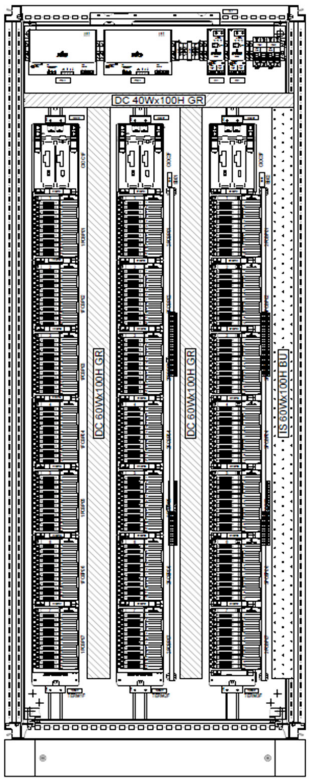
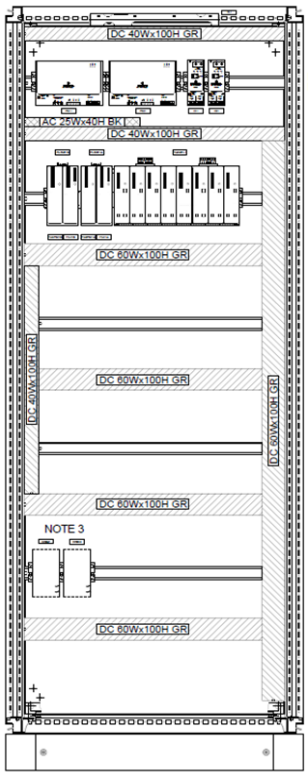
# DeltaV CTO DCS Cabinet (MEA/AP Region)




*DCS CHARM Cabinet Front View*




*DCS Controller Cabinet Front View*

*CTO DCS Cabinet.*

- 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:** These CTO DCS 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 CTO DCS 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 DCS 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.

These 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 DCS 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 DCS 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 of MEA / AP locations.

Configurable options examples: type of CHARMs (I.S. or non I.S.),), incoming voltage, cabinet light 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
- 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 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 DCS cabinets and available options.

## List of DeltaV CTO DCS CHARM Cabinet for MEA/AP Region

| Base Cabinet Model Number | Description | # CHARM IO | Incoming Power Requirements (Prim and Sec) | Permitted Location |
|---|---|---|---|---|
| NK-CAB-800F-252-AC-CIOC | AC Powered Electronic Marshalling Cabinet for 252 CHARM I/Os; 800mm W x 600mm D; Front Access; Cable Entry - Bottom | 252 | 230 / 110 VAC | Safe Area |
| NK-CAB-800FR-504-AC-CIOC | AC Powered PAS Electronic Marshalling Cabinet for 504 CHARM I/Os; 800mm W x 800mm D; Front & Rear Access; Cable Entry - Bottom | 504 | 230 / 110 VAC | Safe Area |
| NK-CAB-800F-288-DC-CIOC | DC Powered PAS CHARMs Cabinet for 288 CHARM I/Os; 800mm W x 600mm D; Front Access; Cable Entry – Bottom | 288 | 24 VDC | Safe Area |
| NK-CAB-800FR-576-DC-CIOC | DC Powered PAS CHARMs Cabinet for 576 CHARM I/Os; 800mm W x 800mm D; Front and Rear Access; Cable Entry - Bottom | 576 | 24 VDC | Safe Area |
| NK-CAB-800FR-AC-CNTR-288 | AC Powered PAS Controller cabinet with 288 CHARM I/Os on rear side; 800mm W x 800mm D; Front & Rear Access; Cable Entry - Bottom | 288 | 230 / 110 VAC | Safe Area |
| NK-CAB-800F-AC-CNTR | AC Powered PAS Controller Cabinet; 800mm W x 600mm D; Front Access; Cable Entry - Bottom | NA | 230 / 110 VAC | Safe Area |

## List of Networking Cabinets for MEA/AP Region

| Base Cabinet Model Number | Description | Incoming Power Requirements (Prim and Sec) | Permitted Location |
|---|---|---|---|
| NK-CAB-800FR-NWK | AC Powered Network Cabinet; 800mm W x 600mm D; Front Access; Cable entry - bottom | 230 / 110 VAC | Safe Area |
| NK-CAB-800FR-SRV | AC Powered Server Cabinet; 800mm W x 800mm D; Front and Rear Access; Cable Entry - Bottom | 230 / 110 VAC | Safe Area |
| NK-CAB-800FR-NW-SER | AC Powered Network and Server Integrated Cabinet; 800mm W x 800mm D;Front and Rear Access; Cable Entry - Bottom | 230 / 110 VAC | Safe Area |

*Overview of CTO DCS Cabinets -*

The CTO DCS cabinet uses the following naming convention: **"NK-CAB-XXXYY-ZZZ-IP-AAA"**, where:

- **NK:** Designs for MEA / AP region.
- **CAB:** Full Size cabinet
- **XXX:** Cabinet width (mm), e.g. "800"
- **YY:** "F" for Front only access (600 mm deep), "FR" for Front and Rear access (800 mm deep), Server cabinet (1000 mm deep)
- **ZZZ:** Maximum installable I/O count in the Cabinet.
- **IP:** Incoming Power, AC = 230/110VAC, DC = 24VDC.
- **AAA:** Short description of content and purpose - CIOC / NWK / SRV / CNTR

## DCS Smart Junction Boxes orderable for MEA/AP Region

There is certain range of DCS Smart junction Boxes orderable for MEA/AP locations. There are two major categories –

1. **Hazardous area SJBs:** SJB Designs certified for CE, ATEX & IECEx, for use in Hazardous (ATEX/IECEx, Zone 2) area.
2. **Safe area SJBs:** SJB Designs certified for CE, for installation in safe area.

For further details on available variants of CTO DCS SJB refer to below product data sheet of "DeltaV CTO DCS Smart Junction Boxes (SJB) "–

**DeltaV DCS Configure To Order (CTO) CHARM Smart Junction Box Product Data Sheet**.

## Overview of DeltaV CTO DCS Cabinets and Options (MEA/AP Region)

| **LEGENDS:**<br>• Default option setting<br>o Configure to option setting. (Different from Default)<br>**NA** Option setting not possible for respective Cabinet | | | **Base Model** | NK-CAB-800F-252-AC-CIOC | NK-CAB-800FR-504-AC-CIOC | NK-CAB-800F-288-DC-CIOC | NK-CAB-800FR-576-DC-CIOC | NK-CAB-800FR-AC-CNTR-288 | NK-CAB-800F-AC-CNTR |
|---|---|---|---|---|---|---|---|---|---|
| **Cabinet Options** | | | | **Option Setting** | | | | | |
| **Input Voltage** | A | 1 | **230V AC** | • | • | NA | NA | • | • |
| | | 2 | 110V AC | o | o | NA | NA | o | o |
| | | 3 | 24V DC | NA | NA | • | • | NA | NA |
| **Enclosure Light** | B | 1 | **With Motion Sensor** | • | • | • | • | • | • |
| | | 2 | With Door Switch | o | o | o | o | o | o |
| **24VDC injected power** *(Applicable for non-IS CHARM Baseplates only)* | C | 1 | Yes | • | • | • | • | • | NA |
| | | 2 | No | o | o | o | o | o | NA |
| **I/O Type Selection** ** | D | 1 | No CIOC | o | o | o | o | o | NA |
| | | 2 | **MIX CHARMs (2 Column IS + 1 Column non-IS)** | • | • | • | • | • | NA |
| | | 3 | All non -IS CHARMs CIOC with all non-IS Baseplates | o | o | o | o | o | NA |
| | | 4 | All IS CHARMs CIOC with all IS Baseplates | o | o | o | o | o | NA |
| **Controller** | F | 1 | **M Series Controller with 8W Carrier** | NA | NA | NA | NA | • | • |
| | | 2 | Red. PK Controller + 4W Carrier | NA | NA | NA | NA | o | o |
| **Network Switch** | G | 1 | **Redundant DeltaV Smart Switch - 8 Port** | NA | NA | NA | NA | • | • |
| | | 2 | No | NA | NA | NA | NA | o | o |

These Nashik CTO DCS Cabinets will have same CTO BOM structure as earlier with certain designs options available to choose from a list of options with pricing. However, only typical drawing with fully loaded base plates will be available for download from EET/ PMM/CCT. There will be **NO** drawing automation in CCT for the non-default design option selection. User will be able to download CAD files of typical cabinet drawing and can update them as per project requirement.

** **I/O Type Selection:** (Applicable only for cabinets with CHARMs installation)

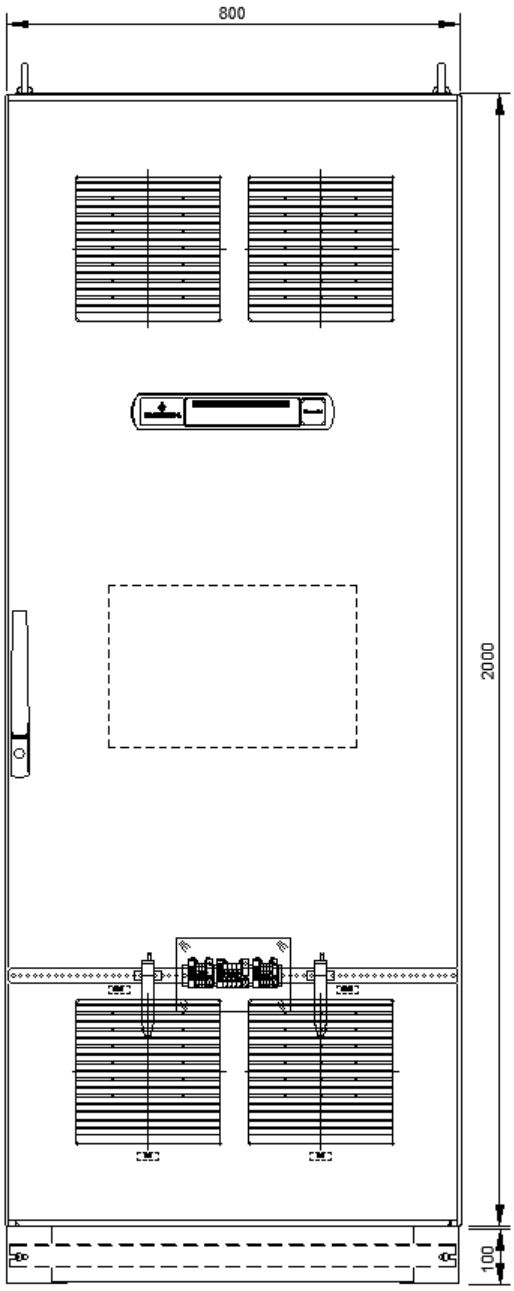
1. New feature is introduced in CCT configuration of each CIOC cabinet to select number of CIOC and CHARM Base Plates quantity as per project requirement subject to design limitations. CTO drawings will not be automated to generate changes.
2. User can keep any CIOC column empty by selecting “No CIOC” option.
3. Mixing of IS and non-IS CHARMs is not possible in same column.
4. New CTO cabinet configurations will be fully loaded with MIX CHARM base plates by default - 2 non-IS columns & one IS column on each side.
5. System validations are applied to avoid invalid selections by user.

## General Specifications for CTO DCS Cabinets:

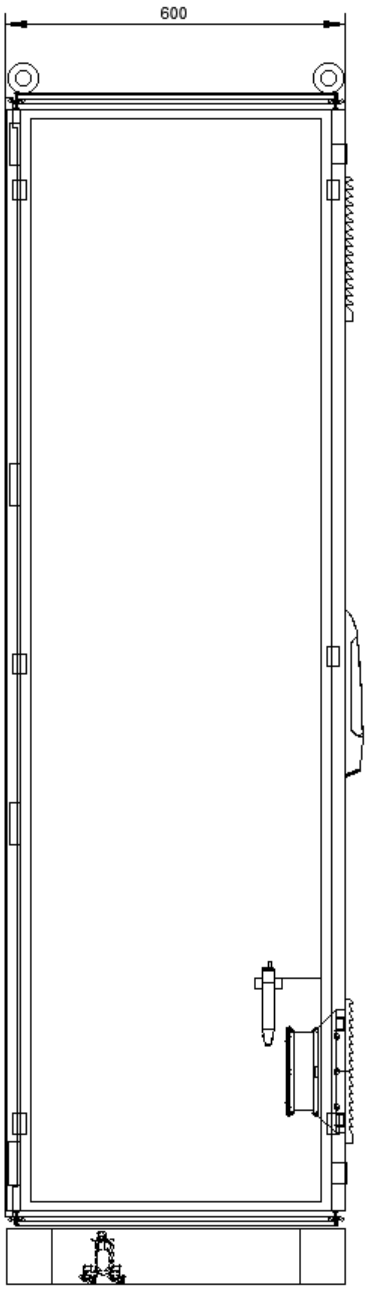
| General Specifications for CTO DCS Cabinets | |
|---|---|
| Dimensions | Front Only Access- 800mm (W) x 600mm (D) x 2000mm (H) + 100mm Plinth<br>Front Rear Access- 800mm (W) x 800mm (D) x 2000mm (H) + 100mm Plinth |
| Access - Cabinet Door | Front Access – Single door on front side,<br>Front Rear Access – Single door on each side,<br>Right hand hinged, latch type lock and 2 sets of keys (key N°3524E) |
| Protection Category | IP54 – NEMA 12 |
| Approximate Weight | Front Only Cabinet ~200 kg<br>Front Rear Cabinet ~ 300 kg |
| Color | Cabinet RAL7035, Plinth RAL7022 |
| Door Fans | Continuous Run with Fan Flow switch |
| Cabinet Light | Default – with motion sensor |
| Temperature Monitoring | Thermostat for Cabinet High Temperature alarm (Recommended Set Point: 35°C) |
| 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).<br><br>Fully redundant 24VDC distribution for CHARM I/O cards and bussed field power through fused terminals (mounted in right side). |
| CIOC Control Network | Redundant 100BASE-TX, RJ45 connectors, to be connected to first CIOC carrier.<br><br>Daisy chained primary and secondary control network between all 3 CIOC carriers is included (can be changed if required). |
| Environmental Specifications | Equipment/rack room installation (HVAC controlled), recommended ambient temperature 25°C |
| Certifications | None |
| Other | Fan and louvered doors with filter, mounting plate, grounding bars,<br>wiring plan pocket, lifting eye bolts on top, bottom cable entry,<br>removable gland plate. |

## CTO DCS Cabinets General arrangements

**Front Access CTO DCS Cabinet Outer General arrangement**



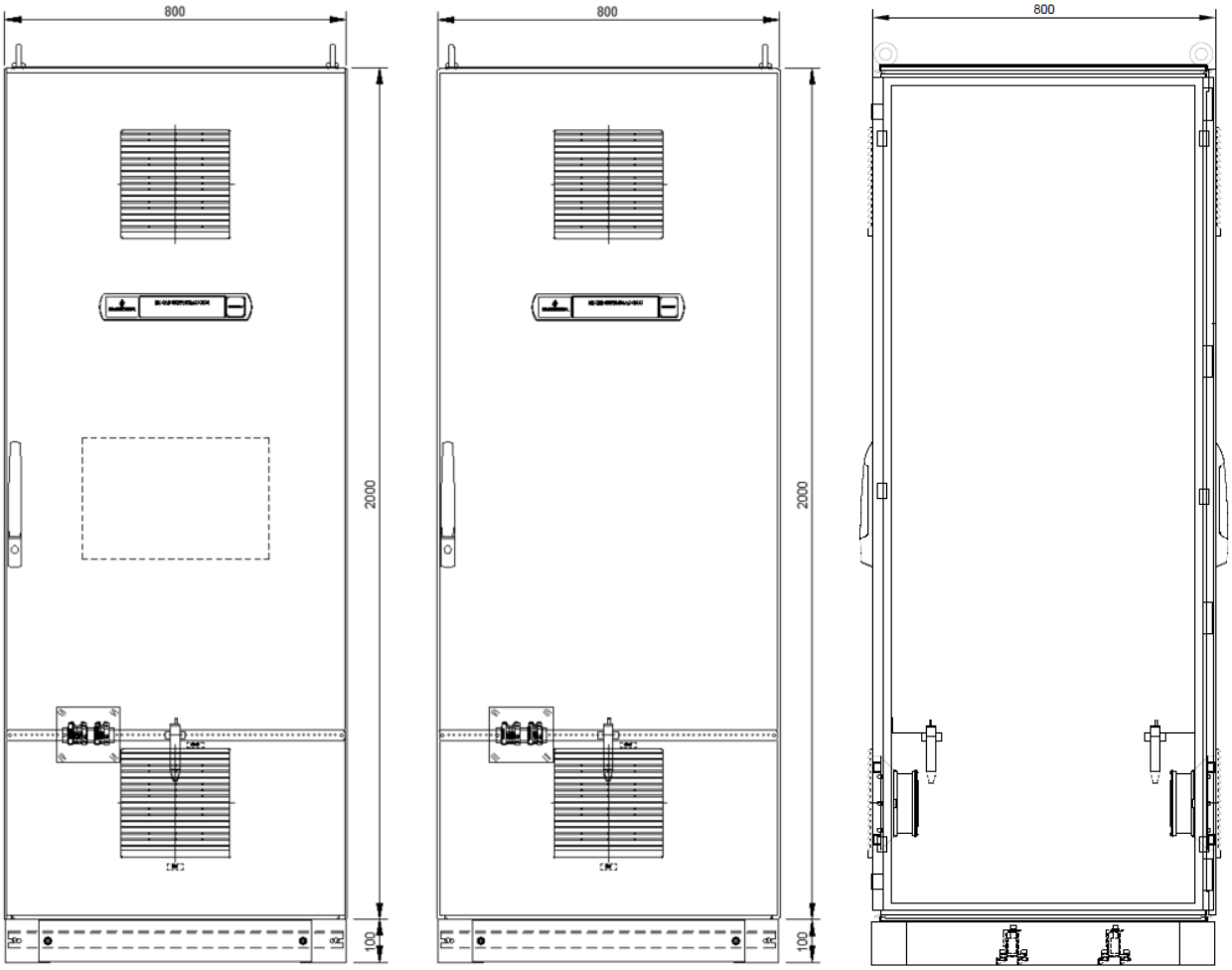

*Front View*




*Side View*

**800mm (W) x 600mm (D) x 2000mm (H) + 100mm Plinth**

## Front and Rear Access CTO DCS Cabinet Outer General arrangement

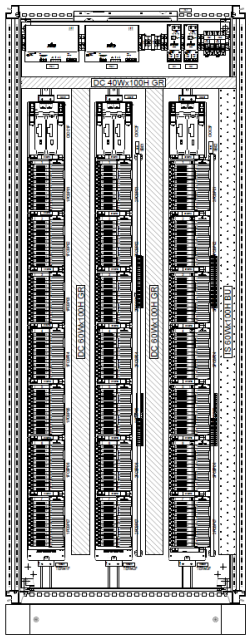



*Front View* *Rear View* *Side View*

**800mm (W) x 800mm (D) x 2000mm (H) + 100mm Plinth**

## CTO DCS Cabinets Internal General Arrangement

### NK-CAB-800F-252-AC-CIOC



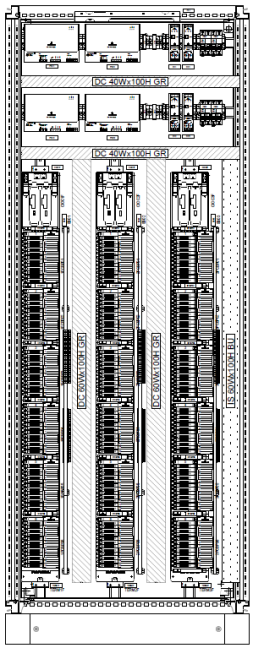
*Front Internal View*

This design includes:

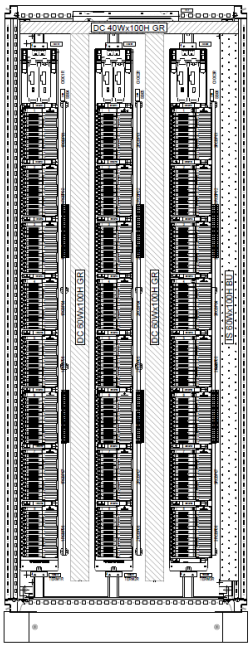
- Power Supply subassembly
- 3 x CHARM I/O Carrier with redundant Copper Ethernet connectors
- 3 CHARM IO columns for total of 252 I/Os
- 7 x CHARM Base Plates per column of CIOC
- 7 x CHARM Address Plugs
- 252 x CHARM terminal blocks - Screw type
- 3 x CHARM I/O bus termination
- CHARM Base Plate and Channel Identifier Labels

***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.***

### NK-CAB-800F-504-AC-CIOC



*Front Internal View*



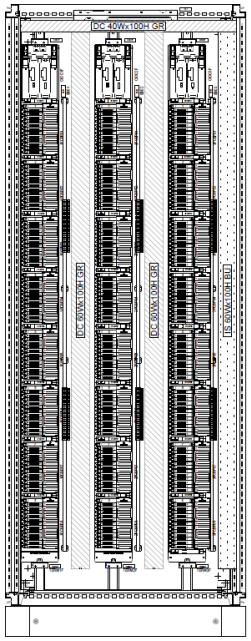
*Rear Internal View*

This design includes:

- Power Supply subassembly – Separate PS for Front & Separate for Rear
- 6 x CHARM I/O Carrier with redundant Copper Ethernet connectors – 3 in front and 3 on rear side
- 6 CHARM IO columns for total of 504 I/Os
- 6 x CHARM Base Plates per column on front side CIOCs
- 8 x CHARM Base Plates per column on rear side CIOCs
- 6 x CHARM Address Plugs
- 504 x CHARM terminal blocks - Screw type
- 6 x CHARM I/O bus termination
- CHARM Base Plate and Channel Identifier Labels

***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.***

## NK-CAB-800F-288-DC-CIOC



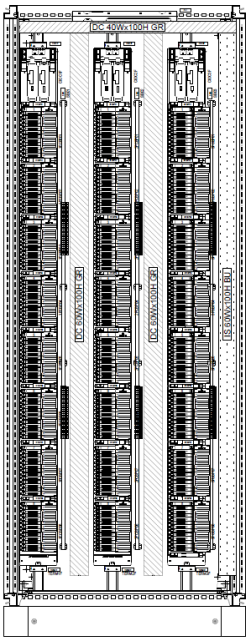
*Front Internal View*

This design includes:

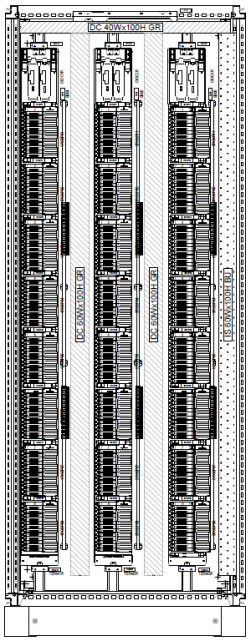
- 3 x CHARM I/O Carrier with redundant Copper Ethernet connectors
- 3 CHARM IO columns for total of 288 I/Os
- 8 x CHARM Base Plates per column of CIOC
- 8 x CHARM Address Plugs
- 288 x CHARM terminal blocks - Screw type
- 3 x CHARM I/O bus termination
- CHARM Base Plate and Channel Identifier Labels

***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.***

## NK-CAB-800F-576-DC-CIOC



*Front Internal View*



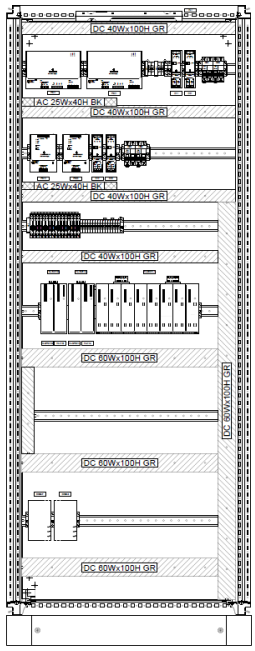
*Rear Internal View*

This design includes:

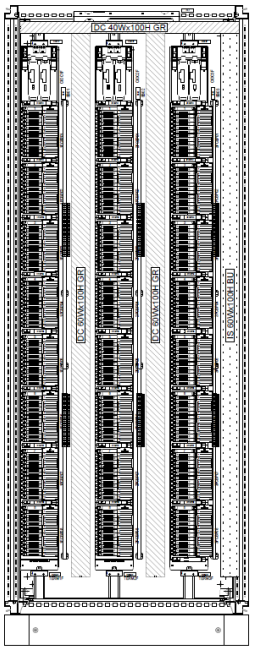
- 3 x CHARM I/O Carrier with redundant Copper Ethernet connectors on front side and 3 on rear side
- 6 CHARM IO columns for total of 576 I/Os
- 8 x CHARM Base Plates per CIOC column in front & rear
- 8 x CHARM Address Plugs
- 576 x CHARM terminal blocks - Screw type
- 6 x CHARM I/O bus termination
- CHARM Base Plate and Channel Identifier Labels

***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.***

## NK-CAB-800FR-AC-CNTR-288




*Front Internal View*




*Rear Internal View*

This front rear cabinet has space to install max. 288 CHARM I/O channels on rear side of the cabinet and front side is equipped with 2 Wide & 8 Wide carrier for installation of M-Series controllers.

Design includes:

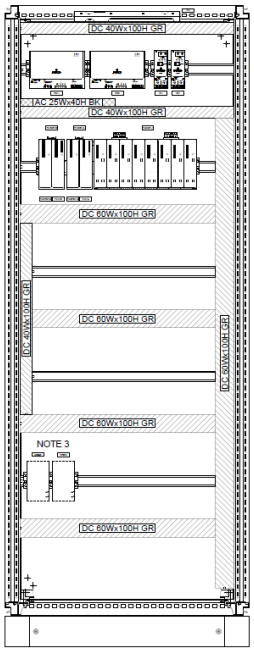
**On front side**

- Power Supply subassembly
- 2 x 2W Carrier
- 1 x 8W Carrier
- DV Switches – Pri. & Sec.

**On rear side**

- 3 x CHARM I/O Carrier with redundant Copper Ethernet connectors
- 3 CHARM IO columns for total of 288 I/Os
- Max. 8 baseplates per CSLS column
- 3 x CHARM Address Plugs
- 288 x NIS CHARM terminal blocks - Screw type
- CHARM Base Plate and Channel Identifier Labels
- 3 x CHARM I/O bus termination

***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.***

| NK-CAB-800F-AC-CNTR | |
|---|---|
|  <br>*Front Internal View* | This design includes:<br>■ Power Supply subassembly<br>■ 2 x 2W Carrier for installation of M-Series controllers<br>■ 1 x 8W Carrier<br>■ DV Switches – Pri. & Sec.<br>***No DeltaV equipment is included in the base model. All DeltaV equipment are to be configured separately through the Emerson quoting tools.*** |

## CTO DCS Cabinet Ordering Process

Configure To Order DCS 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 CTO DCS Cabinet:

1. Specify the CTO DCS 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 specifications & Bill of Materials
   - Drawing package (CAD + PDF) with default option will be available for download. For any non- default option selection, drawing package to be updated manually or can request these modifications from respective iCenter.
3. Approve the drawing package for construction.
4. Order the CTO DCS Cabinet as per provided quotation and approved drawings.
5. The CTO DCS Cabinet is assembled, factory tested and delivered to site. The delivery includes the as-built drawing package (AutoCAD Electrical).

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

For Asia Pacific, Middle East and Africa iCenter:
**rfq_icenter.nsk@Emerson.com**

## Project Customizations

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

For any customizations required 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

DCS CHARMs assigning to MD Plus, MQ, MX and PK Controllers is supported in DeltaV v14.3 and later.

CHARM I/O card 2 (CIOC2) requires DeltaV version 14.3 or later software.

## 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

Below listed are the required products in design and are to be ordered separately -

- CHARM I/O Cards (CIOC2)
- I/O CHARMs
- CHARMS terminal blocks other than the standard terminal block
- DeltaV Switches



**Contact Us**
**www.emerson.com/contactus**