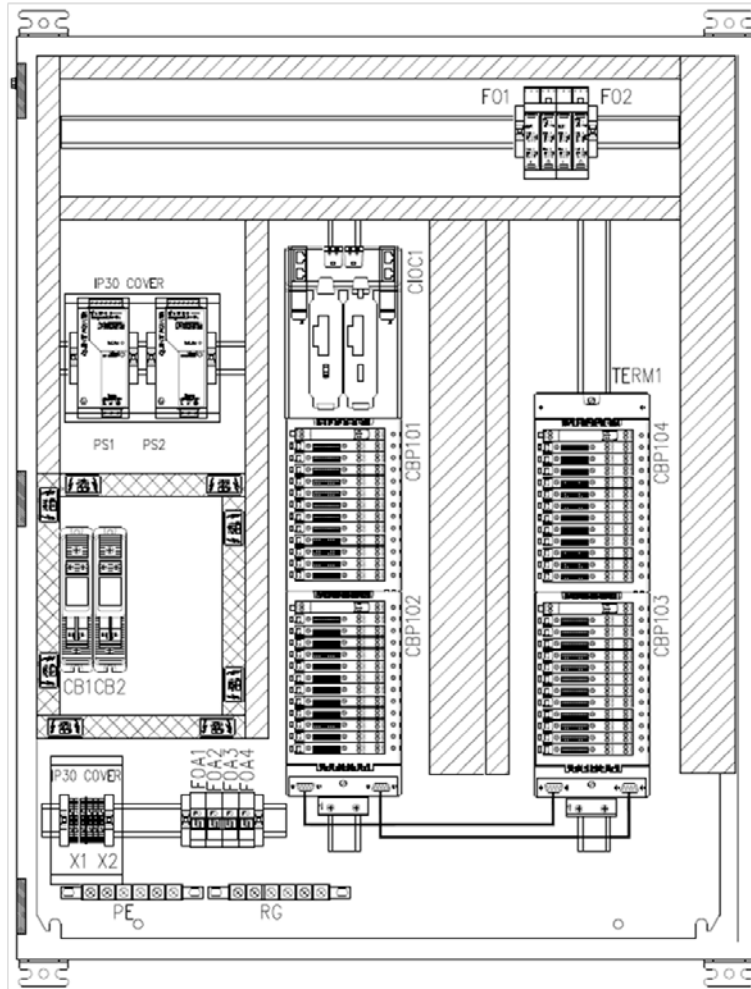


Factory Tested Field Enclosures



Factory Tested Field Enclosures

- Delivers “Electronic Marshalling” enabled by CHARMS technology.
- Reduce system footprint
- Eliminate I/O home run cables
- Eliminate cabinet design engineering
- Fully documented package

Introduction

The DeltaV™ Factory Tested Field Enclosures provide an off-the-shelf solution for faster project execution and reduced installation costs. Enclosures are factory tested and ready for the field. Electronic Marshalling eliminates traditional I/O design tasks and allows field wiring to start long before control strategies are finalized.

The enclosures are designed for hazardous areas and harsh environments, from extreme temperatures to corrosive gases.

Benefits

Delivers “Electronic Marshalling” enabled by CHARMs technology. The Factory Tested Field Enclosures offer the full benefits of Electronic Marshalling. The individual channels can be defined for any combination of field signal type, as required by the process equipment. This allows for 100 % utilization of channels, regardless of the I/O signal mix. Late changes are easily accommodated with minimal re-engineering and no rewiring.

Reduce System Footprint. Equipment room footprint is greatly reduced by replacing traditional marshalling cabinets with field mounted I/O cards.

Eliminate I/O home run cables. Field instrumentation wiring is reduced to the signal pair that connects the field device to the Field Enclosure. Save on home run multi-core cables, cable trays, associated engineering and documentations.

Eliminate cabinet design engineering. The Factory Tested Field Enclosures are pre-engineered and factory tested. The I/O flexibility allows the same design to serve a wide variety of I/O signals, conditioned individually by the CHARM. Field wiring design is complete at the terminal block.

Fully documented package. Each Field Enclosure is supplied with full documentation and engineering drawings showing internal lay-out, bill of materials and internal wiring. They are designed to meet local building code and industry best practices in order to deliver proven functionality with minimal costs.

Product Description

The DeltaV Factory Tested Field Enclosures are industry standard enclosures, preinstalled with CHARM I/O and related equipment, ready to be installed in the field and connected to process field instrumentation.

The design has considered many specific requirements related to outdoor installation in the field, including environmental protection, heat dissipation, power and grounding requirements and installation in hazardous areas.

Before delivery, each field enclosure undergoes a full in-house inspection, to assure that it is fully operational before leaving the factory. Electronic Marshalling eliminates the need for custom designs. These cabinets can be ordered and delivered directly to site to begin field wiring.

The Factory Tested Field Enclosures are standard, wall mounting enclosures that come ready to receive incoming 24 VDC power or available plant AC power. All components are prewired and tested at the factory. Simply install the enclosure, connect the field wiring, power and network cables. Install needed CHARMs to commission your loops and autosense the hardware into your DeltaV system.

There are several designs available to meet environmental and power distribution needs. All components are installed per DeltaV installation requirements. Select the number of enclosures based on the number of field signals. Choose internal 24 VDC power supplies to handle AC power feeds, or use available 24 VDC power feeds. Each cabinet is further explained in the coming sections.

System planning

Electronic Marshalling changes the game with respect to control system I/O planning. The field I/O wiring can be designed independently from the control strategy design, allowing E&I engineers to determine the number and type of I/O based on the process design.

Count the I/O requirements and determine the number of Factory Tested Field Enclosures you need. Is it for a safe area or hazardous area. Plan the power distribution and install the enclosures. Wire the field devices and commission them.

When control strategies and associated controller hardware is finalized, simply assign the I/O signals to the controllers as needed, no wiring changes. You can change controller I/O assignments with the click of a mouse, without touching a wired connection.

Factory Tested Field Enclosures

The Factory Tested Field Enclosures come with the following equipment installed:

- CHARM I/O Card carrier
- 4 CHARM Baseplates with 48 standard terminal blocks, Address Plugs 1 thru 4, assorted CHARM Bus components, including the bus termination.
- *The CHARM I/O cards and CHARMS are ordered separately*
- Power distribution and isolation components for primary and secondary 24VDC Power to CHARM I/O Cards.
- AC power feeds with redundant AC/DC 24 VDC bulk power supplies

- or -

24 VDC power distribution from remote

- PVC wire ducts

- Grounding bars for PE and DC Ground Reference
- Emerson Name Plate Holder and blank name plate insert

Enclosures are designed for bottom entry for all cables (power, network and I/O signals)

The Factory Tested Field Enclosures support all available low voltage CHARM I/O types with 24 VDC bussed field power.

Select the correct Field Enclosures type based on the preferred input power (AC or DC) and hazardous area options.

- The Field Enclosures without bulk power supplies are to be powered from an external 24VDC source. If bulk power supplies are included, the JB's are to be connected to 120/230VAC.

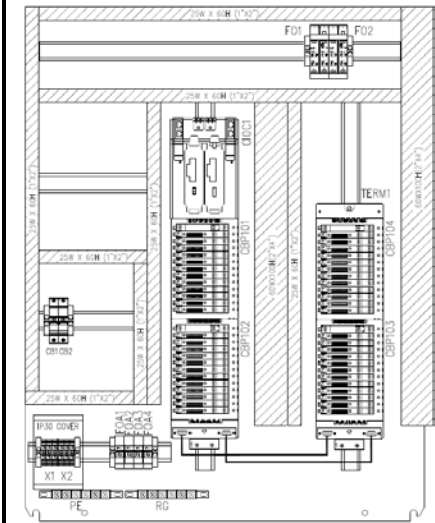
External 24VDC power eliminates 120/230VAC equipment and wiring from the Field Enclosures

Overview of Factory Tested Field Enclosures

Model #	Description	Bulk 24VDC PS / Approximate Weight	Permitted Location
SE7003	DC Powered Field Enclosures for 48 CHARM I/O; CE mark for Safe Area locations	Not included 75 kg	Safe area for EC
SE7008	DC Powered Field Enclosures for 48 CHARM I/O; FM mark for Safe Area locations	Not included 75 kg	Safe area for NA
SE7004	DC Powered Field Enclosures for 48 CHARM I/O; CE mark for Zone 2 Locations	Not included 75 kg	Hazardous Area: ATEX/IEC Ex Zone 2,
SE7009	DC Powered Field Enclosures for 48 CHARM I/O; FM mark for Class 1 Div 2 areas	Not included 75 kg	Hazardous Area: FM Class1, Div 2
SE7006	AC Powered Field Enclosures for 48 CHARM I/O; CE mark for Safe Area locations	2 x 5A 80 kg	Safe area for EC
SE7010	AC Powered Field Enclosures for 48 CHARM I/O; FM mark for Safe Area locations	2 x 5A 80 kg	Safe area for NA
SE7007	AC Powered Field Enclosures for 48 CHARM I/O; CE mark for Zone 2 Locations	2 x 5A 80 kg	Hazardous Area: ATEX/IEC Ex Zone 2
SE7011	AC Powered Field Enclosures for 48 CHARM I/O; FM mark for Class 1 Div 2 areas	2 x 5A 80 kg	Hazardous Area: FM Class1, Div 2

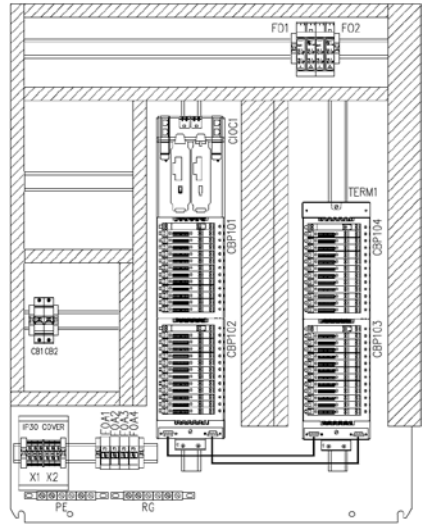
Safe Area Enclosures

SE7003	
Material	Powder Coated sheet Steel – 1.5mm. color RAL7035
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, external grounding bolt, drip edge, breather-drain (polyamide)
Environmental Specifications	Outside Temperature Limits : -40°C to 55°C Outdoor installation in shaded area
Max. Heat dissipation	40 W
Certifications	CE, installation in safe area locations
Power Requirements	Primary and secondary 24VDC power to be supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Full redundant (prim and secondary) 24VDC distribution over power terminals and circuit breakers.</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p>

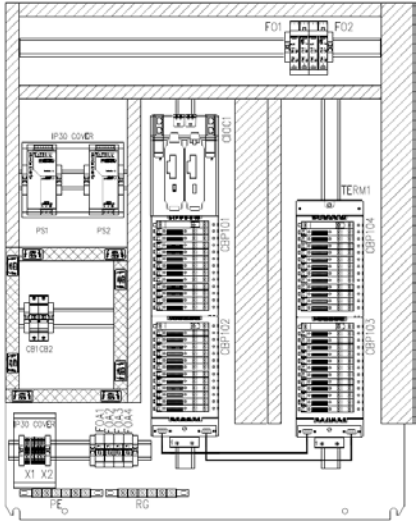


Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

SE7008	
Material	Powder Coated sheet Steel – 1.5mm. color RAL7035
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, drip edge, breather-drain (brass-Ni plated)
Environmental Specifications	Outside Temperature Limits : -40°C to 55°C Outdoor installation in shaded area
Max. Heat dissipation	40 W
Certifications	cFM _{US} , installation in ordinary locations
Power Requirements	Primary and secondary 24VDC power to be supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Full redundant (prim and secondary) 24VDC distribution over power terminals and circuit breakers.</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p>



Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

SE7006	
Material	Powder Coated sheet Steel – 1.5mm. color RAL7035
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, external grounding bolt, drip edge, breather-drain (polyamide)
Environmental Specifications	Outside Temperature Limits : -25°C to 50°C Outdoor installation in shaded area
Certifications	CE, installation in safe area locations
Max. Heat dissipation	60 W
Power Requirements	Primary and secondary 230 VAC power supply supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<div style="display: flex;"> <div style="flex: 1;">  </div> <div style="flex: 2; padding-left: 10px;"> <p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Redundant 230 VAC distribution over power terminals, circuit breakers. 24VDC bulk power supplies: 2 x 5A and full redundant (prim and secondary) 24VDC distribution.</p> <p>IP 30 cover for AC terminals and bulk power supplies</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p> </div> </div>

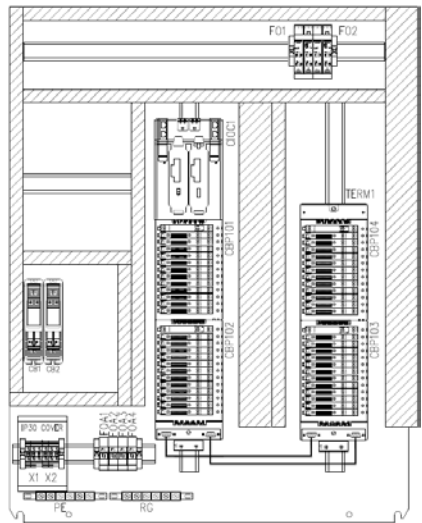
Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

SE7010	
Material	Powder Coated sheet Steel – 1.5mm. color RAL7035
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, drip edge, breather-drain (brass-Ni plated)
Environmental Specifications	Outside Temperature Limits : -25°C to 50°C Outdoor installation in shaded area
Max. Heat dissipation	60 W
Certifications	cFM _{US} , installation in ordinary locations
Power Requirements	Primary and secondary 120 VAC power supply supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Redundant 120 VAC distribution over power terminals, circuit breakers. 24VDC bulk power supplies: 2 x 5A and full redundant (prim and secondary) 24VDC distribution. IP 30 cover for AC terminals and bulk power supplies</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMS – as required Engraving of nameplate Gland Plate holes and cable glands</p>

Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

Hazardous Area Field Enclosures

SE7004	
Material	Stainless steel SS304 1.5 mm
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4X (corrosive environment)
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, external grounding bolt, drip edge, breather-drain (polyamide)
Environmental Specifications	Outside Temperature Limits : -20°C to 50°C Outdoor installation in shaded area
Max. Heat dissipation	40 W
Certifications	CE – ATEX Zone 2, IEC Ex Zone 2 (EXn)
Power Requirements	Primary and secondary 24VDC power to be supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> • 1 x CHARM I/O Carrier with redundant copper Ethernet connectors • 4 x CHARM Base Plates and address plugs • 48 x CHARM standard terminal blocks - Screw type <p>Full redundant (prim and secondary) 24VDC distribution over power terminals and circuit breakers.</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p>

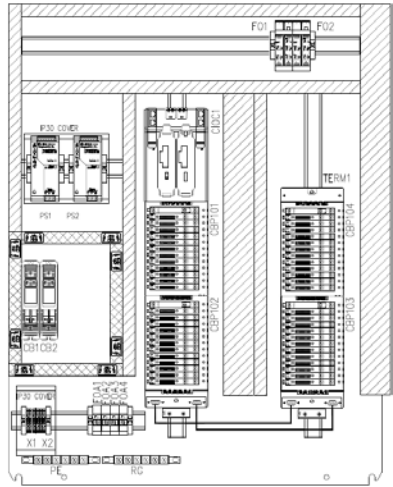


Order Channel Identifier Labels for CHARM Baseplates separately: SE460T02

SE7009	
Material	Stainless steel SS304 1.5 mm
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4X (corrosive environment)
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, drip edge, breather-drain (brass-Ni plated)
Environmental Specifications	Outside Temperature Limits : -20°C to 50°C Outdoor installation in shaded area
Max. Heat dissipation	40 W
Certifications	cFM _{US} (NI/II/2/ABCD) Class1-Div2
Power Requirements	Primary and secondary 24VDC power to be supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<div style="display: flex;"> <div style="flex: 1;"> </div> <div style="flex: 2; padding-left: 10px;"> <p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Full redundant (prim and secondary) 24VDC distribution over power terminals and circuit breakers.</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p> </div> </div>

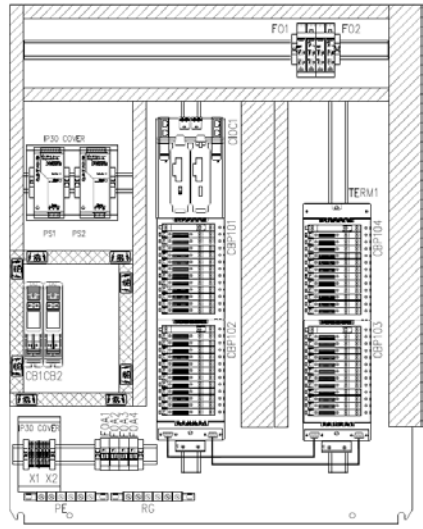
Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

SE7007	
Material	Stainless steel SS304 1.5 mm
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4X (corrosive environment)
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, external grounding bolt, drip edge, breather-drain (polyamide)
Environmental Specifications	Outside Temperature Limits : -20°C to 45°C Outdoor installation in shaded area
Max. Heat dissipation	60 W
Certifications	CE – ATEX Zone 2, IEC Ex Zone 2 (EXn)
Power Requirements	Primary and secondary 230 VAC power supply supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Redundant 230 VAC distribution over power terminals, circuit breakers. 24VDC bulk power supplies: 2 x 5A and full redundant (prim and secondary) 24VDC distribution. IP 30 cover for AC terminals and bulk power supplies Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately:</p> <p>CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p>



Order Channel Identifier Labels for CHARM Baseplates separately: SE4606T02

SE7011	
Material	Stainless steel SS304 1.5 mm
Dimensions	800mm (W) x 1000mm (H) x 300mm (D)
Access	Single door, left hand hinged
Protection category	IP66 – NEMA4X (corrosive environment)
Cable Entry	Bottom, Standard undrilled
Name Plate	Outside Door: laser engraved plastic
Other	Mounting plate, external wall mounting brackets door clamps, ground bars, drip edge, breather-drain (brass-Ni plated)
Environmental Specifications	Outside Temperature Limits : -20°C to 45°C Outdoor installation in shaded area
Max. Heat dissipation	60 W
Certifications	cFM _{US} (NI/1/2/ABCD) Class1-Div2
Power Requirements	Primary and secondary 120 VAC power supply supplied from outside the Field Enclosure
Control Network	Redundant fiber optic, 100BASE-FX, Multi Mode, SC sockets (2 spare SC sockets for up to 4 spare fibers)
Installed Equipment	<p>Standard Pre-installed:</p> <p>48 CHARM I/O channels, 24 VDC I/O assembly, including:</p> <ul style="list-style-type: none"> ■ 1 x CHARM I/O Carrier with redundant copper Ethernet connectors ■ 4 x CHARM Base Plates and address plugs ■ 48 x CHARM standard terminal blocks - Screw type <p>Redundant 120 VAC distribution over power terminals, circuit breakers. 24VDC bulk power supplies: 2 x 5A and full redundant (prim and secondary) 24VDC distribution. IP 30 cover for AC terminals and bulk power supplies</p> <p>Fiber Optic control network: FO to Copper Network switches, SC adaptors + Fiber Optic patch cables, Multimode 50/125 micron core/cladding diameters (OM2).</p> <p>To be ordered / installed separately: CHARM I/O Cards (redundant pair) CHARMs – as required Engraving of nameplate Gland Plate holes and cable glands</p>



Order Channel Identifier Labels for CHARM Baseplates separatly: SE4606T02

Project Customizations

In addition to the standard Factory Tested Field Enclosures above, a number of customizations have been pre-designed as a variation or addition to the standard FTE cabinet specifications, such as:

- Enclosure material: stainless steel SS304 or SS316L
- Removable Gland Plate
- Pre-drilled bottom entry with wire glands for 48 I/O, plus Power, communications and Ground cables.
- Name plate insert, engraved with custom supplied cabinet identification information
- 24 VDC power distribution for injected power :
- 8 fused circuits, optionally prewired to selected channels or base plates
- Bulk Power supply upgrade to 10A
- Heater, for extreme low temperature installations
- Blue marking for wire ducts (IECEX)

These options are available as Configure To Order (CTO) enclosures and can be implemented, tested and shipped to site as one package, without requiring any upfront design engineering or factory acceptance test.

Remark : not all of above options are available for all the enclosures.

Please contact your local Emerson Sales office for further information regarding available CTO options.

System Compatibility

Factory Tested Field Enclosures are compatible with DeltaV version 11.3.x and above.

CHARM I/O cards require S-series Controllers.

Certifications

The Factory Tested Enclosures are designed with components that meet or exceed the following certifications. Depending on the enclosure type (see specs):

- CE Mark :conformity to the relevant European directives, including EMC directive
- CE Mark for Zone-2 ATEX / IEC EX
- FM for US and Canada
- FM Approvals 3611 – Class 1 Div 2

Enclosure documentation package lists all components and corresponding certification markings.

Enclosures are assembled in certified facilities and certified to applicable safety code requirements prior to leaving the factory.

Cabinet designs have been submitted for approvals from certifying agencies.

Refer to the [DeltaV S-series Electronic Marshalling Product Data Sheet](#) for certification information on the DeltaV system components.

Ordering Information

Description	Model Number
DC Powered Field Enclosure for 48 CHARM I/O; CE; Safe Area locations	SE7003
DC Powered Field Enclosure for 48 CHARM I/O; CE; ATEX, IECEx Zone 2 locations	SE7004
AC Powered Field Enclosure for 48 CHARM I/O; CE; Safe Area Locations	SE7006
AC Powered Field Enclosure for 48 CHARM I/O; CE; ATEX, IECEx Zone 2 Locations	SE7007
DC Powered Field Enclosure for 48 CHARM I/O; FM Ordinary Locations	SE7008
DC Powered Field Enclosure for 48 CHARM I/O; FM; Class I Division 2 Locations	SE7009
AC Powered Field Enclosure for 48 CHARM I/O; FM; Ordinary Locations	SE7010
AC Powered Field Enclosure for 48 CHARM I/O; FM; Class I Division 2 Locations	SE7011
Description	Model Number
Channel Identifier Labels for CHARM Baseplates; Package of 8	SE4606T02

Related Products

- CHARM I/O Cards must be ordered separately
- CHARMs must be ordered separately
- Custom labels with individual cabinet identification

To locate a sales office near you, visit our website at:
www.EmersonProcess.com/DeltaV
 Or call us at:
 Asia Pacific: 65.777.8211
 Europe, Middle East: 41.41.768.6111
 North America, Latin America: +1 800.833.8314 or
 +1 512.832.3774

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www.EmersonProcess-powerwater.com
 Or call us at:
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 Europe, Middle East, Africa: 48.22.630.2443
 North America, Latin America: +1 412.963.4000

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