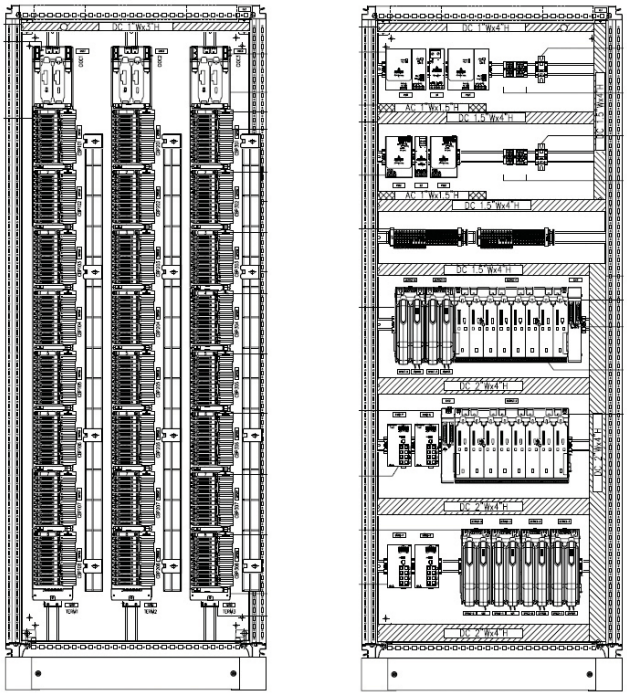
CTO CIOC CHARM Cabinets (MEA/AP Standards)



- Delivers Electronic Marshalling enabled by CHARMs technology or controller cabinet for CHARM system
- Fast delivery
- Reduced system footprint
- Significantly reduce cabinet design engineering
- Fully documented package

Introduction

The DeltaV™ Configure To Order (CTO) Cabinets provide a predesigned solution for DeltaV CHARM I/O system, assembled in industry standard cabinets, ready to be installed on-site and connected to the field I/O.

These cabinets are designed to meet CSA and CE personal safety requirements to help facilitate site installation and inspection. They seamlessly integrate into the overall hardware solution of your DeltaV project.

Benefits

Standardized cabinet designs: The CTO cabinets deliver the full benefits of electronic marshalling. These cabinets meet recommended installation practices of the DeltaV system and each is tested before shipping. The flexibility of DeltaV CHARM I/O 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.

Fast delivery: Standard cabinets are available with short lead times when ordered for direct shipment to site.

Reduced system footprint: Equipment room footprint is reduced by eliminating the traditional marshalling cabinets with cross wiring to traditional I/O cards.

Significantly reduce cabinet design engineering: The CHARM I/O cabinets use DeltaV Electronic Marshalling, which allows any channel to be assigned to any one of four controllers. This eliminates the task of rationalizing I/O to specific controllers and preserves I/O flexibility to handle late changes to the system.

Fully documented package: Each cabinet is supplied with full documentation showing internal lay-out, bill of materials and internal wiring. Drawings can be incorporated into the project drawing package.

Description

The CTO CHARM Cabinets offering comprises a range of pre-engineered solutions based on industry accepted cabinet enclosures, preinstalled with CHARM I/O or DeltaV controllers and related equipment, ready to be installed in an equipment room and connected to process field instrumentation or CHARM I/O.

The cabinets are typical, free standing enclosures intended for floor mounting in equipment room areas, where temperature and humidity are controlled within the requirements for computer/electronic equipment. They come ready to receive incoming 24 VDC power or available plant AC power. All internal wiring to power distribution components and grounding conductors has been tested at the factory.

Before delivery, each cabinet undergoes a full in-house inspection, to assure that it is fully operational before shipping directly to site. Electronic Marshalling eliminates the need for any internal cross wiring and I/O rationalization there is typically no need for FAT at a staging facility.

The CTO controller cabinets are designed to house your controllers, device net, vim, serial and fieldbus I/O.

The CTO CHARM cabinets support all available low voltage CHARM I/O types with 24 VDC bussed field power. The standard cabinets are designed for easy bottom cable entry.

The CTO cabinets are ordered by selecting a base enclosure model, on top of which one or more predefined options are configured to meet specific project needs.

Base enclosure models are available:

- For different cabinet sizes / entry (Front Access or Front and Rear access).
- For different power distribution needs: DC powered or AC powered.
- For different world area design standards and regulations: NK (Asia Pacific and MEA).

Configurable options examples: type of CHARMs (I.S. or non I.S.), type of controllers, type of I/O cards, side panels, cabinet light, nameplate engraving and injected power.

All cabinets come with following equipment installed:

- Primary and secondary 24VDC power distribution for CHARM I/O Cards and field instrumentation
- Wire ducts or wire basket
- Grounding bars
- Wiring plan pocket
- Emerson Name Plate Holder and blank name plate insert
- DeltaV equipment based on your configuration (and priced separately): including CHARM I/O carriers, base plates, standard terminal block, address plugs and terminals.

The CHARM I/O cards and CHARMs are not included and are to be ordered separately.

The required number of (redundant) CHARM I/O cards and CHARM modules depends on the actual number and types of I/O that will be wired into the cabinet.

The following sections provide a more detailed specification for the CTO CHARM Cabinets and available options.

Overview of CIOC Cabinets – Base Models for AP and MEA World Area

Base Model Number	Description	# CHARM IO	Incoming Power Requirements (Prim and Sec)	Permitted Location / World Area
NK-CAB-800F-252-AC-CIOC	AC Powered Electronic Marshalling Cabinet for 252 CHARM I/O; 800mm W x 600mm D; Front Access; Cable Entry - Bottom	252	230 / 110 VAC	Safe Area MEA /AP
NK-CAB-800FR-504-AC-CIOC	AC Powered Electronic Marshalling Cabinet for 504 CHARM I/O; 800mm W x 800mm D; Front and Rear Access; Cable Entry - Bottom	504	230 / 110 VAC	Safe Area MEA /AP
NK-CAB-800F-168-AC-CIOC	AC Powered Electronic Marshalling Cabinet for 168 CHARM I/O; 800mm W x 600mm D; Front Access; Cable Entry – Bottom	168	230 / 110 VAC	Safe Area MEA /AP
NK-CAB-800FR-336-AC-CIOC	AC Powered Electronic Marshalling Cabinet for 336 CHARM I/O; 800mm W x 800mm D; Front and Rear Access; Cable Entry - Bottom	336	230 / 110 VAC	Safe Area MEA /AP

Overview of CIOC Cabinets.

The CTO base model reference for cabinets uses the following naming convention: **"NK-CAB-XXXYY-ZZZ-IP-CIOC"**, where:

- NK = Middle East and Africa and Asia Pacific Standards and Regulations.
- XXX = Cabinet width (mm), e.g. "800", "1200".
- YY = "F" for Front only access (600 mm deep), "FR" for Front and Rear access (800 mm deep).
- ZZZ = Maximum I/O's count in this CTO.
- IP = Incoming Power, AC = 230/110VAC.
- CIOC = Short description of content and purpose.

Overview of CIOC Cabinet Options for MEA/AP World Area

LEGENDS:

- • Default option setting
- o Configure to option setting. (Different from Default)
- **NA** Option setting not possible for Base Enclosure Model
- Intentionally kept blank for user to fill as per configuration choice

Base Model				NK-CAB-800F-252-AC-CIOC	NK-CAB-800FR-504-AC-CIOC	NK-CAB-800F-168-AC-CIOC	NK-CAB-800FR-336-AC-CIOC
World Area				MEA/AP	MEA/AP	MEA/AP	MEA/AP
Power Input (AC:230/110VAC)				AC	AC	AC	AC
Enclosure Access (F: Front, FR: Front-Rear)				F	F/R	F	F/R
#CHARMI/O				252	504	168	336
Enclosure Options				**Option Setting**			
Nameplate Engraving	A		1	No	o	o	o	o
			2	Yes	•	•	•	•
Type of CHARMS *(to be specified for each row of CHARMS)*	B		1	Non I.S.	•	•	•	•
			2	I.S.	o	o	o	o
Enclosure Light	C		1	With Door Switch	•	•	•	•
			2	With Motion Sensor	o	o	o	o
			3	No	o	o	o	o
Temperature Monitoring	D		1	Yes	•	•	•	•
Door Fans	E		1	Thermostat Controlled	•	•	•	•
			2	Continuous Run	o	o	o	o
			2	With Fan Flow Switch	o	o	o	o
Plinth	F		1	100mm	•	•	•	•
			2	200mm	o	o	o	o
Side Panels	G		1	No	o	o	o	o
			2	Yes	•	•	•	•
Baying Kit	H		1	No	•	•	•	•
			2	Yes	o	o	o	o
Cable Clamps Rail	I		1	No	•	•	•	•
			2	Yes	o	o	o	o
Input Voltage	J		1	230V AC	•	•	•	•
			2	110V AC	o	o	o	o

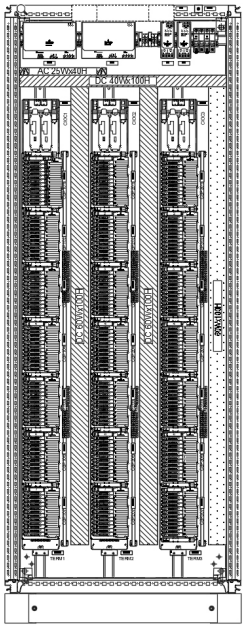
Utility Socket	K		1	No	•	•	•	•
			2	Yes	o	o	o	o
Field Cable Routing	L		1	Cable Duct	•	•	•	•
			2	Wire Basket	o	o	o	o
Ethernet	M		1	Copper	•	•	•	•
			2	Fiber Optic	o	o	o	o
Door Fan Location	N		1	Top	•	•	•	•
			2	Bottom	o	o	o	o
24VDC for Injected Power *(Applicable only for NIS CHARMs)*	O		1	No	•	•	•	•
			2	Yes	o	o	o	o

Following more detailed options can be specified upon order (if applicable):

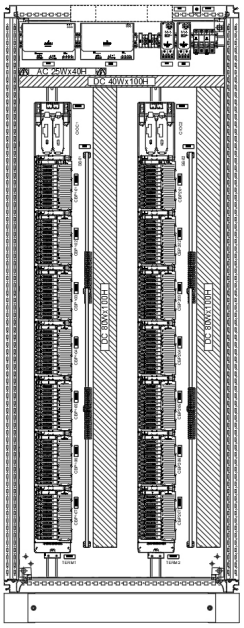
- Disconnect switches for DC power feeds can be configured separately for CIOC power and for injected power inputs.
- Power supply configuration: Power for CIOC and/or injected power (with diode), Front and Rear position in cabinet.
- 24VDC for injected power: optionally prewired (according specification to be provided).
- Wiring color scheme different from default: NK (L- Brown, N- Blue)
- Input Voltage different from default: NK (230/110V AC)

Cabinet Specifications

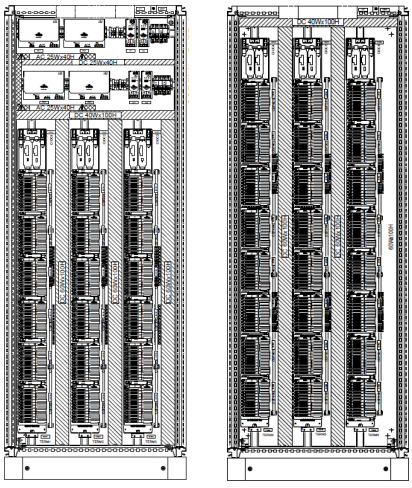
Specifications for NK-CAB-800F-252-AC-CIOC. For other available configuration options refer to CIOC Base cabinet and available configurable options table.

NK-CAB-800F-252-AC-CIOC	
Dimensions	800mm (W) x 600mm (D) x 2000mm (H) + 100mm/200mm Plinth configurable
Access	Front Access – single door, right/left hand hinged configurable, latch type lock and 2 sets of keys (key N°3524E)
Protection Category	IP54 – NEMA 12
Approximate Weight	~200 kg
Color	Cabinet RAL7035, Plinth RAL7022
Door Fans	Configurable: Continuous Run, Thermostat Controlled or With Fan Flow switch
Temperature Monitoring	Thermostat
Other	Fan and louvered doors with filter, mounting plate, grounding bars, wiring plan pocket, lifting eye bolts on top, bottom cable entry, removable gland plate
Environmental Specifications	Equipment/rack room installation (HVAC controlled), 30°C Max.
Certifications	None
Input Power	Primary, Secondary and Utility; Default Input Power: 230 VAC; Optional: 110 VAC
Power Supply Rating	Fixed 2 X 40A
Internal Power Distribution	AC Distribution subassembly (mounted in left side). Fully redundant 24VDC distribution for CHARM I/O cards and bussed field power through fused terminals (mounted in right side).
Control Network	Redundant 100BASE-FX, RJ45 connectors, to be connected to first CIOC carrier. Daisy chained primary and secondary control network between all 3 CIOC carriers is included (can be changed if required).
Example Layout and Installed Equipment: Front Internal View 	3 CHARM IO rails, for total of 252 I/O. Each rail containing: ■ 1 x CHARM I/O Carrier with redundant Copper Ethernet connectors ■ 7 x CHARM Base Plate ■ 7 x CHARM Address Plug ■ 84 x CHARM terminal blocks - Screw type ■ 1 x CHARM I/O bus termination ■ Base Plate and Channel Identifier Labels ***No DeltaV equipment is included in the base model. All DeltaV equipment is to be configured separately through the Emerson quoting tools.***

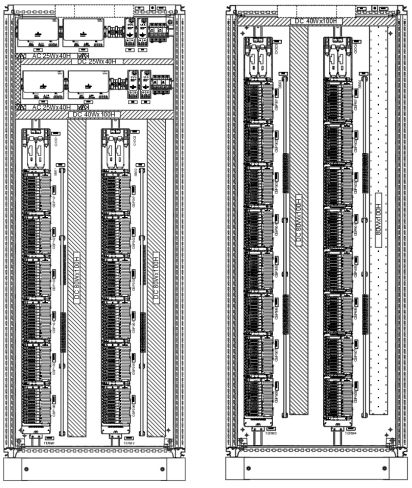
Specifications for NK-CAB-800F-168-AC-CIOC. For other available configuration options refer to CIOC Base cabinet and available configurable options table.

NK-CAB-800F-168-AC-CIOC	
Dimensions	800mm (W) x 600mm (D) x 2000mm (H) + 100mm/200mm Plinth configurable
Access	Front Access – single door, right/left hand hinged configurable, latch type lock and 2 sets of keys (key N°3524E)
Protection Category	IP54 – NEMA 12
Approximate Weight	~200 kg
Color	Cabinet RAL7035, Plinth RAL7022
Door Fans	Configurable: Continuous Run, Thermostat Controlled or With Fan Flow switch
Temperature Monitoring	Thermostat
Other	Fan and louvered doors with filter, mounting plate, grounding bars, wiring plan pocket, lifting eye bolts on top, bottom cable entry, removable gland plate
Environmental Specifications	Equipment/rack room installation (HVAC controlled), 30°C Max.
Certifications	None
Input Power	Primary, Secondary and Utility; Default Input Power: 230 VAC; Optional: 110 VAC
Power Supply Rating	Fixed 2 X 40A
Internal Power Distribution	AC Distribution subassembly (mounted in left side). Fully redundant 24VDC distribution for CHARM I/O cards and bussed field power through fused terminals (mounted in right side).
Control Network	Redundant 100BASE-FX, RJ45 connectors, to be connected to first CIOC carrier. Daisy chained primary and secondary control network between all 3 CIOC carriers is included (can be changed if required).
Example Layout and Installed Equipment: Front Internal View 	2 CHARM IO rails, for total of 168 I/O. Each rail containing: ■ 1 x CHARM I/O Carrier with redundant Copper Ethernet connectors ■ 7 x CHARM Base Plate ■ 7 x CHARM Address Plug ■ 84 x CHARM terminal blocks - Screw type ■ 1 x CHARM I/O bus termination ■ Base Plate and Channel Identifier Labels ***No DeltaV equipment is included in the base model. All DeltaV equipment is to be configured separately through the Emerson quoting tools.***

Specifications for NK-CAB-800FR-504-AC-CIOC. For other available configuration options refer to CIOC Base cabinet and available configurable options table.

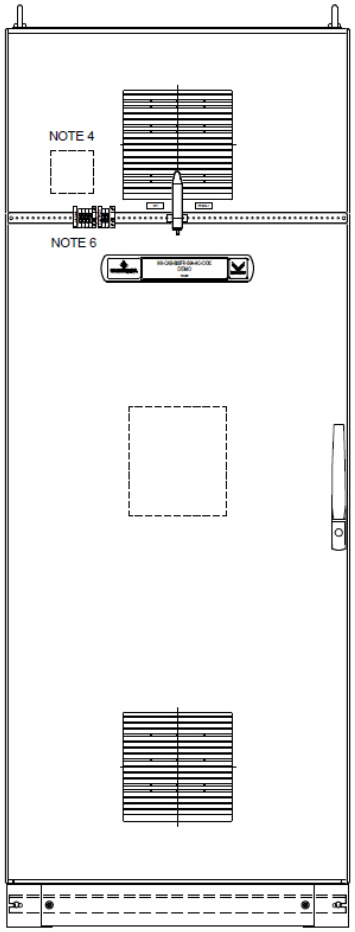
NK-CAB-800FR-504-AC-CIOC	
Dimensions	800mm (W) x 800mm (D) x 2000mm (H) + 100mm/200mm Plinth configurable
Access	Front and Rear Access, single doors, Right/Left hand hinged configurable, latch type lock and 2 sets of keys (key N°3524E)
Protection Category	IP54 – NEMA 12
Approximate Weight	~300 kg
Color	Cabinet RAL7035, Plinth RAL7022
Door Fans	Configurable: Continuous Run, Thermostat Controlled or With Fan Flow Switch
Temperature Monitoring	Thermostat
Other	Fan and louvered doors with filter, mounting plate, grounding bars, wiring plan pocket, lifting eye bolts on top, bottom cable entry, removable gland plate
Environmental Specifications	Equipment/rack room installation (HVAC controlled), 30°C Max.
Certifications	None
Input Power	Primary, Secondary and Utility; Default Input Power: 230 VAC; Optional: 110 VAC
Power Supply Rating	Fixed 2 X 40A for Front and Rear
Internal Power Distribution	AC Distribution subassembly (mounted in left side). Fully redundant 24VDC distribution for CHARM I/O cards and bussed field power through switches and fused terminals (mounted in right side).
Control Network	Redundant 100BASE-FX, RJ45 connectors, to be connected to first CIOC carrier. Daisy chained primary and secondary control network between all 3 CIOC carriers is included (can be changed if required).
Example Layout and Installed Equipment: Front Internal View Rear Internal View 	Example BOM: ■ Power Supply subassembly **Front:** 3 CHARM IO rails for total of 216 I/O, **Rear:** 3 CHARM IO rails for total of 288 I/O ■ 1 x CHARM I/O Carrier with redundant Copper Ethernet connectors ■ 6 x CHARM Base Plates on front and 8 x CHARM Base Plates on Rear ■ 6 x CHARM Address Plugs on front and 8 x CHARM Address Plugs on Rear ■ 216 x CHARM terminal blocks - Screw type on front and 288 x CHARM terminal blocks - Screw type on Rear ■ 1 x CHARM I/O bus termination ■ Base Plate and Channel Identifier Labels ***No DeltaV equipment is included in the base model. All DeltaV equipment is to be configured separately through the Emerson quoting tools.***

Specifications for NK-CAB-800FR-336-AC-CIOC. For other available configuration options refer to CIOC Base cabinet and available configurable options table.

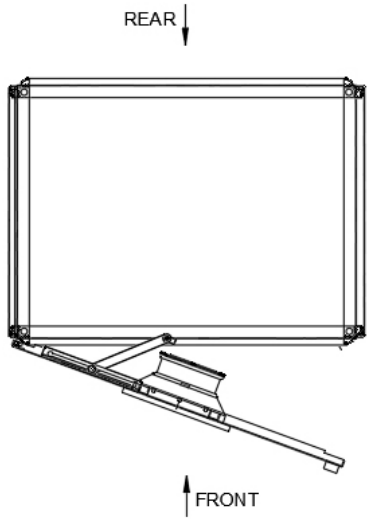
NK-CAB-800FR-336-AC-CIOC	
Dimensions	800mm (W) x 800mm (D) x 2000mm (H) + 100mm/200mm Plinth configurable
Access	Front and Rear Access, single doors, Right/Left hand hinged configurable, latch type lock and 2 sets of keys (key N°3524E)
Protection Category	IP54 – NEMA 12
Approximate Weight	~300 kg
Color	Cabinet RAL7035, Plinth RAL7022
Door Fans	Configurable: Continuous Run, Thermostat Controlled or With Fan Flow Switch
Temperature Monitoring	Configurable: Thermostat
Other	Fan and louvered doors with filter, mounting plate, grounding bars, wiring plan pocket, lifting eye bolts on top, bottom cable entry, removable gland plate
Environmental Specifications	Equipment/rack room installation (HVAC controlled), 30°C Max.
Certifications	None
Input Power	Primary, Secondary and Utility; Default Input Power: 230 VACS; Optional: 110 VAC
Power Supply Rating	Individually configurable as 2 X 40A for Front and Rear
Internal Power Distribution	AC Distribution subassembly (mounted in left side). Fully redundant 24VDC distribution for CHARM I/O cards and bussed field power through switches and fused terminals (mounted in right side).
Control Network	Redundant 100BASE-FX, RJ45 connectors, to be connected to first CIOC carrier. Daisy chained primary and secondary control network between all 4 CIOC carriers is included (can be changed if required).
Example Layout and Installed Equipment: Front Internal View Rear Internal View 	Example BOM: ■ Power Supply subassembly **Front:** 2 CHARM IO rails for total of 144 I/O, **Rear:** 2 CHARM IO rails for total of 192 I/O Each rail containing: ■ 1 x CHARM I/O Carrier with redundant Copper Ethernet connectors ■ 6 x CHARM Base Plates on front and 8 x CHARM Base Plates on Rear ■ 6 x CHARM Address Plugs on front and 8 x CHARM Address Plugs on Rear ■ 72 x CHARM terminal blocks - Screw type on front and 96 x CHARM terminal blocks - Screw type on Rear ■ 1 x CHARM I/O bus termination ■ Base Plate and Channel Identifier Labels ***No DeltaV equipment is included in the base model. All DeltaV equipment is to be configured separately through the Emerson quoting tools.***

External Views for Cabinets

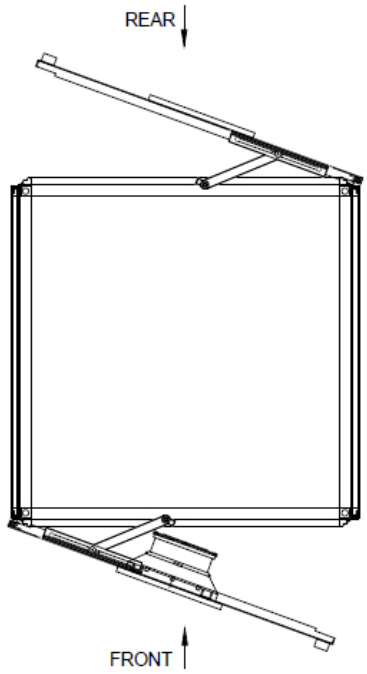
External View for Front only and Front / Rear Cabinet



External Top View for Front only Cabinet



External Top View for Front / Rear Cabinet



How to order a CTO Cabinet?

Configure To Order CHARM Cabinets are pre-engineered solutions developed by Emerson's Project Management Office (PMO) and made available from Emerson Supply Chain. Basically, the following steps are followed to obtain a CHARM Cabinet:

1. Specify the CHARM Cabinet by selecting the base model and the options required for the project.

   Specifying tools are available to aid in the selection of the right combination of optioned CTOs.

2. Based on the specification, you will then receive:

   - A quotation for the fully assembled Cabinet.
   - The detailed specification (drawing package) matching your configuration, including the Bill of Materials.

3. Approve the drawing package for construction.

4. Order the CHARM Cabinet as per provided quotation and approved drawings.

5. The CHARM Cabinet is assembled, factory tested and delivered to site. The delivery includes the as-built drawing package (AutoCAD).

For questions related to specific project quotations or order processing, please contact your local Emerson Sales office or your regional Emerson assembly center:

For US/Canada St. Louis iCenter:
iCenterSTL.Quotes@Emerson.com

For Europe Cluj iCenter:
Cabinets.Quotes@Emerson.com

For Asia Pacific Singapore iCenter:
iCenterSGPQuotes@Emerson.com

For Middle East and Africa iCenter:
rfq.icenter.nsk@Emerson.com

Project Customizations

"...What if a CTO CHARM Cabinet is 90% what I need, but I really need my Cabinet to have..."

Minor customizations as a variation or addition to the standard CTO offering can often be developed in such a way that the additional effort is incremental.

In case your project would require a customer witnessed Factory Acceptance Test, this can also be accommodated.

Please work with your local Emerson Sales office or regional Emerson assembly center to evaluate any impacts of requested customizations to cost, delivery time and certifications.

System Compatibility

CHARM Cabinets are compatible with DeltaV version 11.3.1 and above.

CHARM I/O cards require S-series Controllers.

Certifications

Refer to the **DeltaV S-series Electronic Marshalling** or to the **DeltaV S-series IS Electronic Marshalling** Product Data Sheet for certification information on the DeltaV system components.

Related Products

- CHARM I/O Cards must be ordered separately
- CHARMs must be ordered separately
- CHARMS requiring other terminal blocks than the standard terminal block should be ordered with the non-standard terminal block

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