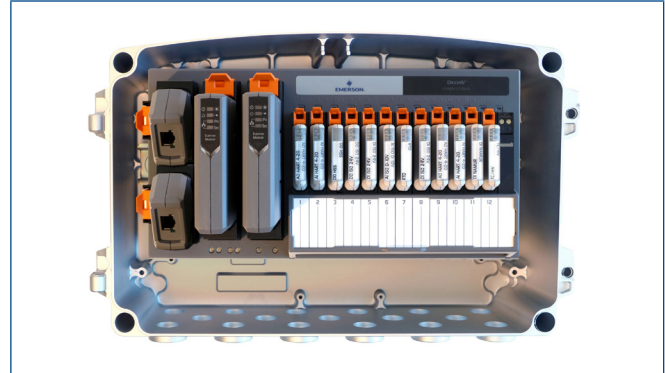


DeltaV™ Electronic Marshalling with Distributed CHARMs

- Reduce total install cost
- Improve flexibility in combining I/O types
- Support for Smart Commissioning
- Works with both DeltaV™ and DeltaV SIS
- Works with both regular and IS CHARMs
- Reduce number of CHARM I/O Cards and CHARMs Smart Logic Solvers
- Improve utilization through expansions



Inside view of 12 CHARM I/O Junction Box with CHARMs, it provides for easy termination close to field devices.

Introduction

Emerson introduced Electronic Marshalling in DeltaV™ v11. Electronic Marshalling provided a new level of control system I/O performance with unprecedented flexibility and ease of use. It provides single-channel granularity, fully redundant communications, and plug and play I/O.

Electronic Marshalling with Distributed CHARMs enables you to install CHARMs even closer to field devices and can eliminate costly engineering and installation efforts. When field devices are wired directly to CHARMs in a junction box close to the physical location of the field devices, the need for loop sheets disappears because the wire path is direct. The time and effort required to perform instrument loop checks is greatly reduced as many field devices are automatically recognized in DeltaV. Multicore cables are replaced with Ethernet cables that communicate the various signal types back to the CHARM I/O Cards (CIOC) or CHARMs Smart Logic Solvers (CSLS).

Benefits

Reduce total install cost: Distributed CHARMs reduces wiring and cable tray cost and the labor associated with pulling wires and installing cable trays. Installation and labor associated with wire preparation, terminations, and labeling of wires is also decreased. The need for traditional loop sheets is lessened or eliminated. Ringing out wires from terminations to field devices is simplified since devices are terminated directly to the CHARM I/O Block close to the field devices – there are no complicated wire paths to document. The time and effort needed to perform instrument loop checks are minimized since smart devices communicate directly with the DeltaV system. Construction and EPC engineering cost can also be decreased since field construction requirements are lessened.

Improve flexibility by combining I/O types:

Traditional junction boxes in the field are typically dedicated to one signal type. For example, 120V AC and 24V DC are separated to reduce noise interference. Thermocouple multicore cables and RTD multicore cables cannot include any other signal types. Different signal types must be isolated in additional separate traditional junction boxes and multicore cables, laid in separate cable trays, which require addition engineering and installation efforts. With Distributed CHARMS, all types of devices can be wired to the same 12 CHARM I/O Junction Box and the shielded Ethernet cable used to communicate back to the CIOC/CSLS can be installed alongside other instrument cables.

Support for Smart Commissioning: All the benefits of Smart Commissioning are applicable to Distributed CHARMS. A description for each CHARM I/O Block can be added in DeltaV software for proper identification. The ability to connect devices directly to 12 CHARM I/O Junction Boxes drastically reduces costs and can eliminate the need for traditional loop diagrams. In DeltaV Explorer a user can generate a report for each CIOC/CSLS showing the CHARM number, signal tag and CHARM I/O Block description – allowing you to easily locate devices after installation is complete.

Works with both DeltaV and DeltaV SIS: Distributed CHARMS can be used with both DeltaV and DeltaV SIS. The CHARM I/O Gateway can be installed either under a CIOC or a CSLS carrier and the CHARM I/O Block can hold either regular CHARMS or Logic Solver CHARMS. The Distributed CHARMS hardware is deemed non-interfering during SIS certification.

Works for both regular and IS CHARMS: There are two types of CHARM I/O Block Carriers available, one for regular CHARMS and another one for IS CHARMS.

Reduce number of CIOCs and CSLSs: Installations with an average number of CHARMS per CIOC or CSLS have room to install more CHARMS. With the Distributed CHARMS architecture, the average number of CHARMS per CIOC and CSLS can increase and the number of CIOCs, CSLSs and SZ controllers with associated networking equipment for the Local Safety Network (LSN) can be reduced.

Improve CIOC/CSLS utilization through expansions:

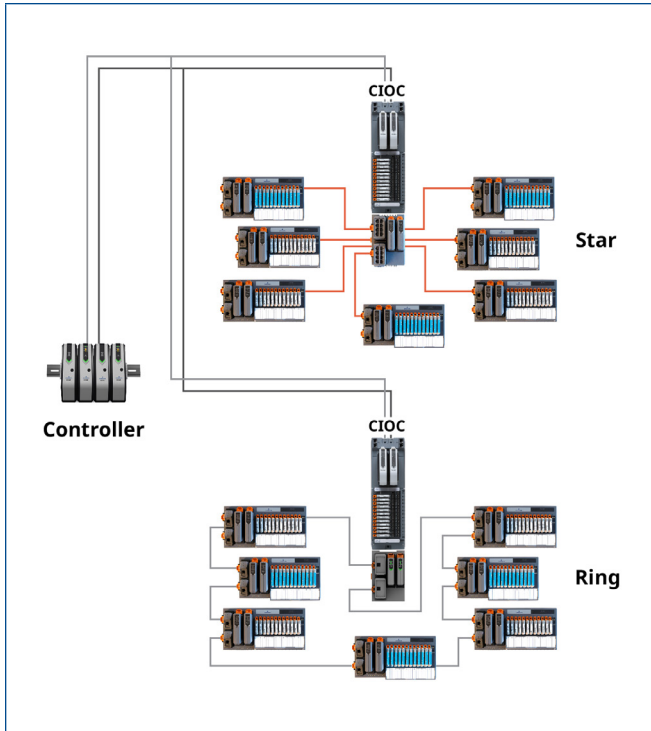
An existing CHARM I/O Field Enclosure that has unused CHARM Baseplates can easily be expanded by installing the CHARM I/O Gateway in available enclosure space. New 12 CHARM I/O Junction Boxes can be installed near the expansion area. This takes advantage of available capacity and eliminates the need for additional CHARM I/O Field Enclosures.

Product Description

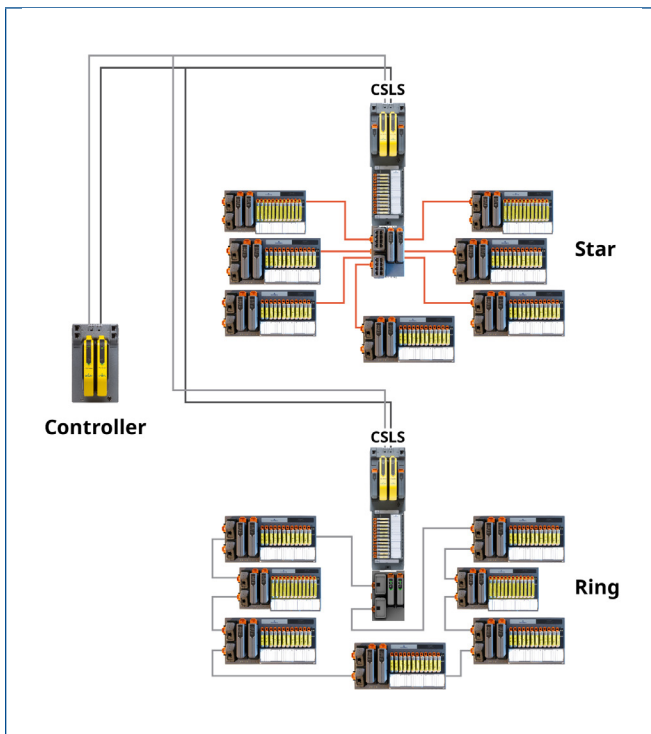
The Distributed CHARMS hardware includes:

- The CHARM I/O Gateway connected to the CIOC or CSLS carrier or to a CHARM baseplate under the CIOC or CSLS carrier.
- The CHARM I/O Block that includes 12 CHARM slots and can be installed close to the field devices.
- The IS CHARM I/O Block that includes 12 IS CHARM slots and can be installed close to the field devices.

The CHARM I/O Gateway and both the CHARM I/O Block and IS CHARM I/O Block have Scanner Modules and Ethernet I/O Ports (IOP) that facilitate communication between the CIOC or CSLS and each CHARM over full duplex 100BASE-TX Ethernet. These products support star or a fault tolerant ring topology using copper Ethernet.



Distributed CHARMS with CHARM I/O Gateway and a mix of CHARM I/O Blocks and IS CHARM I/O Blocks. Star topology (top). Fault tolerant ring topology (bottom).



Distributed CHARMS architecture with DeltaV™ SIS with Electronic Marshalling.

The star Ethernet topology is supported with both simplex and redundant Ethernet communication. Redundant communication provides high availability and requires two 8-port IOPs while simplex only requires one IOP and one IOP protection cover. The star topology allows maximum 100m distance between the CHARM I/O Gateway and each CHARM I/O Block or IS CHARM I/O Block. DeltaV Media Converters can be used to extend beyond 100m. Redundancy is required if Star topology is used in SIS installations.

Fault tolerant ring topology enables you to install CHARM I/O Blocks further away from the CIOC or CSLS by daisy-chaining them together. The 100m maximum distance in ring topology is between the CHARM I/O Gateway and the first CHARM I/O Block, but 100m is also allowed between each CHARM I/O Block on the ring and between the last CHARM I/O Block and back to the CHARM I/O Gateway. DeltaV Media Converters can be used to extend beyond 100m. The ring topology reduces Ethernet wiring as compared to star topology especially if compared to redundant star topology.

CHARM I/O Gateway

The CHARM I/O Gateway consists of the following parts:

- CHARM I/O Gateway Carrier holds the CHARM I/O Scanner Module(s) and IOP(s), and potentially protection cover(s) in simplex configurations.
- CHARM I/O Scanner Module can be installed as simplex or redundant on the CHARM I/O Gateway Carrier. DeltaV SIS installations require redundancy to ensure availability.
- CHARM I/O Gateway 8-port IOP can be installed as simplex or redundant on the CHARM I/O Gateway Carrier and is used for star Ethernet topology. When used with DeltaV SIS, redundancy is required to ensure availability.
- CHARM I/O Gateway 1-port IOP is used for fault tolerant ring Ethernet topology and requires 2 IOPs installed on the CHARM I/O Gateway Carrier.
- CHARM I/O Scanner Module Protection Cover is used in simplex Scanner Module configuration and is mounted in the unused scanner module slot on the CHARM I/O Gateway Carrier.
- CHARM I/O Gateway IOP Protection Cover is used in a simplex star Ethernet topology and is installed in the unused IOP slot on the CHARM I/O Gateway Carrier.



CHARM I/O Gateway with redundant Scanner Modules and redundant 8-port IOPs.

The CHARM I/O Gateway is installed on the rail under the CIOC or CSLS carrier. Regular CHARM Baseplates can be installed both above and below the gateway and regular Cable Extenders can be used as well. A CHARM Baseplate Terminator is still required after the last CHARM Baseplate or after the CHARM I/O Gateway if there is no CHARM Baseplate after it. Any IS CHARM Baseplates must be mounted below the gateway.

The Scanner Modules communicate with the CIOC or CSLS through the backplane and communicates to the CHARM I/O Blocks and IS CHARM I/O Blocks through the IOPs. The CHARM I/O Gateway is powered by the redundant 24V DC power supplied to the CIOC or CSLS carrier.

CHARM I/O Block

The CHARM I/O Block consists of the following parts:

- CHARM I/O Block Carrier holds the CHARM I/O Scanner Module(s), IOP(s), and potentially protection cover(s) in simplex configurations. It supports up to 12 CHARMs and their terminal blocks, as well as an Address Plug with terminal block.
- CHARM I/O Scanner Module is installed as simplex or redundant on the CHARM I/O Block Carrier. The CHARM I/O Scanner Module is the same for both the CHARM I/O Gateway and the CHARM I/O Block. When used with DeltaV SIS, redundancy is required.
- CHARM I/O Block IOP can be installed either as simplex or redundant on the CHARM I/O Block Carrier and is used for both star and ring topology. In a simplex

configuration the IOP must be installed in the same position as the 8-Port IOP in the CHARM I/O Gateway. For example, if the gateway has an 8-port IOP installed in port A, then any CHARM I/O Block connected must also have the IOP installed in port A. If a ring topology is used, both IOPs must be installed. When used with DeltaV SIS, redundancy is required.

- CHARM Terminal Blocks or LS CHARM Terminal Blocks. Up to 12 terminal blocks are supported. The IS CHARM Terminal Blocks are not supported on the CHARM I/O Block. Address Plug Terminal Block with Address Plug provides addressing for the CHARM I/O Blocks.
- CHARMs or LS CHARMs. Up to 12 CHARMs are supported. IS or LS IS CHARMs are not supported on the CHARM I/O Block.
- Horizontal Channel Identifier Label/Wiring Cover for CHARM I/O Block for protecting terminations and holding a label for channel identification.



CHARM I/O Block with redundant Scanner Modules and IOPs, a combination of CHARMs and Channel Identifier Label/Wiring Cover.

The CHARM I/O Block is mounted in the field close to the field devices and supports all non-IS CHARMs and LS CHARMs. The CHARM I/O Block does not support IS or LS IS CHARMs.

The CHARM I/O Block supports redundant power and has terminals for two separate 24V DC power inputs. It also has twelve shield return terminals, one for each CHARM, similar to those on a regular CHARM Baseplate. There are also two terminals to ground the shield returns.

Each CIOC is still limited to a maximum of 96 CHARMs and eight CHARM Baseplates. Each baseplate must have a unique address plug, 1 through 8, and the eight baseplates can be a mix of local CHARM Baseplates under the CIOC or CSLS and distributed CHARM I/O Blocks installed close to the field devices.

IS CHARM I/O Block

The IS CHARM I/O Block consists of the following parts:

- IS CHARM I/O Block Carrier holds the CHARM I/O Scanner Module(s), IOP(s), and potentially protection cover(s) in simplex configurations. It supports up to 12 IS CHARMS and their IS terminal blocks, as well as an Address Plug with IS terminal block.
- CHARM I/O Scanner Module is installed as simplex or redundant on the IS CHARM I/O Block Carrier. The CHARM I/O Scanner Module is the same for both the CHARM I/O Gateway and the IS CHARM I/O Block. When used with DeltaV SIS, redundancy is required.
- CHARM I/O Block IOP can be installed either as simplex or redundant on the IS CHARM I/O Block Carrier and is used for both star and ring topology. In a simplex configuration the IOP must be installed in the same position as the 8-Port IOP in the CHARM I/O Gateway. For example, if the gateway has an 8-port IOP installed in port A, then any CHARM I/O Block connected must also have the IOP installed in port A. If a ring topology is used, both IOPs must be installed. When used with DeltaV SIS, redundancy is required.
- IS CHARM Terminal Blocks. Up to 12 IS CHARM terminal blocks are supported.
- Address Plug Terminal Block for IS with Address Plug provides addressing for the IS CHARM I/O Blocks.
- IS CHARMS or LS IS CHARMS. Up to 12 IS CHARMS are supported.
- Horizontal Channel Identifier Labels for IS CHARM I/O Block for protecting terminations and holding a label for channel identification.



IS CHARM I/O Block with redundant Scanner Modules and IOPs, a combination of IS CHARMS and Channel Identifier Label/Wiring Cover.

12 CHARM I/O Junction Box

A fully assembled 12 CHARM I/O Junction Box consisting of an aluminum box with a CHARM I/O Block installed on a DIN rail inside it is also available. Different options for various levels of redundancy for scanner modules and IOPs are available. The junction box has 17 female threaded bosses at the bottom to facilitate field device wires as well as Ethernet and power wires entering the junction box. These bosses will accept male threaded cable glands or other male threaded conduit fittings. There are two different thread options: either ½" – 14 NPT or M20X1.5. Each junction box has four M8 x 1 MM threaded holes on the back and four clearance holes for M6 screws for mounting.

12 IS CHARM I/O Junction Box

A 12 IS CHARM I/O Junction Box consisting of an aluminum box with an IS CHARM I/O Block on a DIN rail inside it is also available. Different options for various levels of redundancy for scanner modules and IOPs are available.

The junction box has 17 female M20X1.5 threaded bosses at the bottom to facilitate field device wires as well as Ethernet and power wires entering the junction box. These bosses will accept male threaded cable glands or other male threaded conduit fittings. Each junction box has four M8 x 1 MM threaded holes on the back and four clearance holes for M6 screws for mounting. There is a kit available with 17 adapters if ½" – 14 NPT threads are needed.

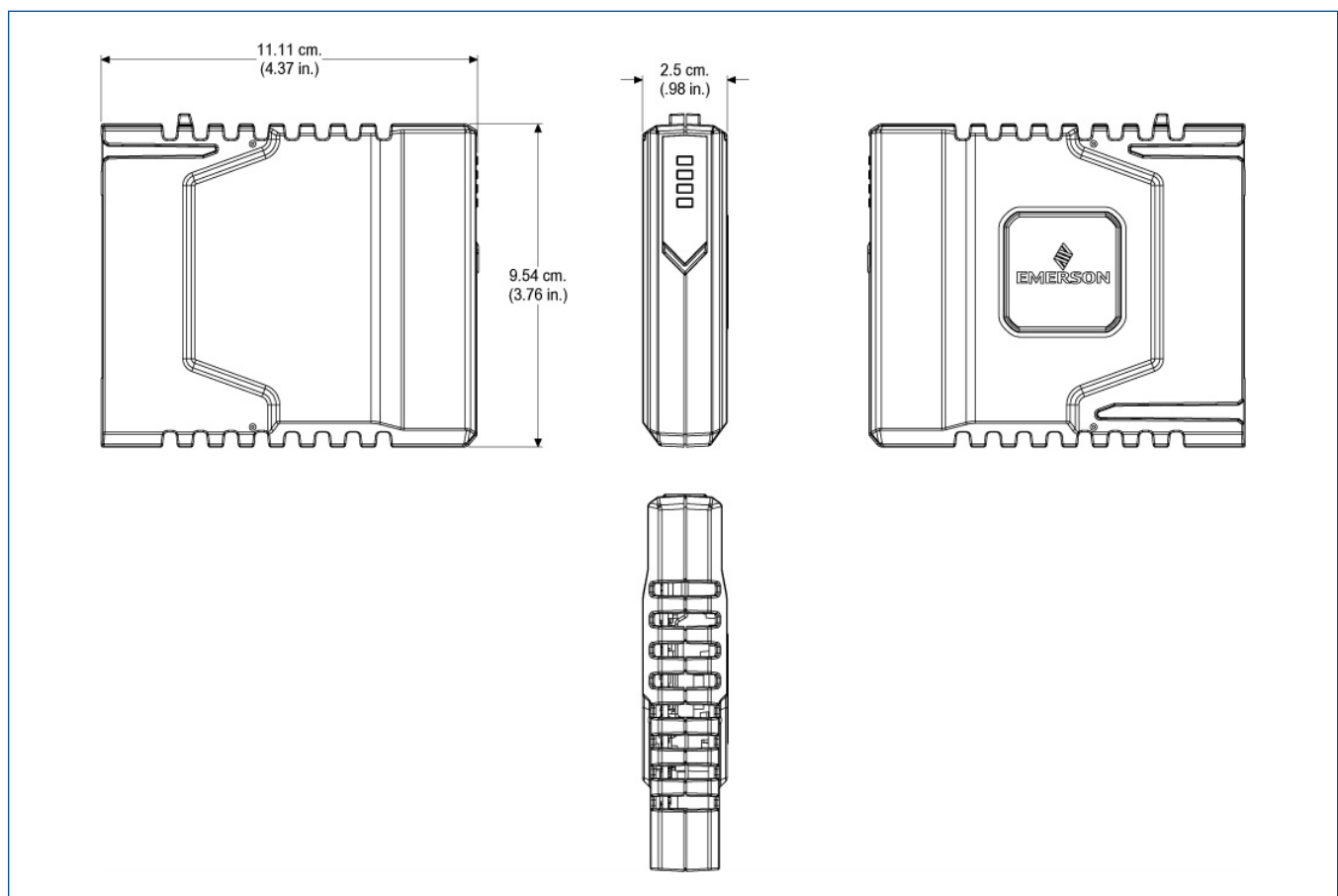
An optional mounting kit is available for the junction boxes that makes it easy to mount on a vertical 2-inch pipe. The mounting kit is made of cold rolled steel finished with gray powder coat paint.

Hardware Specifications

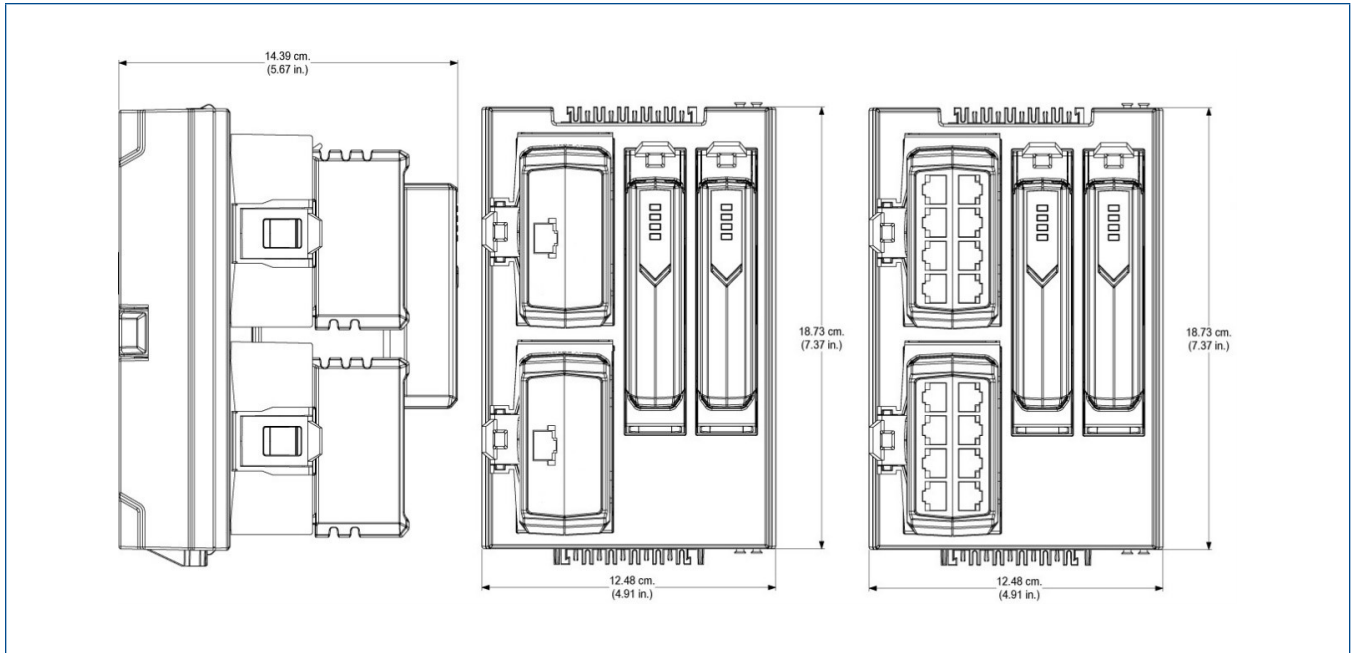
Common Environmental Specifications (all components)	
Operating Temperature*	-40 to 70°C (-40 to 158°F)**
Storage Temperature	-40 to 85°C (-40 to 185°F)
Relative Humidity	5 to 95%, non-condensing
Airborne Contaminates	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock	10g 1/2 sinewave for 11 ms
Vibration	1mm Peak-to-Peak from 2 to 13.2HZ; 0.7g from 13.2 to 150HZ
Protection Class	IP20

*Operating any electronics at the higher end of its temperature range for long periods of time will shorten its expected lifetime, see **Effects of Heat and Airflow Inside an Enclosure White Paper** for more information.

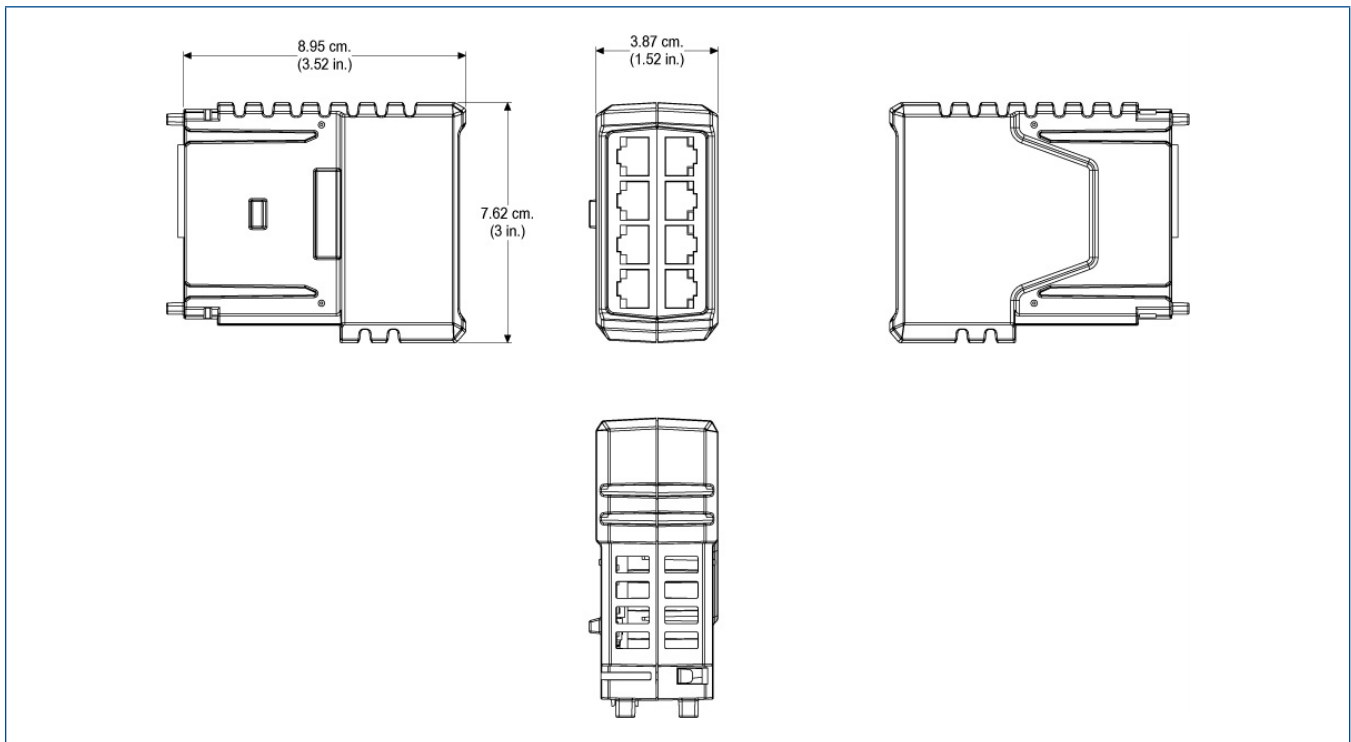
**Upper ambient operating temperature on the 12 CHARM I/O Junction Box is 55°C and requires installation in shaded area (no direct sunlight), similar to 48 and 96 CHARM I/O Field Enclosures.



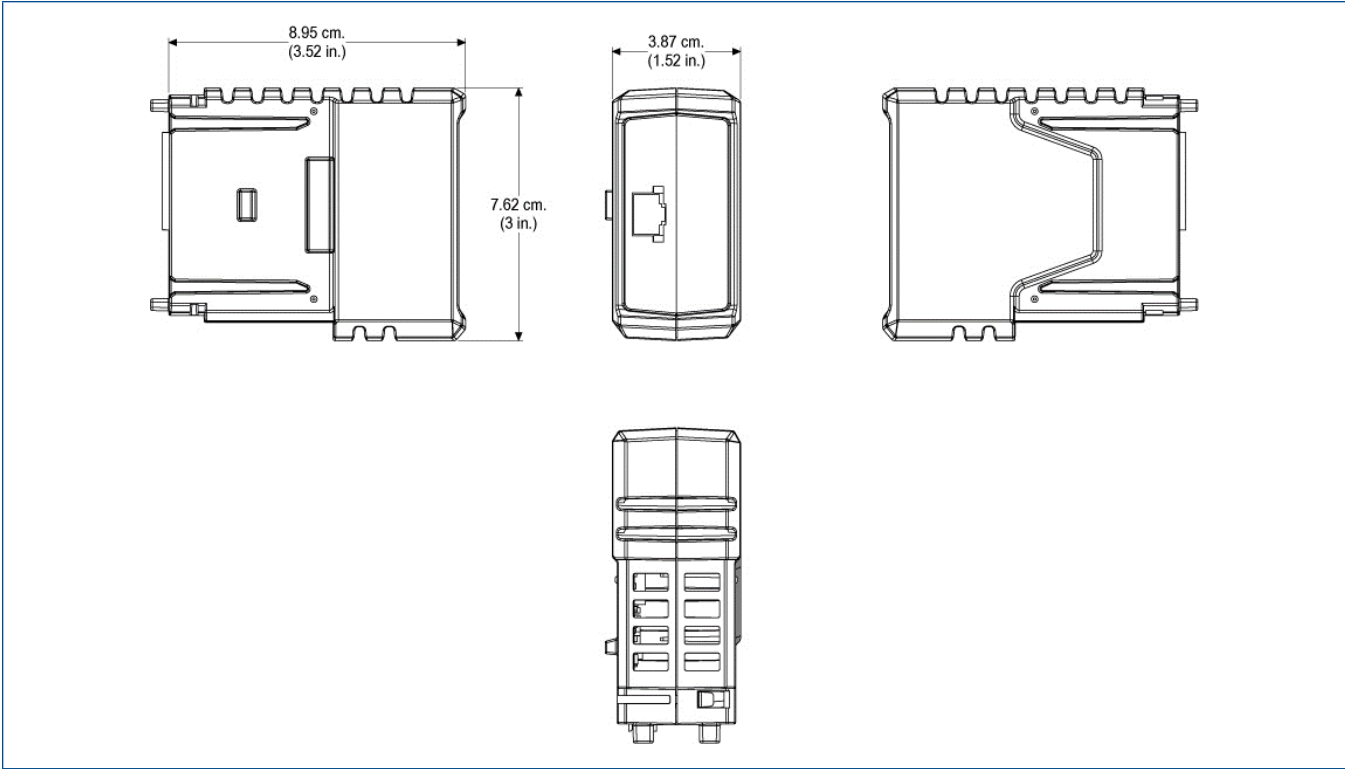
CHARM I/O Scanner Module.



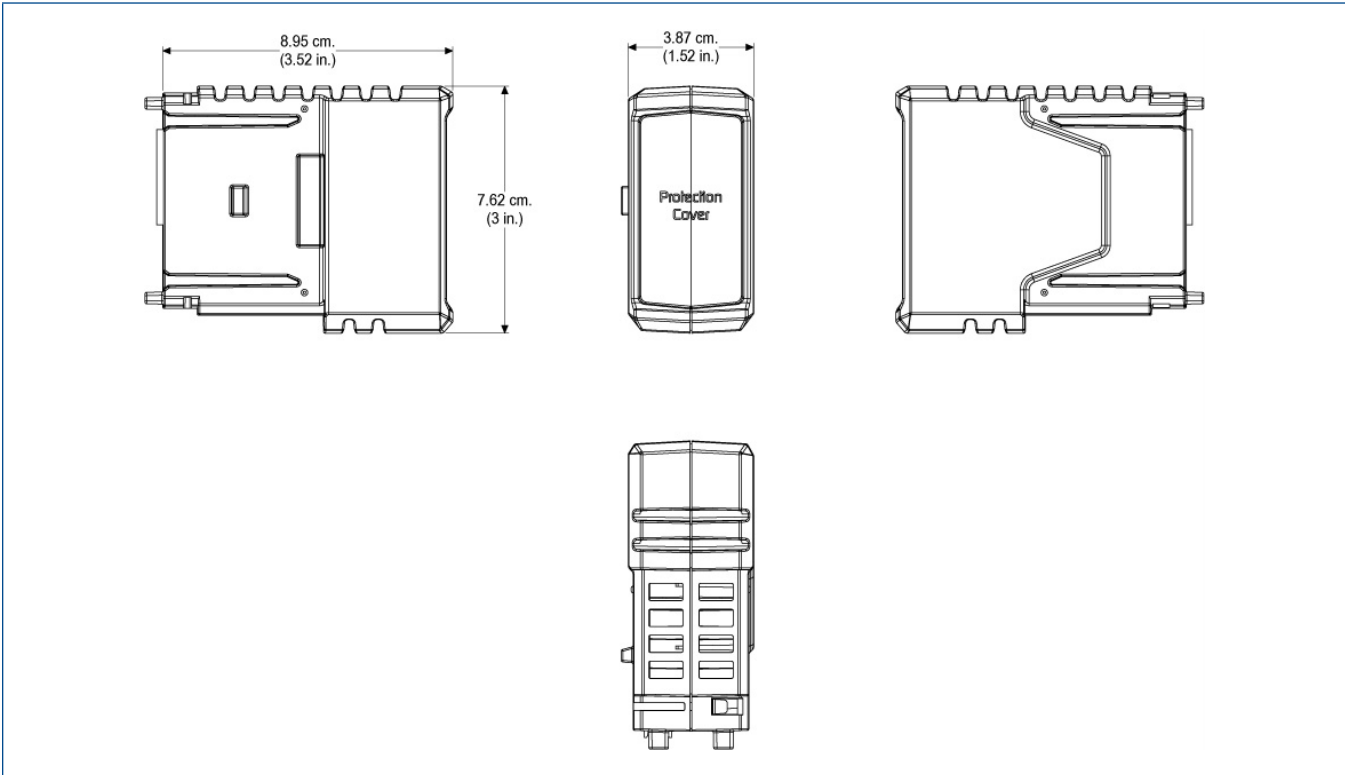
CHARM I/O Gateway with redundant Scanner Modules and redundant 1-port (center) and 8-port (right) IOPs.



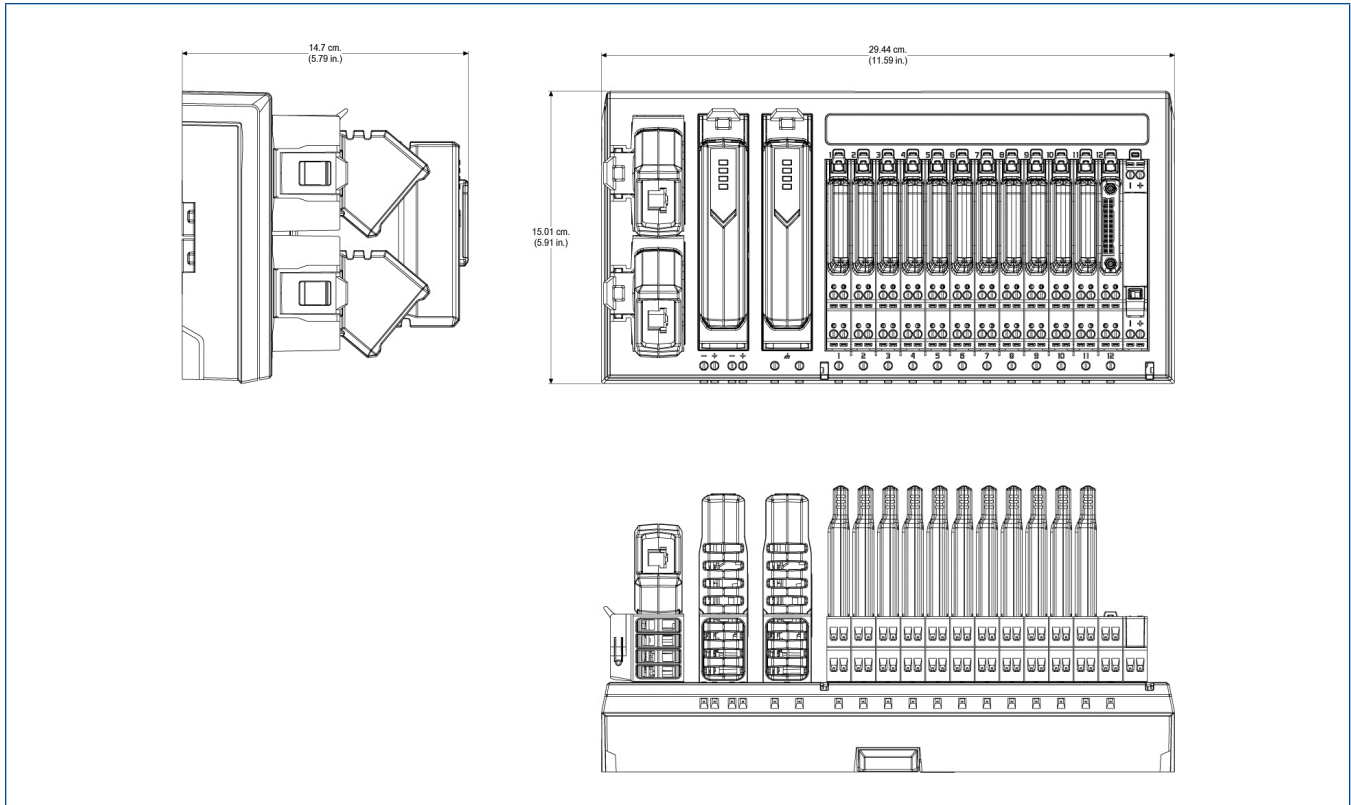
CHARM I/O Gateway 8-port IOP for Star Ethernet topology.



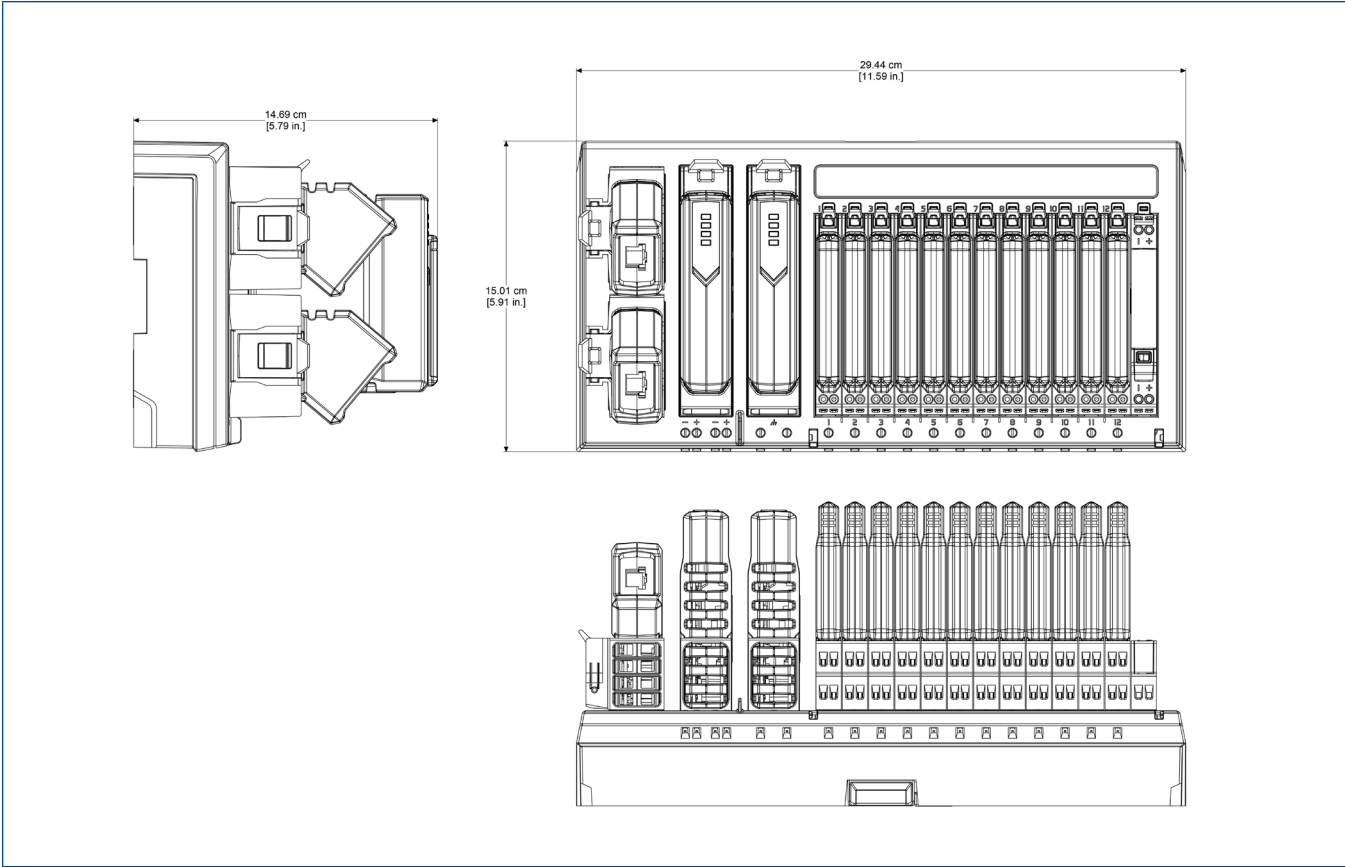
CHARM I/O Gateway 1-port IOP for ring Ethernet topology.



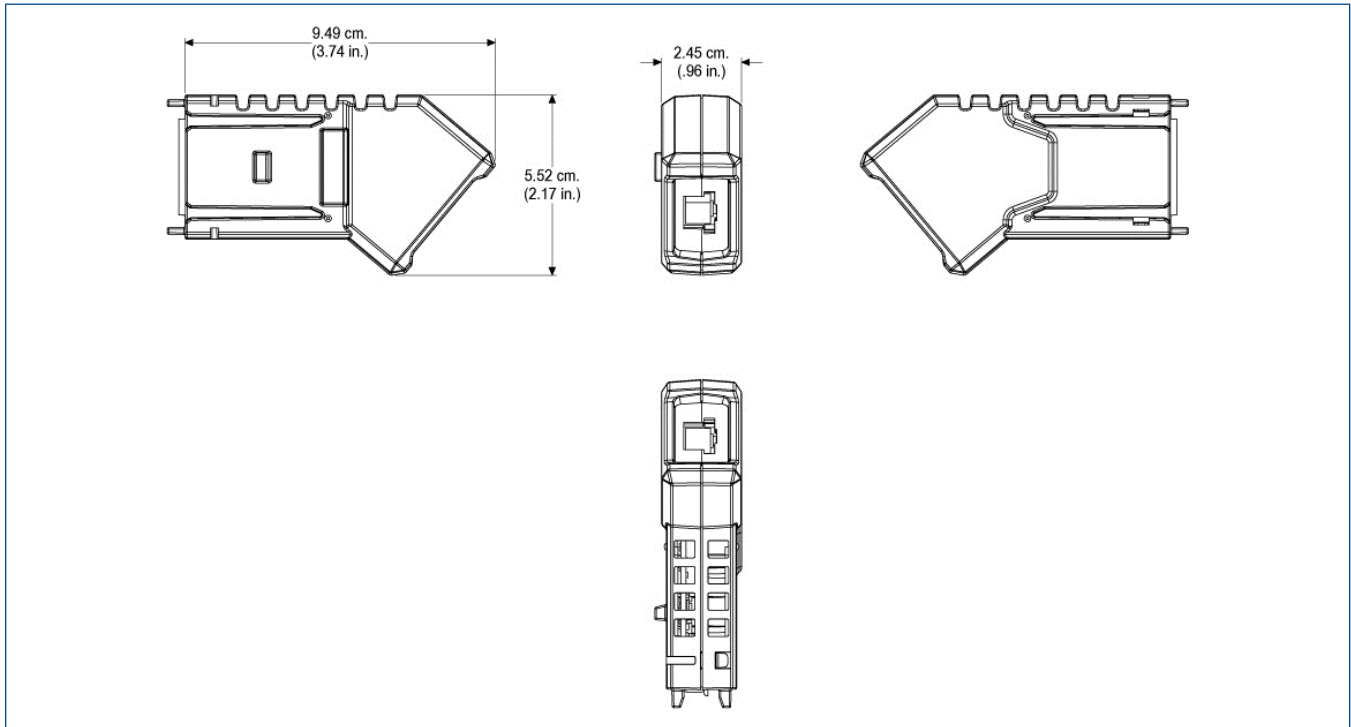
CHARM I/O Gateway IOP Protection Cover.



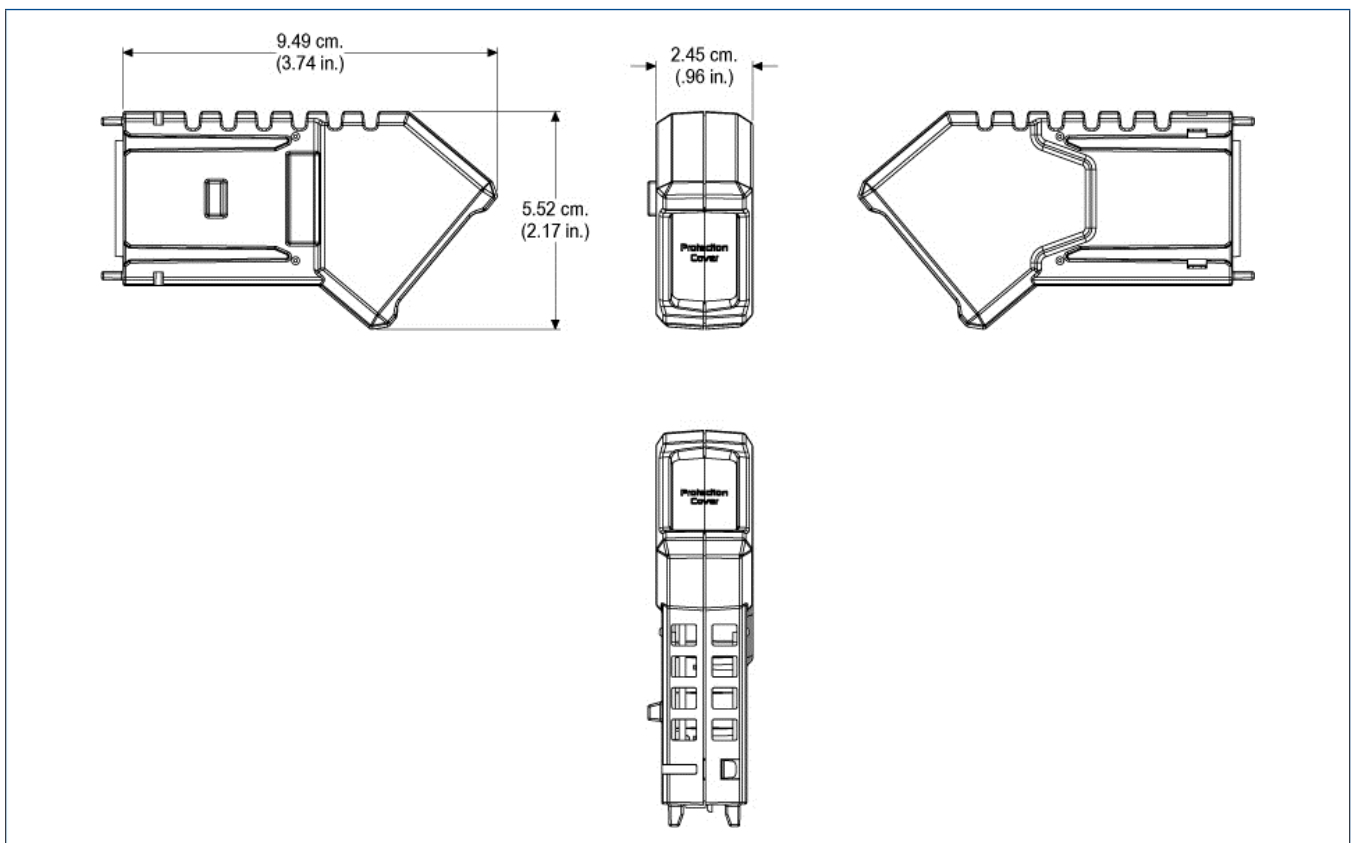
CHARM I/O Block with redundant Scanner Modules, redundant IOPs, terminal blocks and tallest CHARM type installed. The maximum depth of the CHARM I/O Block increases from 14.7 to 15.5cm if the tallest CHARM type is in a disconnected locked position.



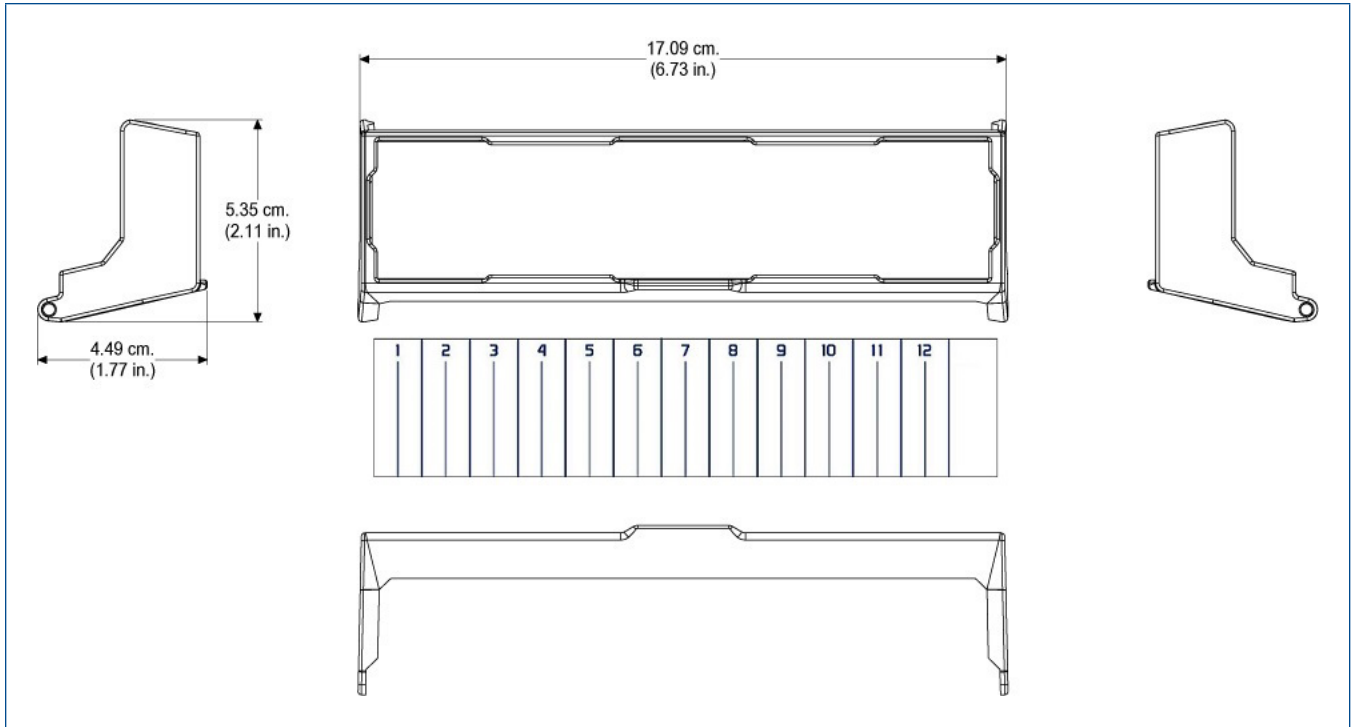
IS CHARM I/O Block with redundant Scanner Modules, redundant IOPs, terminal blocks and tallest IS CHARM type installed. The maximum depth of the CHARM I/O Block increases from 14.7 to 15.5cm if the tallest CHARM type is in a disconnected locked position.



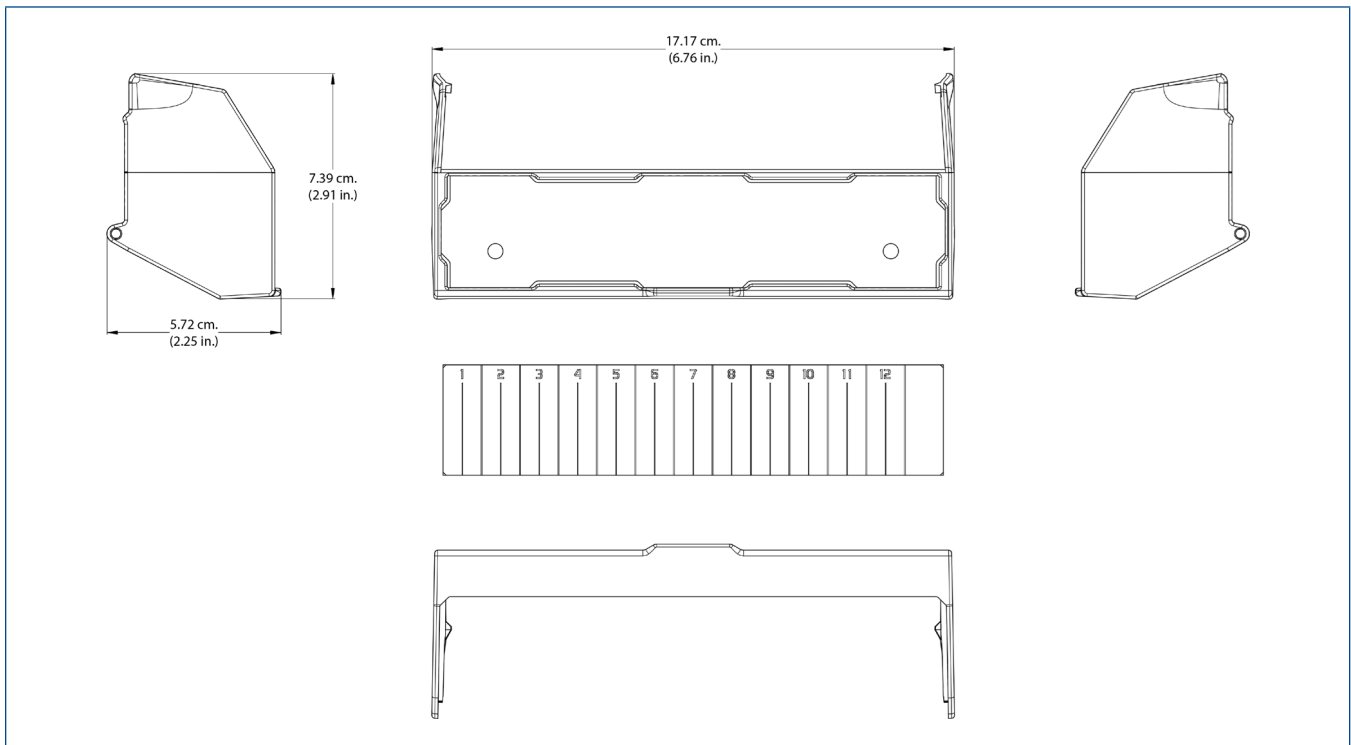
CHARM I/O Block IOP.



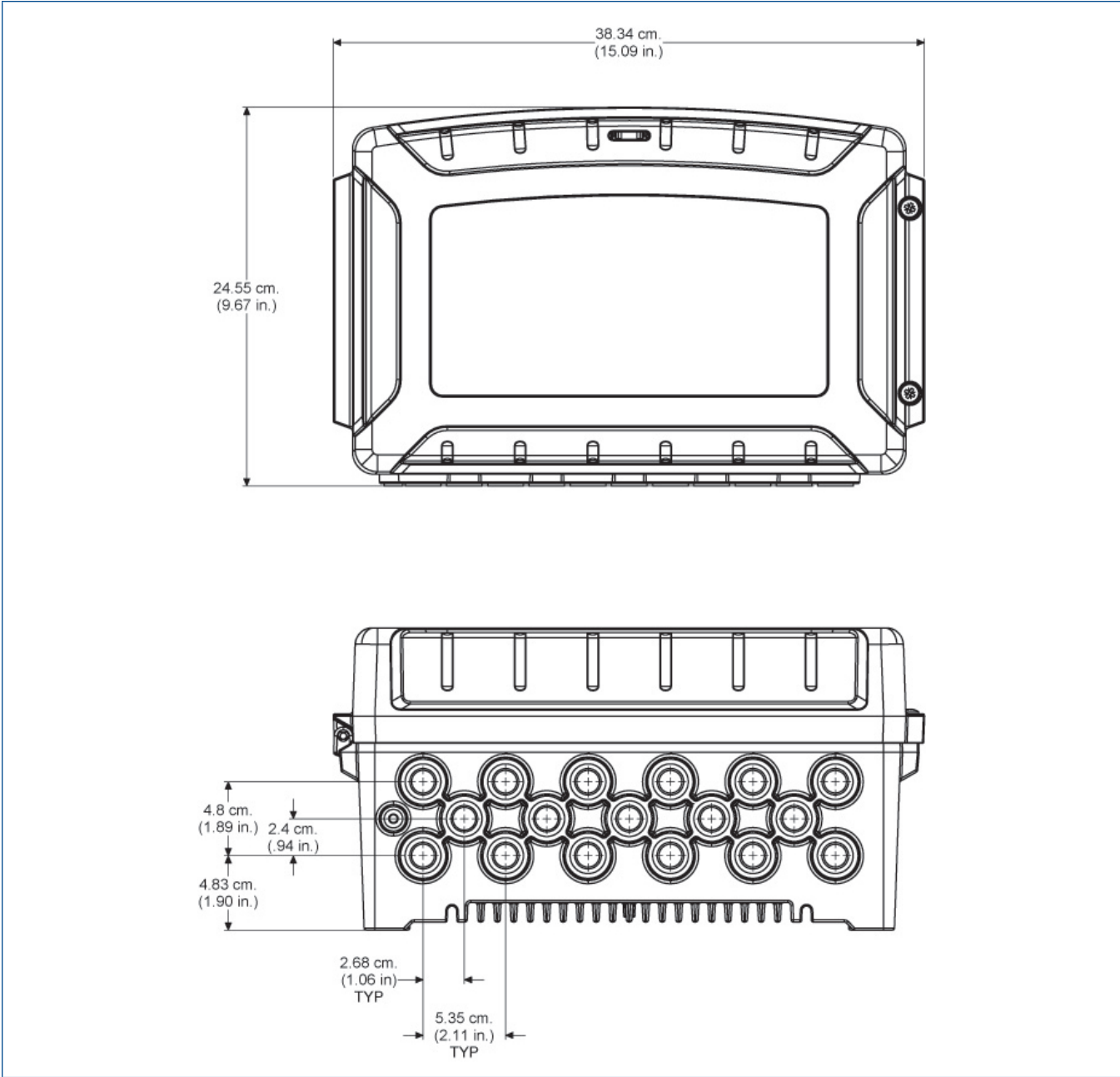
CHARM I/O Block IOP Protection Cover.



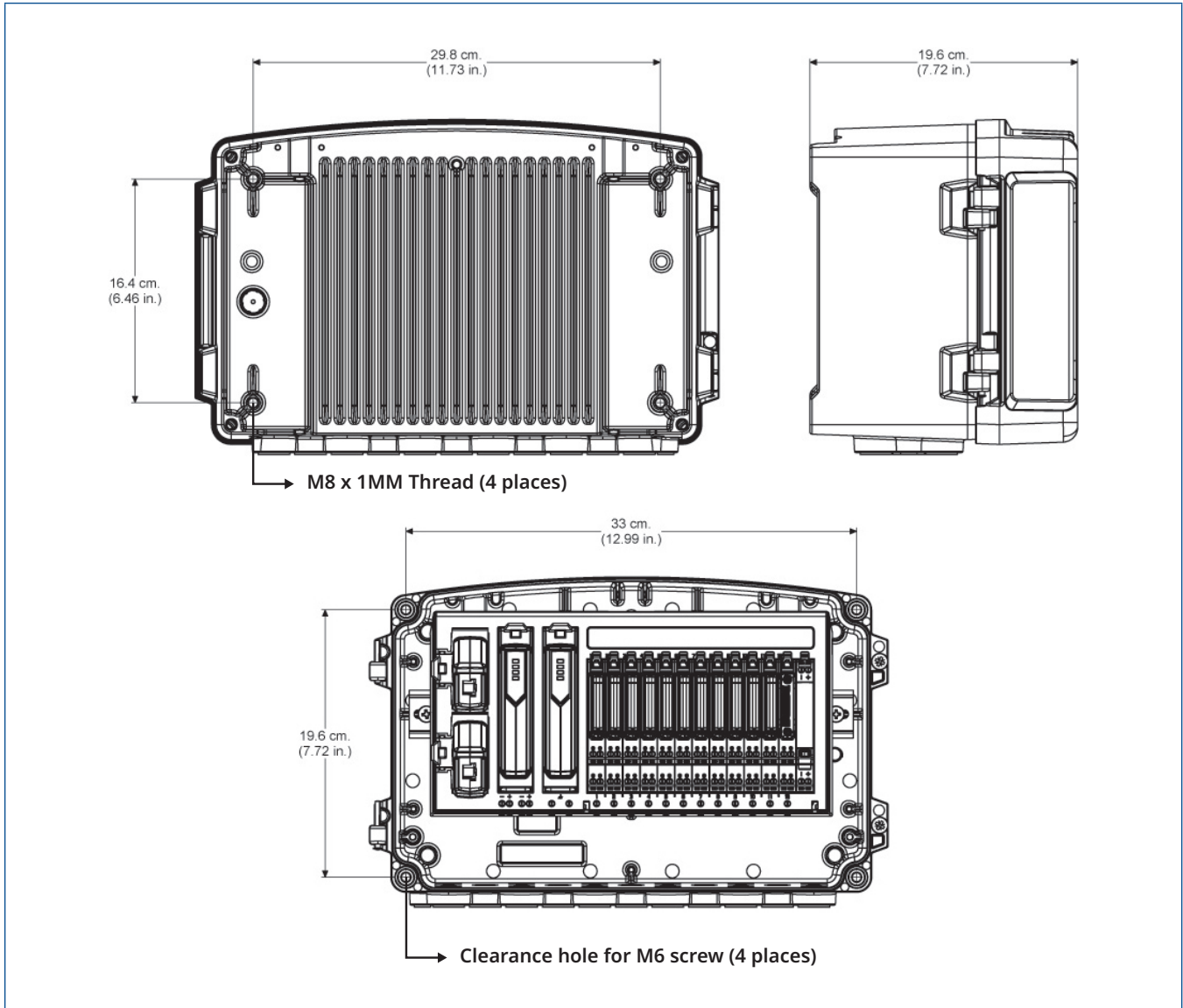
Horizontal Channel Identifier Label/Wiring Cover for CHARM I/O Block.



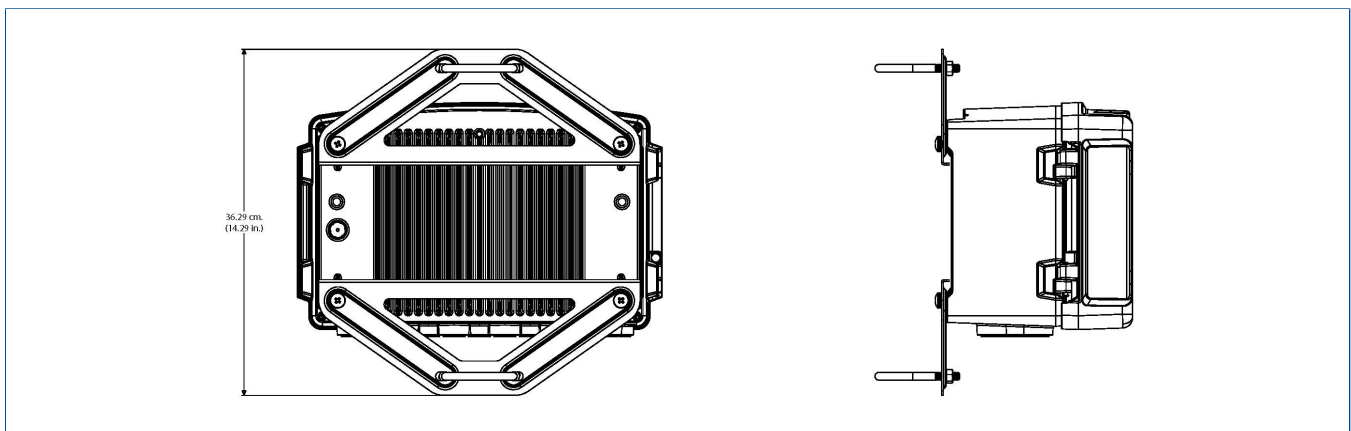
Horizontal Channel Identifier Label/Wiring Cover for IS CHARM I/O Block.



12 CHARM I/O Junction Box.



12 CHARM I/O Junction Box with Mounting holes.



Optional Mounting kit for 12 CHARM I/O Junction Box.

Distributed CHARMS Hardware

Specifications for CHARM I/O Gateway Carrier	
Number of Scanner Modules per Carrier	1 for simplex and 2 for redundancy
IOP Types Supported	8-port IOP for star Ethernet topology, 1 for simplex and 2 for redundancy (Redundancy Required for CSLS) 1-port IOP for fault tolerant ring Ethernet topology, 2 required Copper twisted pair: 10/100BASE-TX with RJ45 connectors: <ul style="list-style-type: none"> ■ Full duplex operation ■ 100 m distance*
Mounting	DIN rail latch to vertical T-type rail
Specifications for CHARM I/O Block Carrier and IS CHARM I/O Carrier	
Number of Scanner Modules per Carrier	1 for simplex and 2 for redundancy
IOP Supported	CHARM I/O Block IOP (1-port): <ul style="list-style-type: none"> ■ 1 IOP for simplex and 2 for redundancy in star Ethernet topology (Redundancy required for CSLS) ■ 2 IOPs required in fault tolerant ring Ethernet topology Copper twisted pair: 10/100BASE-TX with RJ45 connectors: <ul style="list-style-type: none"> ● Full duplex operation ● 100 m distance*
Number of Channels per I/O Block	12
Number of CHARM I/O Blocks and CHARM Baseplates per CIOC/CSLS	Maximum 8 total sum of CHARM Baseplates, IS CHARM Baseplates, CHARM I/O Blocks and IS CHARM I/O Blocks.
Addressing	One Address Plug (1 through 8)
Terminal Blocks supported on CHARM I/O Block Carrier	<ul style="list-style-type: none"> ■ Standard Terminal Block ■ Fused -Injected -Power Terminal Block ■ 3-wire DI Fused Injected Power Terminal Block ■ 3-wire AI Fused Injected Power Terminal Block ■ Relay Output Terminal Block ■ Thermocouple / mV Terminal Block ■ LS DVC Terminal Block ■ LS Redundant Terminal Block ■ LS Redundant DTA Fused Injected Power Relay Terminal Block ■ LS Redundant DTA Relay Terminal Block ■ LS Redundant ETA Relay Terminal Block ■ LS Redundant DVC Terminal Block

*DeltaV Media Converters can be used if distance over 100m is required.

Terminal Blocks supported on IS CHARM I/O Block Carrier	<ul style="list-style-type: none"> ■ IS Standard Terminal Block ■ IS Thermocouple / mV Terminal Block
Power Connections	4 Screw Cage terminals for redundant connection of $\pm 24V$ DC 0.32 – 2.5 mm ² / 22 – 14 AWG
Specifications for CHARM I/O Block Carrier and IS CHARM I/O Carrier	
Shield Connections	1 Screw Cage terminal per channel, plus 2 for cable shield grounding 0.32 – 2.5 mm ² / 22 – 14 AWG
Wire Strip Length	7 – 9 mm / 0.28 – 0.36 in
Mounting	DIN rail latch to horizontal T-type rail

Aluminum box used for the 12 CHARM I/O Junction Box	
Protection Rating	IP66, NEMA 4X
Cable Entries	17 female bosses; two thread options: <ul style="list-style-type: none"> ■ ½" – 14 NPT ■ M20X1.5
Weight	Approximately 12lbs/5.5kg
Operating Temperature*	-40 to 55°C (-40 to 131°F)**
Power Requirements	
CHARM I/O Scanner Module**	24V DC +/-10% @ 150mA max at no load
CHARM I/O Gateway 8-port IOP	24V DC +/-10% @ 85mA max
CHARM I/O Gateway 1-Port IOP	24V DC +/-10% @ 25mA max
CHARM I/O Block IOP	24V DC +/-10% @ 25mA max
Heat Dissipation	
CHARM I/O Scanner Module***	3.5 Watts maximum load (simplex) 6.25 Watts maximum load (redundant)
CHARM I/O Gateway 8-port IOP	1.9 Watts maximum
CHARM I/O Gateway 1-Port IOP	0.5 Watts maximum
CHARM I/O Block IOP	0.5 Watts maximum

*Requires installation in shaded area (no direct sunlight) and heat dissipation calculation to ensure temperature inside junction box is below desired temperature.

**The total power requirement needs to also include the 6.3V DC power required by each CHARM. The 24V DC power needs to be sized to also power the 24V DC required by each CHARM.

***The total heat dissipation also needs to include heat dissipation from each CHARM installed.

System Compatibility

Electronic Marshalling with Distributed CHARMS hardware requires:

- DeltaV v14.3.1 with hotfix or later software.
- CSLS require firmware major revision 2 or higher for use of Distributed CHARMS with DeltaV SIS.

Refer to the DeltaV Electronic Marshalling, DeltaV IS Electronic Marshalling, DeltaV SIS with Electronic Marshalling, and DeltaV SIS with IS Electronic Marshalling Product Data Sheets for CIOCs, CSLSs and individual CHARMS and terminal blocks.

Certifications

The following certifications are available for the Distributed CHARMS components (see actual certificates for exact certifications for each product):

- **CE**
EMC- EN 61326-1
- **FM**
FM 3600
FM 3611
- **CSA**
CSA C22.2 No. 213-M1987
CSA C22.2 No. 1010-1
- **ATEX**
EN 60079-0
EN 60079-7
- **IEC Ex**
IEC60079-0
IEC60079-7
- **Marine Certifications:** IACS E10
ABS Certificate of Design Assessment
DNV Type Approval Certificate

Hazardous Area/Location

The Distributed CHARMS components can be installed and used based on the following Standards (see actual certificates for exact product markings for each product):

- **FM (USA)**
Class I, Division 2, Groups A, B, C, D, T4
Zone 2 AEx ec IIC Gc T4
- **cFM (Canada)**
Class I, Division 2, Groups A, B, C, D, T4
Zone 2 Ex ec IIC Gc T4
- **ATEX**
II 3G Ex ec IIC T4 Gc
- **IEC-Ex**
II 3G Ex ec IIC T4 Gc

Regarding the Installation instructions please refer to the following Documents:

<i>Class 1 Division 2 Installation Instructions DeltaV Electronic Marshalling</i>	<i>12P5401</i>
<i>Zone 2 Installation Instructions DeltaV Electronic Marshalling</i>	<i>12P5403</i>

DeltaV Ordering Information

Description	Model Number
Redundant CHARM I/O Gateway Assembly for Star Topology. Includes Gateway Carrier, 2 Scanner Modules, 2, 8-port Ethernet IOPs.	SE6701T01
Simplex CHARM I/O Gateway Assembly for Star Topology. Includes Gateway Carrier, 1 Scanner Module, 1, 8-port Ethernet IOP, 1 Scanner Module Protection Cover, and 1 IOP Protection Cover.	SE6701T03
Redundant CHARM I/O Gateway Assembly for Ring Topology. Includes Gateway Carrier, 2 Scanner Modules, 2, 1-port Ethernet IOPs.	SE6701T02
Simplex CHARM I/O Gateway Assembly for Ring Topology. Includes Gateway Carrier, 1 Scanner Module, 2, 1-port Ethernet IOPs, and 1 IOP Protection Cover.	SE6701T04
Redundant CHARM I/O Block Assembly. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, and 2, 1-port Ethernet IOPs.	SE4701T01
Simplex CHARM I/O Block Assembly with Redundant Ethernet IOPs. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 2, 1-port Ethernet IOPs, and 1 Scanner Module Protection Cover.	SE4701T03
Simplex CHARM I/O Block Assembly with Simplex Ethernet IOP. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 1, 1-port Ethernet IOP, 1 Scanner Module Protection Cover, and 1 IOP Protection Cover.	SE4701T05
Redundant IS CHARM I/O Block Assembly. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 2 Scanner Modules, and 2, 1-port Ethernet I/O Ports.	SE4708T01
Simplex IS CHARM I/O Block Assembly with Redundant Ethernet IOPs. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 1 Scanner Module, 2, 1-port Ethernet I/O Ports, and 1 Scanner Module Protection Cover.	SE4708T03
Simplex IS CHARM I/O Block Assembly with Simplex Ethernet IOP. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 1 Scanner Module, 1, 1-port Ethernet I/O Port, 1 Scanner Module Protection Cover, and 1 I/O Port Protection Cover.	SE4708T05
12 CHARM I/O Junction Box with 1/2 inch - 14 NPT threads and Redundant CHARM I/O Block Assembly. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, fully assembled in a junction box with 17 female 1/2 inch - 14 NPT threaded bosses.	SE4701T02
12 CHARM I/O Junction Box with 1/2 inch - 14 NPT threads and Simplex CHARM I/O Block Assembly with Redundant Ethernet IOPs. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 2, 1-port Ethernet IOPs, 1 Scanner Module Protection Cover, fully assembled in a junction box with 17 female 1/2 inch - 14 NPT threaded bosses.	SE4701T04
12 CHARM I/O Junction Box with 1/2 inch - 14 NPT threads and Simplex CHARM I/O Block Assembly with Simplex Ethernet IOP. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 1, 1-port Ethernet IOP, 1 Scanner Module Protection Cover, 1 IOP Protection Cover, fully assembled in a junction box with 17 female 1/2 inch - 14 NPT threaded bosses.	SE4701T06
12 CHARM I/O Junction Box with M20X1.5 threads and Redundant CHARM I/O Block Assembly. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, fully assembled in a junction box with 17 female M20X1.5 threaded bosses.	SE4701T08

Description	Model Number
12 CHARM I/O Junction Box with M20X1.5 threads and Simplex CHARM I/O Block Assembly with Redundant Ethernet IOPs. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 2, 1-port Ethernet IOPs, 1 Scanner Module Protection Cover, fully assembled in a junction box with 17 female M20X1.5 threaded bosses.	SE4701T10
12 CHARM I/O Junction Box with M20X1.5 threads and Simplex CHARM I/O Block Assembly with Simplex Ethernet IOP. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 1 Scanner Module, 1, 1-port Ethernet IOP, 1 Scanner Module Protection Cover, 1 IOP Protection Cover, fully assembled in a junction box with 17 female M20X1.5 threaded bosses.	SE4701T12
12 IS CHARM I/O Junction Box with M20X1.5 threads and Redundant IS CHARM I/O Block Assembly. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, and a junction box with 17 female M20X1.5 threaded bosses.	SE4708T08
12 IS CHARM I/O Junction Box with M20X1.5 threads and Simplex IS CHARM I/O Block Assembly with Redundant Ethernet IOPs. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 1 Scanner Module, 2, 1-port Ethernet IOPs, 1 Scanner Module Protection Cover, and a junction box with 17 female M20X1.5 threaded bosses.	SE4708T10
12 IS CHARM I/O Junction Box with M20X1.5 threads and Simplex IS CHARM I/O Block Assembly with Simplex Ethernet IOP. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 1 Scanner Module, 1, 1-port Ethernet IOP, 1 Scanner Module Protection Cover, 1 IOP Protection Cover, and a junction box with 17 female M20X1.5 threaded bosses.	SE4708T12
M20 to NPT adapter kit for 12 IS CHARM I/O Junction Box. Includes 17 adapters and washers.	SE4708KIT1
Horizontal Channel Identifier Label/Wiring Cover for CHARM I/O Block. Package of 8	SE4606T04
Horizontal Channel Identifier Label/Wiring Cover for IS CHARM I/O Block. Package of 8	SE4606T05
Mounting Kit for 12 CHARM I/O Junction Box	SE4701KIT1

DeltaV SIS Ordering Information

Description	Model Number
Redundant CHARM I/O Gateway Assembly for Star Topology; for use with DeltaV SIS. Includes Gateway Carrier, 2 Scanner Modules, 2, 8-port Ethernet IOPs.	SS6701T01
Redundant CHARM I/O Gateway Assembly for Ring Topology; for use with DeltaV SIS. Includes Gateway Carrier, 2 Scanner Modules, 2, 1-port Ethernet IOPs.	SS6701T02
Redundant CHARM I/O Block Assembly; for use with DeltaV SIS. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, and 2, 1-port Ethernet IOPs.	SS4701T01
Redundant IS CHARM I/O Block Assembly; for use with DeltaV SIS. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 2 Scanner Modules, and 2, 1-port Ethernet I/O Ports.	SS4708T01
12 CHARM I/O Junction Box with 1/2 inch - 14 NPT threads and Redundant CHARM I/O Block Assembly; for use with DeltaV SIS. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, fully assembled in a junction box with 17 female 1/2 inch - 14 NPT threaded bosses.	SS4701T02
12 CHARM I/O Junction Box with M20X1.5 threads and Redundant CHARM I/O Block Assembly; for use with DeltaV SIS. Includes CHARM I/O Block Carrier, 12 Standard CHARM Terminal Blocks, 1 CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, fully assembled in a junction box with 17 female M20X1.5 threaded bosses.	SS4701T08
12 IS CHARM I/O Junction Box with M20X1.5 threads and Redundant IS CHARM I/O Block Assembly; for use with DeltaV SIS. Includes IS CHARM I/O Block Carrier, 12 Standard IS CHARM Terminal Blocks, 1 IS CHARM Address Plug Terminal Block, 2 Scanner Modules, 2, 1-port Ethernet IOPs, and a junction box with 17 female M20X1.5 threaded bosses.	SS4708T08
M20 to NPT adapter kit for 12 IS CHARM I/O Junction Box. Includes 17 adapters and washers.	SS4708KIT1
Horizontal Channel Identifier Label/Wiring Cover for CHARM I/O Block; for use with DeltaV SIS. Package of 8.	SS4606T04
Horizontal Channel Identifier Label/Wiring Cover for IS CHARM I/O Block; for use with DeltaV SIS. Package of 8.	SS4606T05
Mounting Kit for 12 CHARM I/O Junction Box used with DeltaV SIS	SS4701KIT1

Spare Part Ordering Information

Description	Model Number
CHARM I/O Scanner Module	KL2103X1-BA1
CHARM I/O Scanner Module Protection Cover	KL2103X1-BB1
CHARM I/O Gateway Carrier	KL4202X1-BA1
CHARM I/O Block Carrier	KL4202X1-BC1
IS CHARM I/O Block Carrier (Includes 12 IS CHARM terminal blocks and 1 IS CHARM Address Plug terminal block)	KL4211X1-BB1
CHARM I/O Gateway 8-port IOP	KL1606X1-BA1
CHARM I/O Gateway 1-port IOP	KL1606X1-BB1
CHARM I/O Block IOP	KL1606X1-BC1
CHARM I/O Gateway IOP Protection Cover	KL1606X1-BD1
CHARM I/O Block IOP Protection Cover	KL1606X1-BE1

Related Products

- **DeltaV Electronic Marshalling**
- **DeltaV IS Electronic Marshalling**
- **DeltaV SIS with Electronic Marshalling**
- **DeltaV SIS with IS Electronic Marshalling**

Prerequisites

DeltaV Electronic Marshalling with Distributed CHARMS hardware requires DeltaV v14.3.1 with hotfix or later software.

CSSLs require firmware major revision 2 or higher for use of Distributed CHARMS with DeltaV SIS.

See additional requirements in related products Product Data Sheets.

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