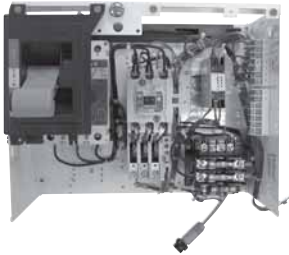


DeviceNet I/O Starter Unit Upgrade



14 Motor Control Centers

| | |
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F2100

Product Description

Nearly 50 years ago, Eaton's electrical business and Westinghouse® introduced the low voltage motor control center (MCC) assembly, enabling the group mounting of low voltage (600V class) electrical controls. This allowed for supervision and safe operation of motor starter units, feeder tap units and auxiliary equipment in a flexible structure arrangement at a centralized location.

The foundation for today's MCCs is a modular plug-in combination motor controller

assembly with components of proven electrical and mechanical integrity. These assemblies are enclosed in metal structures that prevent accidental contact with live electrical parts.

Eaton's Cutler-Hammer® MCC structure consists of structural steel, horizontal and vertical wireways for conduit and load cable entry and exit, and vertical and horizontal bus systems for distributing power throughout the MCC. The starter unit consists of a rugged steel shell (wrapper) for mounting the unit components, a combination motor starter with factory wired control, a handle mechanism for ON/OFF operation and a rigid unit door.

Product History

Group-mounted motor control was originally developed by Westinghouse in 1935. What came to be known as motor control centers were built in 14 manufacturing and repair shops around the country, including a plant in Chicago, IL, that opened in 1941. In 1963, Chicago became the primary MCC manufacturing plant. The Fayetteville, NC, operation was opened in 1980 to relieve some of Chicago's volume. The Fayetteville plant was expanded in 1984 and the Chicago operation was closed. Motor control centers

are currently manufactured in Fayetteville and in eight service centers around the country.

The Westinghouse plug-in starter design for group-mounted control (called motor control centers) was first introduced in 1935, and in 1950 became known as the Type 11-300 motor control center and used the 11-200 motor starter. The Type W MCC replaced the 11-300 in 1965, first using the 11-200 starter and then moving to the A200 starter. The 5 Star was introduced in 1975 to replace the Type W. It, too, used the A200 motor starter. The Series 2100 updated the 5 Star design in 1987, but is mechanically compatible with the 5 Star. The Advantage MCC was introduced as a sister product to the Series 2100 in 1992 with the introduction of the Advantage starter. It was also mechanically compatible with the 5 Star. With the merger of Eaton's electrical Cutler-Hammer business unit and Westinghouse's Distribution and Control Business Unit (DCBU) in 1994, a new hybrid motor control center line was introduced. It was called the F2100 MCC and featured the Freedom™ starter.

The Cutler-Hammer plug-in starter design motor control center was introduced in the late 1950s as the 9800 Series

Unitrol. These motor control centers used the 3-Star type motor starter. In 1968, the Citation line of starters replaced the 3-Star type in the 9800 MCC. The motor control center was totally redesigned around the Citation starter in 1972 and was called the F10 Unitrol. The next generation of MCC was introduced in 1988, using the Freedom line of starters called the Freedom Unitrol. Freedom Unitrol was discontinued in 1994 and replaced with the Cutler-Hammer F2100 motor control center.

Cutler-Hammer motor control centers were originally built in Milwaukee, WI. In 1962, manufacturing moved out of Milwaukee to plants in Atlanta, GA; Bethlehem, PA; Chicago, IL; Los Angeles, CA; Dallas, TX; San Francisco, CA; and Cleveland, TN. In 1972, these plants consolidated to Atlanta, Bethlehem, Chicago, Dallas and Los Angeles. In 1984, another consolidation left manufacturing in only Atlanta and Los Angeles. With the introduction of the Freedom starter in 1989, all manufacturing was moved to Atlanta. After the merger, all motor control center manufacturing moved to the Fayetteville, NC, location.

Product History Time Line

| Page | Product | 1935 | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | Present |
|------------|---------------------------------|------|------|------|------|------|------|------|------|------|------|------|------|---------|
| V12-T14-5 | Westinghouse 11-300 | █ | | | | | | | | | | | | |
| V12-T14-6 | Cutler-Hammer 9800 | | | █ | | | | | | | | | | |
| V12-T14-7 | Westinghouse Type W | | | | | █ | | | | | | | | |
| V12-T14-8 | Cutler-Hammer F10 | | | | | | █ | | | | | | | |
| V12-T14-10 | Westinghouse 5 Star | | | | | | | █ | | | | | | |
| V12-T14-9 | Cutler-Hammer Freedom Unitrol | | | | | | | | | | █ | | | |
| V12-T14-10 | Westinghouse Series 2100 | | | | | | | | | | █ | | | |
| V12-T14-11 | Westinghouse Advanage™ | | | | | | | | | | | █ | | |
| V12-T14-12 | Cutler-Hammer F2100 | | | | | | | | | | | | █ | |
| | Cutler-Hammer <i>IT</i> . MCC ① | | | | | | | | | | | | | █ |

Note

① No additional information at this time.

General Information

Procedure for Identifying Motor Control Center Types ①

| | MCC Type | Type of Handle Mechanism | Starter Type | Bucket Width (Inches) | Door Width (Inches) | Page Number |
|--|--------------------|--------------------------|-------------------------|-----------------------|---|-------------------|
| 11-300  | 11-300 | Rotary | 11-200 Life Line Type N | 15-3/4 | 20 | V12-T14-5 |
| 9800  | 9800 | Rotary and lever | 3 Star | 16-1/8 | 19-3/8 | V12-T14-6 |
| Type W  | Type W | Slider | A200 or 11-200 | 11-3/4 | 13-3/8 | V12-T14-7 |
| F10  | F10 | Slider and lever | Citation | 14 | 14-3/4 with wireway 19-1/2 without wireway | V12-T14-8 |
| Freedom Unitrol  | Freedom Unitrol | Slider | Freedom Series | 13-7/8 | 15-1/2 | V12-T14-9 |
| 5 Star/Series 2100  | 5 Star/Series 2100 | Lever | A200 | 13-3/4 | 15-5/8 | V12-T14-10 |
| Advantage  | Advantage | Lever | Advantage | 13-3/4 | 15-5/8 | V12-T14-11 |
| F2100  | F2100 | Lever | Freedom Series | 13-3/4 | 15-5/8 | V12-T14-12 |
| | IT MCC | Rotary | IT-EM | 13-3/4 | 15-5/8 | ② |

Notes

- ① In the event that the nameplate is missing, it is possible to identify the MCC design by the type of handle mechanism, starter type, bucket width and door width.
- ② Contact **1-800-OLD-UNIT**.

Identification by Original Handle Mechanism



Freedom 2100, Advantage, Series 2100, 5 Star



F10 Unitrol Lever (Obsolete)



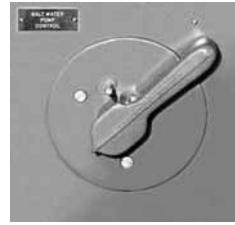
IT-EM Handles



Freedom Unitrol



F10 Unitrol Slider



9800 Unitrol (Obsolete)



11-300



Type W

11-300

Originally a Westinghouse Product



Unit with A200 Starter

Product Description

Introduced in 1937, Westinghouse manufactured the 11-300 MCC through 1965 and it was available as match and lineup until 1974. It used standard structures each 20.00 inches wide, 90.38 inches high, and either 20.25 inches or 12.00 inches deep for front mounted and 20.25 inches for back-to-back mounting. Vertical sections could be bolted together to form a single lineup with continuous horizontal bus and open horizontal wireways.

Unit height was measured in either 9.33-inch or 14.00-inch increments up to a maximum of 70.00 inches of usable vertical space. ANSI 61 light gray enamel was used on all structural parts. The unit door hinged on the right and covered the entire width of the structure.

The 11-300 starter unit was most easily recognized by the rotary type of handle mechanism. Bus and support systems were typically braced to withstand fault currents of 25,000A.

Maximum Ratings

Three-phase, 600V, 600 hp, 2500A bus.



20.00-Inch Wide/Single 11-300 MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL® labeled
- Series C disconnect device
- A200 standard—*IT*, Freedom or Advantage starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with IT-EM Starter

Add-on MCCs

New *IT*, F2100 or Advantage can be added to an existing lineup. **Cable connected only.**

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

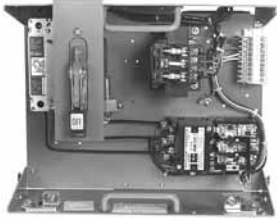
- Feeder breakers and fusible switches through 400A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



11-300 Dual Feeder

9800

Originally a Cutler-Hammer Product



Unit with Citation Starter

Product Description

Introduced in 1956, the Cutler-Hammer 9800 was the initial offering in the motor control center product grouping. The door of the unit measured 19.38 inches wide and the bucket width measured 16.13 inches. Unit height was measured in 9.33-inch and 14.00-inch increments. The MCC did not use a wireway.

ANSI 49 was applied to the units, structural framework, roof, side sheets and all exterior doors.

9800 starter units were originally supplied with a 3-Star starter and a rotary handle mechanism. Replacements today use the newer Freedom starter, and a slider handle mechanism and a new door. The rotary handle mechanism is no longer available. Bus and bus systems were typically braced to withstand fault currents of 25,000A.

Maximum Ratings

Three-phase, 600V, 100 hp, 2500A bus.



20.00-Inch Wide/Single 9800 MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Sizes 1–4 starter units
- UL labeled
- Series C disconnect device
- Freedom standard—**IT**, A200 or Advantage starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with IT-EM Starter

Note: Replacement 9800 units will be supplied with slider handle mechanism as shown.

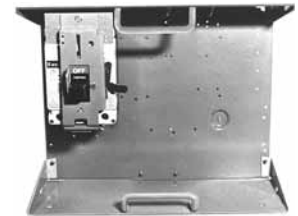
Add-on MCCs

New **IT**, F2100 or Advantage can be added to an existing lineup. **Cable connected only.**

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Feeder breakers and fusible switches through 400A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



9800 Feeder Unit

Note: Handle mechanism pictured above is also used with F10 Unitrol units.

Type W

Originally a Westinghouse Product



Unit with A200 Starter

Product Description

Manufactured from 1965 to 1975, this Westinghouse MCC used standard structures each 19.00 inches wide, 90.00 inches high, and either 15.00 inches or 20.00 inches deep for front mounted or 20.00 inches deep for back-to-back mounting. Vertical sections were bolted together forming a single lineup with continuous horizontal bus. Unit height is measured in 6.00-inch increments up to a maximum of 72.00 inches of usable vertical space. Starter units are 13.50 inches wide.

A two-tone light/dark enamel paint system was used with an ANSI 70 off-white applied to the structural framework and cover plates. A dark gray was used for unit and wireway doors.

The Type W starter units are easily recognized by their sliding handle mechanism, the MC motor control type. Bus and bus support systems were typically braced to withstand fault currents of 22,000A.

Maximum Ratings

Three-phase, 600V, 400 hp, 2500A bus.



20.00-Inch Wide Type W MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- A200 standard—*IT*, Freedom or Advantage starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with IT-EM Starter

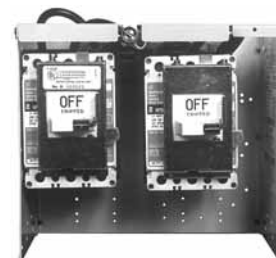
Add-on MCCs

New *IT*, F2100 or Advantage MCCs can be added to an existing lineup through a 10.00-inch bus transition section.

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

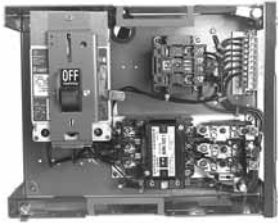
- Feeder breakers and fusible switches through 400A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Type W Dual Feeder

F10

**Originally a
Cutler-Hammer Product**



Unit with Citation Starter

Product Description

Introduced in 1972, this Cutler-Hammer MCC was available in both 16.00 inches wide (with wireway) and 20.00 inches wide (without wireway). Bucket width is 14.00 inches and replacement units are available with both designs. Unit height is measured in 6.00-inch increments.

ANSI 40 was applied to the units, structural framework, roof, side sheets and all exterior doors.

The F10 MCC used the Citation starter and was identified by the slider type handle mechanism. Bus and bus support systems were typically braced to withstand fault currents of 42,000A.

Maximum Ratings

Three-phase, 600V, 150 hp, 2000A bus.



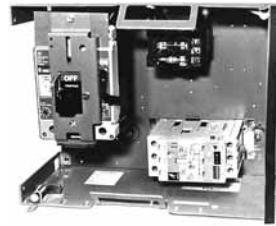
20.00-Inch Wide F10 MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- Freedom standard—*IT*, A200 or Advantage starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with Advantage Starter

Add-on MCCs

New *IT*, F2100 or Advantage MCCs can be added to an existing lineup through a bus splice kit and channel sills.

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

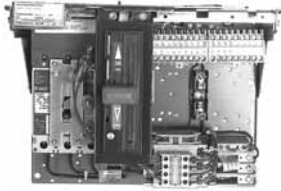
- Feeder breakers 600A and fusible switches 400A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



F10 Feeder Unit

Freedom Unitrol

*Originally a
Cutler-Hammer Product*



Unit with Freedom Starter

Product Description

Introduced in 1989, this Cutler-Hammer MCC had vertical structures that measured 20.00 inches wide, 91.50 inches high, and either 15.00 inches or 20.00 inches deep. It allowed a 6.00-inch Size 1 unit design.

ANSI 49 was applied to the units, structural framework, roof, side sheets and all exterior doors.

The Freedom Unitrol used the Freedom starter and was identified by the slider type handle mechanism. Bus and bus support systems were typically braced to withstand fault currents of 42,000A with the option to increase to 65,000A.

Maximum Ratings

Three-phase, 600V, 400 hp, 2500A bus.



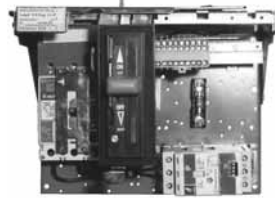
*20.00-Inch Wide Freedom
Unitrol MCC Structure*

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- Freedom standard—*IT*, A200 or Advantage starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with Advantage Starter

Add-on MCCs

New *IT*, F2100 or Advantage MCCs can be added to an existing lineup through a bus splice kit.

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Feeder breakers and fusible switches through 600A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Freedom Unitrol Feeder Unit

5 Star/Series 2100

Originally a Westinghouse Product



Unit with A200 Starter

Product Description

The 5 Star MCC was introduced by Westinghouse in 1975. The structure design was the basis for the Series 2100, Advantage and F2100 products later. The Series 2100 updated the 5 Star design in 1987 with higher ratings and newer components.

The vertical structures are normally 20.00 inches wide, 90.00 inches high, and 16.00 inches or 21.00 inches deep. Vertical sections may be bolted together forming a single lineup with continuous horizontal bus and open horizontal wireways. Unit height is measured in 6.00-inch increments up to a maximum of 72.00 inches of usable vertical space.

A two-tone light/dark enamel paint system is used for this design. ANSI 61 gray is applied to the roof and side sheets and all exterior doors. Starter units are 13.75 inches wide.

The 5 Star/Series 2100 starter unit's handle mechanism is a gray toggle type handle with a black exterior mounting panel and is used on the Advantage and F2100 designs. Bus and bus support systems are typically braced to withstand fault currents of 42,000A on the 5 Star and 65,000A on the Series 2100.

Maximum Ratings

Three-phase, 600V, 600 hp, 2500A bus.



20.00-Inch Wide 5-Star MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- A200 starter standard—*IT*, starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with A200 Starter

Add-on MCCs

New *IT*, F2100 or Advantage MCCs can be added to an existing lineup through a bus splice kit.

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

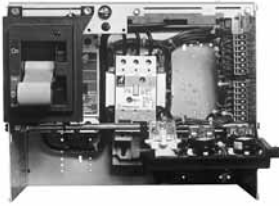
- Feeder breakers and fusible switches through 600A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



5 Star/Series 2100 Feeder Unit

Advantage

Originally a Westinghouse Product



Unit with Advantage Starter

Product Description

Introduced in 1991 as a sister to the Westinghouse Series 2100 MCC, the Advantage starter design revolutionized the industry. It uses state-of-the-art technology to solve motor control application problems, such as coil burnout and contact chatter/welding.

The vertical structures are normally 20.00 inches wide, 90.00 inches high, and 16.00 inches or 21.00 inches deep. Vertical sections may be bolted together forming a single lineup with continuous horizontal bus and open horizontal wireways. Unit height is measured in 6.00-inch increments up to a maximum of 72.00 inches of usable vertical space.

A two-tone light/dark enamel paint system is used for this design. ANSI 61 gray is applied to all exterior back sheets, side sheets and doors. Starter units are 13.75 inches wide and are interchangeable with the 5 Star and Series 2100 design.

The Advantage starter unit's handle mechanism is a gray toggle type handle with a black exterior mounting panel and is used on the 5 Star/ Series 2100 and Freedom 2100 designs. Bus and bus support systems were typically braced to withstand fault currents of 65,000A.

Maximum Ratings

Three-phase, 600V, 1100 hp, 3200A bus.



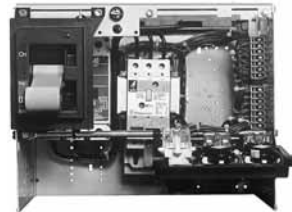
20.00-Inch Wide Advantage MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- Advantage starter
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with Advantage Starter

Device Panel Upgrade

While incorporating Advantage starters, increase the information shown on the unit device panel with one or two of the Advantage control modules (ACMs) available. These units fit into the standard device panel cutout and provide pushbutton, pilot light and metering functions with reduced wiring costs.

The device panel is hinged on a horizontal rod extending across the front of the unit. With the unit door open, loosening two captive retaining screws at the top of the panel and sliding it a 0.50-inch left permits it to swing down. This provides ready access to the rear of the panel and increased accessibility to the unit interior.

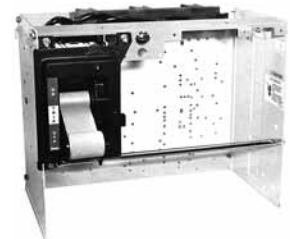


Advantage Device Panel with ACM and Metering Module

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Feeder breakers and fusible switches through 600A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Advantage Feeder Unit

F2100

The Cutler-Hammer F2100 was introduced in 1995



Unit with Freedom Starter

Product Description

The structure is based on the 5 Star, Series 2100 and Advantage MCC design. Vertical structures are normally 20.00 inches wide, 90.00 inches high, and 16.00 inches or 21.00 inches deep. Vertical sections may be bolted together forming a single lineup with continuous horizontal bus and open horizontal wireways. Unit height is measured in 6.00-inch increments up to a maximum of 72.00 inches of usable vertical space.

A two-tone paint system is used for this design. ANSI 61 gray is applied to the exterior and doors. Starter units are 13.75 inches wide with 4.63-inch wireways.

The Freedom starter is used in this design along with the HMCP motor circuit protector.

The F2100 starter unit's handle mechanism is a gray toggle type handle with a black exterior mounting panel and is used on the Advantage and 5 Star/Series 2100 designs. Bus and bus support systems are typically braced to withstand fault currents of 65,000A.

Maximum Ratings

Three-phase, 600V, 1100 hp, 3200A bus.



20.00-Inch Wide F2100 MCC Structure

Replacement Capabilities

Replacement Starter Units

Replacement starter cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Size 1–5 starter units
- UL labeled
- Series C disconnect device
- Freedom starter standard—*IT* starter optional
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



Unit with Freedom Starter

Replacement Feeder Units

Replacement feeder cell units are available for all plug-in MCC designs. A complete unit for adding to an existing MCC includes a unit door, a divider pan and all the necessary mounting hardware. Features of the replacement unit include:

- Feeder breakers and fusible switches through 600A
- UL labeled
- Series C disconnect device
- New tin-plated copper stab assembly
- New door, handle mechanism and hardware



F2100 Feeder Unit

Replacement Capabilities

Replacement Parts

In addition to replacement units, a large number of replacement parts are available for each vintage.

Note: For information on these and additional parts, refer to RPD listed on **Page V12-T14-19** of this catalog. For parts not listed or shown in the RPD, contact your local Eaton Field Sales office or Service Center. See **Page V12-T14-19** of this catalog.

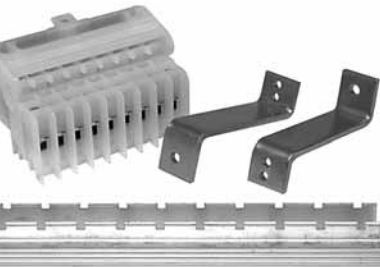
Examples



F2100 Horizontal Wireway Door



9800 Unit Mounting Hardware Kit



Freedom Unitrol Terminal Block Mounting Kit



F10 Handle Mechanism



Series 2100 Bus Splice Kit



Type W Horizontal Busbar

Technology Upgrades

IT. Soft Start



**Intelligent Technologies (IT.)
Soft Starters**

Eaton's Cutler-Hammer Intelligent Technologies (IT) solid-state starters provide high-performance motor control in the most compact packages in the industry. The IT. Series of solid-state starters are available in retrofit units through 200 hp in all Cutler-Hammer and Westinghouse MCC vintages. Each IT. solid-state starter unit includes a disconnect, starter, a DC power supply, a 120 Vac interposing relay, and a 100 VA CPT. The IT. solid-state starter design incorporates an integral, parallel run contact that engages once the starter reaches full speed. Available soft starter options include: pump control software, line/load MOV protection and motor isolation contactor.

IQ Retrofit Kits

IQ Analyzer (The Ultimate in Monitoring)



IQ Analyzer

The Cutler-Hammer IQ Analyzer displays the most comprehensive list of metered parameters in its class. The dot-matrix, gas plasma display provides the flexibility of exhibiting large characters with high visibility and small characters for detailed descriptions. Multiple parameters (e.g., currents of phases A, B and C) are displayed simultaneously for more thorough real-time monitoring. Custom screens can also be configured. Available information includes current, voltage, power, energy, demand and an extensive array of harmonic data.

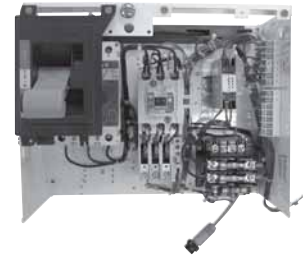
IQ 320



IQ 320

The Cutler-Hammer IQ 320 is the most cost-effective metering solution for monitoring main incoming line electrical values. Through the bright two-line LCD display, the IQ 320 provides accurate readings for voltage, amperes, watts, hertz, power factor and VA. Key features of the IQ 320 include ANSI C312.16 revenue class metering accuracy, PowerNet™ capable communications port and user intuitive four-button front panel interface.

DeviceNet Interface Module Upgrade (DN65)



DeviceNet I/O Starter Unit Upgrade

Using the DN65 Discrete DeviceNet™ I/O module, all Cutler-Hammer and Westinghouse vintage MCCs may be upgraded with the latest Freedom motor starters to provide wire savings and communications capability. The DN65 DeviceNet I/O Module adds increased functionality and intelligence in a small footprint. Standard MCC starter units accommodate the DN65 DeviceNet module and provide the ability to perform START/STOP control over an open network. Additionally, contactor, overload and breaker status may be communicated through the DN65 upstream to a host PC, PLC or DCS system.

Technology Upgrades

SPD Upgrade



F2100 SPD Unit

Surge Protective Device—MCC

The Eaton SPD Series surge protective device is a hybrid MOV filter-based suppression system that protects sensitive electronic equipment from damaging transients, lightning surges and electrical line noise. The SPD is installed in parallel to the electrical circuits in a motor control center and provides clean power to the motor starting circuits. The SPD only reacts and keeps damaging surge current and high frequency noise away from motor starting circuits when the system's nominal operating voltage is exceeded. The latest Eaton SPD Series protective devices are substantially smaller, safer and more compact than their predecessors, providing better performance and easier installation.

The new Eaton SPD Series are available in size ranges from 50 to 400 kA and can be retrofitted to all Cutler-Hammer and Westinghouse vintage MCCs. Consult the factory for further information.

SV9000 Drives



SV9000 AC Drive

Cutler-Hammer SV9000 adjustable frequency drives are available for retrofit units in a number of MCC vintages. For current vintage Freedom and Advantage MCCs, SV9000 drives are available through 1100 hp at 480V. Type W, F10, Freedom Unitrol motor control center vintage units are available with SV9000 drive in plug-in configurations through 30 hp at 480V. Each retrofit unit includes an SV9000 drive (variable or constant torque) disconnect, a CPT and a 3% input and output line reactor. SV9000 drives provide the highest performance and reliability available for flexible and smooth motor control.

IT-EM Technology

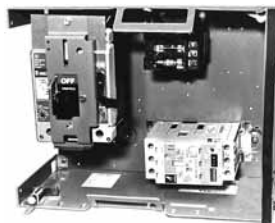
In addition to standard retrofit capabilities, every vintage of MCC can be upgraded with IT-EM motor starters. Consult factory for other manufacturer's motor control centers.



5 Star/2100



Type W



F10

Series C Retrofit Kits

Series C retrofit kits are to be used to upgrade existing Type W, 5 Star and F10 motor control center buckets by changing out the old breakers with the Series C. These kits can be applied to both starter and feeder units.

The old breakers that these kits will upgrade include, but are not limited to, the MCP, F, FA, FB, HFB, K, KA, KB, HKB, L, LA, LB and HLB breakers.

5 Star Series C Retrofit Kit



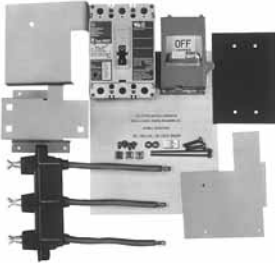
5 Star Series C Retrofit Kit

The 5 Star Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle mechanism, including tripped indication and push-to-trip
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for desired frame size
- Assembly instructions

Note: The upgrade interrupting rating of the breaker does not upgrade the withstand rating of the existing bus.

Type W Series C Retrofit Kit



Type W Series C Retrofit Kit

The Type W Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle mechanism, including tripped indication and push-to-trip
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for proper hole placement for desired frame size
- Series C breaker mounting hardware
- New door and hardware
- New stab assembly
- Assembly instructions

Note: The upgrade interrupting rating of the breaker does not upgrade the withstand rating of the existing bus.

F10 Series C Retrofit Kit



F10 Series C Retrofit Kit

The F10 Series C retrofit kit includes:

- Series C device, 65 kA (either HMCP or thermal-magnetic breaker)
- Operating handle mechanism, including tripped indication push-to-trip
- Label stating that the MCC unit has been retrofitted with Series C device suitable for 65 kA (similar to UL quality label)
- Templates for desired frame size
- Assembly instructions

Note: The upgrade interrupting rating of the breaker does not upgrade the withstand rating of the existing bus.

Series C Molded-Case Circuit Breakers

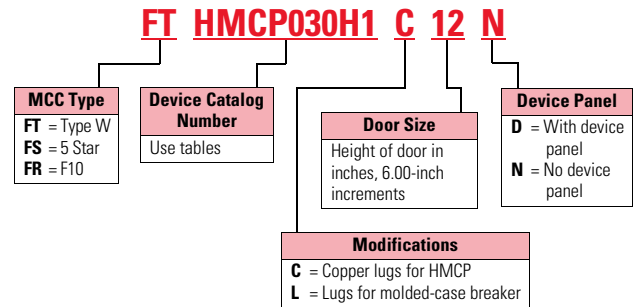
| Frame Type | Interrupting Rating (kAIC) | | | Trip Rating Amperes | Catalog Number |
|------------|----------------------------|------|------|---------------------|----------------|
| | 240V | 480V | 600V | | |
| HFD | 100 | 65 | 25 | 15 | HFD3015 |
| HFD | 100 | 65 | 25 | 20 | HFD3020 |
| HFD | 100 | 65 | 25 | 25 | HFD3025 |
| HFD | 100 | 65 | 25 | 30 | HFD3030 |
| HFD | 100 | 65 | 25 | 40 | HFD3040 |
| HFD | 100 | 65 | 25 | 50 | HFD3050 |
| HFD | 100 | 65 | 25 | 60 | HFD3060 |
| HFD | 100 | 65 | 25 | 70 | HFD3070 |
| HFD | 100 | 65 | 25 | 80 | HFD3080 |
| HFD | 100 | 65 | 25 | 90 | HFD3090 |
| HFD | 100 | 65 | 25 | 100 | HFD3100 |
| HFD | 100 | 65 | 25 | 125 | HFD3125 |
| HFD | 100 | 65 | 25 | 150 | HFD3150 |
| FDC | 200 | 100 | 35 | 15 | FDC3015 |
| FDC | 200 | 100 | 35 | 20 | FDC3020 |
| FDC | 200 | 100 | 35 | 25 | FDC3025 |
| FDC | 200 | 100 | 35 | 30 | FDC3030 |
| FDC | 200 | 100 | 35 | 40 | FDC3040 |
| FDC | 200 | 100 | 35 | 50 | FDC3050 |
| FDC | 200 | 100 | 35 | 60 | FDC3060 |
| FDC | 200 | 100 | 35 | 70 | FDC3070 |
| FDC | 200 | 100 | 35 | 80 | FDC3080 |
| FDC | 200 | 100 | 35 | 90 | FDC3090 |
| FDC | 200 | 100 | 35 | 100 | FDC3100 |
| FDC | 200 | 100 | 35 | 125 | FDC3125 |
| FDC | 200 | 100 | 35 | 150 | FDC3150 |
| HJD | 100 | 65 | 25 | 175 | HJD3175 |
| HJD | 100 | 65 | 25 | 200 | HJD3200 |
| HJD | 100 | 65 | 25 | 225 | HJD3225 |
| HJD | 100 | 65 | 25 | 250 | HJD3250 |
| JDC | 200 | 100 | 35 | 175 | JDC3175 |
| JDC | 200 | 100 | 35 | 200 | JDC3200 |
| JDC | 200 | 100 | 35 | 225 | JDC3225 |
| JDC | 200 | 100 | 35 | 250 | JDC3250 |
| HKD | 100 | 65 | 35 | 300 | HKD3300 |
| HKD | 100 | 65 | 35 | 350 | HKD3350 |
| HKD | 100 | 65 | 35 | 400 | HKD3400 |
| KDC | 200 | 100 | 50 | 300 | KDC3300 |
| KDC | 200 | 100 | 50 | 350 | KDC3350 |
| KDC | 200 | 100 | 50 | 400 | KDC3400 |

Series C Motor Circuit Protectors

| Starter Size | Magnetic Trip Range Amperes | Continuous Rating Amperes | Catalog Number |
|--------------|-----------------------------|---------------------------|----------------|
| 0 | 9–30 | 3 | HMCP003A0 |
| 0 | 21–70 | 7 | HMCP007C0 |
| 0 | 45–150 | 15 | HMCP015E0 |
| 0 | 40–60 | 25 | HMCP025D0 |
| 1 | 90–300 | 30 | HMCP030H1 |
| 2 | 80–120 | 50 | HMCP050G2 |
| 2 | 150–500 | 50 | HMCP050K2 |
| 2 | 115–170 | 70 | HMCP070J2 |
| 2 | 210–700 | 70 | HMCP070M2 |
| 3 | 160–240 | 100 | HMCP100L3 |
| 3 | 300–1000 | 100 | HMCP100R3 |
| 4 | 450–1500 | 150 | HMCP150T4 |
| 4 | 750–2500 | 150 | HMCP150U4 |
| 4, 5 | 350–700 | 250 | HMCP250A5 |
| 5 | 450–900 | 250 | HMCP250C5 |
| 5 | 500–1000 | 250 | HMCP250D5 |
| 5 | 625–1250 | 250 | HMCP250F5 |
| 5 | 750–1500 | 250 | HMCP250G5 |
| 5 | 875–1750 | 250 | HMCP250J5 |
| 5 | 1000–2000 | 250 | HMCP250K5 |
| 5 | 1125–2250 | 250 | HMCP250L5 |
| 5 | 1250–2500 | 250 | HMCP250W5 |
| 5 | 500–1000 | 400 | HMCP400D5 |
| 5 | 625–1250 | 400 | HMCP400F5 |
| 5 | 750–1500 | 400 | HMCP400G5 |
| 5 | 875–1750 | 400 | HMCP400J5 |
| 5 | 1000–2000 | 400 | HMCP400K5 |
| 5 | 1125–2250 | 400 | HMCP400L5 |
| 5 | 1250–2500 | 400 | HMCP400M5 |
| 5 | 1500–3000 | 400 | HMCP400N5 |
| 5 | 1750–3500 | 400 | HMCP400R5 |
| 5, 6 | 2000–4000 | 400 | HMCP400X5 |

Catalog Numbering System

Series C Retrofits



How to Order

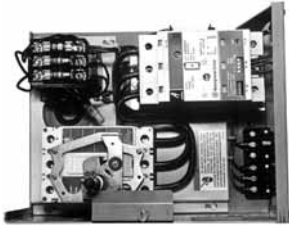
Step 1: Select the correct Series C device from the table in the applicable RPD

5 Star—RP04304003E
 Type W—RP04304006E
 F10—RP04304005E

Step 2: Create a catalog number based on the MCC type, device selected, modification, door size and device panel.

Step 3: Select price from PL04304002E.

Competitive Retrofit Upgrades



GE7770 Unit Retrofitted with Advantage and HMCP

The following competitive retrofit units can be obtained from the Fayetteville manufacturing plant.

- Allis-Chalmers
- Allen-Bradley®
- Arrow Hart®
- General Electric®
- Klockner-Moeller®
- Siemens®
- Other

Factory Retrofit

We replace the starter, the breaker and the handle mechanism. A new door is provided for most competitor's units. The original unit, the pan and the stabs are refurbished.

Panel Retrofit

New components are mounted on a "panel" that is easily installed into the competitor's unit. Included are a new pan, a starter, a breaker, a handle mechanism and a door if available. Requires field installation by Eaton's Electrical Services & Systems (EESS) or a qualified contractor.

Note: See **Page V12-T14-19** for most competitor retrofit units.

Note: Please consult factory for additional retrofit opportunities.

New Units

Brand new ITET 5600, GE 7700/8000 and Allen-Bradley Centerline™ replacement units include:

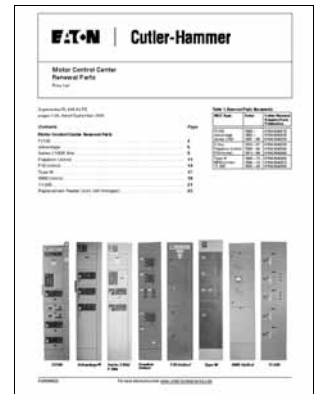
- New bucket
- New stabs
- All new Cutler-Hammer components
- Complete with manufacturer UL label

Note: For additional information and designs for other motor control centers, call the Aftermarket Products Center in Fayetteville, NC.

Customer Required Information

Procedure for identifying renewal parts:

1. Renewal parts listed in PL04304002E below identify those replacement parts that are most frequently ordered and that are readily available from manufacturing stock.
2. For parts not shown in *Aftermarket, Renewal Parts and Life Extension Solutions* or listed in Further Information on **Page V12-T14-19**, contact your local Eaton Field Sales office or call **1-800-OLD-UNIT**.



PL04304002E



Poster PST03A01TE

Product Support Services

The following replacement units can be obtained from the Fayetteville manufacturing plant and the service centers.

- F2100
- Advantage
- 5 Star/Series 2100
- Freedom Unitrol
- F10
- Type W
- 9800
- 11-300
- Technology Upgrade Kits
- Allen-Bradley Centerline
- Federal Pacific Electric® (FPE)
- Sylvania® Clark (no UL)
- Square D® Model 3 (no UL)
- Telemecanique®
- Gould®
- ITE
- GE 7700/8000

New Units

Seven Customer Manufacturing Solution Centers

Atlanta

(678) 309-4270

Chicago

(847) 299-1911

Denver

(303) 366-9949

Hartford

(860) 683-4221

Brand new ITE 5600, GE 7700/8000 and Allen-Bradley Centerline replacement units include:

- New bucket
- New stabs
- All new Cutler-Hammer components
- Complete with manufacturer UL label

Note: For additional information and designs for other motor control centers, call the Aftermarket Products Center in Fayetteville, NC, **1-800-OLD-UNIT**. If you are in Canada, call **1-855-656-2882**.

Houston

(713) 939-9696

Los Angeles

(562) 944-6413

Portland

(503) 636-8333

Support of Installed Equipment

Fayetteville

1-800-OLD-UNIT

Airdrie, Canada

1-855-656-2882

Further Information

| Publication Number | Description |
|--------------------|---|
| RP04304001E | F2100—1995–Present |
| RP04304002E | Advantage—1992–Present |
| RP04304003E | Series 2100—1987–1995 |
| RP04304003E | 5 Star—1975–1987 |
| RP04304004E | Freedom Unitrol—1988–1994 |
| RP04304005E | F10 Unitrol—1972–1989 |
| RP04304006E | Type W—1965–1975 |
| RP04304007E | 9800 Unitrol—1956–74 |
| RP04304008E | 11-300—1935–1965 |
| RP04304010E | 5600—2003–Present |
| SA-11848 | Sales Aid—Advantage MCC |
| SA-162 | Sales Aid—F2100 |
| SA.8K.02.S.E | Sales Aid—QDS II sAftermarket Tri-fold |
| PST.03A.01.T.E | Sales Aid—MCC Wall Poster |
| LEM002A | Tri-fold Mailer “We Have The Solutions” |
| LEM005 | Tri-fold Mailer “MCC Units with TVSS” |
| LEM006 | Tri-fold Mailer “Technology Upgrades” |
| PA.8K.01.S.E | MCC Competitive Retrofit Units |

Pricing Information

Price List—All MCC Vintages—PL04304002E

Price List—Freedom 2100—PL03A01EPE

Price List—Advantage MCC—PL04301001E

Price and Availability Digest (PAD)

Vista/VISTALINE™ Discount Symbol 1CD-2C