

# S-series Electronic Marshalling for Migrations



*S-series CHARM I/O Cards (CIOC) mounted on a Migration Panel*



*S-series CHARM I/O Baseplate Migration Panel.*

- I/O anywhere you need it
- Single channel granularity
- Replaces legacy I/O in place
- Fully redundant architecture
- Complete DeltaV™ S-series solution
- Plug and play I/O

## Introduction

DeltaV S-series Electronic Marshalling delivers a new level of control system I/O performance with unprecedented flexibility and ease of use. The CHARM I/O card (CIOC) supports up to 96 individually configurable channels and when mounted horizontally in conjunction with a legacy system migration will allow for direct replacement of legacy hardware within existing cabinets. Now you can migrate to DeltaV S-series without having to add cabinets, custom cables, or extra marshalling. All communications are completely redundant from the channel (CHARM) to the DeltaV S-series controller.

**Benefits**

**I/O anywhere you need it.** DeltaV CHARM I/O Card (CIOC) provides an unprecedented flexibility in control system I/O topology. Now you can mount your DeltaV I/O in the same space as your legacy I/O for a direct 1-to-1 replacement of your legacy I/O. Without adding any new cabinets of DeltaV hardware you can replace all your legacy equipment leaving behind a complete DeltaV solution.

**Single Channel granularity.** The CHARM I/O architecture allows each individual channel to be characterized for the requirements of the field device. Any instrument signal can be wired to any terminal block. The channel is then electronically marshalled by installing the appropriate CHARM and assigning the channel to one of four controllers. Legacy I/O terminations are no longer a concern because of multiple channel types from a single termination panel. Just install the proper CHARM to characterize the I/O as found on the legacy panels. No more engineering and splitting signals from a single legacy panel to multiple DeltaV I/O cards.

**Replaces Legacy I/O in place.** DeltaV Electronic Marshalling goes where no one else's I/O can. Install the CHARMS migration panel above, below, or even in front of your legacy termination panel and move your wires inches to complete your migration to DeltaV. Since the CHARMS migration panel is a standard CHARMS baseplate, it talks to the CIOC the same as the standard vertical installation via the cable interface. This allows you to mount the migration panel in the best location to facilitate a clean system cutover and not how to "stretch" your I/O cables to a new termination. As an added bonus, install CHARMS vertical if your wiring allows for it in certain areas. Now you can mount your I/O in any orientation as best fits your current migration layout and needs.

**Fully redundant communications.** The CIOC architecture is fully redundant. This starts with the two I/O cards on a carrier. The carrier has redundant communication modules for primary and secondary network connections. There are two 24 VDC input power connections. The carrier connects to the CHARMS Baseplates and provides redundant power and communication buses to the CHARMS. Everything is redundant down to the individual channel.

**Complete DeltaV S-series solution.** Migrate from your legacy system with the comfort that when complete you will have a complete DeltaV S-series solution, not a combination of standard and custom hardware/software to support. Every piece of the migration panel is standard DeltaV hardware and can be supported with the same personnel and spare equipment that every other CHARMS and S-series installation uses.

**Plug and Play I/O.** The DeltaV CIOC has been designed for ease of use, both in physical installation and its software tools. Components snap together with secure DIN-rail latches and interlocking carrier connectors. Insert the CHARMS and auto sense the node to create the I/O definition automatically in your DeltaV configuration database. CHARMS use a self-keying system to automatically set a channel for a specific CHARM type. Users cannot mistakenly insert a CHARM into the wrong terminal block. Assign all, one or any number of channels to a controller with a simple click and drag.



CHARM and Terminal Block.

Field power is provided through a redundant 24VDC bus to each CHARM, with up to 100 mA per CHARM. Higher current Discrete Channels can be powered through integrated power injection bus local to each CHARM Baseplate.

**Product Description**

**Electronic Marshalling for Migrations hardware includes:**

- CHARM I/O Carrier (DIN rail mounted and supports redundant pair of CHARM I/O Cards)
- CHARM I/O Card (provides communication between CHARMs and the Ethernet I/O network to S-series controllers)
- CHARM Baseplate (DIN rail mounted with interleaving power and bus connectors. Supports 12 CHARMs and their terminal blocks, as well as connection for injected field power)
- CHARM Terminal Block (removable terminal block providing terminal connections to field wiring and physical latch for CHARM)
- CHARMs (Characterization Module for each field signal. Provides basic analog to digital conversion, connectivity to redundant communication bus, and fault isolation)
- Cable Extenders that provide flexibility in carrier mounting.
- Baseplate terminators (provides bus terminations for redundant I/O bus)
- 19" Migration Panels (provides DIN rail mounting for two migration CIOC's or two baseplates and cable extenders for installation into your standard 19" legacy cabinets.)



*CIOC Migration Panel*

The CHARM I/O card carrier is mounted on a vertical DIN rail and can communicate with up to eight CHARM Baseplates mounted vertically or on migration panels and connected to each other via extender cables. The bus terminators are attached to the last baseplate.



*Baseplate Migration Panel*

Each CHARMs Migration Baseplate Assembly is ordered pre-loaded with 24 terminal blocks that are ready to receive field wires from 2, 3 and 4-wire devices. Electronic Marshalling eliminates the need to scramble the field wiring or to partition the I/O in order to match signals to channel types of specific cards. Simply connect field signals in an orderly fashion as desired. Insert the appropriate CHARM into each terminal block to complete the field circuit and the signal is ready to be used by any one of 4 S-series controllers.

For each Migration CIOC installation you will need to determine the quantity and connector cable length as well as the appropriate quantity of top and/or bottom baseplate terminators.

The Migration CIOC assembly has a height of 6 EIA units (10.5 inches) and is designed to be mounted at the top of the migration cabinet and connected to the CHARM baseplate assemblies via the cables and cable extenders. It should be noted that the CIOC can be mounted on vertical DIN rail anywhere in the cabinet (front, back, side, top, middle, bottom...) and connected to the CHARM baseplate assembly the same way. NOTE: the CIOC cannot be mounted on a horizontal DIN rail.

The Migration CHARM baseplate assembly has a height of 3 EIA units (5.25 inches) which allows for each installation to determine the mounting location within each cabinet. The user can decide to reuse existing wire way / cable tray, mount each assembly adjacent to each other, or mount with spacing between each assembly. DeltaV CHARMs allow for installation flexibility by allowing each assembly to be mounted as needed to achieve the best result for each customer specific termination installation.

Each CHARM acts as circuit protection device and field wiring disconnects. Signals are current limited or fused to protect against wiring faults to ground. Each CHARM provides surge protection to meet industry standards in the area of EMC, and is designed to fail during overvoltage conditions due to incorrect field wiring. Signal faults are isolated to the single charm.

CHARMs can be partially ejected to a locked position that disconnects the field wiring from the system to perform field maintenance actions or to remove power to a field device. Activating the CHARM latch ejects the CHARM to the detent position. Closing the latch locks the CHARM in place and isolates the field wiring for field work.

The CIOC communicates over Ethernet with up to 4 controllers, allowing great flexibility and ease of system expansion. Additional controllers can be added to accommodate increased control scope and I/O can be reassigned without changing the physical wiring. This allows you the flexibility required in migrations where over time I/O has been land on one controller only to be used in another because of space and or available I/O.

CHARMs can be added to any existing base plate position and autosensed online. Additional CIOC's can be added on line.

**CHARM Types**

All CHARM types function on the migration panel, see

[PDS S-series Electronic Marshalling](#) and

[PDSS-series IS Electronic Marshalling](#)

for a complete listing of CHARMs and IS CHARMs

**I/O Terminal Block Options**

All IS and non IS I/O Terminal Block types function on the migration panel by choosing the right Baseplate assembly.

**CHARM Keying Posts**

Keying Posts function the same.

**CHARM I/O Card Hardware**

See PDS S-series Electronic Marshalling and PDS S-series IS Electronic Marshalling for a complete description of CHARMs Hardware.

**CHARM I/O Card Carrier**

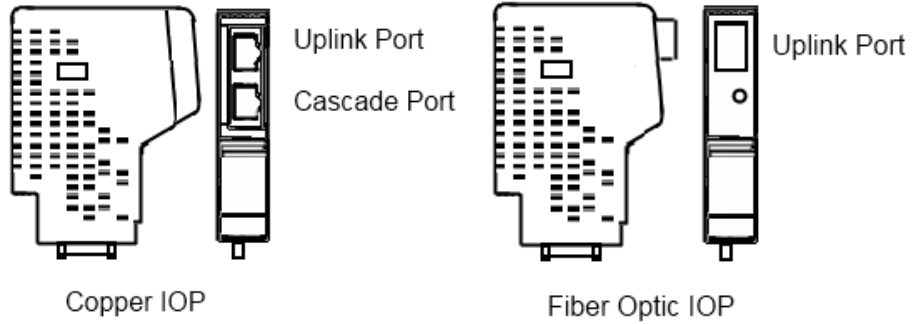
See PDS S-series Electronic Marshalling and PDS S-series IS Electronic Marshalling for a complete description of CHARMs Hardware.

**Hardware Specifications**

CHARM I/O Migration Panel	
Environmental Specifications	
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
Protection rating	IP 20, NEMA 12
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 13.2 Hz; 0.7 g from 13.2 to 150 Hz
Dimensions	
Height	19 in
Depth	10.5 in
Width	6.86 in
Mounting	19 in (48.26 cm) EIA rails 6 Rack Units (U) high

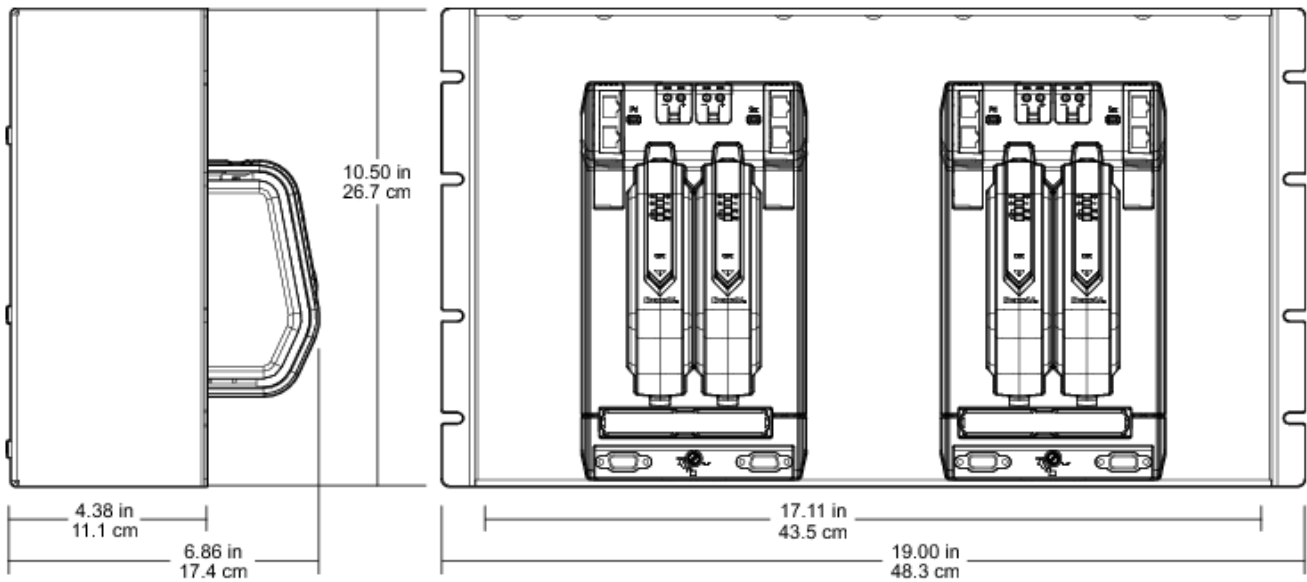
*When used with copper Ethernet I/O Ports (Copper IOP). When used with the Fiber Optic I/O Ports (Fiber Optic IOP), the operating temperature range is limited to -40 to 60 °C (-40 to 140 °F).*

# S-series Electronic Marshalling for Migrations



Operating Temperature -40 to 70 °C (-40 to 158 °F)    Operating Temperature -40 to 60 °C (-40 to 158 °F)

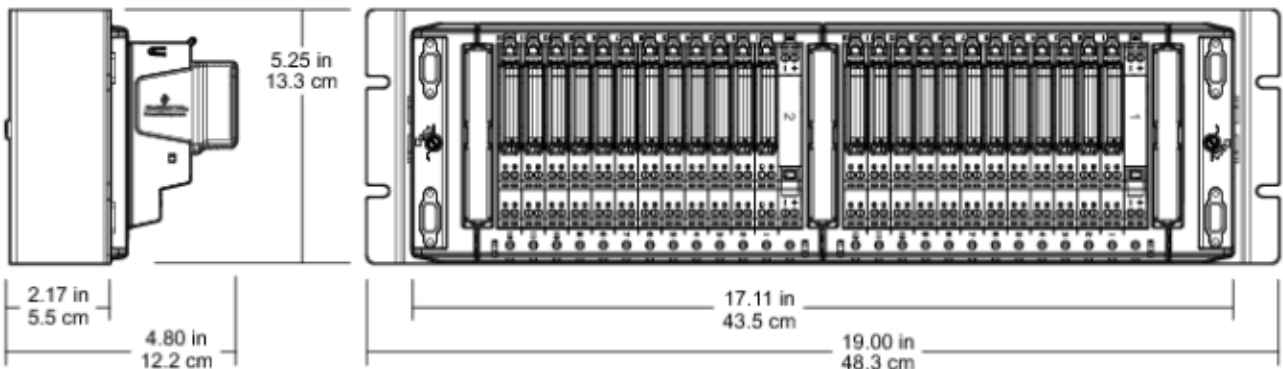
*CIOC Carrier Ethernet Communication Modules*



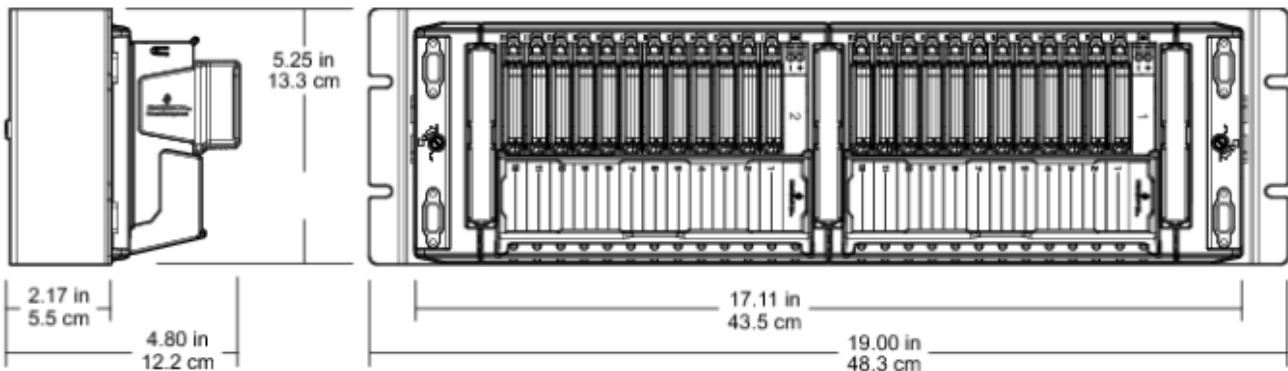
*CIOC Migration Panel*



CHARM Baseplate Migration Panel	
Environmental Specifications	
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
Protection rating	IP 20, NEMA 12
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 13.2 Hz; 0.7 g from 13.2 to 150 Hz
Dimensions (with or without labels)	
Height	19 in
Depth	13.3 in
Width	4.8 in
Mounting	19 in (48.26 cm) EIA rails 3 Rack Units (U) high



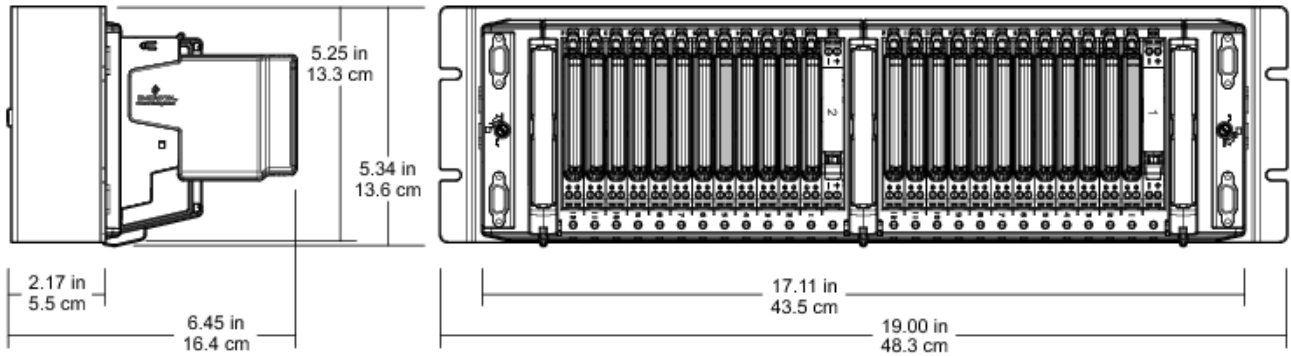
*CHARM Baseplate Migration Panel without labels*



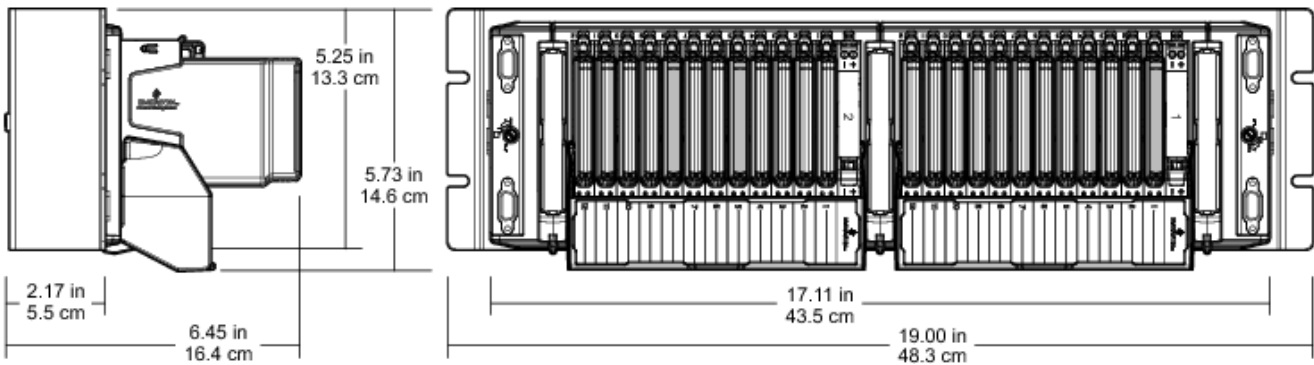
*CHARM Baseplate Migration Panel with labels*

<b>IS CHARM Baseplate Migration Panel</b>	
<b>Environmental Specifications</b>	
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
Protection rating	IP 20, NEMA 12
Airborne contaminants	ISA-S71.04-1985 Airborne Contaminants Class G3 Conformal coating
Shock	10 g ½-sine wave for 11 ms
Vibration	1 mm peak-to-peak from 5 to 13.2 Hz; 0.7 g from 13.2 to 150 Hz
<b>Dimensions (with labels)</b>	
Height	19 in
Depth	13.6 in
Width	6.45 in
Mounting	19 in (48.26 cm) EIA rails 3 Rack Units (U) high
<b>Dimensions (without labels)</b>	
Height	19 in
Depth	14.6 in
Width	6.45 in
Mounting	19 in (48.26 cm) EIA rails 3 Rack Units (U) high

# S-series Electronic Marshalling for Migrations



*IS CHARMs Baseplate Migration Panel without labels*



*IS CHARMs Baseplate Migration Panel with labels*

## System Compatibility (Optional)

See PDS S-series Electronic Marshalling and PDS S-series IS Electronic Marshalling for a complete description of CHARMs Compatibility.

## Certifications (Optional)

See PDS S-series Electronic Marshalling and PDS S-series IS Electronic Marshalling for a complete description of CHARMs certification



**Ordering Information**

<b>CHARM I/O Cards for Migrations</b>	
<b>Description</b>	<b>Model Number</b>
<b>Redundant Migration CIOC with Copper Ethernet</b> , includes redundant pair of CHARM I/O Cards, CHARM I/O Carrier with Screw Terminals, Copper I/O Ports, CHARMs Baseplate Extender with Bottom Cable Connector, a Baseplate Identifier and a Separation Wall	SE6501T03
<b>Redundant Migration CIOC with fiber optics Ethernet</b> , includes redundant pair of CHARM I/O Cards, CHARM I/O Carrier with Screw Terminals, Fiber Optic I/O Ports, CHARMs Baseplate Extender with Bottom Cable Connector, a Baseplate Identifier and a Separation Wall	SE6501T04
<b>CHARMs Migration CIOC Assembly</b> 19" Migration panel with DIN rail support for 2 redundant migration CIOC's	SE6503T01
<b>CHARM Baseplates for Migrations</b>	
<b>Description</b>	<b>Model Number</b>
<b>CHARMs Migration Baseplate Assembly:</b> <ul style="list-style-type: none"> <li>• Two CHARMs Baseplates</li> <li>• Two CHARMs Address Terminal Blocks with screw terminals</li> <li>• 24 Standard CHARM Terminal Blocks</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Top</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Bottom</li> <li>• 19" migration panel with DIN rail</li> <li>• 3 Baseplate Identifier</li> </ul>	SE4601T03
<b>CHARMs Migration Baseplate Assembly with Fused Injected Field Power:</b> <ul style="list-style-type: none"> <li>• Two CHARMs Baseplates</li> <li>• Two CHARMs Address Terminal Blocks with screw terminals</li> <li>• 24 Fused Injected Power CHARM Terminal Blocks</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Top</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Bottom</li> <li>• 19" migration panel with DIN rail</li> <li>• 3 Baseplate Identifier</li> </ul>	SE4601T04
<b>CHARMs Migration Baseplate Assembly with Relay Output:</b> <ul style="list-style-type: none"> <li>• Two CHARMs Baseplates</li> <li>• Two CHARMs Address Terminal Blocks with screw terminals</li> <li>• 24 Relay Output CHARM Terminal Blocks</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Top</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Bottom</li> <li>• 19" migration panel with DIN rail</li> <li>• 3 Baseplate Identifier</li> </ul>	SE4601T06

**Ordering Information**

IS CHARM Baseplates for Migrations	
Description	Model Number
<p><b>IS CHARMs Migration Baseplate Assembly:</b></p> <ul style="list-style-type: none"> <li>• Two IS CHARMs Baseplates</li> <li>• Two IS CHARMs Address Terminal Blocks</li> <li>• 24 IS CHARM Standard Terminal Blocks</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Top</li> <li>• CHARMs Baseplate Extender with Cable Connectors – Bottom</li> <li>• 19” migration panel with DIN rail</li> <li>• 3 Baseplate Separation Walls</li> </ul> <p>Important Note :</p> <p>The IS CHARMs are dimentional different than non IS CHARMs. The IS CHARM Baseplates will be mounted on the same 19” migration panel than the non IS Baseplates, therefore the IS CHARMs will stick 45 mm further out of the 19” frame than non IS CHARMs!</p>	SE4608T02

CHARM I/O Baseplate Address Plugs	
Description	Model Number
<b>CHARMs Addressing Plugs</b> , includes Address Plugs 1 through 8	SE4602
<b>CHARMs Addressing Plugs</b> , includes Address Plugs 1 through 4	SE4613

**Prerequisites**

S-Series Electronic Marshalling hardware requires DeltaV v11.3.1 or later software

Ordering Information

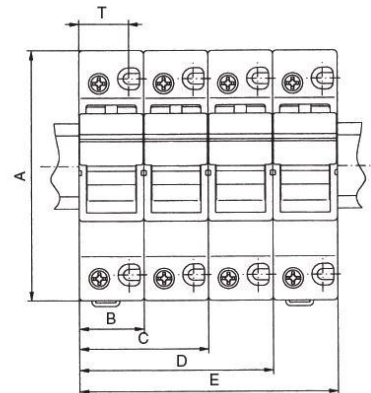
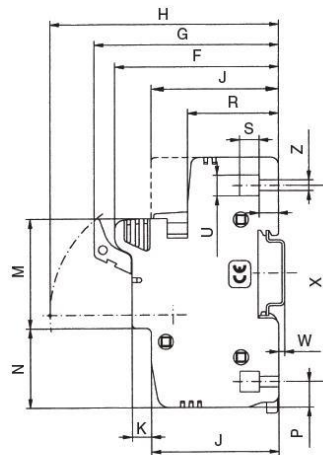
CHARM I/O Baseplate Extender, Terminator & Cables	
Description	Model Number
<b>CHARMs Baseplate Extender with Cable Connectors, Top (Male)</b> includes a Baseplate Identifier and a Baseplate Separation Wall	SE4603T05
<b>CHARMs Baseplate Extender with Cable Connectors, Bottom (Female)</b> includes a Baseplate Identifier and a Baseplate Separation Wall	SE4603T06
<b>CHARMs Baseplate Terminator, Top (Male)</b> includes a Baseplate Identifier and a Baseplate Separation Wall	SE4604T03
<b>CHARMs Baseplate Terminator, Bottom (Female)</b> includes a Baseplate Identifier and a Baseplate Separation Wall	SE4604T04
<b>CHARMs Baseplate Cables</b> , includes two 0.5m cables	SE4605T02
<b>CHARMs Baseplate Cables</b> , includes two 1m cables	SE4605T03
<b>CHARMs Baseplate Cables</b> , includes two 2m cables	SE4605T04

Each vertical DIN rail requires a DIN Rail stop to lock baseplates in position. Order VE4054DRS, which is a box of 5.

IS CHARM FUSE	
Description	Model Number
<b>Fuse Holder and Fuse Assembly for 24VDC Power Supply of CHARM I/O CARD</b>	SE4610T01*

\* Two of these Fuse Assemblies have to be ordered with any SE6501T03 or SE6501T04, when used with IS CHARM baseplates

A	4.04" (102.5 mm)	M	1.77" (45 mm)
B	1.04" (26.5 mm)	N	1.28" (32.5 mm)
C	2.10" (53 mm)	P	0.40" (10.5 mm)
D	3.13" (79.5 mm)	R	1.48" (37.5 mm)
E	4.17" (106 mm)	S	0.30" (8 mm)
F	2.66" (67.5 mm)	T	0.80" (20.5 mm)
G	3.00" (76 mm)	U	∅ 0.33" (8.5 mm)
H	3.70" (94.2 mm)	W	0.1" (2.5 mm)
J	2.07" (52.5 mm)	X	3.17" (80.5 mm)
K	0.30" (8 mm)	Z	∅ 0.17" (4.4 mm)



**CHARM I/O Labeling and Spare part ordering Information**

<b>CHARM I/O Labeling and Spare Parts</b>	
<b>Description</b>	<b>Model Number</b>
<b>Channel Identifier Labels for CHARM Baseplates; Package of 8</b>	SE4606T02
<b>Charm Baseplate Identifier; Package of 9</b>	SE4606T03
<b>250V 2A Fuse for Fused Terminal Block; Box of 20</b>	KJ4010X1-BC1
<b>Power Terminal Plug for CHARM I/O Carrier</b>	KJ4005X1-BF1
<b>I/O Port Switch Module; Copper; for CIOC Carriers</b>	KL1601X1-BA1
<b>I/O Port Switch Module; Fiber; for CIOC Carriers</b>	KL1602X1-BA1*

\* Fiber Optic Ethernet I/O Ports are not cascade able

**IS CHARM I/O Labeling and Spare part ordering Information**

<b>IS CHARM I/O Labeling and Spare Parts</b>	
<b>Description</b>	<b>Model Number</b>
<b>Channel Identifier Labels for Intrinsically-Safe CHARM Baseplates; Package of 8</b>	SE4609T01
<b>IS Charm Baseplate Separation Wall; Package of 9</b>	SE4609T02
<b>Replacement Fuse for SE4610T01 Fuseholder Assembly</b>	KL4510X1-FA1
<b>Replacement Fuseholder for SE4610T01 Fuseholder Assembly</b>	KL4510X1-GA1

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