.	1.42/36	1.42/36	1.42/36

*Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.
**Not recommended

Active Read/Write Radio Frequency Identification (RFID) – European Typical & Guaranteed Read/Write Ranges

(inches/mm)*

Antennas		Tags HL200R-Series	HL200XL-Series
HL500(A)	Typ.	3.74/95	3.90/100
	Guar.	2.99/76	3.15/80
HL501(A)	Typ.	3.70/94	3.70/94
	Guar.	2.96/75	2.96/75
HL814	Typ.	0.47/12	0.47/12
	Guar.	0.39/10	0.39/10
HL816	Typ.	0.47/12	0.47/12
	Guar.	0.39/10	0.39/10

*Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

HS200R-Series Read/Write Tags

Features

- Up to 32KB of Memory
- 3000 Bytes/Second Data Transfer — Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paints, Dust, Dirt and Solvents

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS500-Series Antennas
- HS814 / HS816 Portable Reader/Writers

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Technical Description

The HS200R-Series Tags incorporate from 64 bytes up to 32,768KB of fast, random-access memory and are epoxy encapsulated to withstand the harshest industrial environments. Advanced digital signal processing techniques allow a data transmission speed of 3,000 bytes per second while still using reliable, safe, low-frequency RF. EMS Tags are the only low-frequency RF Tags on the market with such high speed data transfer capability.

The approximately six-inch Read/Write range of the HS200R-Series Tags make them ideal for use in pallet based automated systems. Once the Tag is mounted, the pallet becomes "intelligent," and can carry with it all information regarding the product or material on the pallet. The very long life of the Tag means that it doesn't have to be removed. Other than replacing batteries, the Tag does not require maintenance.

The HS200R-Series Tags contain a replaceable lithium battery power source. The battery will power the Tag for 150 million bytes transferred or ten years, whichever comes first. The lifetime of the battery can be easily calculated according to the number of bytes to be transferred to and from the Tag per day. For example, if the application calls for 200 bytes to be transferred to or from the Tag every minute for eight hours per day, seven days per week. Multiplying 200 bytes/operation times 480 operations/day yields 96,000 operations per day. The battery can therefore be expected to have a lifetime of 150,000,000 divided by 96,000, or 1,563 days (4.2 years).

Replaceable Batteries Give the HS200R Tags Virtually Unlimited Life

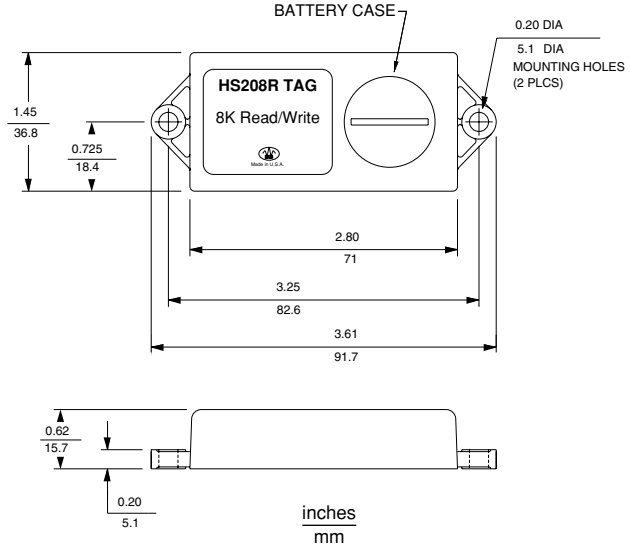
Battery life can be tracked using the Tag's internal battery counter. Byte 0 of the Tag contains the results of an internal timer, which keeps approximate track of the total time which the Tag has been active. Byte 0 reads 70 hours of actual transmitting time. For the HS200R-Series Tags, the battery should be replaced when the timer value reaches fifteen. The Tag battery can be easily changed by unscrewing the removable battery cap from the Tag.

Unlike competitive RFID systems, the HS200R-Series Tags are insensitive to the direction of travel or to the orientation of the Tag face to the Antenna.

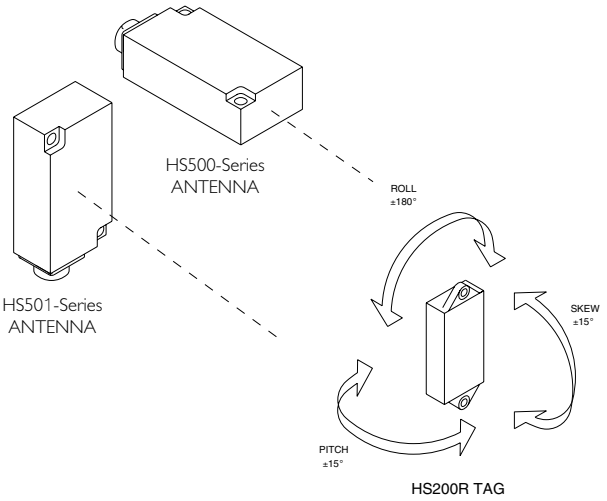
HS200R-Series Read/Write Tags

Electrical	Battery Type	Replaceable Long-Life Lithium Batteries
	Battery Life	10 Years or 150 Million Bytes Transferred to/from Tags
Memory	Memory Type	CMOS Static RAM
	Memory Capacity	
	HS200R	64Bytes
	HS208R	8KB
	HS232R	32KB
RF Interface	Data Transfer Rate	3000 Bytes/Second
Mechanical Specifications	Dimensions (W x H x D)	3.61 x 1.45 x 0.62in. (92 x 37 x 16mm)
	Weight	2.6oz. (74g)
	Enclosure	ABS Shell, Epoxy Encapsulated
Environment	Operating Temperature	-14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP67)

Mechanical Dimensions



Tag-to-Antenna Orientation



Read/Write Ranges

HS200R-Series Read/Write Tags

Reading & Writing Ranges with HS500-Series Read/Write Antennas

	HS500(A)	HS501(A)	HS510	HS550A	HS814	HS816
Typical Range (Y) (inches/mm)*	5.91/150	5.00/127	**	4.49/114	1.77/45	1.77/45
Guaranteed Operating Range (X)	4.72/120	4.02/102	**	3.58/91	1.42/36	1.42/36

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

**Not recommended.

Available Models

Model	Description
HS200R	64Byte Read/Write Tag
HS208R	8KB Read/Write Tag
HS232R	32KB Read/Write Tag

HL200R - Series Read/Write Tags (European)

Features

- Up to 8KB of Memory
- 750 Bytes/Second Data Transfer — Reading and Writing
- Epoxy Encapsulated
- Replaceable Lithium Batteries
- Unaffected by Paints, Dust, Dirt and Solvents

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HL500-Series Antennas
- HL814 / HL816 Portable Reader/Writers

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The HL200R-Series Tags incorporate from 64 Bytes up to 8KB of fast, random-access memory and are epoxy encapsulated to withstand the harshest industrial environments. Advanced digital signal processing techniques allow a data transmission speed of 750 bytes per second while still using reliable, safe, low-frequency RF. EMS Tags are the only low-frequency RF Tags on the market with such high speed data transfer capability.

The approximately four-inch Read/Write range of the HL200R-Series Tags make them ideal for use in pallet based automated systems. Once the Tag is mounted, the pallet becomes "intelligent," and can carry with it all information regarding the product or material on the pallet. Other than replacing batteries, the Tag does not require maintenance.

The HL200R-Series Tags contain a replacement battery power source. The battery will power the Tag for 40 million bytes transferred or ten years, whichever comes first. The lifetime of the battery can be easily calculated according to the number of bytes to be transferred to and from the Tag per day.

Replaceable Batteries Give the HL200R Tags Virtually Unlimited Life

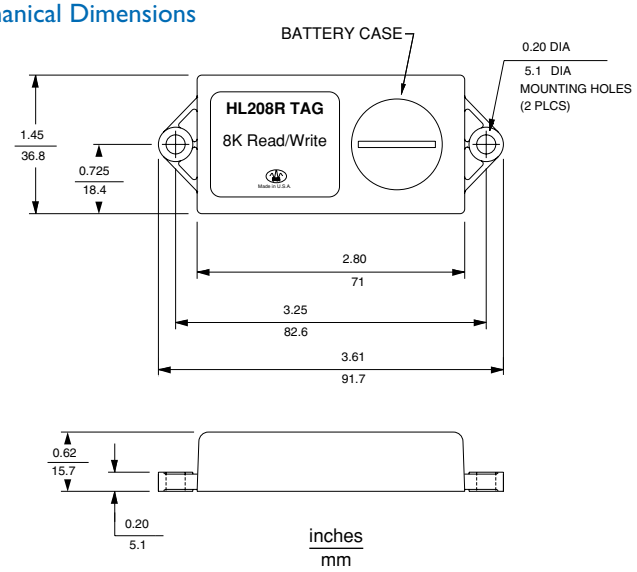
Battery life can be tracked using the Tag's internal battery counter. Byte 0 of the Tag contains the results of an internal timer, which keeps approximate track of the total time which the Tag has been active. Byte 0 reads 70 hours of actual transmitting time. For the HL200R-Series Tags, the battery should be replaced when the timer value reaches fifteen.

Unlike competitive RFID systems, the HL200R-Series Tags are insensitive to the direction of travel or to the orientation of the Tag face to the Antenna. Data transfer operations are insensitive to non-conductive materials in the RF field and are unaffected by wet environments.

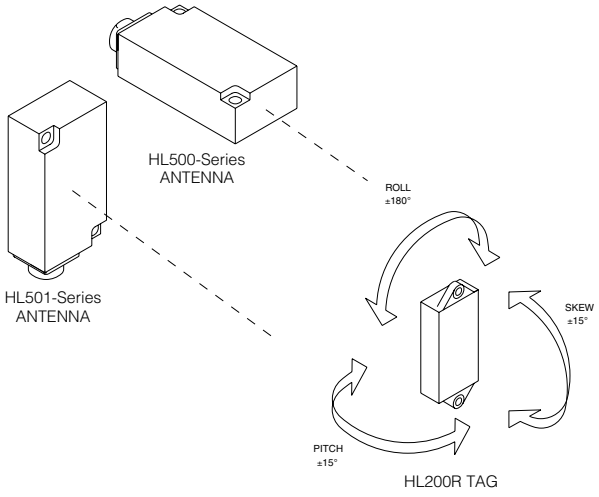
HL200R-Series Read/Write Tags

Electrical	Battery Type	Replaceable Long-Life Lithium Batteries
	Battery Life	10 Years or 40 Million Bytes Transferred to/from Tags
Memory	Memory Type	CMOS Static RAM
	Memory Capacity	
	HL200R	64Bytes
	HL208R	8KB
RF Interface	Data Transfer Rate*	750 Bytes/Second
	* Typical values with HL500-Series Antennas, Reading and Writing.	
Mechanical Specifications	Dimensions (W x H x D)	3.61 x 1.45 x 0.62in. (92 x 37 x 16mm)
	Weight	2.6oz. (74g)
	Enclosure	ABS Shell, Epoxy Encapsulated
Environment	Operating Temperature	-14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP67)

Mechanical Dimensions



Tag-to-Antenna Orientation



Read/Write Ranges

HL200R-Series Read/Write Tags

Reading & Writing Ranges with HL500-Series Antennas

	HL500(A)	HL501(A)	HL814	HL816
Typical Range (Y) (inches/mm)*	3.74/95	3.70/94	0.47/12	0.47/12
Guaranteed Operating Range (X)	2.99/76	2.96/75	0.39/10	0.39/10

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HL200R	64Byte Read/Write Tag
HL208R	8KB Read/Write Tag

HS200XL-Series Read/Write Tags

Features

- Over Five-Inch Read/Write Range
- Up to 32KB of Memory
- 3000 Bytes/Second Data Transfer — Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paints, Dust, Dirt and Solvents

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS500-Series Antennas
- HS814 / HS816 Portable Reader/Writers

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Technical Description

The HS200XL-Series Tags incorporate from 64 bytes up to 32KB of fast, random-access memory and are epoxy encapsulated to withstand the harshest environments. Advanced digital signal processing techniques allow a data transmission speed of 3,000 bytes per second while still using reliable, safe, low-frequency RF. EMS' Tags are the only low-frequency RF Tags on the market with such high speed data transfer capability.

The approximately six-inch Read/Write range of the HS200XL-Series Tags makes them ideal for use in pallet based automated systems. Once the Tag is mounted, the pallet becomes "intelligent," and can carry with it all information regarding the product or material on the pallet. The very long life of the Tag means that it doesn't have to be removed. Other than replacing the batteries, the Tag does not require maintenance.

The HS200XL-Series battery will power the Tag for 800 million bytes transferred or ten years, whichever comes first. The lifetime of the battery can be easily calculated according to the number of bytes to be transferred to and from the Tag per day. For example, if the application calls for 800 bytes to be transferred to or from the Tag every minute for eight hours per day, seven days per week. Multiplying 800 bytes/operation times 480 operations/day yields 384,000 operations per day. The battery can therefore be expected to have a lifetime of 2,083 days (5.7 years).

HS200XL Tags will Power the Tag for 800 Million Bytes Transferred or Ten Years

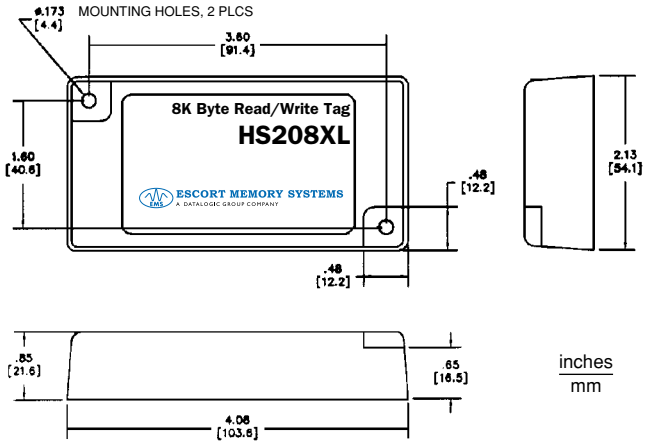
Battery life can be tracked using the Tag's internal battery counter. Byte 0 of the Tag contains the results of an internal timer, which keeps approximate track of the total time which the Tag has been active. Byte 0 reads 70 hours of actual transmitting time.

Unlike competitive RFID systems, the HS200XL-Series Tags are virtually insensitive to the direction of travel or the orientation of the Tag face to the Antenna.

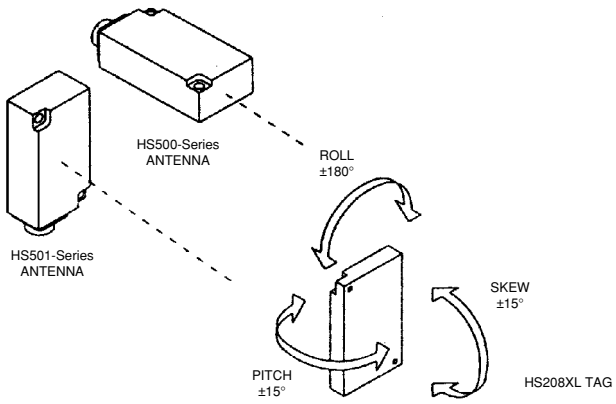
HS200XL-Series Read/Write Tags

Electrical	Battery Type	Replaceable Long-Life Lithium Batteries
	Battery Life	10 Years or 800 Million Bytes Transferred to/from Tags
Memory	Memory Type	CMOS Static RAM
	Memory Capacity	
	HS200XL	64Bytes
	HS208XL	8KB
	HS232XL	32KB
RF Interface	Data Transfer Rate	3000 Bytes/Second
Mechanical Specifications	Dimensions (W x H x D)	3.60 x 2.13 x 0.85in. (91 x 54 x 22mm)
	Weight	5.75oz. (163g)
	Enclosure	ABS Shell, Epoxy Encapsulated
Environment	Operating Temperature	-14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP67)

Mechanical Dimensions



Tag-to-Antenna Orientation



Read/Write Ranges

HS200XL-Series Read/Write Tags

Reading & Writing Ranges with HS500-Series Read/Write Antennas

	HS500(A)	HS501(A)	HS510	HS550A	HS814	HS816
Typical Range (Y) (inches/mm)*	5.71/145	5.00/127	**	5.90/150	1.77/45	1.77/45
Guaranteed Operating Range (X)	4.57/116	4.02/102	**	4.72/120	1.42/36	1.42/36

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

**Not recommended.

Available Models

Model	Description
HS200XL	64Bytes Read/Write Tag
HS208XL	8KB Read/Write Tag
HS232XL	32KB Read/Write Tag

HL200XL-Series Read/Write Tags (European)

Features

- Up to 8KB of Memory
- 750 Bytes/Second Data Transfer — Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paints, Dust, Dirt and Solvents

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HL500-Series Antennas
- HL814 / HL816 Portable Reader/Writers

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Technical Description

The HL200XL-Series Tags incorporate from 64 bytes up to 8KB of fast, random-access memory and are epoxy encapsulated to withstand the harshest industrial environments. Advanced digital signal processing techniques allow a data transmission speed of 750 bytes per second while still using reliable, safe, low-frequency RF. EMS Tags are the only low-frequency RF Tags on the market with such high speed data transfer capability.

The approximately four-inch Read/Write range of the HL200XL-Series Tags make them ideal for use in pallet based automated systems. Once the Tag is mounted, the pallet becomes "intelligent," and can carry with it all information regarding the product or material on the pallet.

The HL200XL-Series battery will power the Tag for 210 million bytes transferred or ten years, whichever comes first. The lifetime of the battery can be easily calculated according to the number of bytes to be transferred to and from the Tag per day. For example, if the application calls for 200 bytes to be transferred to or from the Tag every minute for eight hours per day, seven days per week. Multiplying 200 bytes/operation times 480 operations/day yields 96,000 operations per day. The battery can therefore be expected to have a lifetime of 210,000,000 divided by 96,000 or 2188 days (5.9 years).

BATTERIES WILL LAST 10 YEARS OR 210 MILLION BYTES. WE GUARANTEE IT!

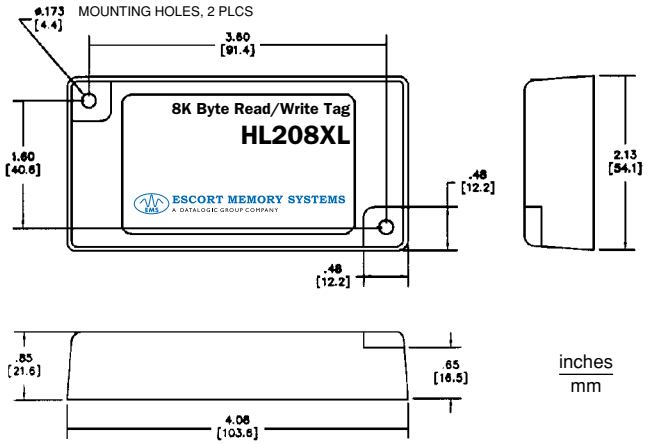
Battery life can be tracked using the Tag's internal battery counter. Byte 0 of the Tag contains the results of an internal timer, which keeps approximate track of the total time which the Tag has been active. Byte 0 reads 70 hours of actual transmitting time.

Unlike competitive RFID systems, the HL200XL-Series Tags are insensitive to the direction of travel or to the orientation of the Tag face to the Antenna. Data transfer operations are insensitive to non-conductive materials in the RF field and are unaffected by wet environments.

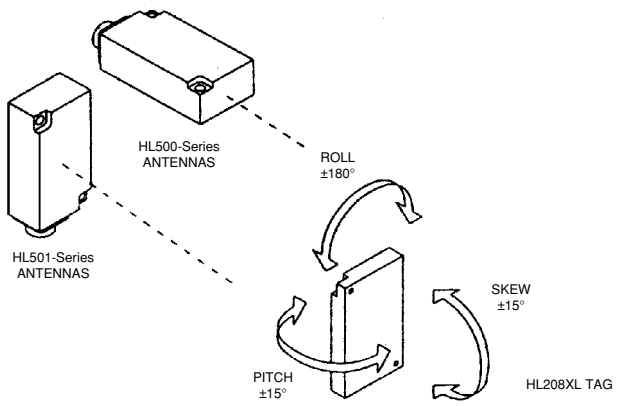
HL200XL-Series Read/Write Tags

Electrical	Battery Type	Long-Life Lithium Batteries
	Battery Life	10 Years or 210 Million Bytes Transferred to/from Tags
Memory	Memory Type	CMOS Static RAM
	Memory Capacity	
	HL200XL	64Bytes
	HL208XL	8KB
RF Interface	Data Transfer Rate*	750 Bytes/Second
	* Typical values with HL500-Series Antennas, Reading and Writing.	
Mechanical Specifications	Dimensions (W x H x D)	3.60 x 2.13 x 0.85in. (91 x 54 x 22mm)
	Weight	5.75oz. (163g)
	Enclosure	ABS Shell, Epoxy Encapsulated
Environment	Operating Temperature	-14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP67)

Mechanical Dimensions



Tag-to-Antenna Orientation



Read/Write Ranges

HL200XL-Series Read/Write Tags

Reading & Writing Ranges with HL500-Series Antennas

	HL500(A)	HL501(A)	HL814	HL816
Typical Range (Y) (inches/mm)*	3.90/100	3.70/94	0.47/12	0.47/12
Guaranteed Operating Range (X)	3.15/80	2.96/75	0.39/10	0.39/10

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HL200XL	64Bytes Read/Write Tag
HL208XL	8KB Read/Write Tag

HS200LR-Series Long-Range Read/Write Tags

Features

- Reading/Writing Range Up to 29 inches
- Up to 32KB of Memory
- 3000 Bytes/Second Data Transfer Speed — Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paints, Dust, Dirt and Solvents

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS500-Series Antennas
- HS814 / HS816 Portable Reader/Writers

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The HS200LR-Series Tags incorporate from 64 bytes up to 32,768 bytes of fast, random-access memory and are epoxy encapsulated to withstand the harshest industrial environments. Advanced digital signal processing techniques allow a data transmission speed of 3,000 bytes per second while still using reliable, safe, low-frequency RF. EMS Tags are the only low-frequency RF Tags on the market with such high speed data transfer capability.

The long-range of the HS200LR-Series Tags makes them ideal for use in automated systems involving larger pallets or product carriers. Once the Tag is mounted, the product carrier becomes "intelligent," and can carry with it all information regarding the product or material on the pallet. The very long life of the Tag means that it doesn't have to be removed. Other than replacing batteries, the Tag does not require maintenance.

The HS200LR-Series Tags contain a replaceable lithium battery power source. The battery will power the Tag for 200 million bytes transferred or ten years, whichever comes first. The lifetime of the battery can be easily calculated according to the number of bytes to be transferred to and from the Tag per day. For example, if the application calls for 200 bytes to be transferred to or from the Tag every minute for eight hours per day, seven days per week. Multiplying 200 bytes/operation times 480 operations/day yields 96,000 operations per day. The battery can therefore be expected to have a lifetime of 200,000,000 divided by 96,000, or 2,083 days (5.7 years).

READING/ WRITING UP TO 29 INCHES

Battery life can be tracked using the Tag's internal battery counter. Byte 0 of the Tag contains the results of an internal timer, which keeps approximate track of the total time which the Tag has been active. Byte 0 reads 70 hours of actual transmitting time. For the HS200LR-Series Tags, the battery should be replaced when the timer value reaches twenty. The Tag battery can be easily changed by unscrewing the removable battery cap from the Tag.

Unlike competitive RFID systems, the HS200LR-Series Tags are virtually insensitive to the direction of travel or to the orientation of the Tag face to the Antenna.

HS200LR-Series Long-Range Read/Write Tags

Electrical	Battery Type	Replaceable Long-Life Lithium Batteries
	Battery Life	10 Years or 200 Million Bytes Transferred to/from Tag
Memory	Memory Type	CMOS Static RAM
	Memory Capacity	
	HS200LR	64Bytes
	HS208LR	8KB
	HS232LR	32KB
RF Interface	Data Transfer Rate	3000 Bytes/Second
Mechanical Specifications	Dimensions (W x H x D)	4.00 x 2.10 x 1.36in. (102 x 53 x 35mm)
	Weight	13.75oz. (390g)
	Enclosure	ABS Shell, Epoxy-Encapsulated
Environment	Operating Temperature	14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP67)

Read/Write Ranges

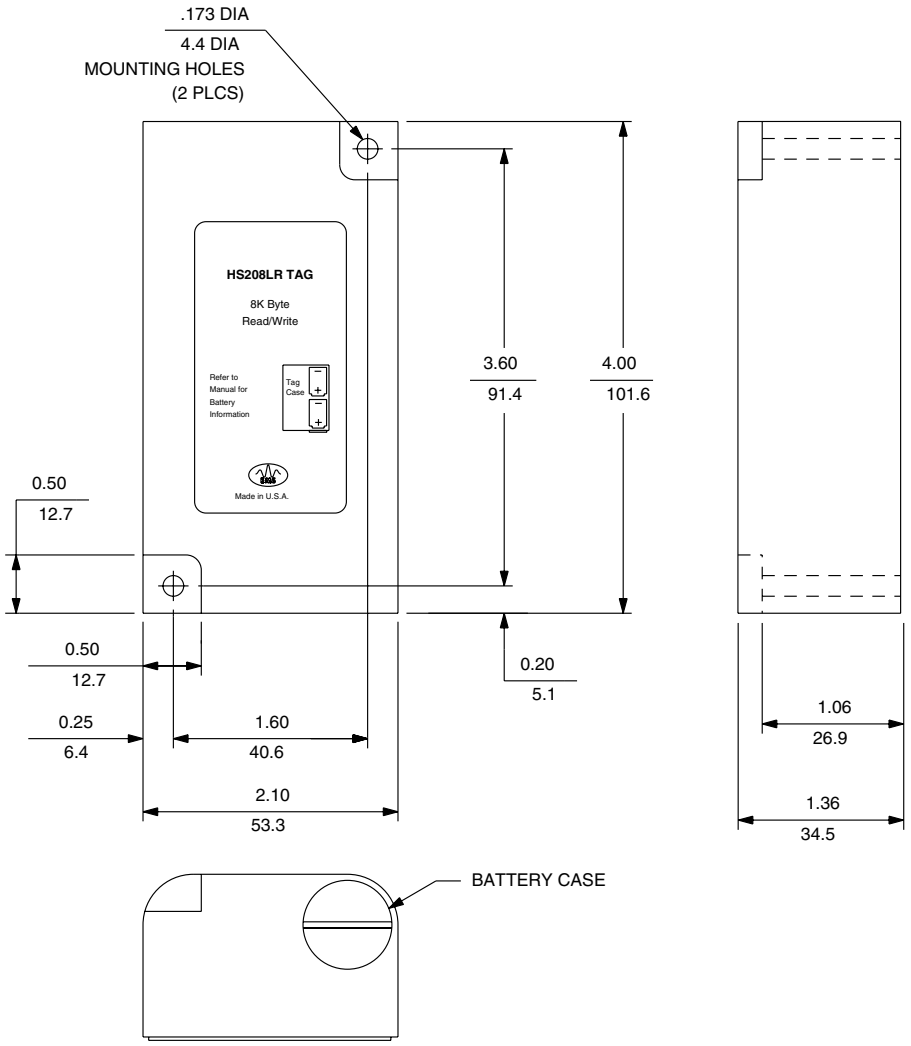
HS200LR-Series Long-Range Read/Write Tags

Reading & Writing Ranges with HS500-Series Read/Write Antennas

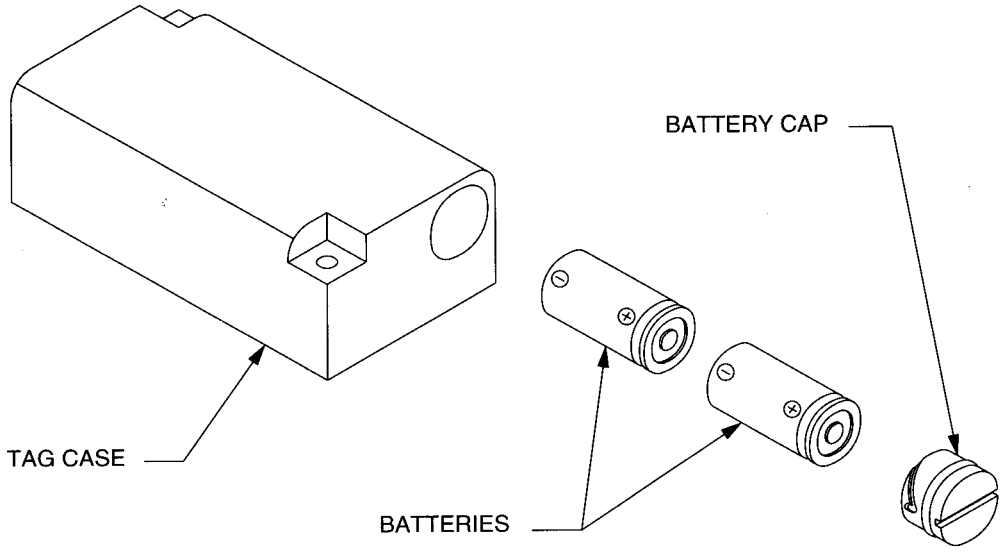
	HS500(A)	HS501(A)	HS510	HS550A	HS814	HS816
Typical Range (Y) (inches/mm)*	18.70/475	13.00/330	29.00/737	16.50/420	1.77/45	1.77/45
Guaranteed Operating Range (X)	15.00/380	10.40/264	23.23/590	13.20/335	1.42/36	1.42/36

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Mechanical Dimensions



Battery Replacement

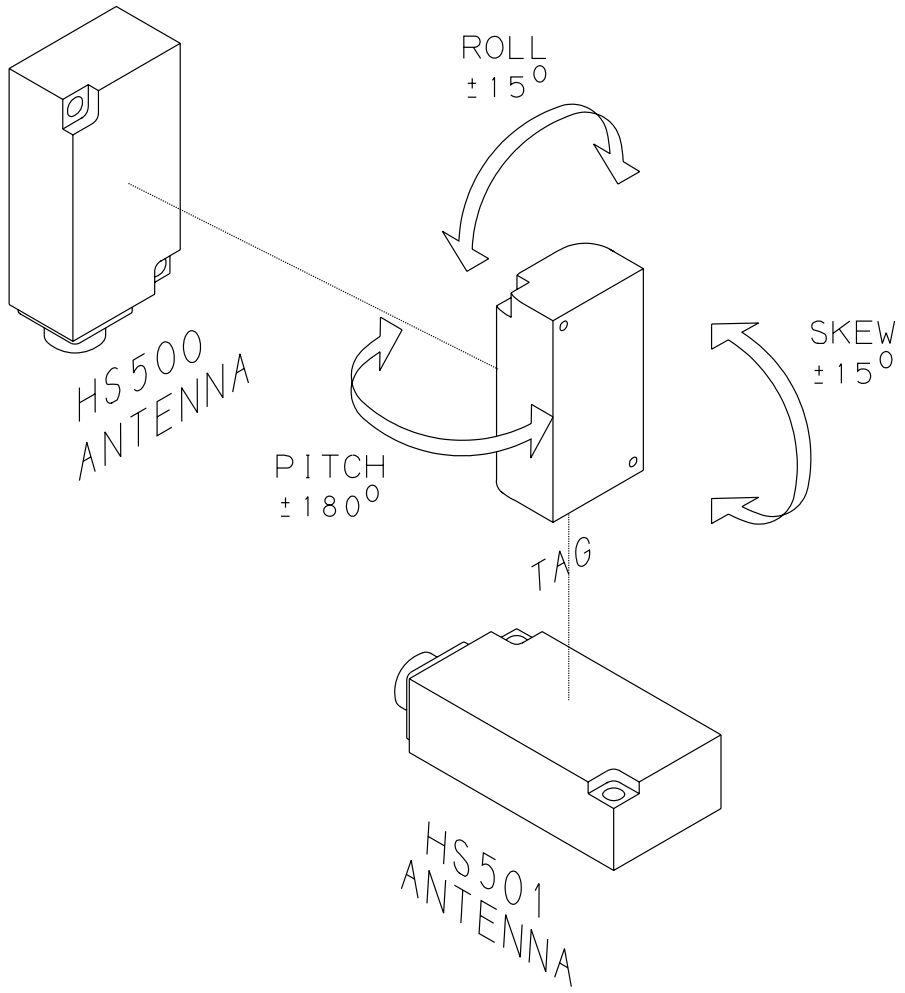


HS200LR-Series Long-Range Read/Write Tags

Available Models

Model	Description
HS200LR	64Bytes Long-Range Read/Write Tag
HS208LR	8KB Long-Range Read/Write Tag
HS232LR	32KB Long-Range Read/Write Tag

Tag-to-Antenna Orientation



HS500-Series Read/Write Antennas

Features

- 3000 Bytes/Second Data Transfer Speed — Reading and Writing
- Epoxy Encapsulated
- Access Tags through Virtually Any Non-Conductive Material
- Unaffected by Paint, Dust, Dirt and Solvents
- High Immunity to Metal
- Small and Rugged for Easy Installation

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags
- HS850B Serial Eurocard Controller
- HS880B-Series Read/Write Controller
- HS900 PC-Bus Read/Write Controller
- CM01 Asynchronous Serial Interface Module
- CM12 DeviceNet Module
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Interface Modules
- CM900 / CM1000
- CM1746 RFID Module

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Technical Description

The HS500-Series Antennas connected to an Escort Memory Systems' Controller provides a very convenient interface between a host computer or programmable Controller and the data in EMS Tags.

The HS500 Antenna contains all the circuitry necessary to convert the digital signals received from the Controller to high-speed RF signals for the Tags, and subsequently, convert the RF signals from the Tags back into digital signals for the Controller.

The compact size and long-range of the Antenna makes it ideal for use in factory automation environments where space is at a premium. For greater mounting flexibility, the HS500 is available in both end-emitting and face-emitting versions. To further ease installation, the distance from the Controller card to the Antenna can be up to 4,000 feet. This is advantageous because the Controller portion of the RFID system is then afforded extra protection from noise that could be generated by electrical equipment positioned near the Read/Write station. Connection to the Controller is via a quick disconnect circular connector. Antennas can be replaced on the line without changing any wiring.

Compact Size, Large Memory and Rapid Data Transfer Speed

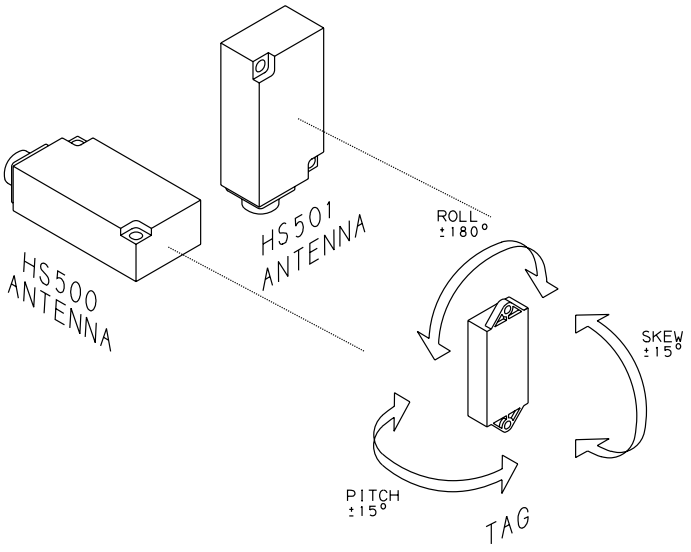
The Antenna is equipped with a two-color status LED, indicating when power is present and the Antenna is or is not transmitting.

The Antenna is a solid state device, without moving parts or mechanical switches, and configuration is not required prior to installation. It has a metal backplate which helps to distribute stress from the mounting bolts and greatly increases immunity to additional metal in the Read/Write field.

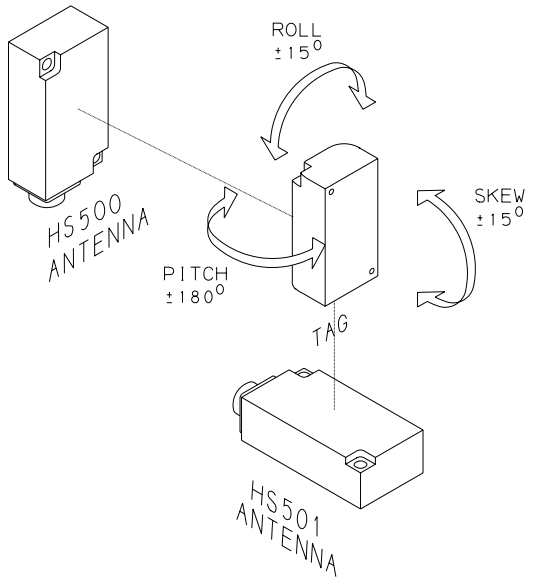
HS500-Series Read/Write Antennas

Electrical	Supply Voltage	20-26VDC
	Max. Current	500mA
RF Interface	Data Transfer Rate	3000 Bytes/Second
Interface With Controller	Max. Cable Length	4000ft. (1200m)
Mechanical Specifications	Dimensions (W x H x D)	4.10 x 2.15 x 1.26in. (104 x 55 x 32mm)
	Weight	13.4oz. (380g)
	Enclosure	ABS Shell, Epoxy-Encapsulated
	Cable	User-Supplied
	Connector	
	HS500	8-Pin Plastic Circular (Mating End Furnished)
	HS500A	6-Pin Metal Circular
	HS501	8-Pin Plastic Circular (Mating End Furnished)
	HS501A	6-Pin Metal Circular
	Indicators	Power/Transmit LED
Environment	Operating Temperature	14° to 129°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP66)

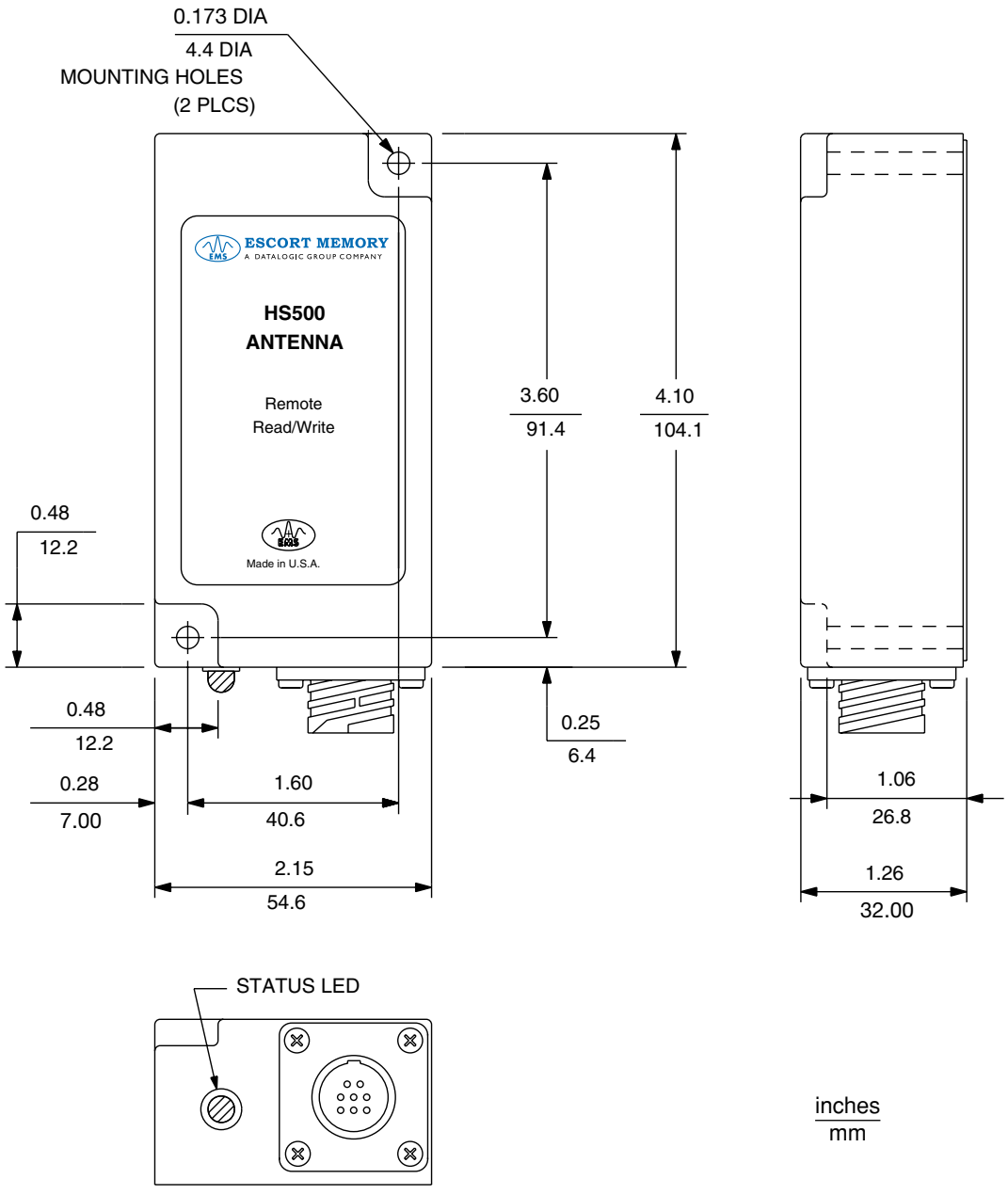
Antenna to HS200R Tag Orientation



Antenna to HS200LR Tag Orientation

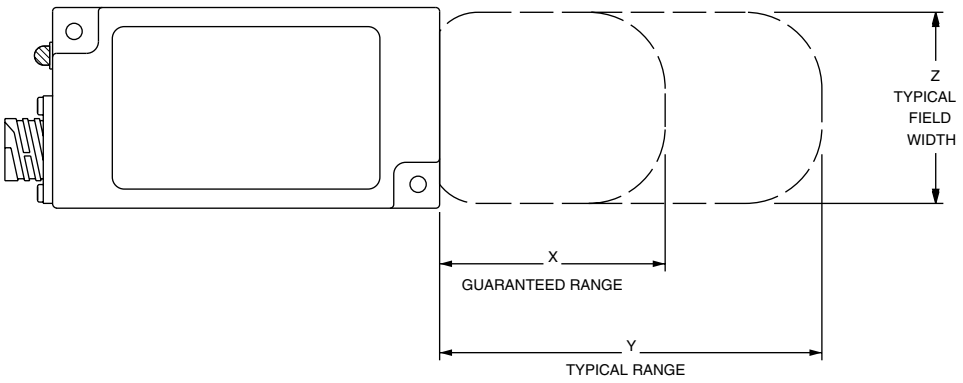


Mechanical Dimensions



HS500-Series Read/Write Antennas

Read/Write Ranges



HS500(A) / HS501(A)-Series Read/Write Antennas

Reading & Writing Ranges with HS200-Series Read/Write Tags (inches/mm)*

		HS200R	HS200XL	HS200LR
HS500(A)	Typ.	5.91/150	5.71/145	18.70/475
	Guar.	4.72/120	4.57/116	15.00/380
HS501(A)	Typ.	5.00/127	5.00/127	13.00/330
	Guar.	4.02/102	4.02/102	10.40/264

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HS500	Small Remote Read/Write Antenna, Standard Plastic Circular Connector
HS500A	Small Remote Read/Write Antenna, Metal Circular Connector
HS501	Small Remote Read/Write Antenna, Face-Emitting, Plastic Circular Connector
HS501A	Small Remote Read/Write Antenna, Face-Emitting, Metal Circular Connector

Accessories

Model	Description
68-5001	Crimping Tool for 8-Pin Circular Connector (Amp 169341-1)
10-7026	8-Pin Plastic Mating Connector for HS500-Series Antennas (1 Kit Ships with Antenna)
46-1291	Straight 6-Pin Circular Plug for HS500A-Series Antennas (Does Not Ship with Antenna) (Amp 97-3106-A-14S-6S-608)
46-1292	Right Angle 6-Pin Circular Plug for HS500A-Series Antennas (Does Not Ship with Antenna) (Amp 97-3108-A-14S-6S-608)
46-5073	Cable Clamp for 46-1291 and 46-1293. Max. Cable O.D. 11/32" (Amp 9767-14-6)

Ordering Notes

The Mating Connector Kit for the HS500/HS501 Antennas Ship with the Units. The Mating Connector Kit for the HS500A/HS501A Antennas Must Be Purchased Separately.

HL500-Series Read/Write Antennas (European)

Features

- 750 Bytes/Second Data Transfer Speed — Reading and Writing
- Epoxy Encapsulated
- Can Access Tags through Virtually Any Non-Conductive Material
- Unaffected by Paint, Dust, Dirt and Solvents
- High Immunity to Metal
- Small and Rugged for Easy Installation

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HL200R-Series Tags
- HL200XL-Series Tags

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Technical Description

The HL500-Series Antennas connected to an EMS Controller provides a very convenient interface between a host computer, or Programmable Controller and the data in EMS Tags.

The HL500 Antenna contains all the circuitry necessary to convert the digital signals received from the Controller to high-speed RF signals for the Tags, and subsequently to convert the RF signals from the Tags back into digital signals for the Controller.

The small size and long-range of the Antenna makes it ideal for use in factory automation environments where space is at a premium. For greater mounting flexibility, the HL500 is available in both end-emitting and face-emitting versions. To further ease installation, the distance from the Controller card to the Antenna can be up to 4,000 feet. This is advantageous because the Controller portion of the RFID system is then afforded extra protection from noise that could be generated by electrical equipment positioned near the Read/Write station. Connection to the controller is via a quick disconnect circular connector. Antennas can be replaced on the line without changing any wiring.

The Small Size of the HL500 Makes it Easy to Install in Tight Spaces

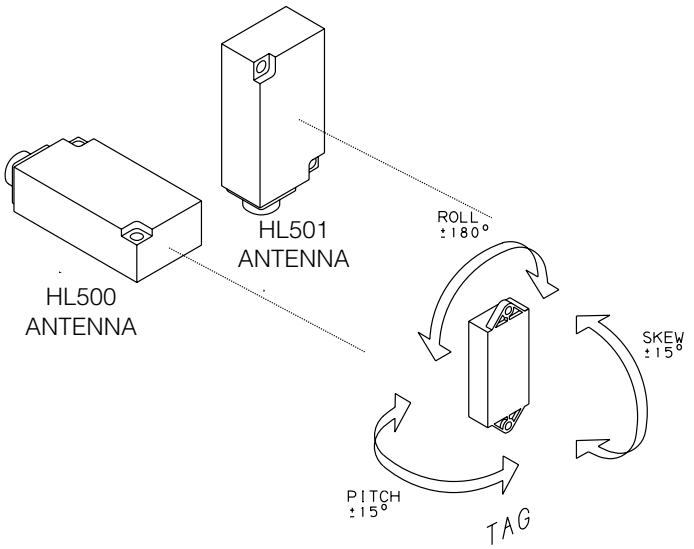
The Antenna is equipped with a two-color status LED, indicating when power is present and the Antenna is or is not transmitting.

The Antenna is a solid state device, without moving parts or mechanical switches, and configuration is not required prior to installation. It has a metal backplate which helps to distribute stress from the mounting bolts and greatly increases immunity to additional metal in the Read/Write field.

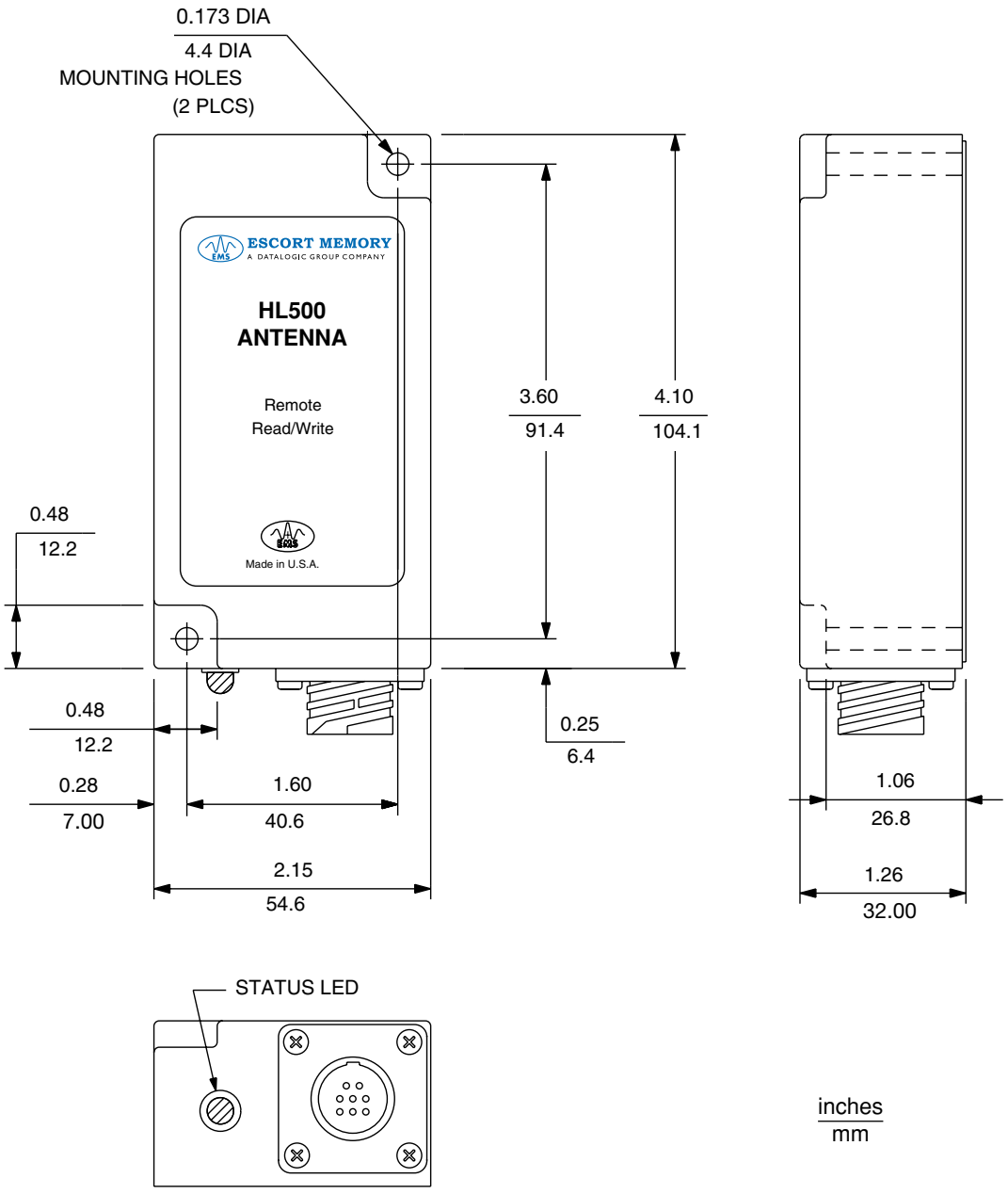
HL500-Series Read/Write Antennas

Electrical	Power Requirements	20-26VDC
	Max. Current	500mA
	Max. Ripple	2% of DC voltage
RF Interface	Data Transfer Rate*	750 Bytes/Second
	* Typical values with HL200R-Series Tag, Reading and Writing.	
Interface With Controller	Max. Cable Length	4000ft. (1200m)
Mechanical Specifications	Dimensions (W x H x D)	4.10 x 2.15 x 1.26in. (104 x 55 x 32mm)
	Weight	13.4oz. (380g)
	Enclosure	ABS Shell, Epoxy-Encapsulated
	Cable	User-Supplied
	Connector	
	HL500	8-Pin Circular (Mating End Furnished)
	HL500A	6-Pin Metal Circular
	HL501	8-Pin Plastic Circular (Mating End Furnished)
	HL501A	6-Pin Metal Circular
	Indicators	Power/Transmit LED
Environment	Operating Temperature	14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP66)

Antenna to HL200R Tag Orientation

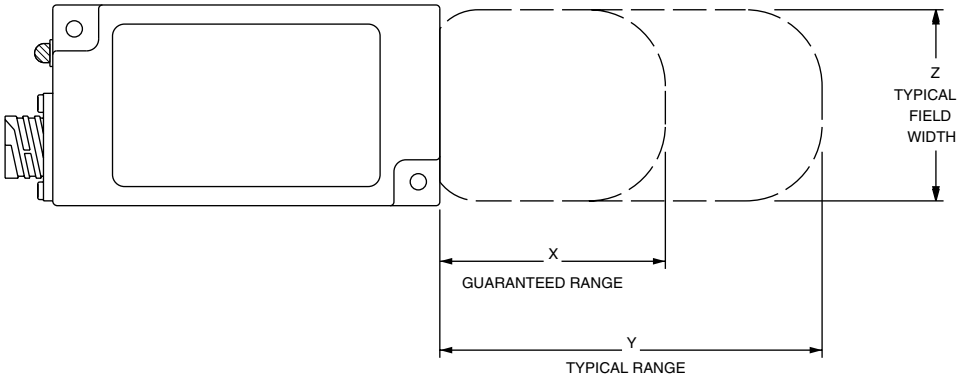


Mechanical Dimensions



HL500-Series Read/Write Antennas

Read/Write Ranges



HL500 / HL500A-Series Read/Write Antennas

Reading & Writing Ranges with HL200-Series Tags

	HL200R	HL200XL
Typical Range (Y) (inches/mm)*	3.74/95	3.90/100
Guaranteed Operating Range (X)	2.99/76	3.15/80

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

HL501 / HL501A-Series Read/Write Antennas

Reading & Writing Ranges with HL200-Series Tags

	HL200R	HL200XL
Typical Range (Y) (inches/mm)*	3.70/94	3.70/94
Guaranteed Operating Range (X)	2.96/75	2.96/75

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HL500	Small Remote Read/Write Antenna, Standard Plastic Circular Connector
HL500A	Small Remote Read/Write Antenna, Metal Circular Connector
HL501	Small Remote Read/Write Antenna, Face-Emitting, Plastic Circular Connector
HL501A	Small Remote Read/Write Antenna, Face-Emitting, Metal Circular Connector

Accessories

Model	Description
68-5001	Crimping Tool for 8-Pin Circular Connector (Amp 169341-1)
10-7026	8-Pin Plastic Mating Connector for HL500-Series Antennas (1 Kit Ships with Antenna)
46-1291	Straight 6-Pin Circular Plug for HL500A-Series Antennas (Does Not Ship with Antenna) (Amp 97-3106-A-14S-6S-608)
46-1292	Right Angle 6-Pin Circular Plug for HL500A-Series Antennas (Does Not Ship with Antenna) (Amp 97-3108-A-14S-6S-608)
46-5073	Cable Clamp for 46-1291 and 46-1293. Max. Cable O.D. 11/32" (Amp 9767-14-6)

Ordering Notes

The Mating Connector Kit for the HL500 / HL501 Antennas Ship with the Units. The Mating Connector Kit for the HL500A / HL501A Antennas Must Be Purchased Separately.

HS510 Long-Range Read/Write Antenna

Features

- Up to 29 Inches Read/Write Range
- 3000 Bytes/Second Data Transfer Speed – Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paint, Dust, Dirt and Solvents
- High Immunity to Metal
- Uses Safe Low-Frequency Radio Waves

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200LR-Series Tags
- HS850B Serial Eurocard Controller
- HS880B-Series Read/Write Controllers
- HS900 PC-Bus Read/Write Controller
- CM01 Asynchronous Serial Interface Module
- CM12 DeviceNet Module
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Interface Modules
- CM900 / CM1000
- CM1746 RFID Module

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Technical Description

The HS510 Long-Range Read/Write Antenna connected to an Escort Memory Systems Controller provides a very convenient interface between a host computer or programmable Controller and the data in EMS Long-Range Tags.

The HS510 Antenna contains all the circuitry necessary to convert the digital signals received from the Controller to high speed RF signals from the Tags, and subsequently, convert the RF signals from the Tags back into digital signals for the Controller.

The distance from the Controller to the Antenna can be up to 4,000 feet. This is advantageous because the Controller portion of the RFID system is then afforded extra protection from noise that could be generated by electrical equipment positioned near the Read/Write station. Connection to the Controller is via an 8-pin circular connector. Antennas can be replaced on the line without changing any wiring.

UP TO 29 INCHES READ/WRITE RANGE

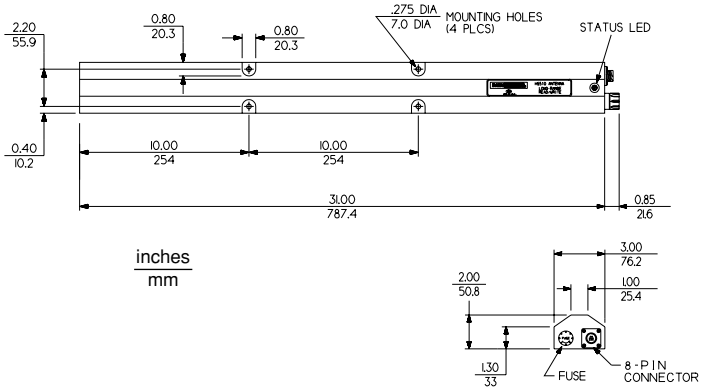
The Antenna is equipped with a two-color status LED, indicating when power is present and the Antenna is or is not transmitting.

The HS510 is a solid state device, without moving parts or mechanical switches, and configuration is not required prior to installation. It has a metal backplate which helps to distribute stress from the mounting bolts and greatly increases immunity to additional metal in the Read/Write field.

HS510 Long-Range Read/Write Antenna

Electrical	Supply Voltage	20-26VDC
	Current Consumption	500mA Maximum
RF Interface	Data Transfer Rate	3000 Bytes/Second
Interface with Controller	Maximum Cable Length	4000ft. (1200m)
Mechanical Specifications	Dimensions (W x H x D)	31 x 3.0 x 2.0in. (787 x 76 x 51mm)
	Weight	9.5lbs (4.3kg)
	Enclosure	ABS Shell, Epoxy Encapsulated
	Cable	User Supplied
	Connector	8-Pin Plastic Circular
	Indicators	Power/Transmit LED
Environment	Operating Temperature	14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4 (IP66)

Mechanical Dimensions



RF Field and Read/Write Ranges

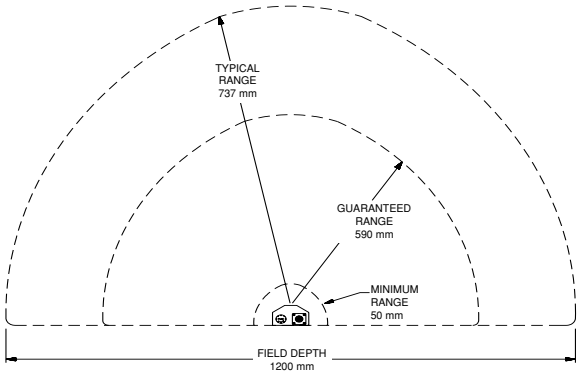
HS510 Long-Range Read/Write Antenna

Reading & Writing Ranges to HS200-Series Read/Write Tags

	HS200R	HS200XL	HS200LR
Typical Range (Y) (inches/mm)*	**	**	2.00-29.00/50-737
Guaranteed Operating Range (X)	**	**	2.00-23.23/50-590

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

** Not recommended.



RF Field of HS510 when used with HS200LR-Series Tag.

Available Models

Model	Description
HS510	Long-Range Read/Write Antenna

Accessories

Model	Description
68-5001	Crimping Tool for 8-Pin Circular Connector (Amp 603547-1)
10-7026	Antenna Connector Kit for HS510 (Furnished with HS510, but also Available as a Spare Part)

HS550A Wide-Field Read/Write Antenna

Features

- Up to 16 Inch Wide Read Field
- 3000 Bytes/Second Data Transfer Speed – Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paint, Dust, Dirt and Solvents
- High Immunity to Metal

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags
- HS850B Serial Eurocard Controller
- HS880B-Series Read/Write Controllers
- HS900 PC-Bus Read/Write Controller
- CM01 Asynchronous Serial Interface Module
- CM12 DeviceNet Module
- CM21 InterBus-S Module
- CM30-Series Profibus Modules
- CM40-Series Modbus Plus Modules
- CM52 Remote I/O Module
- CM80-Series ControlNet Interface Module
- CM900 / CM1000
- CM1746 RFID Module

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The HS550A Wide-Field Antenna connected to an Escort Memory Systems Controller provides a very convenient interface between a host computer or programmable Controller and the data in EMS Tags.

The HS550A Antenna contains all the circuitry necessary to convert the digital signals received from the Controller to high speed RF signals for the Tags, and subsequently, convert the RF signals from the Tags back into digital signals for the Controller.

The wide RF field of the HS550A makes it ideal for use in factory automation environments where Tags will be moving at greater speeds as they pass the Antennas. To further ease installation, the distance from the Controller card to the Antenna can be up to 4,000 feet. This is advantageous because the Controller portion of the RFID system is then afforded extra protection from noise that could be generated by electrical equipment positioned near the Read/Write station. Connection to the Controller is via a 6-pin circular Connector. Antennas can be replaced on the line without changing any wiring.

WIDE READ/WRITE FIELD MAKES TRACKING FAST MOVING PRODUCTS EASY

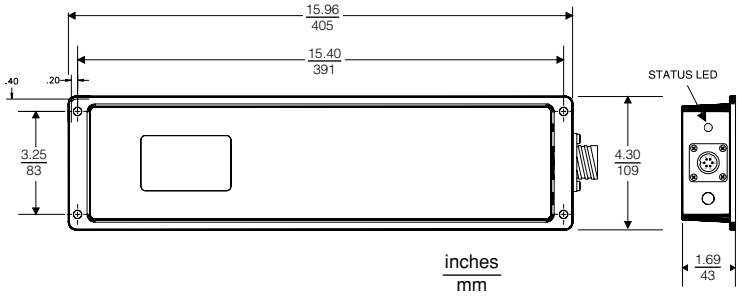
The Antenna is equipped with a two-color status LED, indicating when power is present and the Antenna is or is not transmitting.

The Antenna is a solid state device, without moving parts or mechanical switches, and configuration is not required prior to installation. It has a metal backplate which helps to distribute stress from the mounting bolts and greatly increases immunity to additional metal in the Read/Write field.

HS550A Wide-Field Read/Write Antenna

Electrical	Supply Voltage	20-26VDC
	Maximum Current	500mA
	Maximum Ripple	2% of DC Voltage
RF Interface	Data Transfer Rate	3000 Bytes/Second
Interface with Controller	Maximum Cable Length	4000ft. (1200m)
Mechanical Specifications	Dimension (W x H x D)	15.96 x 4.30 x 1.69in. (405 x 109 x 43mm)
	Weight	5lbs. (2.3kg)
	Enclosure	ABS Shell, Epoxy Encapsulated
	Cable	User Supplied
	Connector	6-Pin Metal, Circular (Mating End Purchased Separately)
	Indicators	Power/Transmit LED
Environment	Operating Temperature	14° to 120°F (-10° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	Water-Resistant
	Protection Class	NEMA 4X (IP66)

Mechanical Dimensions



Read/Write Ranges

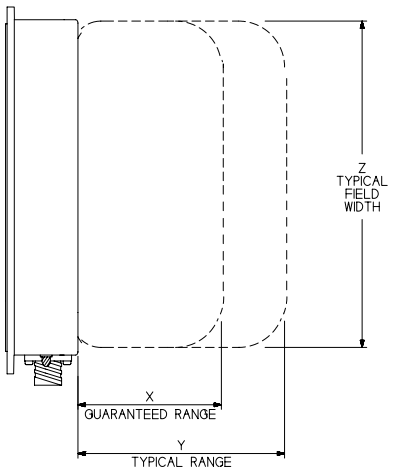
HS550A Wide-Field Read/Write Antenna

Reading & Writing Ranges to HS200-Series Read/Write Tags

	HS200R	HS200XL	HS200LR
Typical Range (Y) (inches/mm)*	4.49/114	5.90/150	16.50/420
Guaranteed Operating Range (X)	3.58/91	4.72/120	13.20/335
Reading Field (Z)	13.00/330	13.00/330	13.00/330

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

** Not recommended.

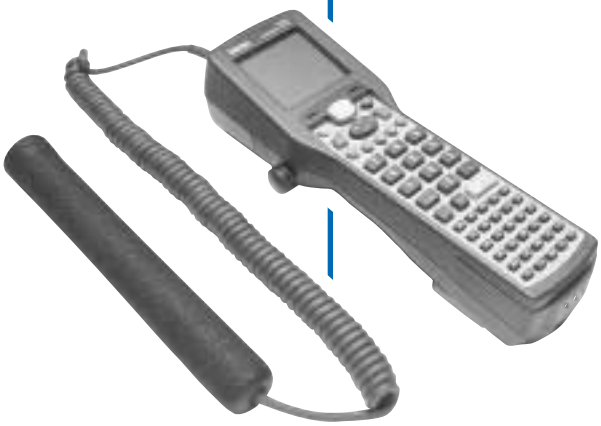


Available Models

Model	Description
HS550A	Wide-Field Read/Write Antenna (Mating Connector not included)

Accessories

Model	Description
46-1291	Mating Connector for HS550A, 6-pin, circular, metal, straight, requires Cable Clamp 46-5073
46-1292	Mating Connector for HS550A, 6-pin, circular, metal, right angle, requires Cable Clamp 46-5073
46-5073	Cable Clamp for 46-1291 and 46-1292 Connectors, maximum cable O.D. 11/32"
68-5001	Crimping Tool for Circular Connector (AMP 169341-1)



Note: HS814 featured above shown with the PC2420 Hand-Held Terminal.

HS814 / HS816 Portable Reader/Writers

Features

- 3000 Bytes/Second Data Transfer Speed – Reading and Writing
- Epoxy Encapsulated
- Unaffected by Paint, Dust, Dirt and Solvents
- Uses Safe, Reliable Low-Frequency Radio Waves
- Automatic Program Start-Up

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags

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EMS has recently teamed up with Intermec to launch an exciting new product line of Portable Reader/Writers. Escort Memory Systems' Read/Write Antenna, the HS814, can be plugged into Intermecs' PC2420-Series Hand-Held Terminals (PC2420 and PC2425) to provide portable Read/Write capabilities. For added flexibility, Escort Memory Systems also offers the HS816 Reader/Writer, which provides a direct host interface (e.g. laptop, palmtop).

The HS814 Portable Reader/Writer is a fully encapsulated wand housed in an industrial enclosure and has a cushioned exterior for comfort and shock resistance. The HS814 plugs into the Intermec Hand-Held Terminal to allow for portable Reading and Writing to the HS-Series Tags. The HS814 is powered by the Terminal.

The HS816 Portable Reader/Writer is unique from the HS814 in that it interfaces to the host (e.g. laptop, palmtop) via an RS232 serial port. The HS816 uses an external power supply, and it features the same rugged characteristics of the HS814. Included with the HS816 Reader/Writer is a complete user software guide and a disk with demonstration programs.

ACTIVE READER/WRITERS ARE NOW PORTABLE

Intermec offers two Terminals to interface with Escort Memory Systems' Reader/Writers – the PC2420 and the PC2425. The PC2420 is a powerful micro-computer which features a CGA compatible back-lit LCD displaying 16 lines of 20 characters per line. The PC2420 also has a full alpha-numeric keypad, long battery life, and a rugged design suitable for use in industrial environments. The PC2425 Terminal shares all the above characteristics as the PC2420 but also provides the added benefit of an RF link to the host.

Technical Description

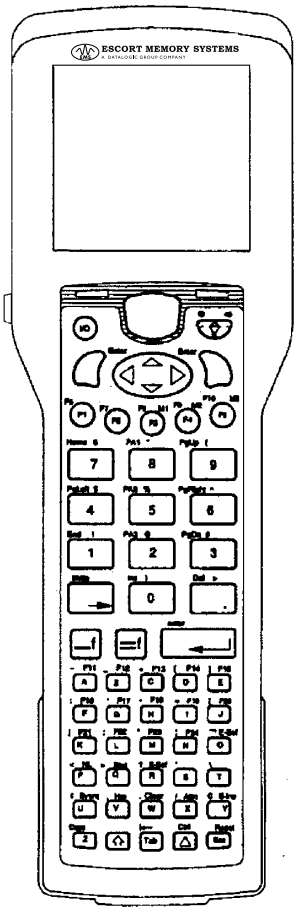
The HS814 / HS816 Portable Reader/Writers contains their own microprocessor and memory subsystems to manage communication with the HS-Series Tags. Communication between the PC2420 (or PC2425) Terminal and the HS814 is in serial asynchronous form.

HS814 / HS816 Portable Reader/Writers

PC2420-Series Hand-Held Terminals

Electrical	Supply Voltage	Lithium Ion Battery Pack
	Memory Backup	Rechargeable NiCad Battery Pack
	RAM Memory	1MB Total, 512K Available
	Extended Memory	2MB SRAM
Mechanical Specifications	Dimensions (W x H x D)	10.6 x 3.2 x 2.8in. (269 x 82 x 71mm)
	Weight	22oz. (620g) Including Battery
Environment	Operating Temperature	-4° to 120°F (-20° to 49°C)
	Storage Temperature	-4° to 140°F (-20° to 60°C)
	Humidity	95% Non-Condensing
Display		CGA Compatible Backlit LCD Displaying 16 Lines of 20 Characters Per Line (160 x 128 dot matrix). Plus Graphic Status Icons. Full 25 x 80 Virtual Screen with Viewporting.
Keyboard		Elastomeric 56-key with Full Alphanumeric Set, Function Keys and Oversized Numeric. Options for U.S. and Multilingual European.

PC2420-Series Hand-Held Terminals



HS814 Portable Reader/Writer

Electrical	Supply Voltage Current	7.2VDC 100mA Continuous 400mA Peak
RF Interface	Data Transfer Rate Error Detection Antenna Type	3000 Bytes/Second CRC and Parity Check Internal
Interface	Serial Host Interface Baud Rate Connector	TTL 9600 RJ45 - 10 Pin for PC2420
Mechanical Specifications	Cable Length Antenna Body (L x W)	6ft. 8.25 x 1.22in. (210 x 31mm)
Environment	Operating Temperature Storage Temperature Humidity Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing NEMA 4 (IP66)

HS816 Portable Reader/Writer

Electrical	Supply Voltage Current	12VDC 100mA Continuous 400mA Peak
Interface	Serial Host Interface Baud Rates Connector	RS232 9600, 19200 DE9S with DC Power Jack
Mechanical Specifications	Cable Length Antenna Body (L x W)	6ft. 8.25 x 1.22in. (210 x 31mm)
Environment	Operating Temperature Storage Temperature Humidity Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing NEMA 4 (IP66)

HS814 / HS816 Portable Reader/Writers and PC2000-Series Hand-Held Terminals

Read/Write Ranges

HS814 / HS816 Portable Reader/Writers

Reading & Writing Ranges with HS200-Series Read/Write Tags

	HS200R	HS200XL	HS200LR
Typical Range (Y) (inches/mm)*	1.77/45	1.77/45	1.77/45
Guaranteed Operating Range (X)	1.42/36	1.42/36	1.42/36

* Proximity to metal, CRT devices and other sources of electromagnetic radiation may affect the range of the Antenna.

Available Models

Model	Description
HS814	Portable RF Reader/Writer (Use with PC2420-Series Hand-Held Terminals)
HS816	Portable RF Reader/Writer Wand with RS232 Interface
(Note: HS814 will require a Hand-Held Terminal, a Battery and Battery Charger. See Accessories below.)	
HS814 J004	Portable Reader/Writer Kit Includes: HS814 Read/Write Antenna, PC2420 Hand-Held Terminal, 00-1099 Battery and 00-1102 Battery Charger

Accessories – PC2420

Model	Description
PC2420	Hand-Held PC Terminal
PC2425	Hand-Held PC Terminal with RF Link
00-1099	Battery, PC2420 7.2V, 1350mAh
*00-1100	Comm. Dock/Charger, PC2420 (Note: Requires CBL-1443 or CBL-1444 Cables and 00-1101 Power Supply)
*00-1101	Power Supply for 00-1100
00-1102	Battery Charger for Two Batteries 00-1099
*00-1111	Software Microsoft Visual C++ V1.52
00-1112	Hand Strap for PC2420
*00-1113	Software Development Kit PC2420 (Note: Requires Visual C/C++ V1.0 or V1.5X or V4.X)
*CBL-1443	RS232 Cable, DE9S to DE9S, Null Modem, 5-Wire
*CBL-1444	RS232 Cable, DE9S to DB25P, Null Modem, 3-Wire
17-1265	Manual, PC2420/25

* Recommended Accessories for Development of Custom PC2420 Applications

European – See page 209 for Read/Write Ranges

HL814	Portable RF Reader/Writer (Use with PC2420-Series Hand-Held Terminals)
HL816	Portable RF Reader/Writer Wand with RS232 Interface
HL814 J026	Portable Reader/Writer Kit Includes: HL814 Reader/Writer, PC2420 Hand-Held Terminal, 00-1099 Battery and 00-1102 Battery Charger

HS850B
Serial Eurocard Controller

Features
- Controls up to Four HS-Series Antennas Simultaneously
- Antenna Cable Length Up to 4000 Feet
- 3000 Bytes/Second Data Transfer – Reading and Writing
- Simple Host Serial Protocol
- RS232, RS422 and RS485 Multidrop Link

Applications
- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With
- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags
- HS500-Series Read/Write Antennas
- HS510 Long-Range Read/Write Antenna

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The HS850B Serial Eurocard Controller provides the complete interface between the serial port of the user's host computer and up to four EMS HS-Series Antennas. Up to 45 HS850B Controller cards can be connected on one RS485 multidrop line, allowing a single host port to control up to 180 EMS Antennas. The connection between the Eurocard Controller and each Antenna is via two twisted pairs (four wires), with a maximum cable length of up to 4,000 ft. (1,200 meters). Eight status LEDs are mounted on the front of the Controller to aid in system debug and maintenance. The HS850B has backplane connections to the host, Antennas and power, for use in the EMS HS640B-850 single card rack.

CONTROLS UP TO FOUR RF ANTENNAS

HS850B Serial Eurocard Controller

Electrical	Supply Voltage	21-28VDC
	Current Consumption	100mA Typ., 200mA Max.
Memory	Memory Type	RAM Tag Buffer
	Memory Capacity	32KB
Interface with Antenna	Max. Cable Length	4000ft. (1200m)
Interface	Host Interface Options	RS232, RS422, RS485 Multidrop
	Baud Rate	110, 300, 1200, 2400, 4800, 9600
	Parity	Odd, Even, None
	Data Bits	8
	Stop Bits	1
	Software Protocol	ASCII or Binary
Mechanical Specifications	Dimensions (W x H)	6.3 x 3.9in. (160 x 100mm)
	Connector	64-Pin DIN (32 x 2)
	Indicators	On, Error, RX, TX, Antenna LEDs
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 1 (IP30)

Electrical Connections

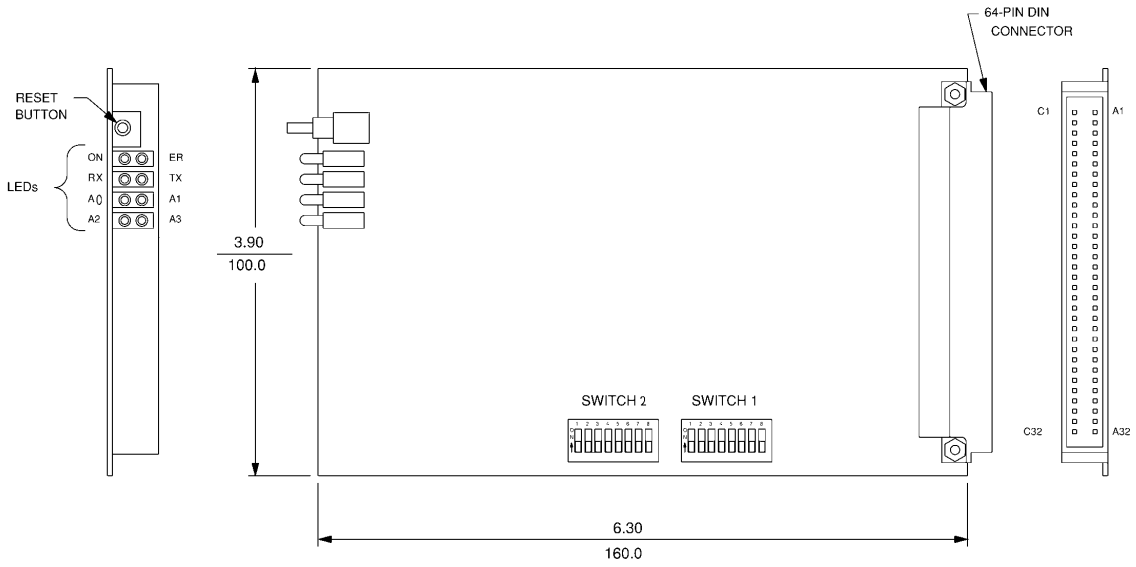
Pinouts

HS850B (64-Pin DIN) and HS640B-850 (2 x 32 Terminal Blocks)

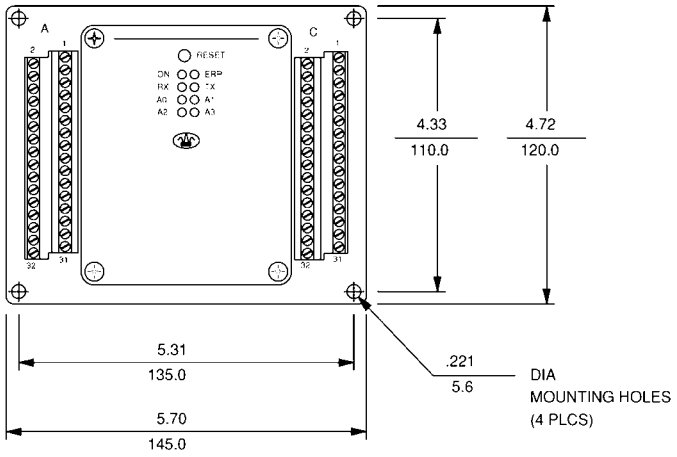
PIN	Description	Type	PIN	Description	Type
A2	Antenna 0 Pin 1	In/Out	C2	RS232 TX	Output
A4	Antenna 0 Pin 2	In/Out	C4	RS232 RX	Input
A6	Antenna 0 Pin 3	In/Out	C6	Signal Ground	Power
A8	Antenna 0 Pin 4	In/Out	C8	RS422/485 TX+	Output
A10	Antenna 1 Pin 1*	In/Out	C10	RS422/485 TX-	Output
A12	Antenna 1 Pin 2*	In/Out	C12	RS422/485 RX+	Input
A14	Antenna 1 Pin 3*	In/Out	C14	RS422/485 RX-	Input
A16	Antenna 1 Pin 4*	In/Out	C16	(spare)	
A18	Antenna 2 Pin 1*	In/Out	C18	(spare)	
A20	Antenna 2 Pin 2*	In/Out	C20	(spare)	
A22	Antenna 2 Pin 3*	In/Out	C22	(spare)	
A24	Antenna 2 Pin 4*	In/Out	C24	(spare)	
A26	Antenna 3 Pin 1*	In/Out	C26	(spare)	
A28	Antenna 3 Pin 2*	In/Out	C28	(spare)	
A30	Antenna 3 Pin 3*	In/Out	C30	+24VDC	Power
A32	Antenna 3 Pin 4*	In/Out	C32	Ground	Power

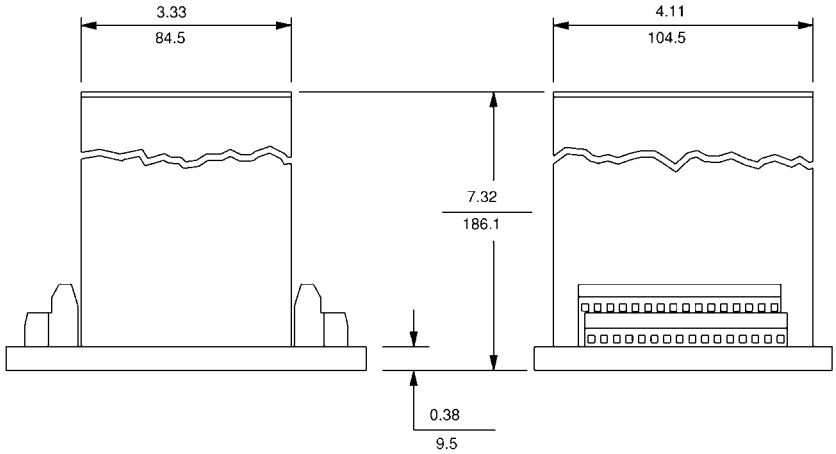
*These connections only apply using HS850B-4

Mechanical Dimensions
HS850B Serial Eurocard Controller



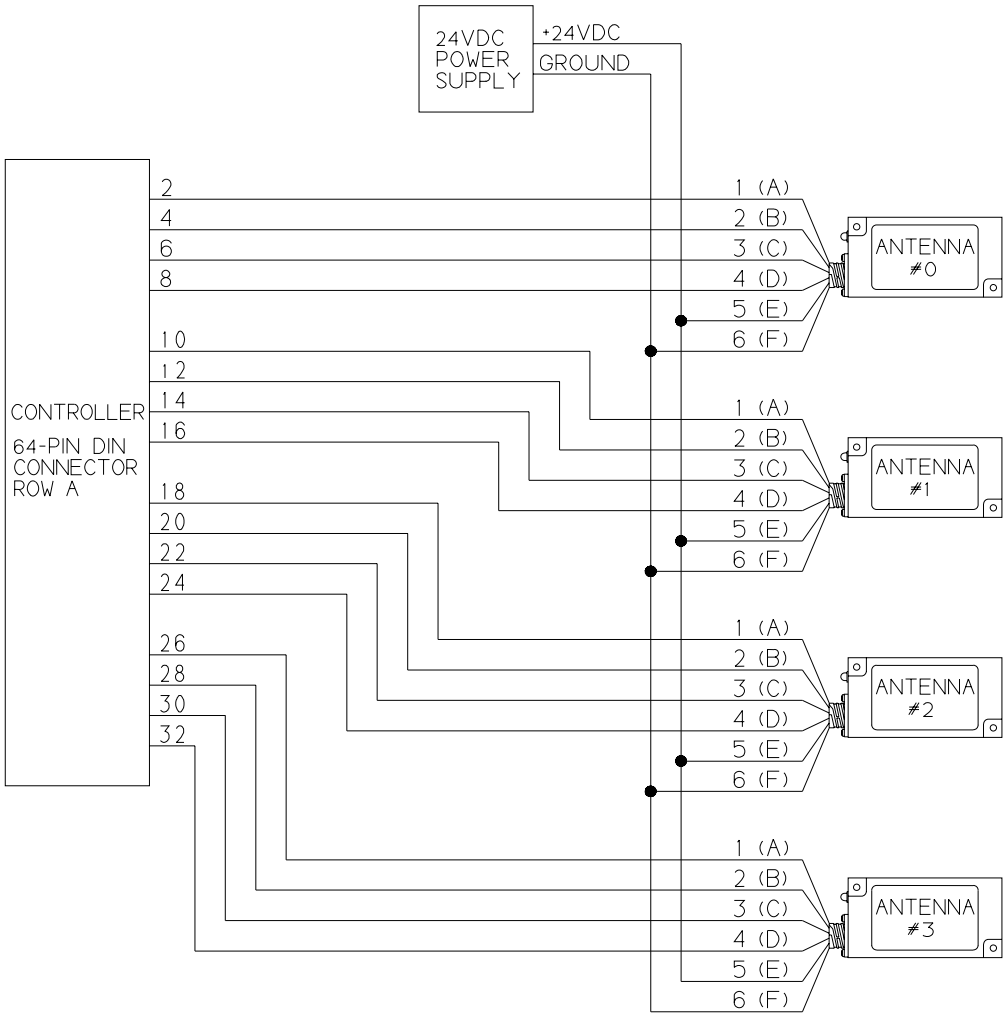
Mechanical Dimensions
HS640B-850 Eurocard Enclosure





HS850B Serial Eurocard Controller

Connections to Antennas



Note: Connections to Antennas 1, 2 and 3 Apply Only When Using the HS850B-4 Controller.

Available Models

Model	Description
HS850B-1	Serial Eurocard Controller for One Antenna
HS850B-4	Serial Eurocard Controller for Four Antennas

Accessories

Model	Description
HS640B-850	Single-Card Enclosure for HS850B Eurocard, Stainless Steel, NEMA 12 (IP54)

HS880B-Series Read/Write Controllers

Features

- Controls up to Four Antennas
- Antenna Cable Length up to 4000 Feet (1200 Meters)
- 3000 Bytes/Second Data Transfer–Reading and Writing
- Programmable in C Language
- HS403B Industrial I/O Board Available
- High-Speed CPU with Real-Time Clock/Calendar

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags
- HS500-Series Antennas
- HS403B I/O Board
- HS64xB-880 Enclosures

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Technical Description

The HS880B-Series Controllers incorporate high-level language capability, two fully-buffered bi-directional serial ports, a separate program/debug port, 32KB of RAM, 64 programmable TTL-level I/O points and an interface to up to four EMS HS500-Series Antennas.

The HS880B-Series Controllers utilizes programs written in the powerful "C" language, so no special "proprietary languages" need to be learned for applications development. Programs are written and compiled on a PC-compatible computer using the development package available from EMS. Once compiled, the program is downloaded into the EEPROM memory of the HS880B-Series Controllers for execution. In addition to the native functions of the C compiler, the development package includes a complete library of functions specific to the operation of the Controller. The separate program/debug port allows new programs to be downloaded to the HS880B without having to disconnect either of the two serial ports. Additionally, the program/debug port may be used to transmit status or error messages to aid program development.

The HS880B offers a high-speed CPU with a real-time clock/calendar for date stamping data critical to process control. The connection between the Controller and each Antenna is via two twisted pair wires (four wires). Using good quality shielded cable, the connection length between the Controller and Antenna can be up to 4000 feet (1200 meters).

Ten status LEDs are mounted on the front of the Controller to aid in system debug and maintenance. Each serial port has separate transmit and receive indicators, each Antenna port has a transmit indicator, and two LEDs are provided for systems error indication and power.

THE HS880B-SERIES IS THE WORKHORSE OF OUR CONTROLLER LINE

The HS403B industrial I/O board can be used to convert the TTL-level signals on the HS880B to 24 Volt DC optically-isolated industrial I/O.

The HS880B-Series Controllers can be installed in three different enclosures. The HS640B-880 is a single card enclosure giving access to 32 TTL-level I/O. The HS641B holds two cards, the Controller and one HS403B, providing 32 industrial level I/O. HS643B enclosure accepts the HS880-Series Controllers and up to two HS403B I/O boards, provides 64 industrial I/O with two HS403Bs installed.

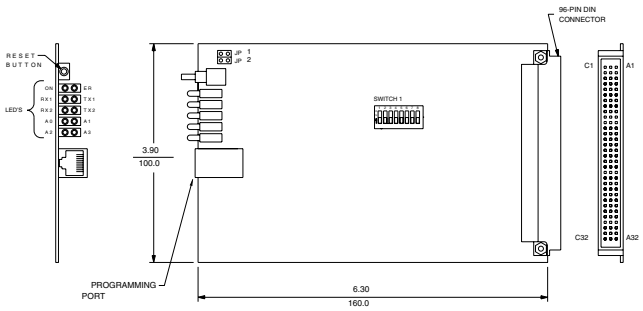
HS880B-Series Read/Write Controllers

Electrical	Supply Voltage	21-28VDC
	Maximum Current	300mA
Memory	EEPROM	2KB Used by System, 30KB Used for User Program Storage
	RAM	32KB, for User Variables and Programs
Interface With Antenna	Maximum Cable Length	4000ft. (1200m)
Input/Output	Inputs	32 TTL-Level
	Outputs	32 TTL-Level
Communication With Host	Interface Options	Two RS232 or RS422 Bi-Directional Serial Ports, One RS232 Program/Debug Port
	Baud Rate	300, 1200, 4800, 9600, 19200
	Parity	Odd, Even or None
	Data Bits	7 or 8
	Stop Bits	1
Processor	HS882	24MHz with Real-Time Clock/Calendar
Mechanical Specifications	Dimensions (W x H)	3.9 x 6.3in. (100 x 160mm)
	Connector	96-Pin DIN (32 x 3)
	Indicators	On, Error, RX, TX and Antenna LEDs
Environment	Operating Temperatures	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 1 (IP30)

HS403B I/O Board

Electrical	Voltage	20-26VDC
	Maximum Current	200mA
Input/Output	16 DC Inputs	24VDC, Optically-Isolated
	16 DC Outputs	24VDC, 100mA, Optically-Isolated
Mechanical Specifications	Dimensions (W x H)	3.9 x 6.3in. (100 x 160mm)
	Connector	96-Pin DIN (32 x 3)
	Indicators	32 I/O LEDs
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing

Mechanical Dimensions

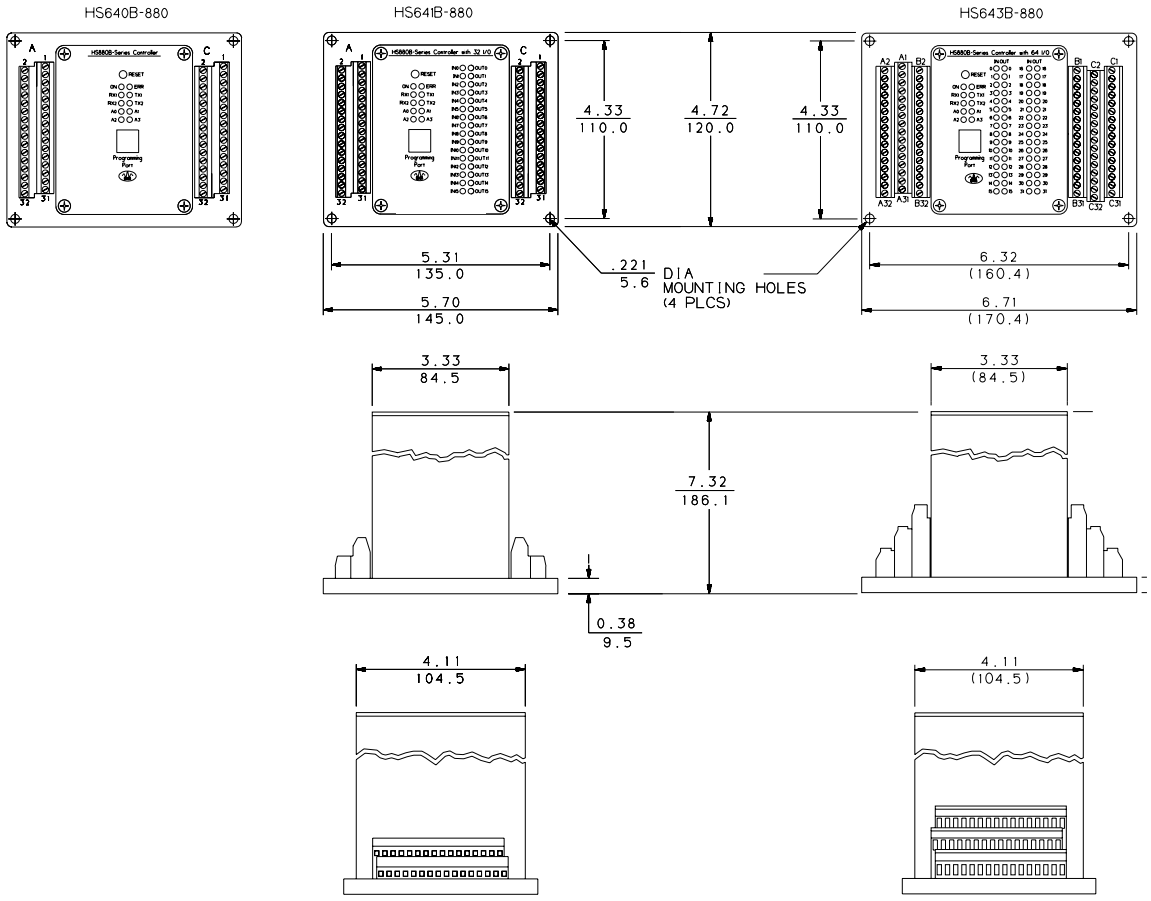


HS882B-Series Controller

inches
mm

HS403B I/O Board

Mechanical Dimensions
HS640B-880, HS641B-880, and HS643B-880 Enclosures



HS880B-Series Read/Write Controllers

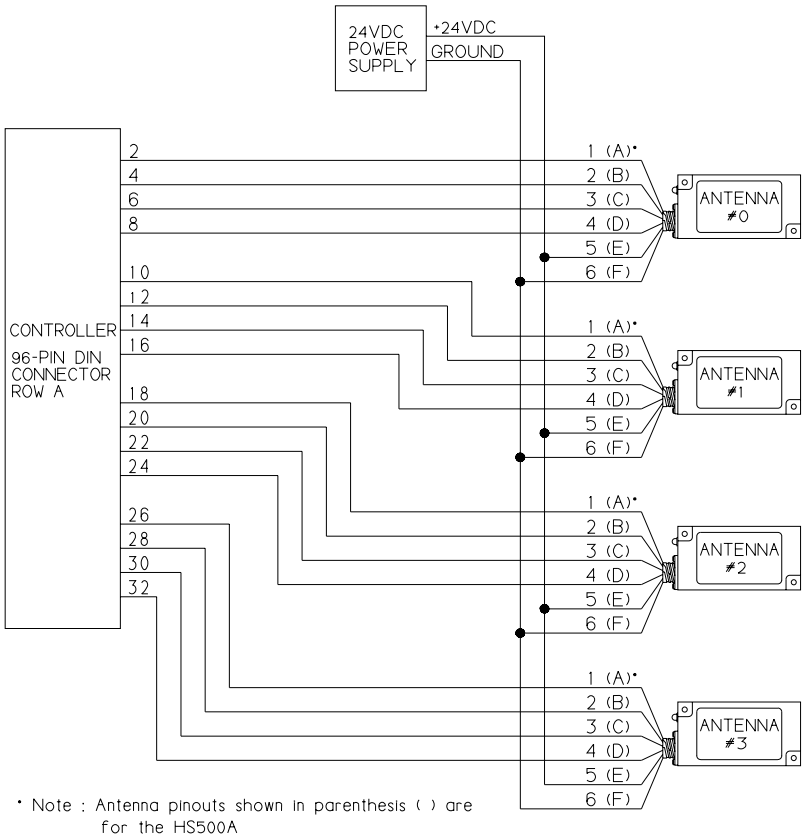
Available Models

Model	Description
HS880B-4	C-Programmable Controller
HS882B-4	C-Programmable Controller with High-Speed CPU and Built-In Clock/Calendar
HL882B-4	Controller, RFID Euro, CLF, 4-Antenna (European)

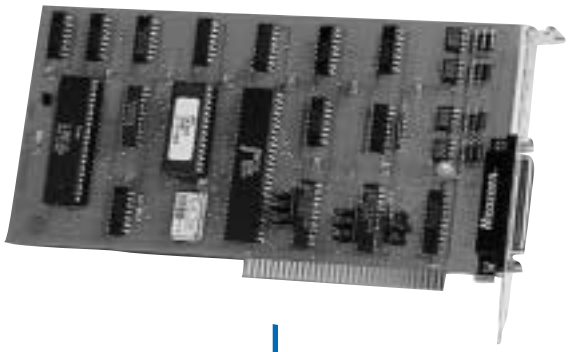
Accessories

Model	Description
CBL-1150	Programming/Debug Cable with 6 Pin Modular Connector Terminating in a DE9-S Connector
HS403BH	Industrial I/O Board, for HS880B-Series Controllers, Current Sourcing
HS403BL	Industrial I/O Board, for HS880B-Series Controllers, Current Sinking
HS640B-880	Single-Card Eurocard Enclosure for Use with the HS880B-Series Controllers, Provides 32TTL-Level I/O
HS641B-880	Two-Card Eurocard Enclosure for Use with the HS880B-Series Controllers and one HS403B I/O Board, Provides 32 Industrial-Level I/O
HS643B-880	Three-Card Eurocard Enclosure for Use with the HS880B-Series Controllers and one HS403B, I/O Board Provides 64 Industrial-Level I/O
SP1008-LIB	Software Development Package for HS880B, with Libraries and Utilities
SP1014-LIB	Software Development Package for HS882B, with Libraries and Utilities
88-1001	Franklin Compiler for HS880-Series Software Development
SP1017	Interface Package for Allen-Bradley DB-A Module, Includes Custom HS882 Program, Firmware for DB-A Module and Manual
SP1016	Interface Package for Allen-Bradley DB-B Module, Includes Custom HS882 Program, Firmware for DB-B Module and Manual
10-5158	Interface Firmware for Allen-Bradley DB-A Module
10-5149	Interface Firmware for Allen-Bradley DB-B Module

Connection to EMS Antennas



* Note : Antenna pinouts shown in parenthesis ( ) are for the HS500A



HS900 PC-Bus Read/Write Controller

Features

- Simple Dual-Port Memory Interface to PC-Bus
- Controls up to Four HS-Series Antennas Simultaneously
- Antenna Cable Length up to 4000 Feet (1200 Meters)
- 3,000 Bytes/Second Data Transfer – Reading and Writing
- No Separate Power Supply Required
- PC-Compatible Demo Software Available

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS200R-Series Tags
- HS200XL-Series Tags
- HS200LR-Series Tags
- HS500-Series Antennas

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The HS900 PC-Bus Read/Write Controller is an XT-type PC expansion board which serves as the interface between a PC, XT, AT or PC-compatible personal computer and up to four HS-Series Antennas. The Antennas can be used to both read and write data from the HS-Series Read/Write Tags. The connection between the PC-Bus Controller and each Antenna is via two twisted pairs (four wires), with a maximum cable length of 4,000 feet (1200 meters). This is advantageous because the Controller portion of the RFID system is then afforded extra protection from noise that could be generated by electrical equipment positioned near the Read/Write station.

Interface between the PC and the HS900 is via 2KB dual-port RAM, which can be mapped into any available address of the PC's memory. Read/Write instructions for the HS900 are written into the dual-port RAM and read by the HS900's on-board microprocessor. Once the Tag is read, the collected data is returned to the PC via the same dual-port.

Controls Up to Four HS-Series Antennas At the Same Time

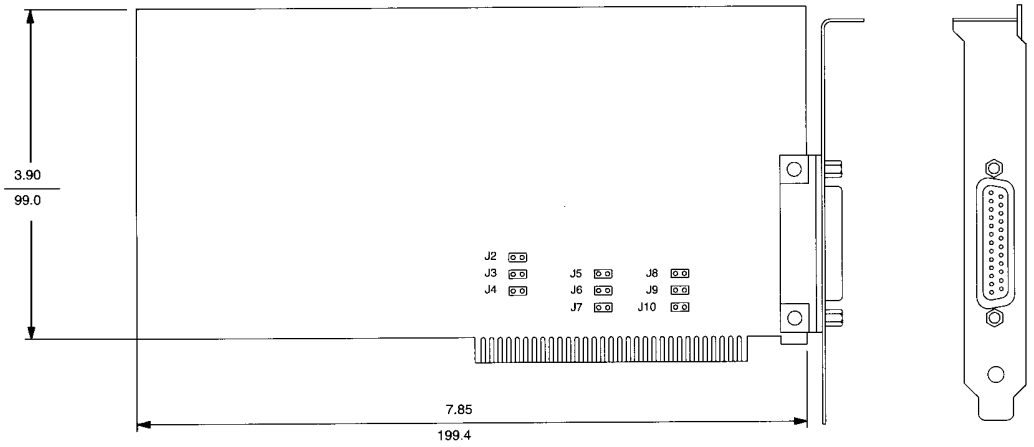
This memory-mapped nature of the HS900 makes interfacing fast and easy. Sample interface routines are available in the popular C programming language.

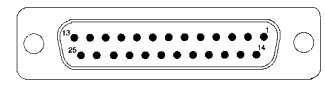
The HS900 is manufactured under the quality standards which have made EMS the industry leader in network interface modules.

HS900 PC-Bus Read/Write Controller

Electrical	Supply Voltage Maximum Current	±5VDC (Obtain directly from PC-Bus) 500mA
Interface With Antenna	Maximum Cable Length	4000ft. (1200m)
Communications With Host	Compatibility Interface	PC, XT, AT and 100% PC-Compatible Dual Port RAM, Selectively-Addressable within PC Address Space
Mechanical Specifications	Dimensions (W x H) Connector	3.90 x 7.85in. (100 x 199mm) DB-25S for All External Connections
Environment	Operating Temperatures Storage Temperature Humidity Protection Class	32° to 120°F (0° to 49°C) -40° to 185°F (-40° to 85°C) 95% Non-Condensing NEMA 1 (IP30)

Mechanical Dimensions





DB-25S (female)

HS900 Pinouts

Pin	Description	Type
1	Antenna 0 Pin 1	In/Out
2	Antenna 0 Pin 2	In/Out
3	Antenna 0 Pin 3	In/Out
4	Antenna 0 Pin 4	In/Out
6	Antenna 1 Pin 1	In/Out
7	Antenna 1 Pin 2	In/Out
8	Antenna 1 Pin 3	In/Out
9	Antenna 1 Pin 4	In/Out
11	Antenna 2 Pin 1	In/Out
12	Antenna 2 Pin 2	In/Out
13	Antenna 2 Pin 3	In/Out
14	Antenna 2 Pin 4	In/Out
16	Antenna 3 Pin 1	In/Out
17	Antenna 3 Pin 2	In/Out
18	Antenna 3 Pin 3	In/Out
19	Antenna 3 Pin 4	In/Out

Available Models

Model	Description
HS900-4	PC-Bus Controller for Four Antennas
HL900	PC-Bus Read/Write Controller (European)

CM01 Asynchronous Serial Interface Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM01
- One Industrial-Level Input
- LED Status Indicators
- NEMA 4 (IP66) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- HS-Series Active Read/Write Antennas
- RS232 Serial Device

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Technical Description

The CM01 Module is a general purpose programmable interface that can be connected between any standard serial com port or PLC serial communications module to the CM01 and Reads/Writes to HS-Series RFID Antennas.

This programmable interface is provided with a standard program that allows standard commands to control the reading and writing of a block (or non-contiguous blocks) of data.

PRESENCE FOR AUTO ID PRODUCTS

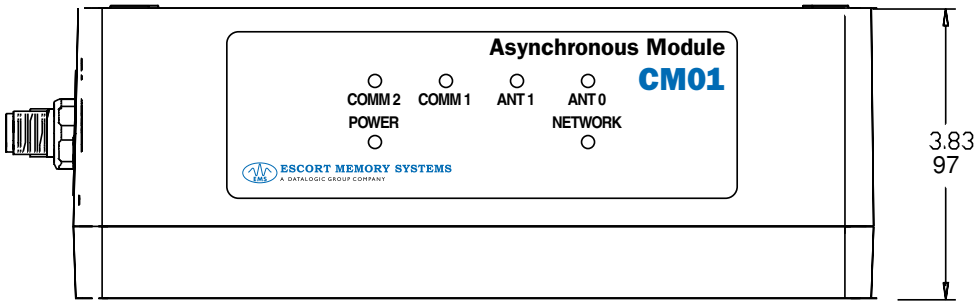
The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM01 is implemented as a two board set, interconnected by a stackable PC104 Connector.

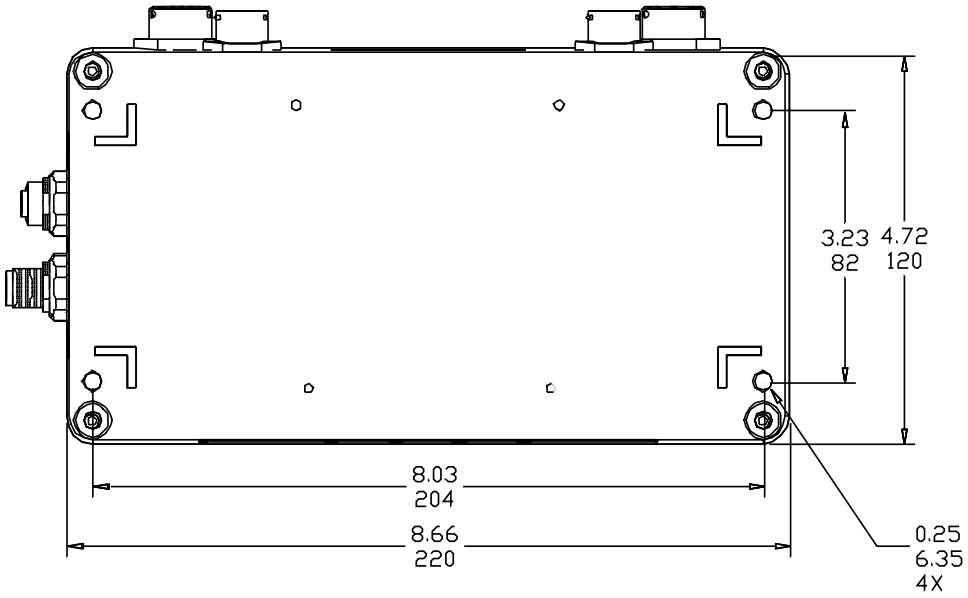
ABX (HS) and HS850A protocols are implemented.

CM01 Asynchronous Serial Interface Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	RFID	Two EMS HS-Series Antenna Ports
Ports	COM1 COM2 Input	RS232 RS232/RS422/RS485(Mux32 Protocol) One Industrial-Level Input, 10-30VDC
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	8.66 x 4.72 x 3.83in. (220 x 120 x 82mm) 3.5lbs. (1.6kg) Aluminum Alloy
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks each Axis IEC 68-2-6 Test FC 1.5mm; 10 to 55Hz; 2 Hours each Axis NEMA 4 (IP66)

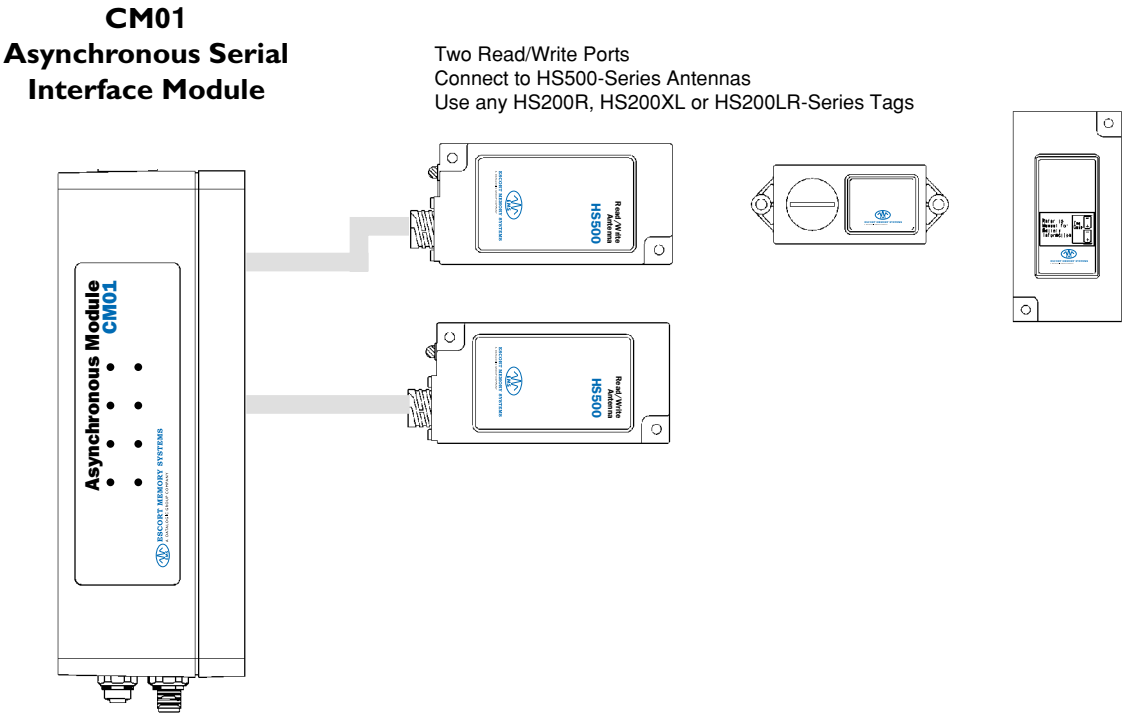
Mechanical Dimensions





CM01 Asynchronous Serial Interface Module

Connections



Available Models

Model	Description
CM01	Asynchronous Serial Interface Module

DeviceNet™

CM11 / CM12 DeviceNet Interface Modules

Features

- One Full Duplex RS232, RS485(Mux32), or RS422 Serial Port
- One Programming/ Configuration Port
- One Sensor Port with One Optically Isolated Output
- External or CAN Bus Power
- LED Indicators for Network and Serial Communications Status
- 32KB EEPROM Program Memory and 32KB Static RAM Data Memory
- Hardware Watchdog Timer

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- Any RS232 Serial Device
- HL-Series

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The CM11 can be used to give a DeviceNet presence to Auto ID equipment such as RFID Controllers, bar code readers/scanners, sensors and switches.

The CM11 interfaced to a DeviceNet program allows all of EMS' RS232 devices (as well as other RS232 devices) to have a direct presence on the DeviceNet CAN Bus. As many as 32 serial devices may be attached via the Mux32 RS485 bus.

Technical Description

To an existing DeviceNet system, the CM11 DeviceNet module is a buffered, full duplex, serial channel. The standard program provides a buffered pass-through of serial data. The converter buffers incoming serial data, assembles packets and transmits them over the CAN Bus. Similarly, incoming packets from the CAN Bus are buffered and then transmitted out the serial lines.

One general purpose, opto-isolated, input line is provided for connection of a presence sensor, proximity sensor or relay. The input is passed to the CPU and acted on according to the configuration parameters. The input may be passed back within the CM11 or sent out to the network to be processed by the PLC. An optically-isolated output can be used to send trigger signals or operates as a switch.

DeviceNet Presence for Auto ID Products

EMS' CM12 is an external device that allows an EMS RFID Antenna to interface with the PLC through ODVA's Device-Net network.

The CM12 has one HS500-Series Read/Write Antenna port in addition to one RS232 serial port, which can be used for ASCII data stream transmission and to download updated firmware. An I/O input and output are also provided for sensor control. A standard mini-connector is used for DeviceNet network connections.

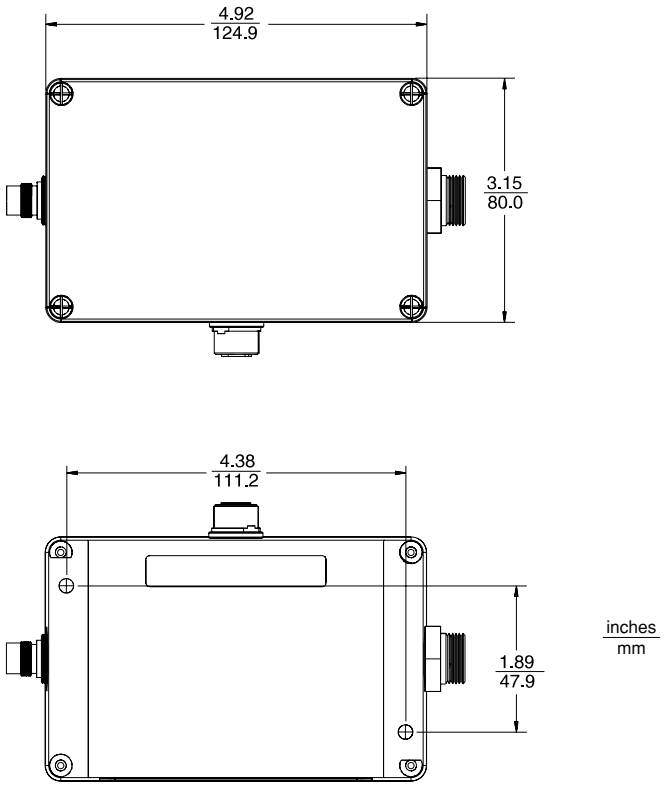
The simplified command sets are defined so Read/Write Tag commands can be easily constructed in PLC and communicated through DeviceNet. Power can either be supplied from the DeviceNet network or from an external power source.

CM11 / CM12 DeviceNet Interface Modules

CM11 DeviceNet Interface Module

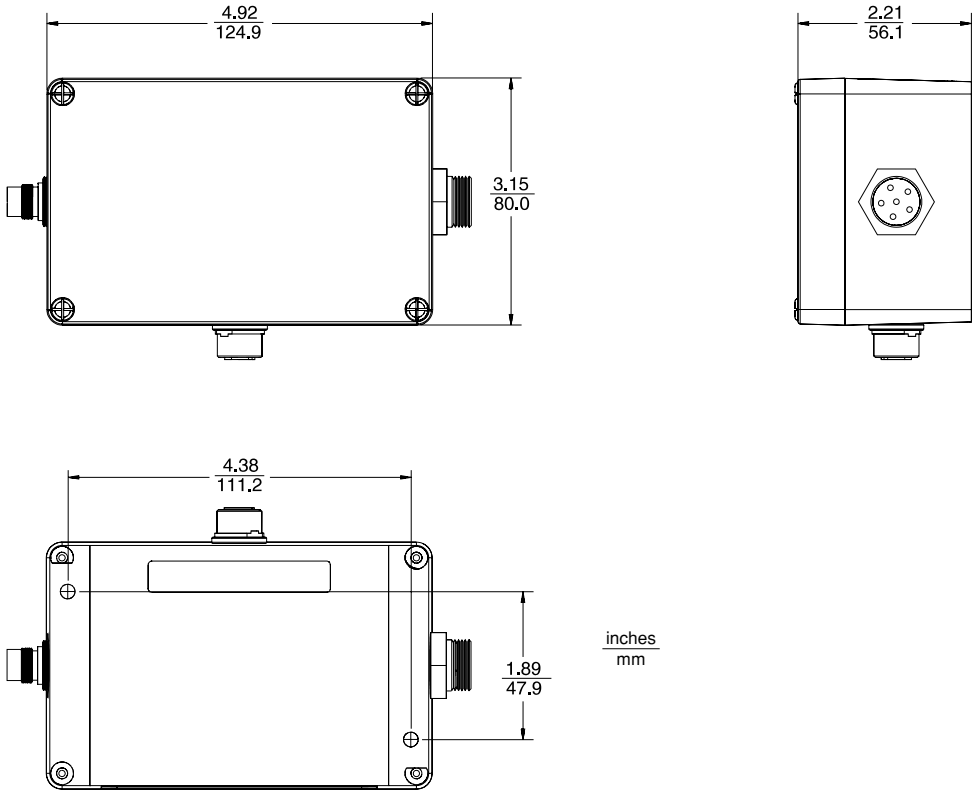
Electrical	Supply Voltage	24VDC ±15%
	Current Consumption	90mA max.@24VDC No Connected Devices
Serial Interface	Serial Port Type	RS232, RS422, RS485, Mux32
	Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200
	Parity	Odd, Even, None
	Data Bits	7 or 8
	Stop Bits	1
	Max. Cable Length	50ft. (15m) RS232 1000ft. (300m) RS422, RS485, Mux32
Mechanical Specifications	Dimensions (W x H x D)	4.92 x 3.15 x 2.21in. (125 x 80 x 56mm)
	Enclosure	Aluminum
	Cables	User Supplied
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)
Input/Output	Input	One Industrial-Level Input, 10-30VDC
	Output	One Industrial-Level Output, 10-30VDC

Mechanical Dimensions



Electrical	Supply Voltage	24VDC@250mA max
	Maximum Ripple	2% of Supply Voltage
	Current Consumption	120mA max.@24VDC with No Connected Devices 2.35mA max.@24VDC with HS500 Antenna
Serial Interface	Serial Port Type	RS232
	Baud Rate	9600
	Parity	Odd, Even, None
	Data Bits	8
	Stop Bits	1
	Max. Cable Length	50ft. (15m)
Mechanical Specifications	Dimensions (W x H x D)	4.92 x 3.15 x 2.21in. (125 x 80 x 56mm)
	Enclosure	Aluminum
	Cables	User Supplied
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 4 (IP66)
Input/Output	Input	One Industrial-Level Input, 10-30VDC
	Output	One Industrial-Level Output, 10-30VDC

Mechanical Dimensions



CM11 / CM12 DeviceNet Interface Modules

Available Models

Model	Description
CM11	DeviceNet Interface Module, HMS-Series
CM12	DeviceNet Interface Module, HS500-Series

Accessories

Model	Description
88-1001	Franklin C-Compiler for CM11 software development
CBL-1222	Programming/Debug Cable, CM11 to PC
CBL-1224	Unterminated Cable, CM11, 3 ft. length
CBL-1226	CM11 to RS427-10 Demonstration Cable, 18″ length
46-1377	Terminal Plug for AB 1747SDN DeviceNet module
00-1062	Demonstration Kit, includes: CBL-1222, CBL-1224, CBL-1226, 46-1377
46-1089	Mating Connector to RS232 port (right angle)
46-1357	Mating Connector to sensor port
46-1393	Mating Connector to DeviceNet

CM21 InterBus-S Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- High Speed PCP 2.0 Communications Protocol
- One Industrial-Level Input
- Two General Purpose Serial Ports
- LED Status Indicators
- NEMA 4 (IP65) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use with

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

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Technical Description

The CM21 InterBus-S Module is a general purpose programmable interface between the InterBus-S network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers or bar code readers/scanners (or a combination of both) on a Mux32 line. The CM21 supports InterBus-S Remote Bus with communications speeds up to 12M baud. The CM21 can be used to give a InterBus-S presence to a wide range of existing equipment, such as bar code readers, RFID controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows InterBus-S commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

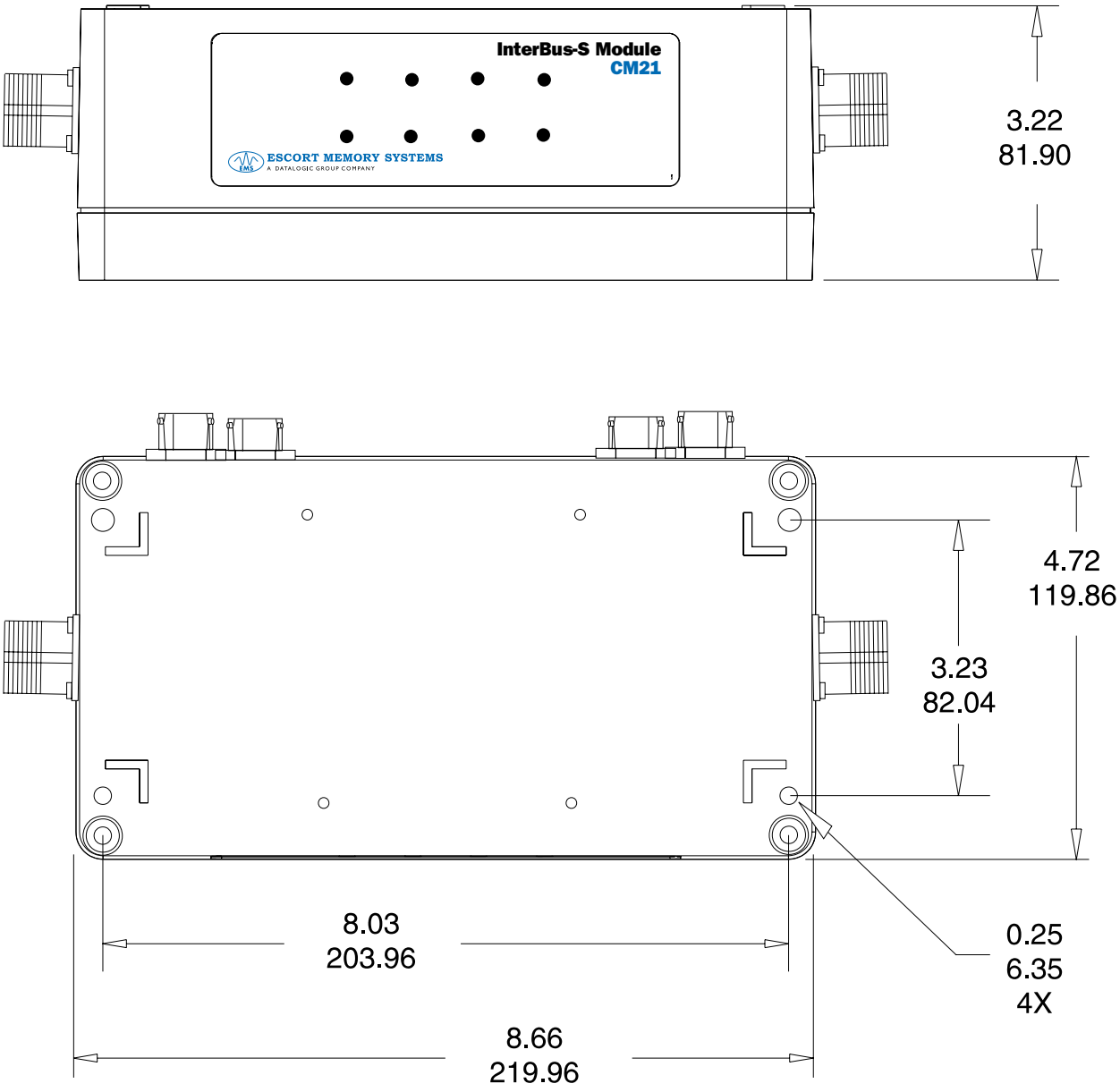
InterBus-S Presence for Auto ID Products

The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM21 is implemented as a two board set, interconnected by a stackable PC104 connector.

CM21 InterBus-S Module

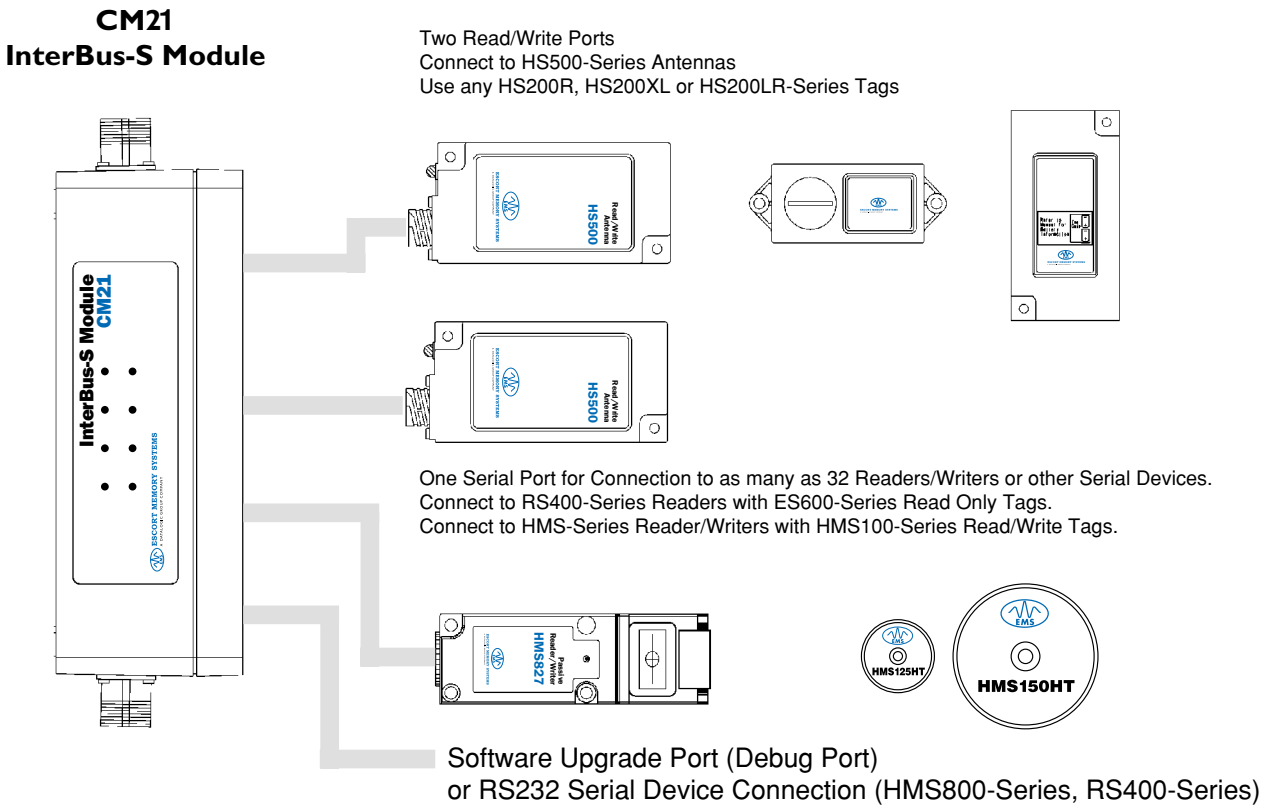
Electrical	Power Requirements From External Connector	24VDC ±15% 200mA (Module Only) 700mA (with Antennas)
Communication	InterBus-S RFID	Remote Bus or Installation Remote Bus Two EMS HS/HL-Series Antenna Ports, HMS-Series through Serial Ports
Ports	COM1 COM2 Input	RS232 RS232/RS422/RS485(Mux32 Protocol) One Industrial-Level Input, 10-30VDC
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	8.66 x 4.72 x 3.22in. (220 x 120 x 82mm) 4lbs. (1.8kg) Aluminum Alloy
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10 to 55Hz; 2 Hours Each Axis NEMA 4 (IP66)

Mechanical Dimensions



CM21 InterBus-S Module

Connections



Available Models

Model	Description
CM21	InterBus-S Module

CM31 Profibus Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM31
- One Industrial-Level Input
- LED Status Indicators
- NEMA 4 (IP65) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

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Technical Description

The CM31 Profibus Module is a general purpose programmable interface between the Profibus network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers or bar code scanners (or a combination of both) on a Mux32 line. The CM31 supports Profibus DP slave protocol with communications speeds up to 12M baud. The CM31 can be used to give a Profibus presence to a wide range of existing equipment, such as bar code readers, RFID Controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows Profibus commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

PROFIBUS PRESENCE FOR AUTO ID PRODUCTS

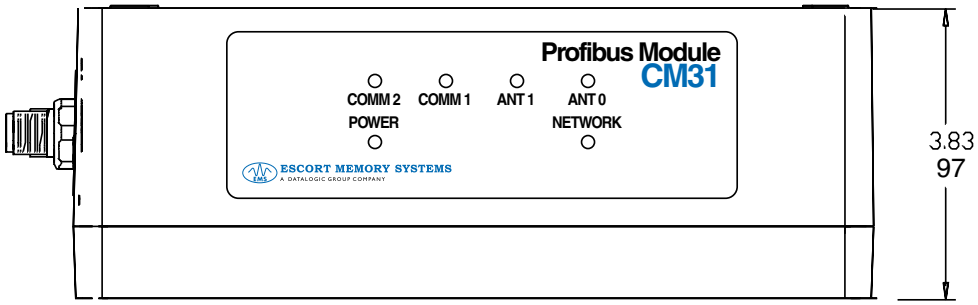
The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

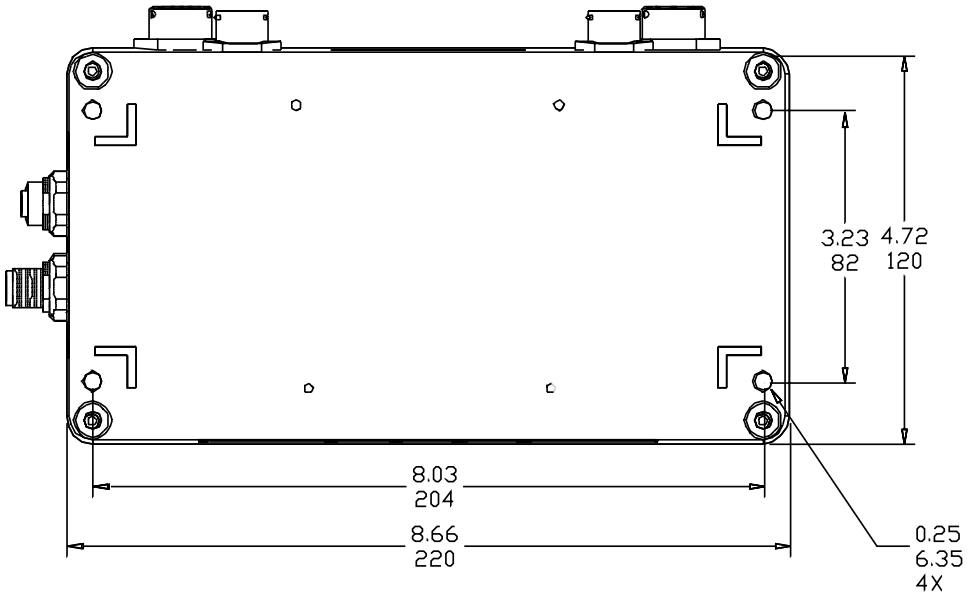
The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM31 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM31 Profibus Module

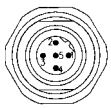
Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	Profibus RFID	DP Slave Protocol up to 12M baud Two EMS HS/HL-Series Antenna Ports, HMS-Series through Serial Ports
Ports	COM1 COM2 Input	RS232 RS232/RS422/RS485(Mux32 Protocol) One Industrial-Level Input, 10-30VDC
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	8.66 x 4.72 x 3.83in. (220 x 120 x 97mm) 3.5lbs. (1.6kg) Aluminum Alloy
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks each Axis IEC 68-2-6 Test FC 1.5mm; 10 to 55Hz; 2 Hours each Axis NEMA 4 (IP66)

Mechanical Dimensions

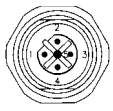




Profibus-In
5P Conn

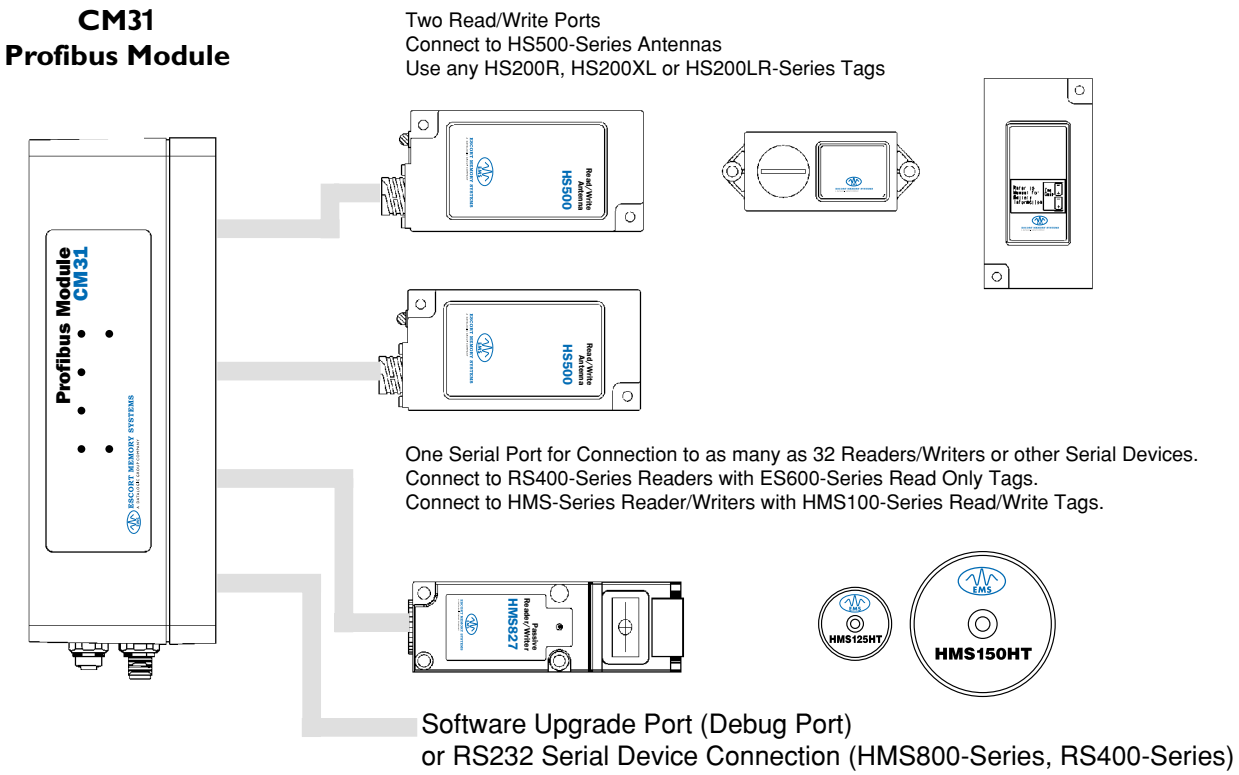


Profibus-Out
5S Conn



CM31 Profibus Module

Connections



Available Models

Model	Description
CM31	Profibus DP Communication Module, NEMA 4 (IP66)
CM32	Profibus DP Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
00-1098	Profibus 12Mbaud Termination Plug, 12mm male
CBL-1438-01	Profibus 12mm M/F Cable (1 meter length)
CBL-1438-03	Profibus 12mm M/F Cable (3 meter length)
CBL-1438-06	Profibus 12mm M/F Cable (6 meter length)
CBL-1438-30	Profibus 12mm M/F Cable (30 meter length)
CBL-1439-01	CMx1 to HS500 Cable (1 meter length)
CBL-1439-03	CMx1 to HS500 Cable (3 meter length)
CBL-1439-06	CMx1 to HS500 Cable (6 meter length)
CBL-1439-30	CMx1 to HS500 Cable (30 meter length)
46-1442	Profibus, 12mm Female, Field Mountable Connector
46-1443	Profibus, 12mm Male, Field Mountable Connector

CM32 Profibus Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM32
- Two Industrial-Level Inputs/Outputs
- LED Status Indicators
- NEMA 2 (IP31) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS485 Serial Devices
- HL-Series

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Technical Description

The CM32 Profibus Module is a general purpose programmable interface between the Profibus network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers, or bar code scanners (or a combination of both) on a Mux32 line. The CM32 supports Profibus DP slave protocol with communications speeds up to 12M baud. The CM32 can be used to give a Profibus presence to a wide range of existing equipment, such as bar code Readers, RFID Controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows Profibus commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

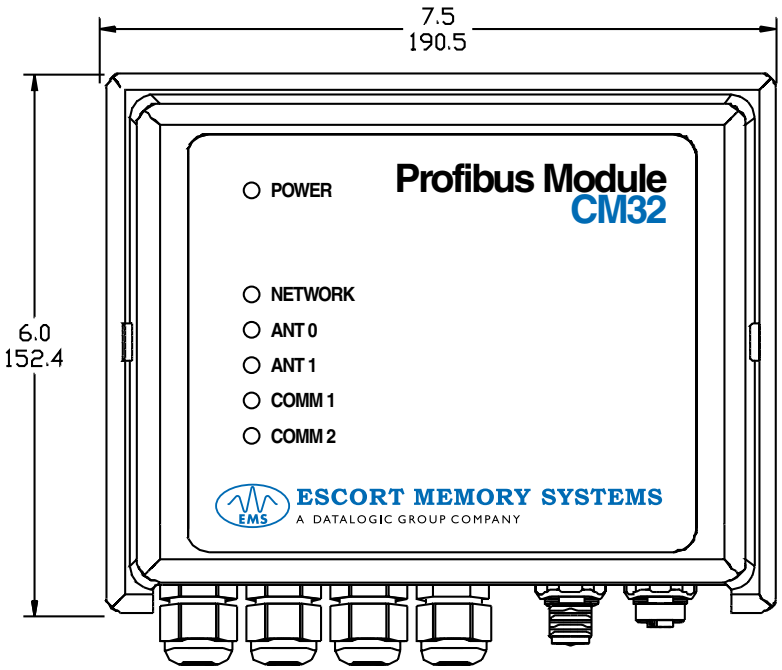
PROFIBUS PRESENCE FOR AUTO ID PRODUCTS

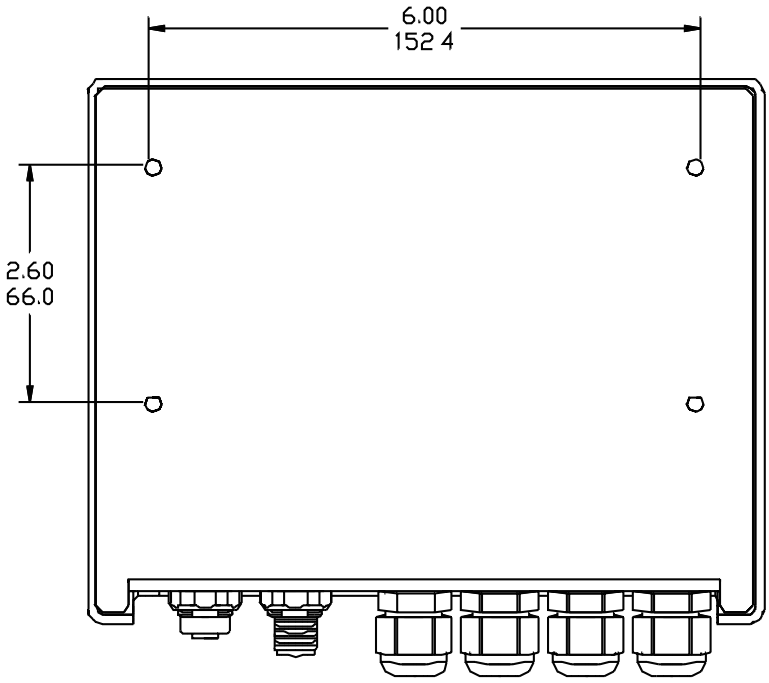
The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM32 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM32 Profibus Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	Profibus RFID	DP Slave Protocol up to 12M baud Two EMS HS/HL-Series Antenna Ports, HMS-Series Readers through Serial Ports
Ports	COM1 COM2 Input Output	RS232 RS232/RS422/RS485(Mux32 Protocol) Two Industrial-Level Inputs, 10-30VDC Two Industrial-Level Outputs, 5-30VDC@400mA Either Sourcing or Sinking
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	7.5 x 6.0 x 2.1in. (191 x 152 x 51mm) 2.0lbs. (0.9kg) ABS Shell
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 90% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10-55Hz; 2 Hours Each Axis NEMA 2 (IP31)

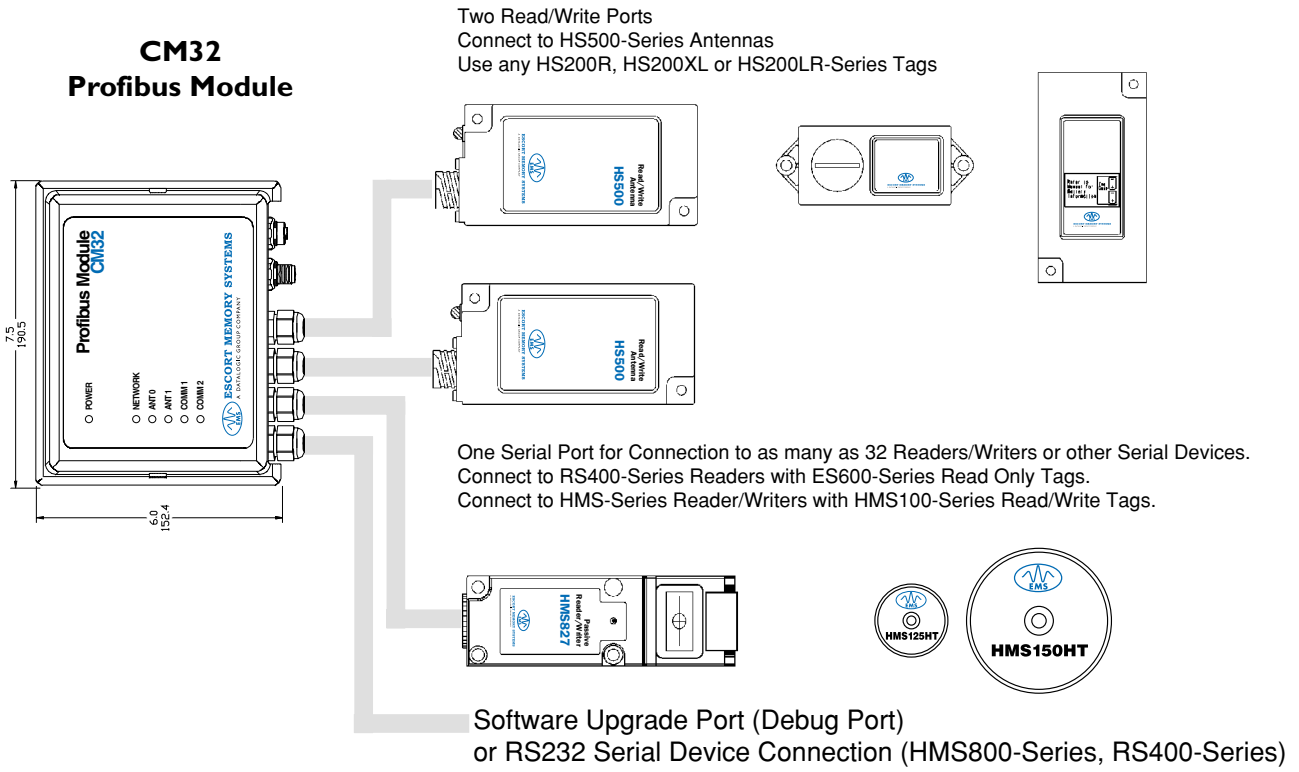
Mechanical Dimensions





CM32 Profibus Module

Connections

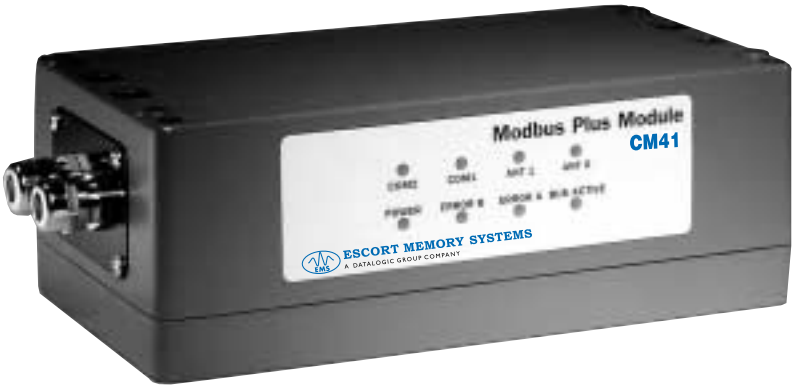


Available Models

Model	Description
CM31	Profibus DP Communication Module, NEMA 4 (IP66)
CM32	Profibus DP Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
00-1096	DIN Rail Mounting Clips (2) with screws, for use with CM32
00-1098	Profibus 12Mbaud Termination Plug, 12mm male
CBL-1438-01	Profibus 12mm M/F Cable (1 meter length)
CBL-1438-03	Profibus 12mm M/F Cable (3 meter length)
CBL-1438-06	Profibus 12mm M/F Cable (6 meter length)
CBL-1438-30	Profibus 12mm M/F Cable (30 meter length)
CBL-1440-01	CMx2 to HS500 Cable (1 meter length)
CBL-1440-03	CMx2 to HS500 Cable (3 meter length)
CBL-1440-06	CMx2 to HS500 Cable (6 meter length)
CBL-1440-30	CMx2 to HS500 Cable (30 meter length)
46-1442	Profibus, 12mm female, Field Mountable Connector
46-1443	Profibus, 12mm male, Field Mountable Connector



Schneider Alliances

CM41 Modbus Plus Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM41
- One Industrial-Level Input
- LED Status Indicators
- NEMA 4 (IP66) Enclosure
- Supports Modbus Plus Cable Redundancy at A and B Ports

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The CM41 Modbus Plus module is a general purpose programmable interface between the Modbus Plus network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers or bar code scanners (or a combination of both) on a Mux32 line.

The CM41 can be used to give a Modbus Plus presence to a wide range of existing equipment, such as bar code readers, RFID Controllers, bar code verifiers, sensors and switches. A PLC can communicate to the CM41 using the MSTR function block. An alternate form of communication is a PC-based master such as Modicon's SA85, which can use the Modicon DOS or Windows driver to communicate with the CM41.

This programmable interface is provided with a standard program that allows Modbus Plus commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions. The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

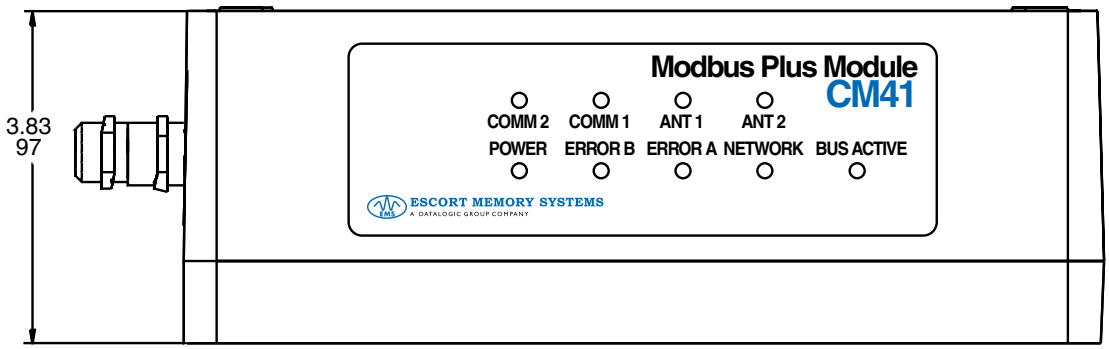
MODBUS PLUS PRESENCE FOR AUTO ID PRODUCTS

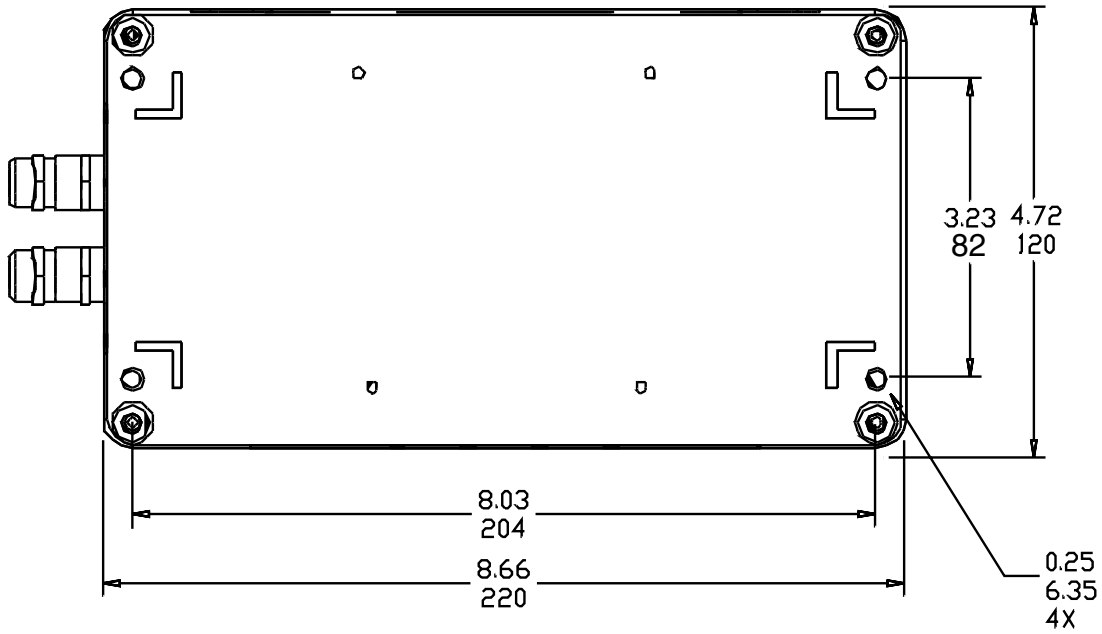
The CM41 is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as eight commands can be processed simultaneously. The CM41 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM41 Modbus Plus Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	Modbus Plus RFID	Slave Device, 16 Bit Registers, Dual Redundant Bus Two EMS HS/HL-Series Antenna Ports, HMS-Series through Serial Ports
Ports	COM1 COM2 Input	RS232 RS232/RS422/RS485(Mux32 Protocol) One Industrial-Level Input, 10-30VDC
Mechanical Specifications	Dimensions (L x W x H) Weight Enclosure	8.66 x 4.72 x 3.83in. (220 x 120 x 97mm) 3.5lbs. (1.6kg) Aluminum Alloy
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 90% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10-55Hz; 2 Hours Each Axis NEMA 4 (IP66)

Mechanical Dimensions



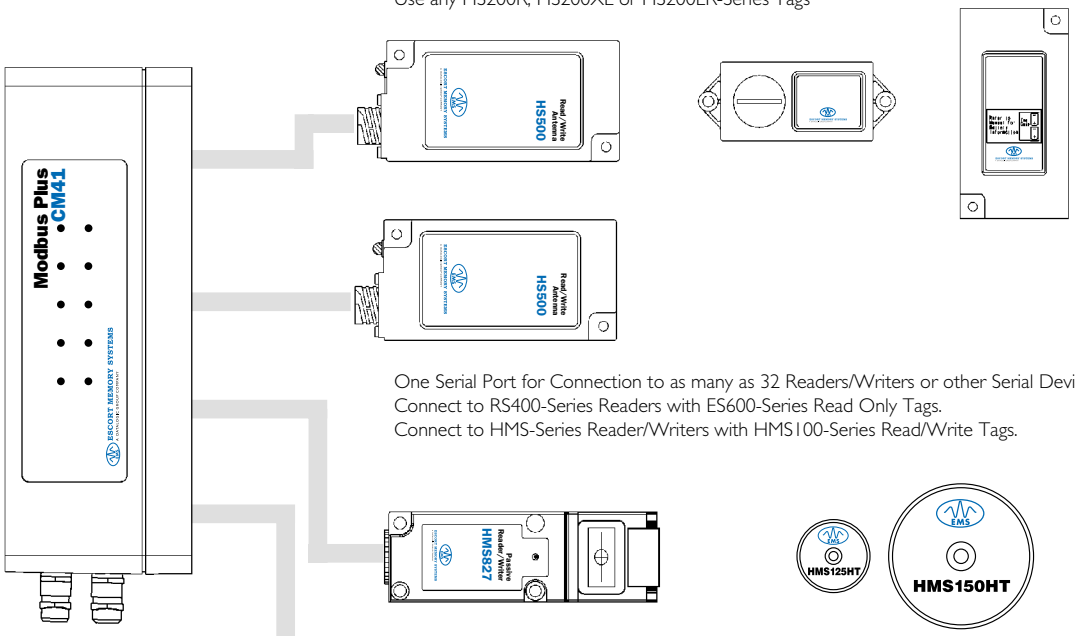


CM41 Modbus Plus Module

Connections

CM41
Modbus Plus Module

Two Read/Write Ports
Connect to HS500-Series Antennas
Use any HS200R, HS200XL or HS200LR-Series Tags



One Serial Port for Connection to as many as 32 Readers/Writers or other Serial Devices.
Connect to RS400-Series Readers with ES600-Series Read Only Tags.
Connect to HMS-Series Reader/Writers with HMS100-Series Read/Write Tags.

Software Upgrade Port (Debug Port)
or RS232 Serial Device Connection (HMS800-Series, RS400-Series)

Available Models

Model	Description
CM41	Modbus Plus Communication Module, NEMA 4 (IP66)
CM42	Modbus Plus Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
CBL-1439-01	CM41 to HS500 Cable (1 meter length)
CBL-1439-03	CMx1 to HS500 Cable (3 meter length)
CBL-1439-06	CMx1 to HS500 Cable (6 meter length)
CBL-1439-30	CMx1 to HS500 Cable (30 meter length)

CM42 Modbus Plus Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM42
- Two Industrial-Level Inputs/Outputs
- LED Status Indicators
- NEMA 2 (IP31) Enclosure
- Modbus Plus Slave Device
- DIN Rail Mounting

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The CM42 Modbus Plus Module is a general purpose programmable interface between the Modbus Plus network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers or bar code scanners (or a combination of both) on a Mux32 line.

The CM42 can be used to give a Modbus Plus presence to a wide range of existing equipment, such as bar code readers, RFID controllers, bar code verifiers, sensors and switches. A PLC can communicate to the CM42 using the MSTR function block. An alternate form of communication is a PC-based master such as Modicon's SA85, which can use the Modicon DOS or Windows driver to communicate with the CM42.

This programmable interface is provided with a standard program that allows Modbus Plus commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions. The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

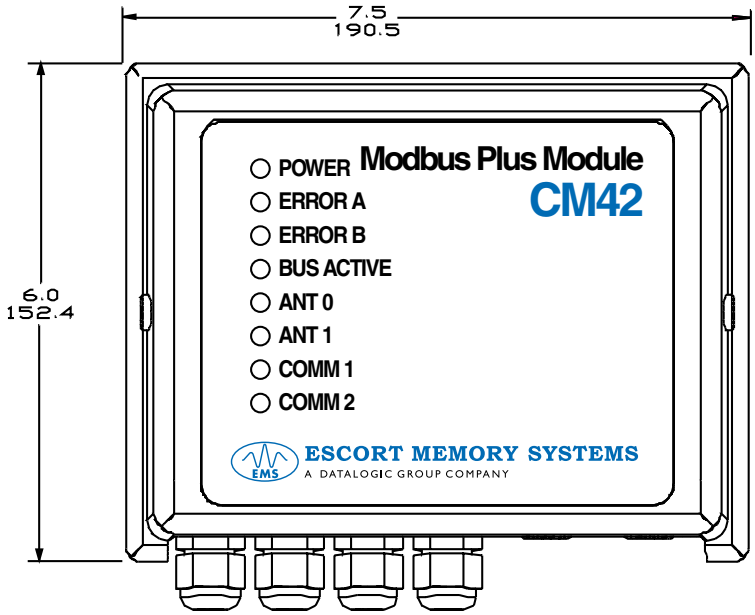
MODBUS PLUS PRESENCE FOR AUTO ID PRODUCTS

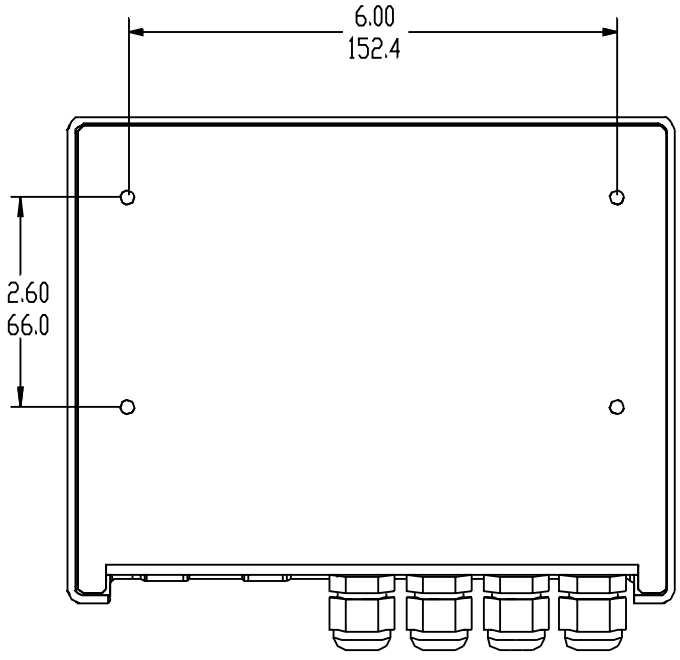
The CM42 is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as eight commands can be processed simultaneously. The CM42 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM42 Modbus Plus Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	Modbus Plus RFID	Slave Device, 16 Bit Registers, Dual Redundant Bus Two EMS HS/HL-Series Antenna Ports, HMS-Series through Serial Ports
Ports	COM1 COM2 Input Output	RS232 RS232/RS422/RS485(Mux32 Protocol) Two Industrial-Level Inputs, 10-30VDC Two Industrial-Level Outputs, 5-30VDC@400mA Either Sourcing or Sinking
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	7.5 x 6.0 x 2.1in. (191 x 152 x 51mm) 2.0lbs. (0.9kg) ABS Shell
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 90% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10-55Hz; 2 Hours Each Axis NEMA 2 (IP31)

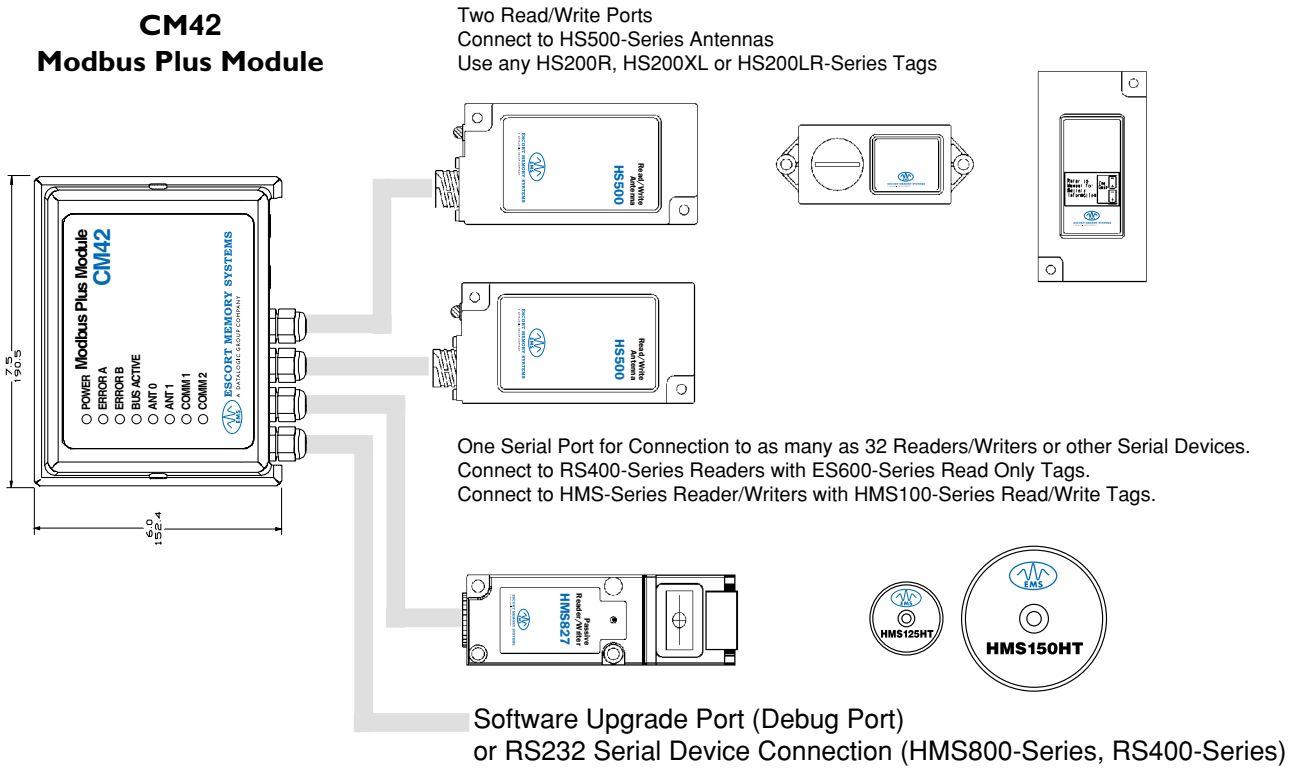
Mechanical Dimensions





CM42 Modbus Plus Module

Connections



Available Models

Model	Description
CM41	Modbus Plus Communication Module, NEMA 4 (IP66)
CM42	Modbus Plus Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
00-1096	DIN Rail Mounting Clips (2) with screws, for use with CM42
CBL-1440-01	CMx2 to HS500 Cable (1 meter length)
CBL-1440-03	CMx2 to HS500 Cable (3 meter length)
CBL-1440-06	CMx2 to HS500 Cable (6 meter length)
CBL-1440-30	CMx2 to HS500 Cable (30 meter length)

ROCKWELL AUTOMATION
ENCOMPASS™
AMERICAS · EUROPEAN PARTNER

CM52 Remote I/O Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM52
- Two Industrial-Level Inputs/Outputs
- LED Status Indicators
- NEMA 2 (IP31) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The CM52 is a general purpose programmable interface between the Allen-Bradley Remote I/O network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers, or bar code scanners (or a combination of both) on a Mux32 line. The CM52 can be used to give a Remote I/O presence to a wide range of existing equipment, such as bar code Readers, RFID Controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows Remote I/O commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

REMOTE I/O PRESENCE FOR AUTO ID PRODUCTS

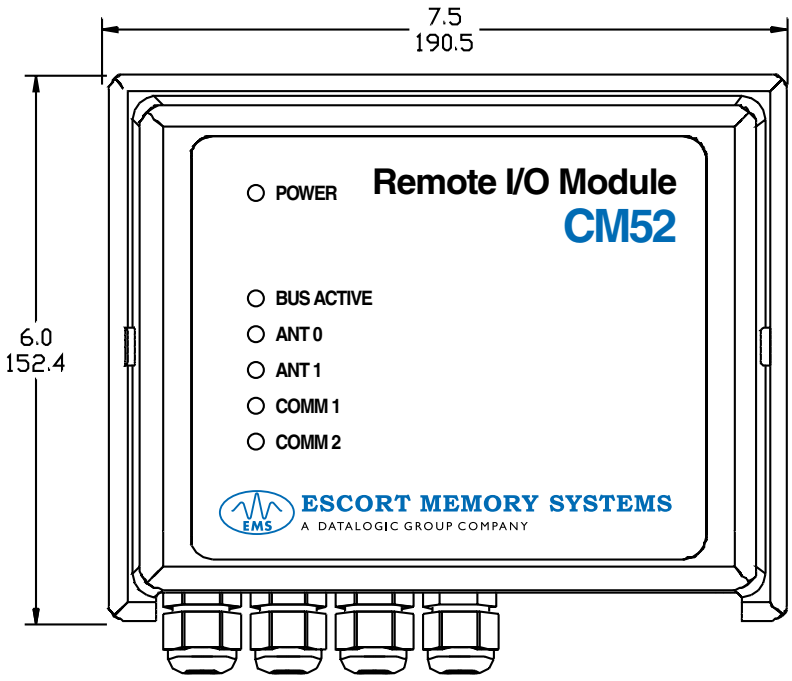
The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

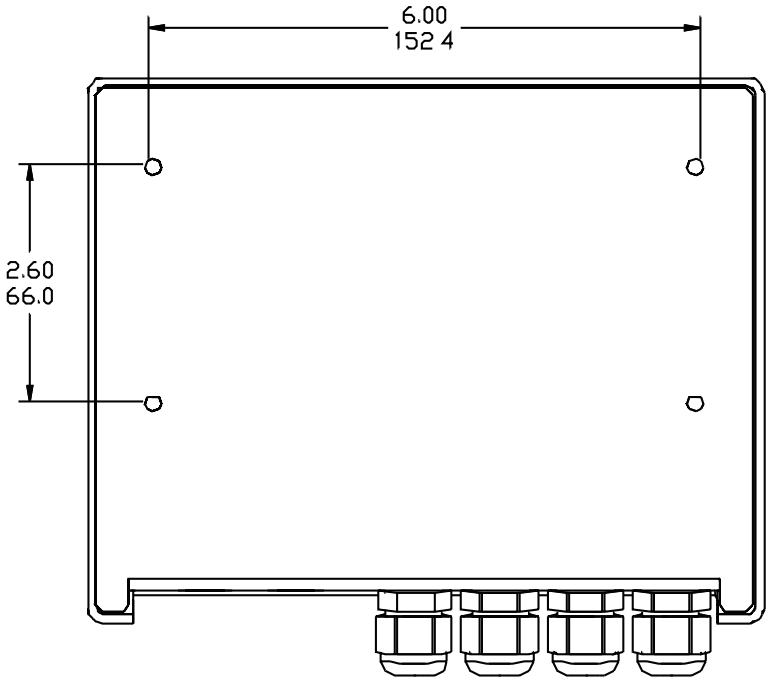
The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM52 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM52 Remote I/O Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	Interface RFID	A-B Remote I/O Two EMS HS/HL-Series Antenna Ports, HMS-Series Readers through Serial Ports
Ports	COM1 COM2 Input Output	RS232 RS232/RS422/RS485(Mux32 Protocol) Two Industrial-Level Inputs, 10-30VDC Two Industrial-Level Outputs, 5-30VDC@400mA Either Sourcing or Sinking
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	7.5 x 6.0 x 2.1in. (191 x 152 x 51mm) 2.0lbs. (0.9kg) ABS Shell
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 90% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10-55Hz; 2 Hours Each Axis NEMA 2 (IP31)

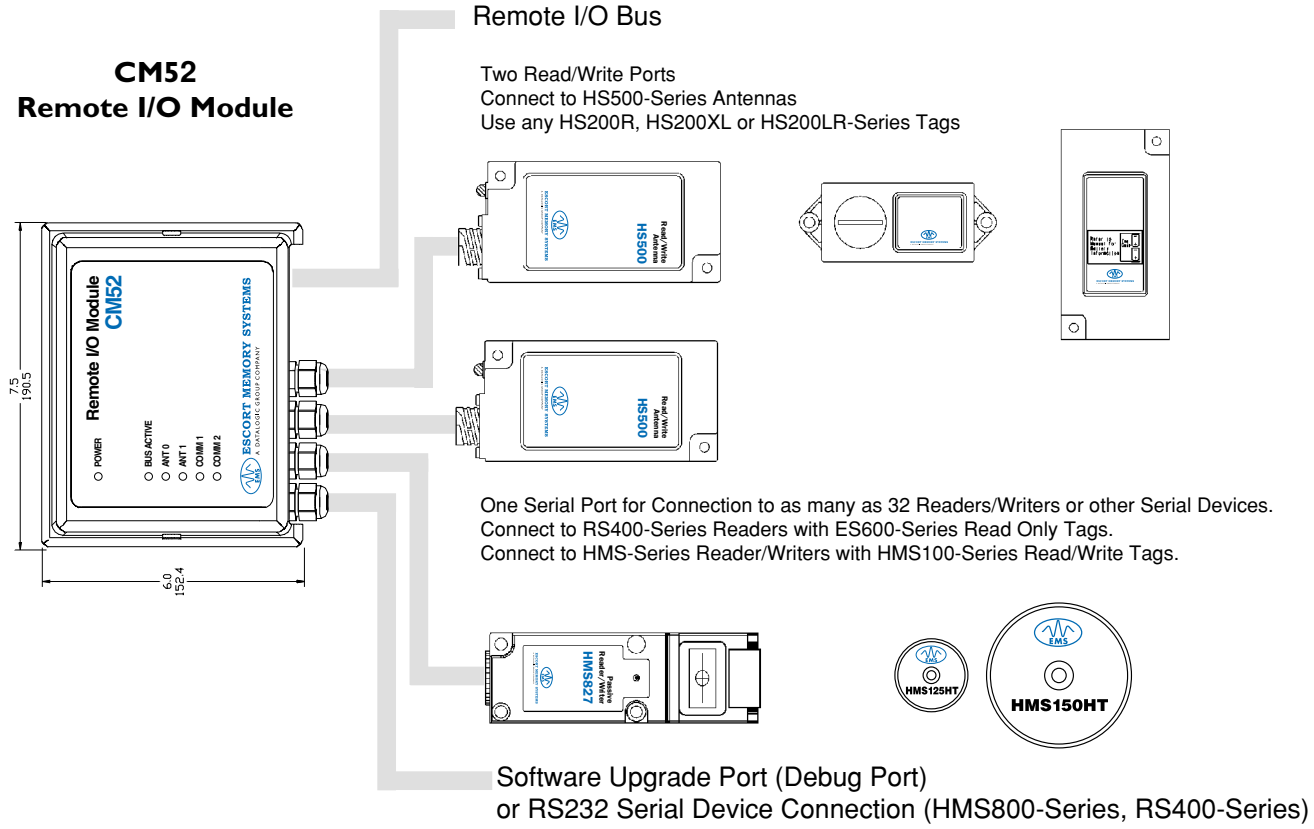
Mechanical Dimensions





CM52 Remote I/O Module

Connections



Available Models

Model	Description
CM52	Remote I/O Module, NEMA 2 (IP31)

Accessories

Model	Description
00-1096	DIN Rail Clips with Screws
30-1022	Mating Connector Remote I/O Bus

ControlNet™

CM81 ControlNet Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM81
- One Industrial-Level Input
- LED Status Indicators
- NEMA 4 (IP66) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The CM81 ControlNet Module is a general purpose programmable interface between the ControlNet network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers or bar code scanners (or a combination of both) on a Mux32 line. The CM81 supports ControlNet with a variable mix of baud. The CM81 can be used to give a ControlNet presence to a wide range of existing equipment, such as bar code readers, RFID Controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows ControlNet commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

CONTROLNET PRESENCE FOR AUTO ID PRODUCTS

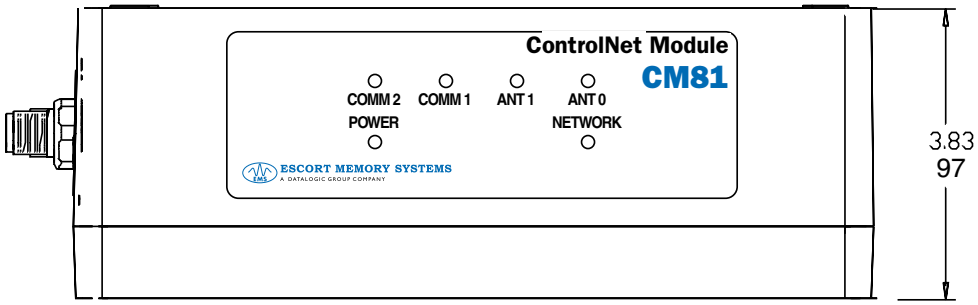
The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

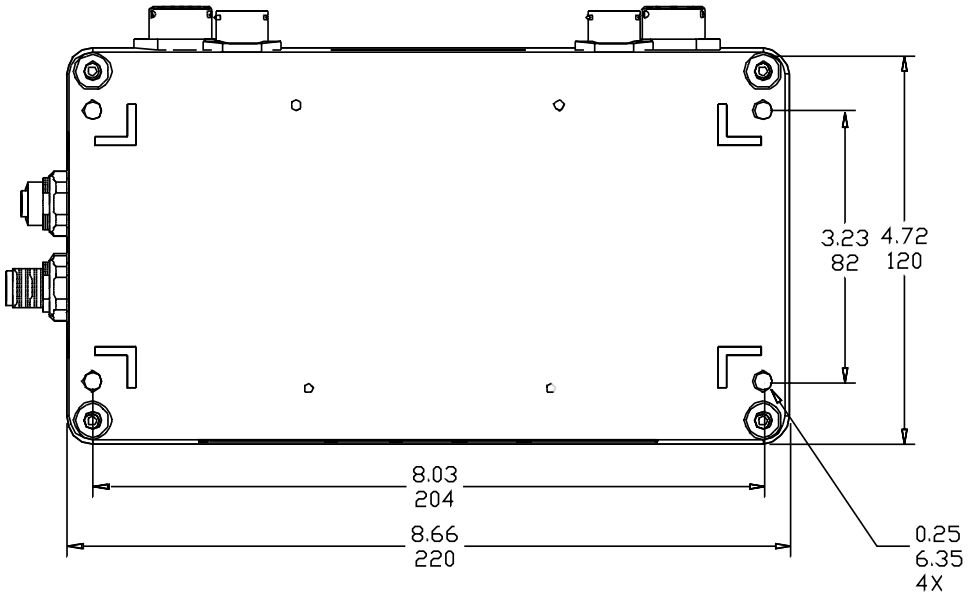
The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM81 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM81 ControlNet Module

Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	RFID	Two EMS HS/HL-Series Antenna Ports, HMS-Series through Serial Ports
Ports	COM1 COM2 Input	RS232 RS232/RS422/RS485(Mux32 Protocol) One Industrial-Level Input, 10-30VDC
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	8.66 x 4.72 x 3.83in. (220 x 120 x 97mm) 3.5lbs. (1.6kg) Aluminum Alloy
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 95% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks each Axis IEC 68-2-6 Test FC 1.5mm; 10 to 55Hz; 2 Hours each Axis NEMA 4 (IP66)

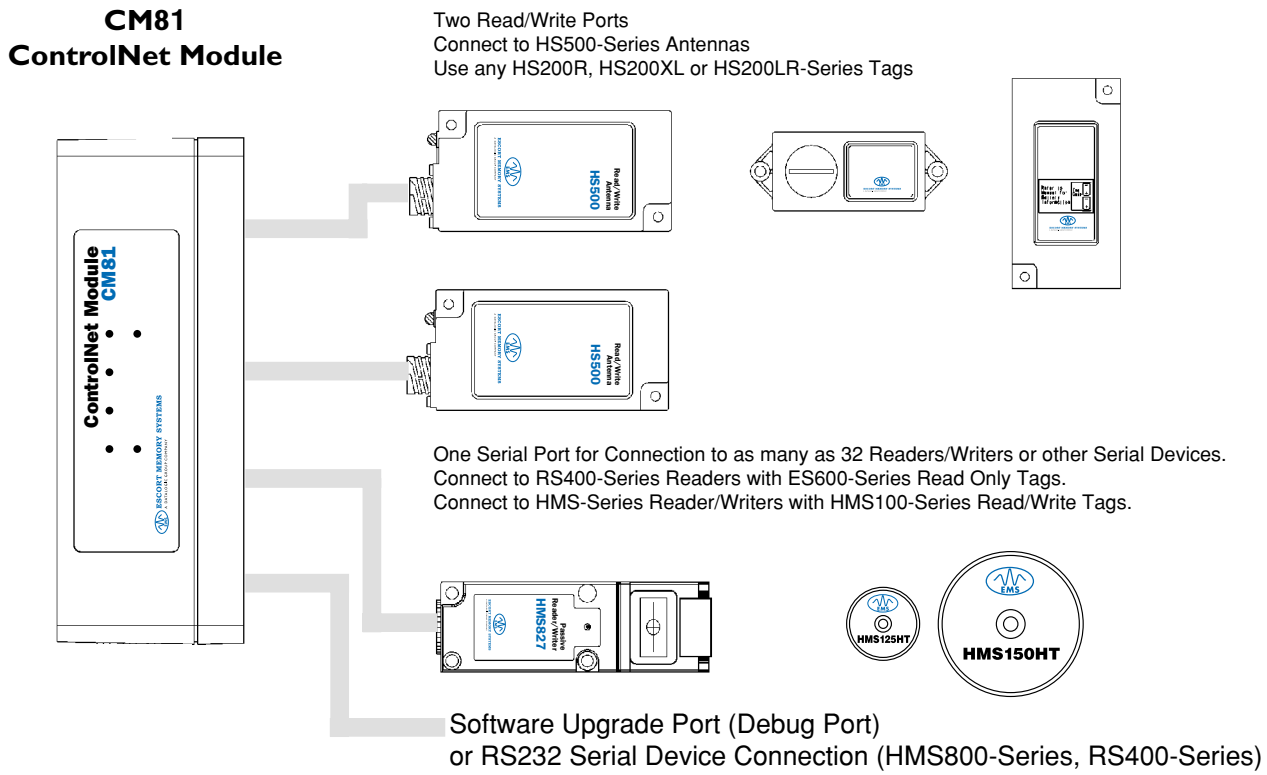
Mechanical Dimensions





CM81 ControlNet Module

Connections

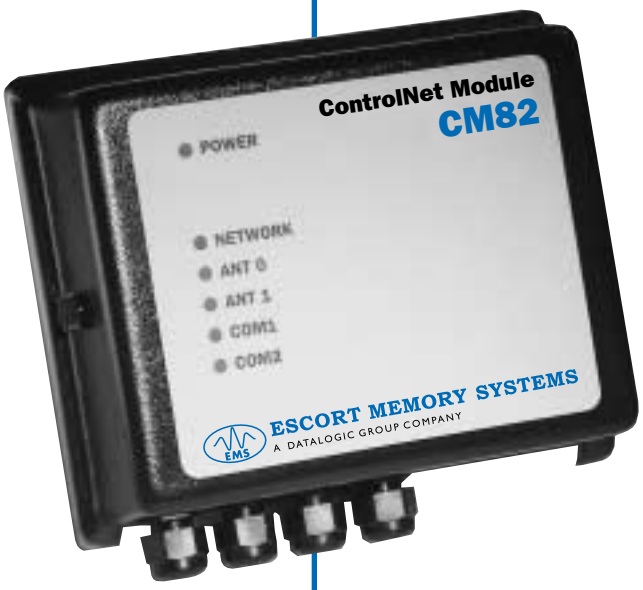


Available Models

Model	Description
CM81	ControlNet Communication Module, NEMA 4 (IP66)
CM82	ControlNet Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
10-7268	Connector Kit (CMx1)
CBL-1439-01	CMx1 to HS500 Cable (1 meter length)
CBL-1439-03	CMx1 to HS500 Cable (3 meter length)
CBL-1439-06	CMx1 to HS500 Cable (6 meter length)
CBL-1439-30	CMx1 to HS500 Cable (30 meter length)



ControlNet™

CM82 ControlNet Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM82
- Two Industrial-Level Inputs/Outputs
- LED Status Indicators
- NEMA 2 (IP31) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS485 Serial Devices
- HL-Series

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Technical Description

The CM82 ControlNet Module is a general purpose programmable interface between the ControlNet network and up to two HS/HL500-Series Antennas, or as many as 32 HMS-Series Reader/Writers, RS-Series Readers, or bar code scanners (or a combination of both) on a Mux32 line. The CM82 supports ControlNet with a variable mix of baud. The CM82 can be used to give a ControlNet presence to a wide range of existing equipment, such as bar code Readers, RFID Controllers, bar code verifiers, sensors and switches.

This programmable interface is provided with a standard program that allows ControlNet commands to control the reading and writing of a block (or non-contiguous blocks) of data, Mux32 connection status, serial inputs/outputs, and Tag fill functions.

The standard program can readily be modified by EMS. For special applications; contact your EMS representative.

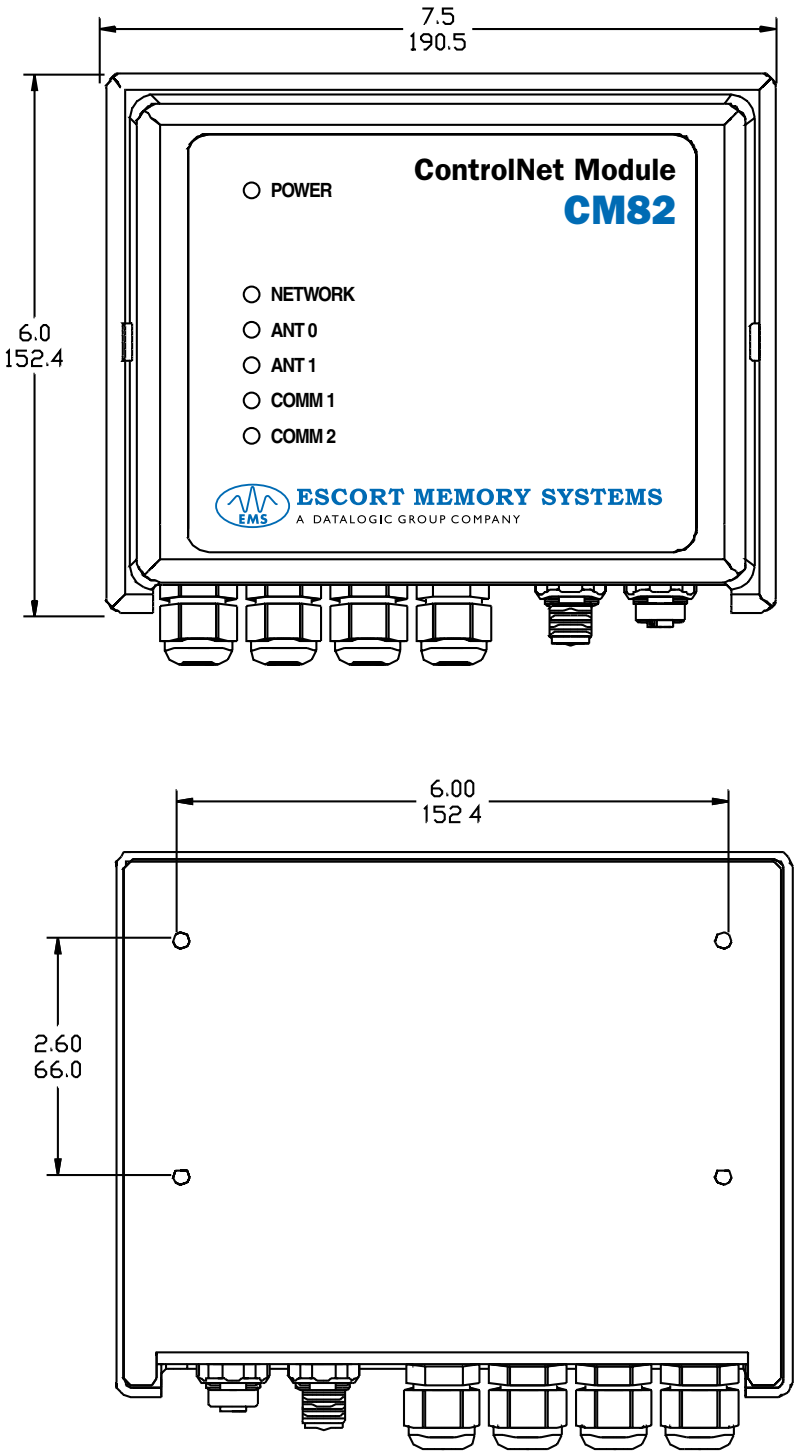
CONTROLNET PRESENCE FOR AUTO ID PRODUCTS

The module is based on a real-time, DOS compatible operating system providing great speed and flexibility. As many as four commands can be processed simultaneously. The CM82 is implemented as a two board set, interconnected by a stackable PC104 Connector.

CM82 ControlNet Module

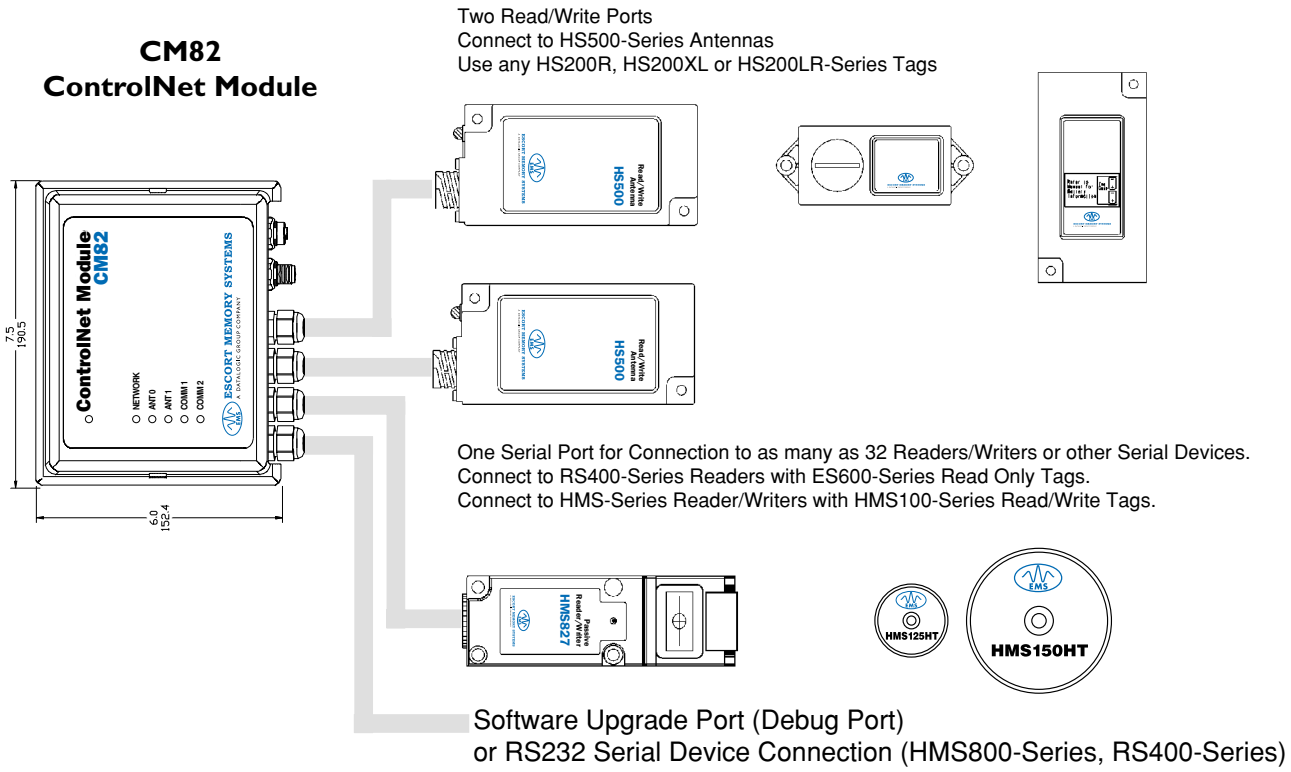
Electrical	Power Requirements From External Connector	24VDC ±15% 350mA (Module Only) 900mA (with Antennas)
Communication	RFID	Two EMS HS/HL-Series Antenna Ports, HMS-Series Readers through Serial Ports
Ports	COM1 COM2 Input Output	RS232 RS232/RS422/RS485(Mux32 Protocol) Two Industrial-Level Inputs, 10-30VDC Two Industrial-Level Outputs, 5-30VDC@400mA Either Sourcing or Sinking
Mechanical Specifications	Dimensions (W x H x D) Weight Enclosure	7.5 x 6.0 x 2.1in. (191 x 152 x 51mm) 2.0lbs. (0.9kg) ABS Shell
Environment	Operating Temperature Storage Temperature Humidity Shock Resistance Vibration Resistance Protection Class	32° to 120°F (0° to 49°C) -4° to 158°F (-20° to 70°C) 90% Non-Condensing IEC 68-2-27 Test EA 30g; 11ms; 3 Shocks Each Axis IEC 68-2-6 Test FC 1.5mm; 10-55Hz; 2 Hours Each Axis NEMA 2 (IP31)

Mechanical Dimensions



CM82 ControlNet Module

Connections



Available Models

Model	Description
CM81	ControlNet DP Communication Module, NEMA 4 (IP66)
CM82	ControlNet DP Communication Module, NEMA 2 (IP31)

Accessories

Model	Description
CBL-1440-01	CMx2 to HS500 Cable (1 meter length)
CBL-1440-03	CMx2 to HS500 Cable (3 meter length)
CBL-1440-06	CMx2 to HS500 Cable (6 meter length)
CBL-1440-30	CMx2 to HS500 Cable (30 meter length)

Schneider Alliances

CM900 Automatic ID Module

Features

- Direct Connection to the Modicon Compact Backplane and Micro I/O Expansion Bus
- Two Serial Ports for Interface to Bar Code Scanners or other Serial Devices
- Flexible Standard Program to Eliminate Most Custom Programming Needs
- C Programmable for Custom/Unique Applications
- 32KB of Battery-Backed RAM
- 32KB EEPROM

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The CM900 Automatic ID module, developed together with Modicon through the ModConnect Partners program, allows all serial devices as well as bar code and Read/Write Radio Frequency Identification (RFID) products, to be connected directly to the Modicon Compact series backplane and Micro I/O expansion bus. The CM900 expands the role of the Compact PLC by adding ASCII data handling capability.

In addition to the backplane interface, the CM900 has two serial ports and an RFID Antenna port.

The CM900 Module comes to the end-user already loaded with a standard program that allows the user to access all the CM900 functionality while remaining within the PLC programming environment.

The RFID command set of the standard program allows the user to perform the following functions: Fill Tag, Block Read/Writes and Non-Contiguous Read/Writes. Custom programs can be easily developed by using the development package.

Technical Description

The CM900 achieves high data exchange rates by utilizing an advanced high speed microprocessor. The master microprocessor executes the application program while communicating with the PLC backplane. The system has 32KB of battery-backed RAM for storage of run-time variables, pointers, tables, and in-process data transactions. The application program is stored on an ultra-reliable 32KB EEPROM. This combination of high speed microprocessor and large memory capacity allows the CM900 to internally handle serial and RFID transactions and simply pass the requested registers of data to the host PLC processor.

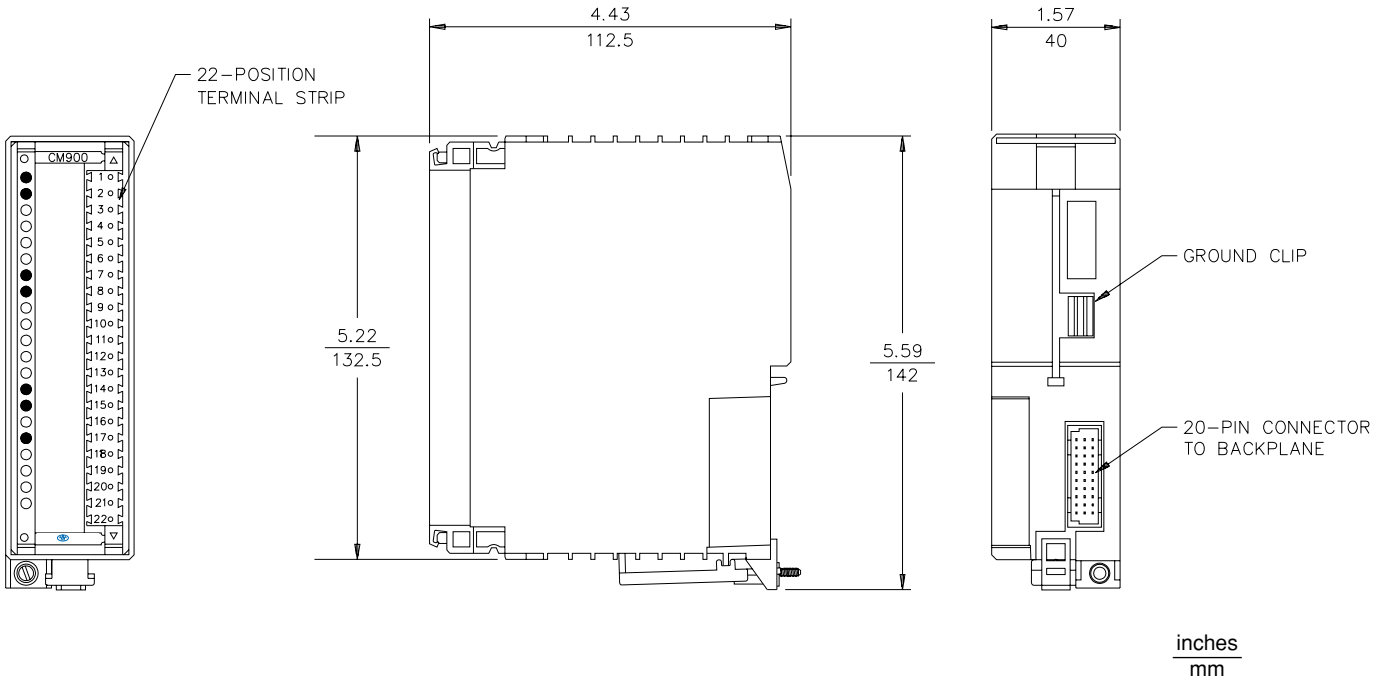
Data Transfer Rate of 3,000/Bytes Per Second

The RFID Antenna port is compatible with all EMS' HS/HL-Series Antennas. The electrical interface to the Antenna is similar to RS422 and uses two twisted pairs with a maximum cable length of 4000 feet. This interface has an effective data transfer rate to the RFID Tag of 3000 bytes per second.

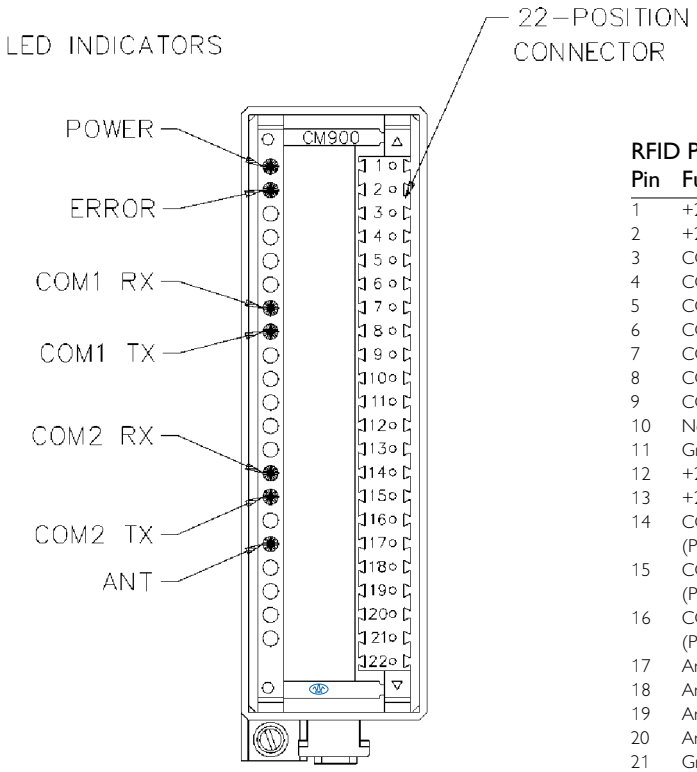
CM900 Automatic ID Module

Electrical	**Backplane—Supplied by PLC**	
	Supply Voltage	5VDC ±5%
	Maximum Current	250mA
	Front End—External Supply Required	
	Supply Voltage	24VDC ±15%
	Maximum Current	250mA (without Antenna) 750mA (with Antenna)
	Maximum Ripple	2.0% of DC Voltage
Communication		Modicon Compact PLC, Direct – Connect to Backplane and Micro I/O Expansion Bus
Ports	COM1	RS232/RS422
	COM2	RS232
	RFID Port Name	ANT
	Maximum Cable Length	4000ft. (1200m)
Internal Memory	Master Microprocessor	32KB Battery-Backed Static RAM
	Application Program Storage	32KB EEPROM, 2KB Used by System
Interface to Serial Devices	Serial Port Names	COM1, COM2 (Programming/Debug)
	Compatibility	EMS Bar Code Scanners Any Third-party External Serial Device
	Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200
	Parity	None, Odd, Even
	Data Bits	7 or 8
	Stop Bits	1 or 2
Interface to Modicon Backplane	Traffic-Cop Compatibility	CM900 for 6-Register Transfer Requiring 96 Inputs and 96 Outputs
	SP1004 Loadable	PLC Function Block Allows Transfer of 1-127 Registers of Data Between PLC and CM900
Mechanical Specifications	Dimensions (W x H x D)	4.43 x 5.59 x 1.57in. (113 x 142 x 40mm)
	Weight	0.62lbs. (0.304kg)
	Connectors	(2) 11-Position Plug-in Terminal Strips (Mating Connector Furnished)
	Backplane	Direct Plug-in to Modicon Compact PLC Housings
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Shock Resistance	30G for 11ms
	Vibration Resistance	30G at 3-500Hz for 23 Minutes Per Plane, 1 Octave/Minute in All Three Planes
	Altitude	15,000ft. (4,540m), Per MIL-STD-810, Method 500.2, Low Pressure
	ESD Immunity	8kV to All Surfaces, Per IEC 801-2, Level Tests
	Magnetic Immunity	Per IEC 801-3, Level 3
	Noise Emissions	FCC Part 15, Subpart B, Class A; CDC Class B

Mechanical Dimensions



Serial Port Connectors Electrical Connections



RFID Port/Power Pinouts

Pin	Function
1	+24 VDC
2	+24 VDC
3	COM 1 RS422 RX+
4	COM 1 RS422 RX-
5	COM 1 RS422 TX+
6	COM 1 RS422 TX-
7	COM 1 RS232 RX
8	COM 1 RS232 TX
9	COM 1 RS232 GND
10	No Connection
11	Ground
12	+24 VDC
13	+24 VDC
14	COM2 RS232 RX (Programming Port)
15	COM2 RS232 TX (Programming Port)
16	COM2 Signal Ground (Programming Port)
17	Antenna, Pin 1
18	Antenna, Pin 2
19	Antenna, Pin 3
20	Antenna, Pin 4
21	Ground
22	Ground

CM900 Automatic ID Module

Available Models

Model	Description
CM900	Automatic ID Module for Compact and Micro-Series PLCs. Mating Connectors Included. Requires SP1004 to Run Standard Program.

Accessories

Model	Description
SP1011-LIB	Software Manual and Libraries for Use in Developing Custom Application Programs for the CM900 Auto ID Module. Diskette Includes Libraries and Standard Program Source Code. Does Not Include Compiler, Tools or Compiler Manual.
88-1001	Franklin C Compiler for CM900 Software Development.
SP1004	Software Loadable Program for most Models of the Modicon 984 CPU (Excluding 984-A,-B,-X) and most Models of the Modicon Compact Series, (Excluding Compact CPU - 120 Models). Required to Run Standard Program.
CBL-1182	Demonstration Cable Set. Includes Two 10′ Long RS232 Connection Cables to the Main (DB-25S) and Programming Ports (DE-9P), 10′ Long Connection Cable for HS500/HS501 Antenna, and 24VDC Wall Mount Power Supply. Terminal Strip Connectors Included.
CBL-1183	Demonstration Cable Set. Includes Two 10′ Long RS232 Connection Cables to the Main (DB-25S) and Programming Ports (DE-9P), 10′ Long Connection Cable for HS / HL500A / HS / HL501A Antenna, and 24VDC Wall Mount Power Supply. Terminal Strip Connectors Included.
CBL-1184	Cable Assembly, PC AT-to-CM900 Programming Cable, 10′ long, DE-9P to Terminal Strip. Includes Power Supply.
CBL-1185	Cable Assembly, PC XT-to-CM900 Programming Cable, DB-25S to Terminal Strip. Includes Power Supply. 10′ Long.
46-1285	Connector Assembly, CM900, for Connection to Pins 12-22
46-1286	Connector Assembly, CM900, for Connection to Pins 1-11

CM1000 Automatic ID PLC Module

Features

- Controls up to Four Read/Write RFID Antennas
- Eight Serial Ports for Interface to Bar Code Scanners or Other Serial Interface Devices
- C Programmable
- Three Microprocessors for Maximum Performance
- 32KB Battery-Backed RAM for System Storage
- 32KB EEPROM for Program Storage
- 32KB Serial Buffer
- Direct Connection to Modicon 800-Series I/O Products

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The CM1000 Module, developed together with AEG Modicon, allows all serial devices as well as bar code and Read/Write Radio-Frequency Identification (RFID) products to be connected directly to the backplane of Modicon 800-Series I/O Housings. In addition to four RFID ports for connection to EMS RFID Antennas, eight serial ports have been incorporated to allow direct connection with bar code scanners or third-party serial interface devices.

The CM1000 can be operated with a standard interface program (included with the module) and a software loadable function block which is available from EMS. Alternatively, the Module can be custom-programmed by the user using the optional C language development system. The development system allows the application program to modify the data before it is passed to the PLC backplane and to fully control the routing of data to and from the RFID or serial ports.

Technical Description

The CM1000 achieves high data exchange rates by using three independent high-speed microprocessors in an advanced multiprocessor architecture. A master microprocessor executes the standard program or the user written application program while communicating with the backplane and with the two slave microprocessors. The master microprocessor system provides 32KB of battery backed RAM for storage of run-time variables, pointers, and in-process data transactions, as well as 32KB of ultra-reliable non-volatile EEPROM for program storage.

DIRECT CONNECTION TO MODICON PLC'S

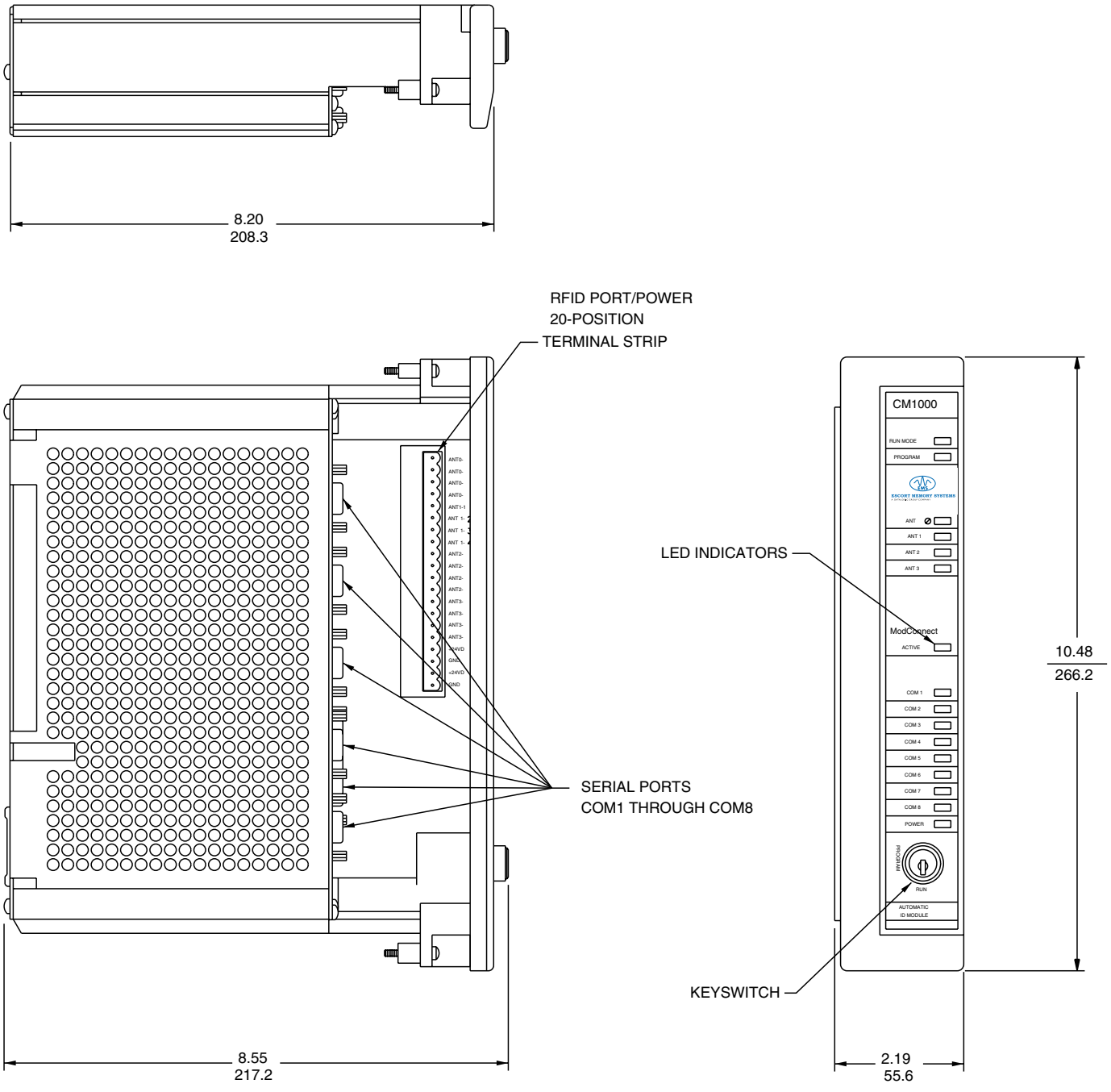
The RFID slave microprocessor is dedicated to communications with the RFID data collection ports. The use of a separate microprocessor for this function insures maximum performance. The RFID subsystem has its own 32KB of RAM for data buffering and a dual port RAM for communication with the master microprocessor, and can control up to four Read/Write Antennas. Connection to the RFID Antennas is via a Phoenix-type plug-in terminal strip.

The second slave microprocessor system is dedicated to control of the eight bi-directional serial ports, which can be used to interface to bar code scanners or other serial interface devices. Each serial port is software-selectable for RS232 or RS422 interfaces.

CM1000 Automatic ID PLC Module

Electrical	**Backplane—Supplied by PLC**	
	Supply Voltage	5VDC ±5%
	Maximum Current	500mA
	Front End—External Supply Required	
	Supply Voltage	24VDC ±15%
	Maximum Current	500mA
	Maximum Ripple	2.0% of DC voltage
Internal Memory	Serial Port Buffer	32KB Static RAM, 2KB for Each Receive Channel
	RFID Port Buffer	32KB Static RAM
	Master Microprocessor	32KB Battery-Backed Static RAM
	Application Program Storage	32KB EEPROM, 2K Used by System
Communication		Modicon 800-Series I/O, Direct-Connect to OURBUS Backplane Modicon OURBUS Proprietary Interface
Ports	COM1	RS232/RS422
	COM2	RS232
	RFID Port Name	ANT
Interface to RFID Devices	Compatibility	All EMS Read/Write RFID Antennas
	Maximum Cable Length	4000ft. (1200m)
Interface to Serial Devices	Serial Port Names	COM1 through COM8
	Interface	RS232, RS422
	Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200
	Parity	Odd, Even, None
	Data Bits	7 or 8
	Stop Bits	1 or 2
	Max. Throughput	4800 Baud on All Ports Simultaneously, Sustained
Mechanical Specifications	Dimensions (W x H x D)	2.2 x 10.5 x 8.6in. (56 x 266 x 217mm)
	Weight	2.8lbs. (1.26kg)
	Connectors	
	Backplane	Direct Plug-in to Modicon 800-Series I/O Rack
	Serial Ports	Separate DE-9S for COM 1 through 5, Single DB-25S for COM 6 through 8
	RFID Port/Front End Power	20-Position Plug-in Terminal Strip (Mating End Furnished)
	LED Indicators	Power, Active, Program, RunMode, Serial Ports, RFID Ports
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Shock Resistance	30G for 11ms
	Vibration Resistance	1G at 3-500 Hz for 23 Minutes Per Plane, 1Octave/Minute in All Three Planes Per IEC 68-2-6, Test Fc
	Altitude	15000ft. (4540m), Per MIL-STD-810, Method 500.2, Low Pressure
	ESD Immunity	8kV to All Surfaces Per IEC 801-2, Level Test
	Magnetic Immunity	Per IEC 801-3, Level 3
	Noise Emissions	FCC Part 15, Subpart B, Class A; CDC Class B

Mechanical Dimensions



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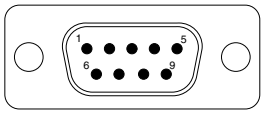
CM1000 Automatic ID PLC Module

Serial Port Connectors Electrical Connections



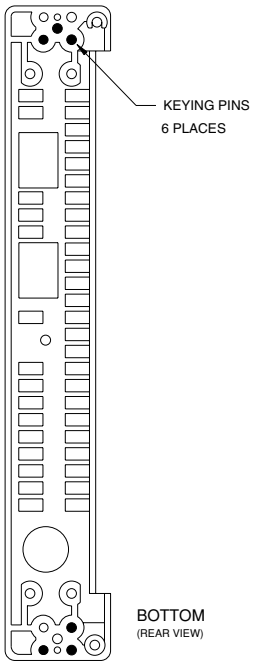
DE-9S (Female)

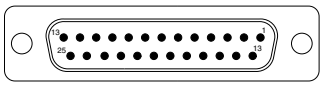
COM1-COM5 Pinouts (6 Connectors)

Pin#	Interface	Function
2	RS232	RS232RX
3		RS232TX
5		Signal Ground
6	RS422	RS422RX+
7		RS422RX-
8		RS422TX+
9		RS422TX-

Pins 1 and 4 are no connection

Keying Diagram





DB-25S (Female)

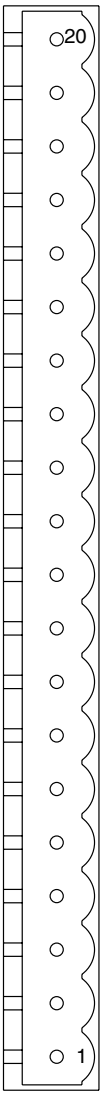
COM6-COM8 Pinouts (1 Connector)

Pin#	Port #	Function
1	COM6	Signal Ground
3	RS232	RS232RX
4		RS232TX
14	COM6	RS422RX+
15	RS422	RS422RX-
16		RS422TX+
17		RS422TX-
5	COM7	Signal Ground
7	RS232	RS232RX
8		RS232TX
18	COM7	RS422RX+
19	RS422	RS422RX-
20		RS422TX+
21		RS422TX-
9	COM8	Signal Ground
11	RS232	RS232RX
12		RS232TX
22	COM8	RS422RX+
23	RS422	RS422RX-
24		RS422TX+
25		RS422TX-

Pins 2, 6, 10, 13 are no connection

RFID Port/Power Connector Electrical Connections

20-Position Terminal Strip



RFID Port/Power Pinouts

Pin#	Port	Function
1	ANT0	Antenna 0/Pin 1
2		Antenna 0/Pin 2
3		Antenna 0/Pin 3
4		Antenna 0/Pin 4
5	ANT1	Antenna 1/Pin 1
6		Antenna 1/Pin 2
7		Antenna 1/Pin 3
8		Antenna 1/Pin 4
9	ANT2	Antenna 2/Pin 1
10		Antenna 2/Pin 2
11		Antenna 2/Pin 3
12		Antenna 2/Pin 4
13	ANT3	Antenna 3/Pin 1
14		Antenna 3/Pin 2
15		Antenna 3/Pin 3
16		Antenna 3/Pin 4
17	(Power)	Antenna +24VDC*
18		Antenna Ground*
19		CM1000 +24VDC
20		CM1000 Ground

*The Antennas may be powered by local 24VDC supplies. Voltages between the Antennas and the CM1000 must conform to RS422 limits, however it is usually not necessary to maintain a common ground with the CM1000 module. See specific Antenna manual or instruction sheet for power and ground pinouts.

Available Models

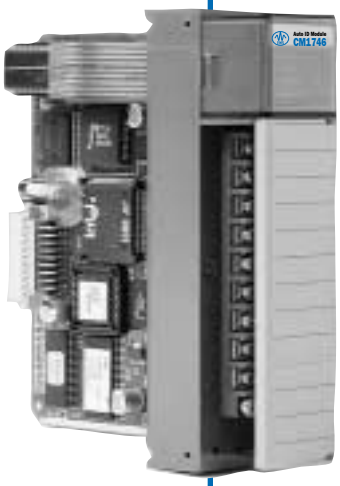
Model	Description
CM1000	Automatic ID Module for Direct Plug-In to Modicon 800-Series I/O Rack. Includes Standard Program. Mating Connector Included. SP1004 Required to Run Standard Program.

Accessories

Model	Description
SP1003-LIB	Software Manual and Libraries for Use in Developing Custom Application Programs for the CM1000 Auto ID Module. Diskette includes Libraries and Standard Program Source Code. Does Not Include Compiler, Tools or Compiler Manual.
88-1001	Franklin C Compiler for CM1000 Software Development
SP1004	Software Program, Loadable for Most Models of the Modicon 984 CPU (Excluding 984-A, -B, -X), Provides for Bi-Directional Data Transfers between the CM1000 and PLC. Required to Run Standard Program.
CBL-1091	Download Cable, for Downloading Application Programs from a PC-Compatible Computer to the CM1000, 10′ Long, DB-25S to DE-9P
CBL-1095	Cable Assembly, PC AT-to-CM1000 Download Cable, 10′ Long, DE-9P to DE-9S
10-7098	Back Shell Kit, metal screw lock, for CM1000

ESCORT MEMORY SYSTEMS
A DATALOGIC GROUP COMPANY

ROCKWELL AUTOMATION ENCOMPASS™ AMERICAS · EUROPEAN PARTNER



CM1746 RFID Module

Features

- Two Read/Write RFID Antenna Ports
- 25 MHz i386 Processor
- 512KB Flash Memory
- 512KB RAM
- DOS Compatible Operating System
- Two General Purpose Serial Ports for CM1746
- Two Industrial-Level Inputs/Outputs
- LED Status Indicators
- NEMA 1 (IP30) Enclosure

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- EMS Active Read/Write
- RS232 and RS422 Serial Devices

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

The CM1746 RFID Module is specifically designed to integrate EMS products with Allen-Bradley's 1746 I/O backplane and SLC 500™ PLC's. The CM1746 is mounted on a standard 1746 Module enclosure that plugs directly into the 1746 backplane. The CM1746's 386 microprocessor and a real-time operating system runs EMS' high speed Read/Write RFID Controller and built-in Mux32 RS485 multidrop protocol for connection to Read Only RFID. Provided with a standard program, the Module can also be custom programmed in the C language, In short, the CM1746 brings all the power of Escort Memory Systems' RFID to your Allen-Bradley system in a simple, easy-to-use package.

Technical Description

The CM1746 is an optically isolated communications interface designed to pass information between a complete RFID system and the Allen-Bradley SLC 500 PLC. The CM1746 communicates data between the RFID Tags or serial port and the host PLC via a simple ladder logic program in the PLC. The standard program supplied with each module offers normal operations such as Reading and Writing to a Tag and returning status of operations to the PLC. The module's real-time operating system permits the simultaneous execution of up to five commands. The DOS compatible processor makes it possible to create custom C-based application programs. EMS provides the standard program with the necessary libraries and download tools. One RS232 serial port is available for programming and debugging the module.

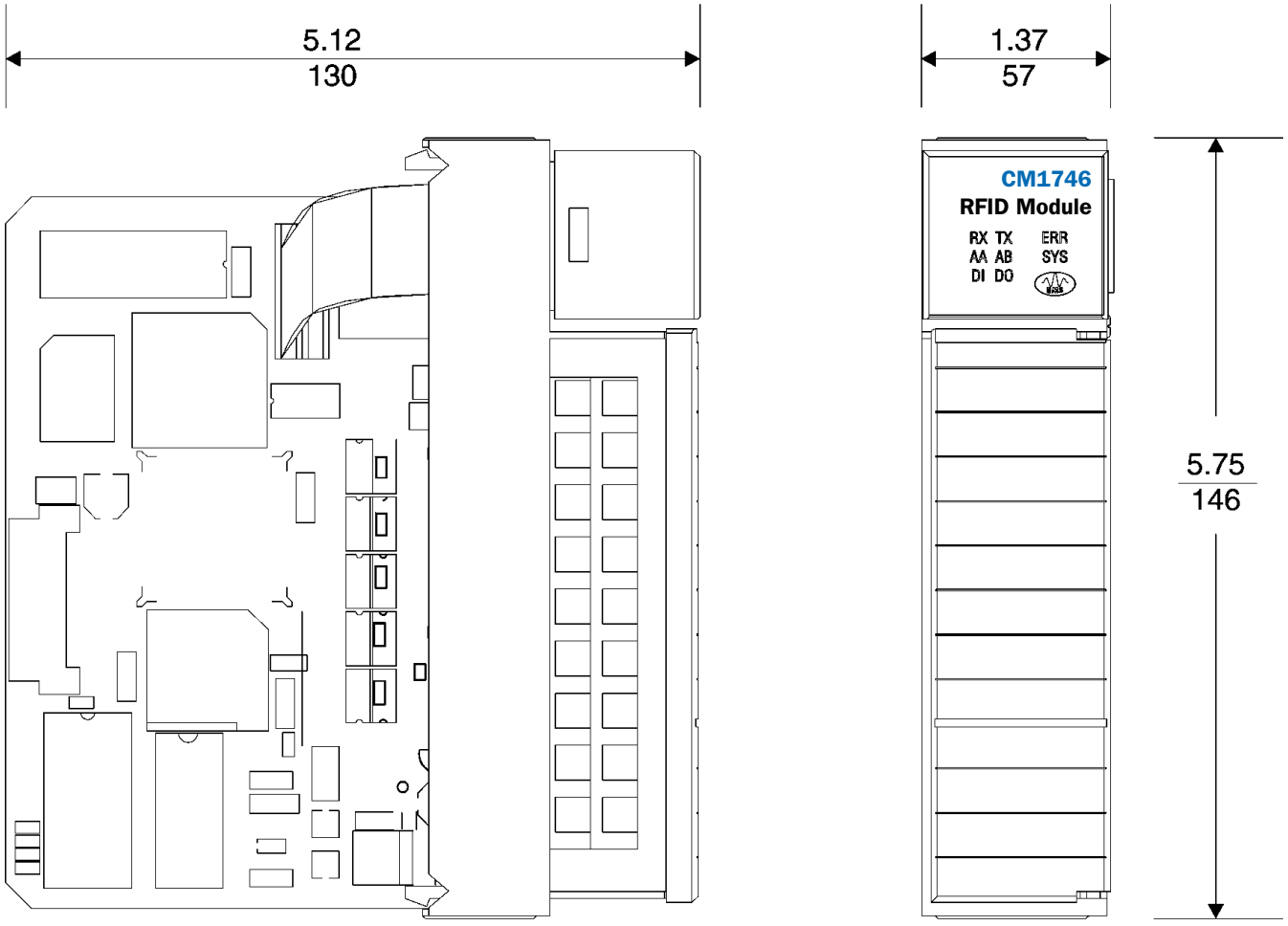
Direct Access to RFID with Allen-Bradley's SLC 500™ PLC

Two RFID ports are dedicated to direct connection to Read/Write Antennas. They support the same electrical and communications interface as all of EMS' Active Read/Write Antennas. The second serial port is configurable as RS232, RS422 or RS485 communications for connection to EMS' Read Only Readers, Passive Reader/Writers and for general use. The CM1746 supports the same EMS Mux32 multidrop protocol used by our Read Only systems and other devices. The Mux32 protocol supports up to 32 networked Read Only Readers for flexible solutions to complex applications.

CM1746 RFID Module

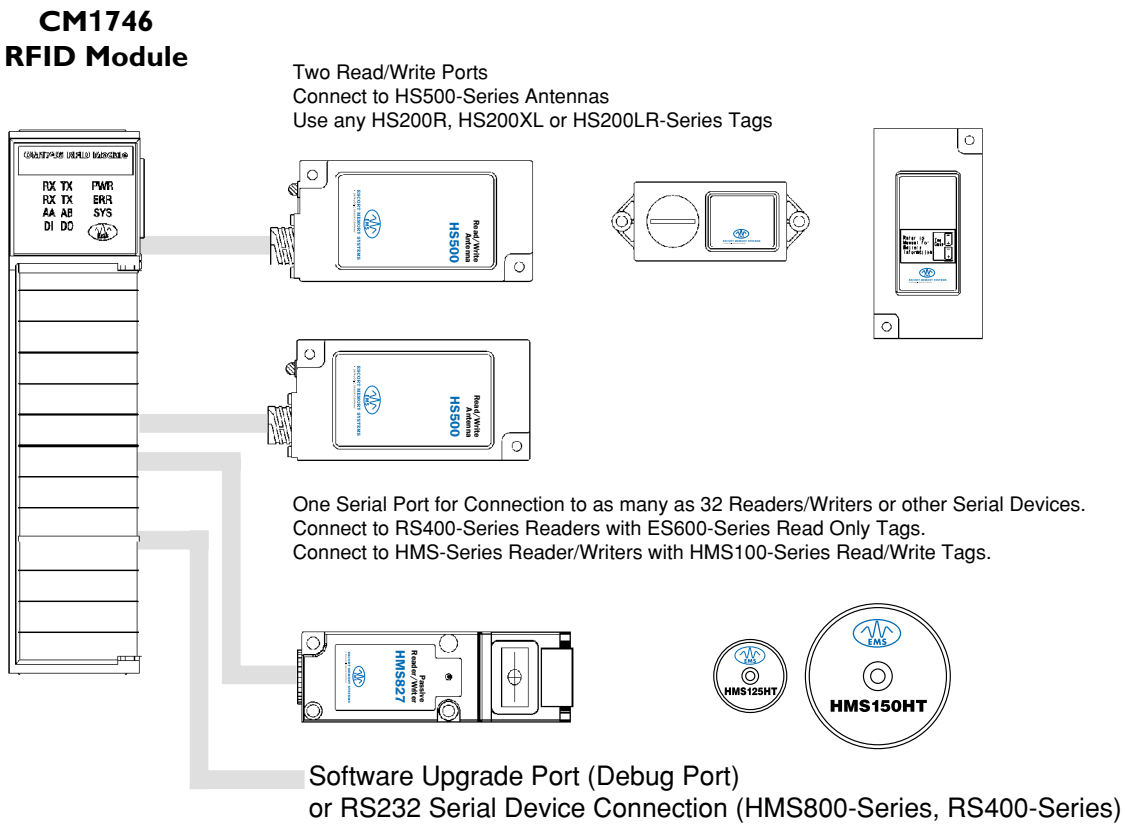
Electrical	**Backplane—Supplied by PLC**	
	Supply Voltage	5VDC ±5%
	Maximum Current	600mA
	Front End—External Supply Required	
	Supply Voltage	24VDC ±15%
	Current	125mA avg., 250mA peak
	Maximum Ripple	2.0% of DC Voltage
Internal Memory	Memory	512KB DRAM
Communication	Compatibility	SLC 5/03™ or SLC 5/04™
	Interface	1746 Series Bus
Compatible RFID Devices	Read/Write	HS/HL500-Series Antennas and HMS800-Series Reader/Writers
	Read Only (1-32)	RS427, RS400 and RD3000 via Mux32 Multidrop
Interface to Serial Devices	COM1	RS232 (For Programming and Debugging)
	COM2	RS232, RS422, RS485 (Mux32)
	Baud Rate	300, 600, 1200, 2400, 4800, 9600, 19200
	Parity	Even, Odd, None
	Data Bits	7 or 8
	Stop Bits	1 or 2
	Max. Throughput	12000 Characters Per Second Total
Interface to PLC	A-B SPIOGA2 Registers	32 Input Image Registers, 32 Output Image Registers
	Shared RAM	32KB
	M0 Space	5760 Words
	M1 Space	5755 Words
	PLC Module Driver	Class 3
	I/O Mix Code	8 (32 Input Words, 32 Output Words)
	I/O Type Code	35 (Third Party Module)
Mechanical Specifications	Dimensions (W x H x D)	5.75 x 1.37 x 5.12in. (146 x 57 x 130mm)
	Weight	1.5lbs. (0.70kg)
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Shock Resistance	30G for 11ms
	Vibration Resistance	1G at 3-500 Hz for 23 Minutes per Plane, 1Octave/Minute in All Three Planes
	Altitude	15000ft. (5540m), per MIL-STD-810, Method 500.2, Low Pressure
	Protection Class	NEMA1 (IP30)

Mechanical Dimensions



CM1746 RFID Module

Connections



Available Models

Model	Description
CM1746	RFID Module for Allen-Bradley SLC 500TM PLC and 1746 I/O Chassis
00-1067	CM1746 Demo Kit, includes: RS427 Passive Read Only Reader, ES620 Read Only Tag, HS500 Active Read/Write Antenna, HS208R Active Read/Write Tag, CM1746 RFID Module, Allen-Bradley SLC 500 PLC, Demo Case and Ladder Logic Program

MM80MicroMux Bus Module

Features

- RS232 to RS485 Converter
- Ultra-Compact, DIN Rail Enclosure
- C Programmable
- Supports Mux32 Protocol
- 9600 and 346K Baud Communication
- Peer-to-Peer Communication
- Screw Terminal Connections
- Low Cost
- Network up to 32 Devices
- Presence Input
- DIN Rail Mounting

Applications

- Material Handling
- Sortation Systems
- Work-in-Progress Monitoring
- Quality Control

Use With

- EMS Passive Read/Write
- EMS Passive Read Only
- RS232 Serial Device

EMS, a Datalogic Group Company, is the field-proven leader in the development and application of Radio Frequency Identification (RFID) Tags/Labels/PCBs, Antennas, Controllers and network interface modules for tough industrial environments. With over a dozen years of RFID successes in the automotive, electronics, material handling and food processing industries, EMS has built a global reputation in providing customers with complete supply chain solutions – from production to retail EMS has the complete solution!

Escort Memory Systems' (EMS) MicroMux is a compact, easy to use RS232 to RS485 multidrop bus Controller. Multidrop networks with MicroMux communications nodes expand the possibilities when connecting bar code readers, sensors, RFID Controllers, PCs and PLCs together. The MicroMux Module is quickly configured for network operation with DIP switch settings and serial commands and is compatible with the Mux32 protocol found in RFID controllers and bar code scanners. A MicroMux network can have as many as 32 MicroMux nodes with the possibility of more than one serial device attached to each node.

Technical Description

Each MicroMux is selected to act either as a master or slave on a Mux32 multidrop bus via DIP switches within the unit. The bus location of each MicroMux and communication mode, master/slave or peer-to-peer, are also set with the DIP switches. After the DIP switches are correctly set, bus operation starts with the master polling the slaves and transferring information. The master automatically updates the polling list by occasionally polling non-active unit numbers to determine if a new unit has been attached. Through the master, the network can be rewired, reprogrammed and tested. The MicroMux network can operate at two baud rates, either 9600 baud or the extremely high speed mode of 346K baud.

CREATE FLEXIBLE, INEXPENSIVE RS485 NETWORKS

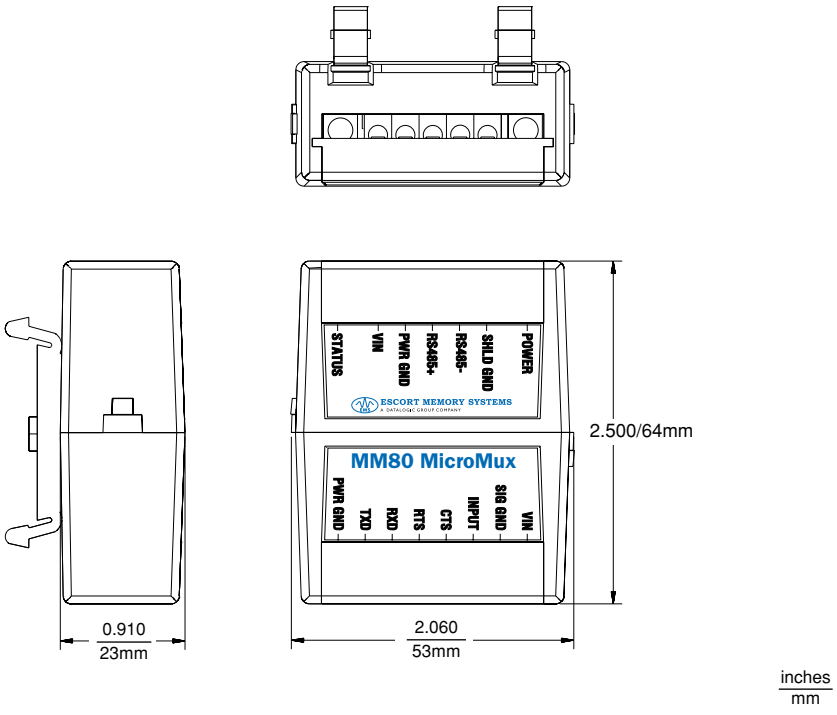
The module's standard program contain all the necessary functions for high speed data collection applications. Besides regulating traffic on the bus, the master downloads programs, and monitors: Data, starts, single steps, and stops nodes.

The standard program can be readily modified by EMS. For special applications, contact your EMS representative.

MM80MicroMux Bus Module

Electrical	Supply Voltage	8-30VDC
	Power Consumption	1.5 Watts
	Current Consumption	70mA Max. @24VDC with No Connected Devices
Serial Devices	Baud Rate	9600, 346K
	Parity	None
	Data Bits	8
	Stop Bits	1
	Max. Cable Length	50ft. (15m)
Input	Input	One TTL Presence Sensor Input, 0-5VDC
Mechanical Specifications	Dimensions (W x H x D)	0.91 x 2.5 x 2.06in. (23 x 64 x 53mm)
	Enclosure	Plastic
	Cables	User Supplied
Environment	Operating Temperature	32° to 120°F (0° to 49°C)
	Storage Temperature	-40° to 185°F (-40° to 85°C)
	Humidity	95% Non-Condensing
	Protection Class	NEMA 1 (IP30)

Mechanical Dimensions



Available Models

Model	Description
MM80	RS232 Serial to RS485/Mux32 Serial Interface Module, 8KB of Memory