EATON | Cutler-Hammer

Intelligent Technologies

QCPort Cover Control

Programmer's Manual

April 2005
Supercedes March 2005

Table of Contents

Index of Figures

How to Set Up a System

Performing an Offline Configuration

Offline Configuration Start

This section is designed to aide in choosing components, modifying the IO and also setting up any parameters special to the application for an offline project. Start by configuring the system offline using CH Studio Component Manger, if the system (MCC) already exists and can be connected to then skip this step and go to the Online Configuration section.

Start CH Studio Component Manager and create a new project by using the File/New option from the pull down menu or by selecting the New button on the toolbar. At this time name the project.

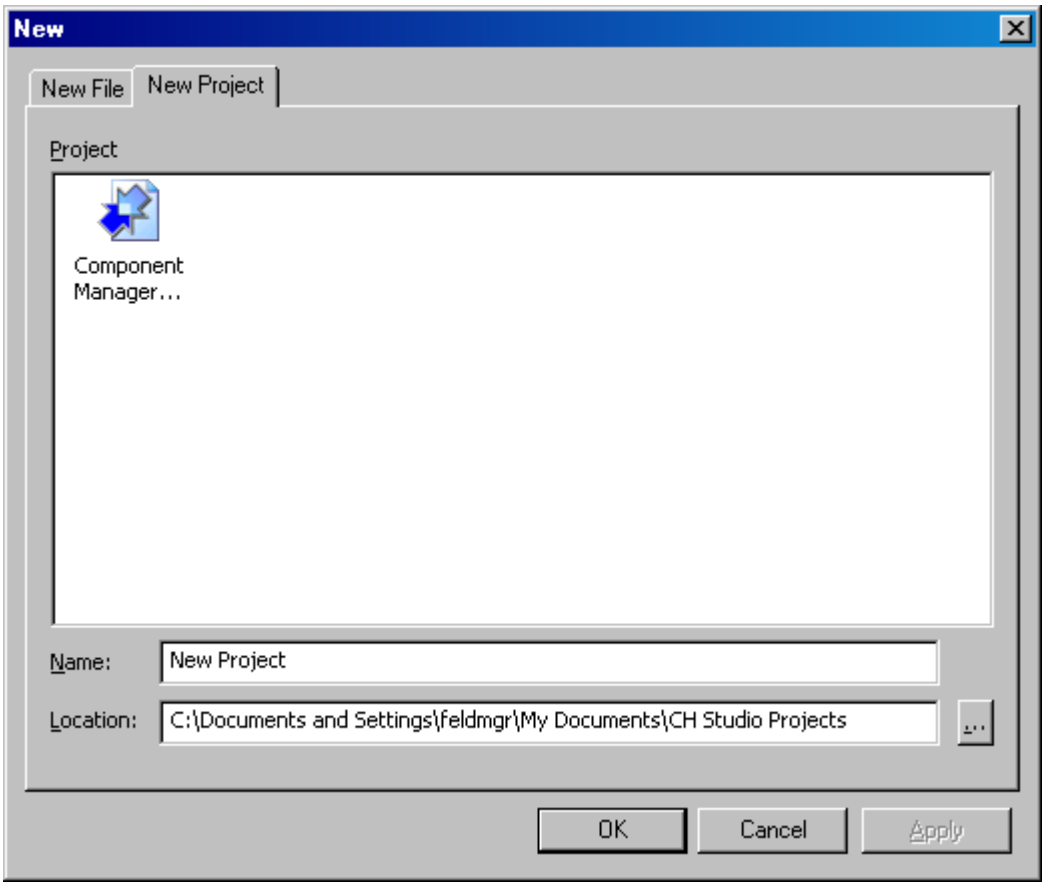


Figure 1 - New Project Window

Add Device

For this example a DeviceNet adapter (D77D-DNA) was used.

Once the project has been created the next step is to add the devices that compose the system. This is performed by using the Tasks/Add Device from the pull down menu, or by right clicking on the explorer window and choosing Add Device. Select the D77D-DNA by Eaton/Cutler-Hammer (a required device for all DeviceNet MCC's), this device is the DeviceNet to QCPort adapter. Choose Add and the D77D-DNA will be placed on the Desktop. Close the Add Device window at this time.

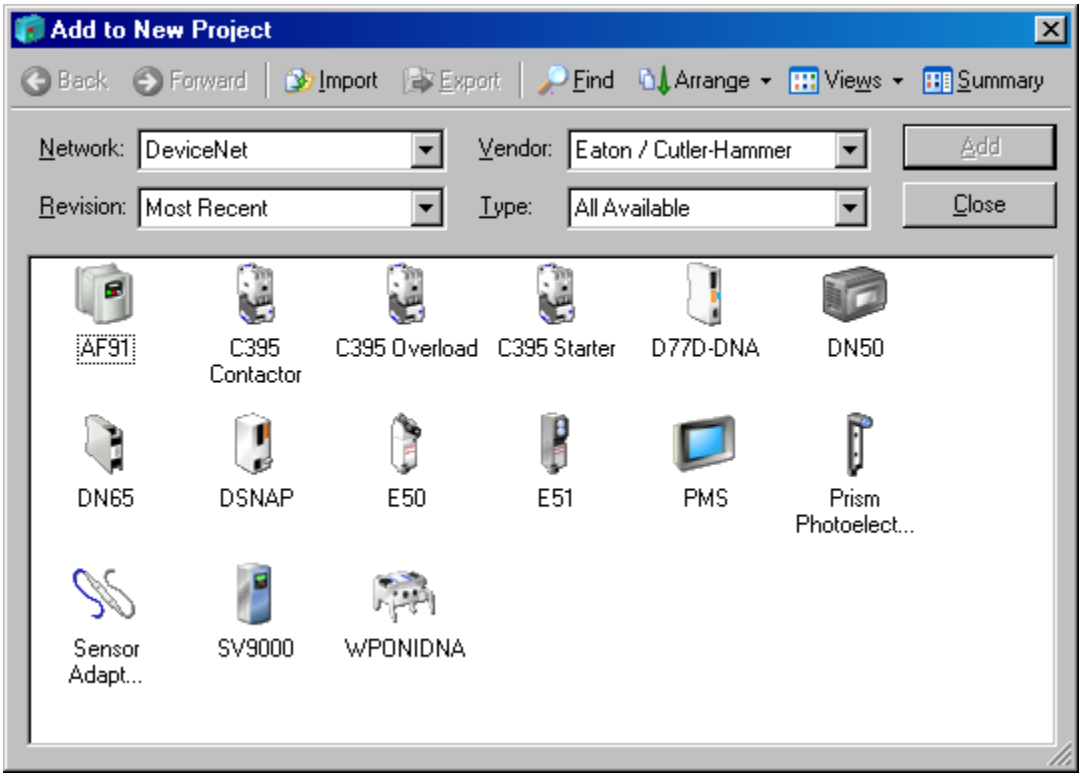


Figure 2 - Add Device Window

D77D-DNA Property Page

By performing a right mouse click on the D77D-DNA and choosing Properties the MAC ID can be viewed/changed and the IO data can be viewed. At this time there will not be any IO data since there are not any QCPort devices added to the D77D-DNA. Exit the Property window after setting the MAC ID.

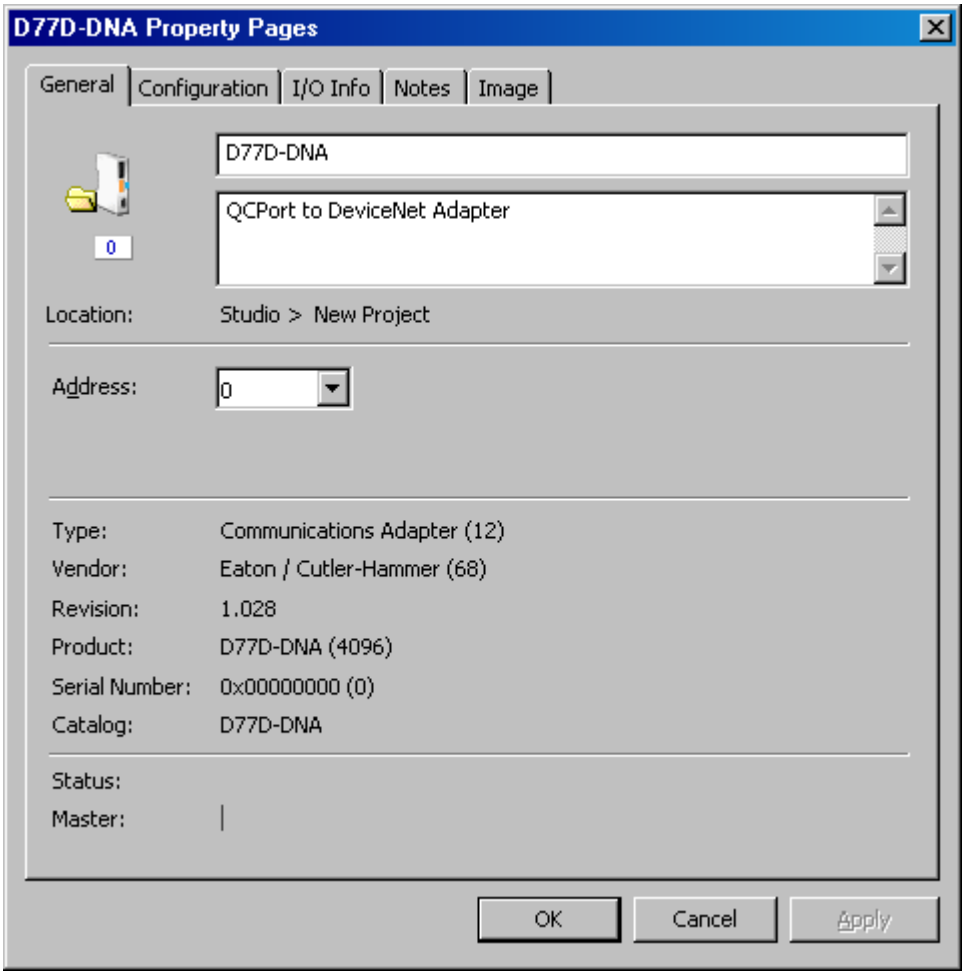


Figure 3 - Property Page for D77D-DNA

Channel A Devices

Exit the Property Page for the D77D-DNA and double click the D77D-DNA. There will be two folders, a Channel A and a Channel B, double click on Channel A. Channel A is the channel that all the QCPort Cover Control units are connected to within the MCC. Choose Add Device again and this time add a Cover Control. To add multiple Cover Controls, click the Add button multiple times. For this example, the MCC will have 5 Cover Control units in it. If there will be multiple Cover Control units that require parameter modification and are all identical to one another, only add one Cover Control and move on to the next step.

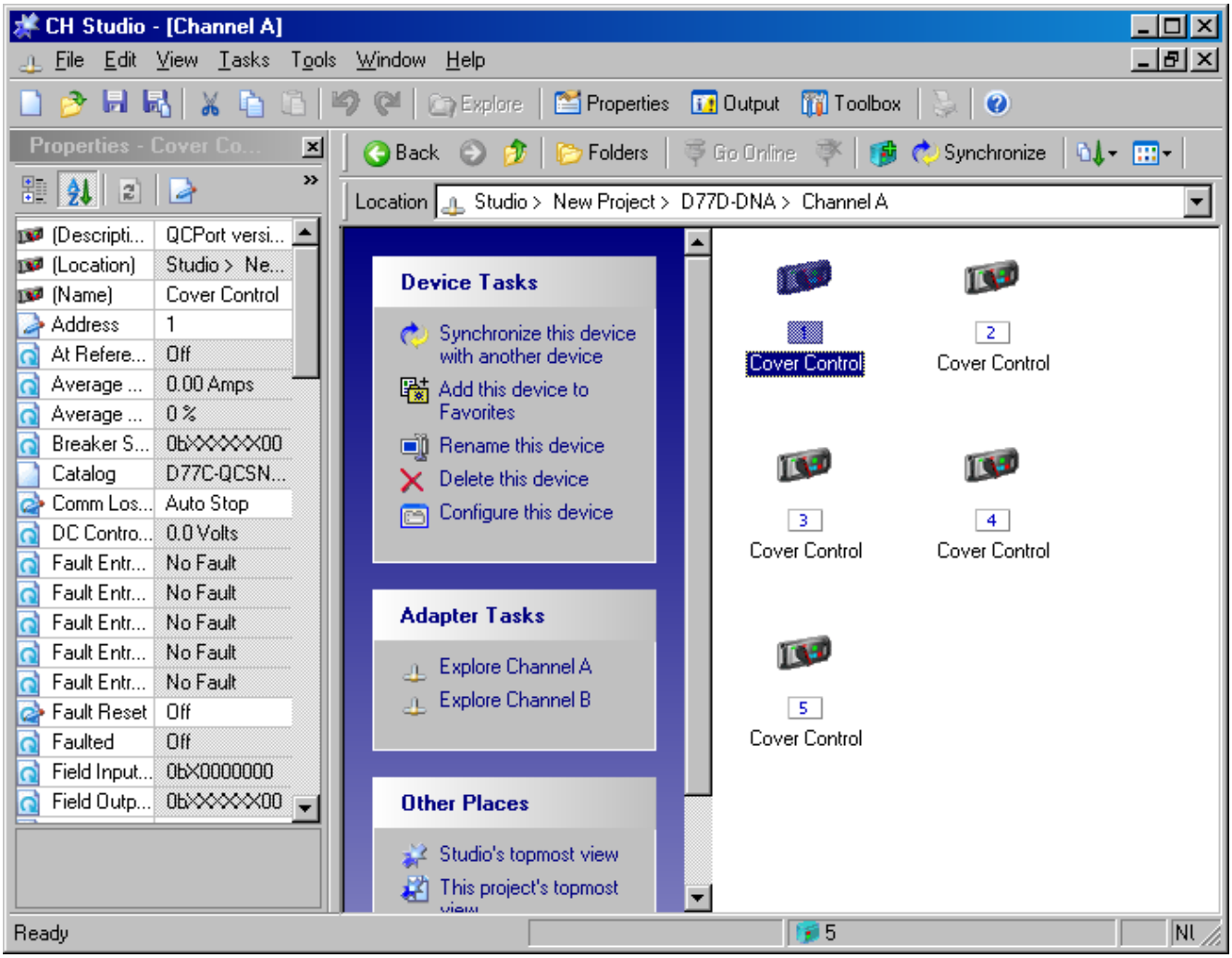


Figure 4 - Channel A Devices

Cover Control Property Page

To display the Property Page for the Cover Control, simply double click a Cover Control. In the Property Page there will be choices to enable/disable features and to choose IO data.

Note that each Cover Control has an address associated with it, it is important that each Cover Control (QCPort device) have a unique address.

Cover Control Configuration Page

To enable Ground Fault (must order the MCC with the ground fault option) check the Enable Ground Fault Trip and choose the duration (how long the ground fault must be active prior to trip) and the Inhibit Delay (when to start looking for a ground fault after a start). This is also the spot where the Underload and Over Current warning levels are enabled and set.

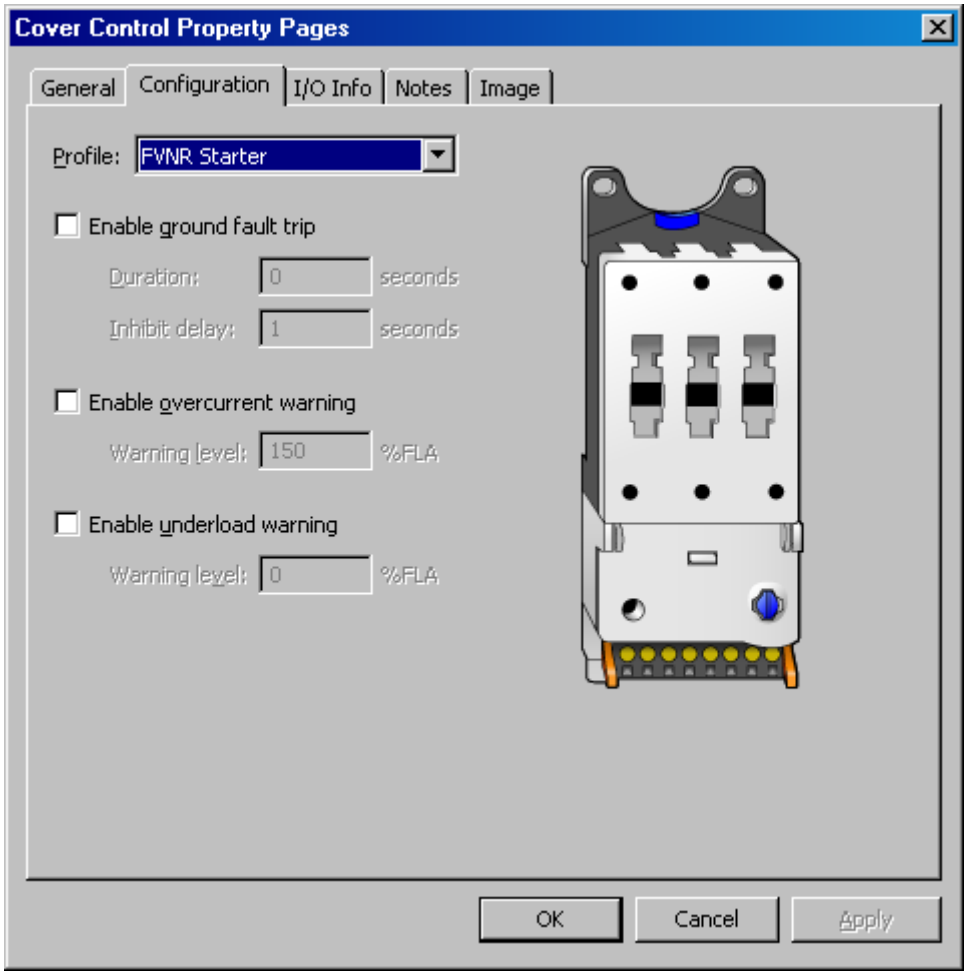


Figure 5 - Configuration Properties

Cover Control IO Info Page

The IO Info tab allows the user to configure the IO data specifically for the application. The default IO configuration is displayed on this tab. By selecting and deselecting the type of data the IO can be changed to meet the application requirements.

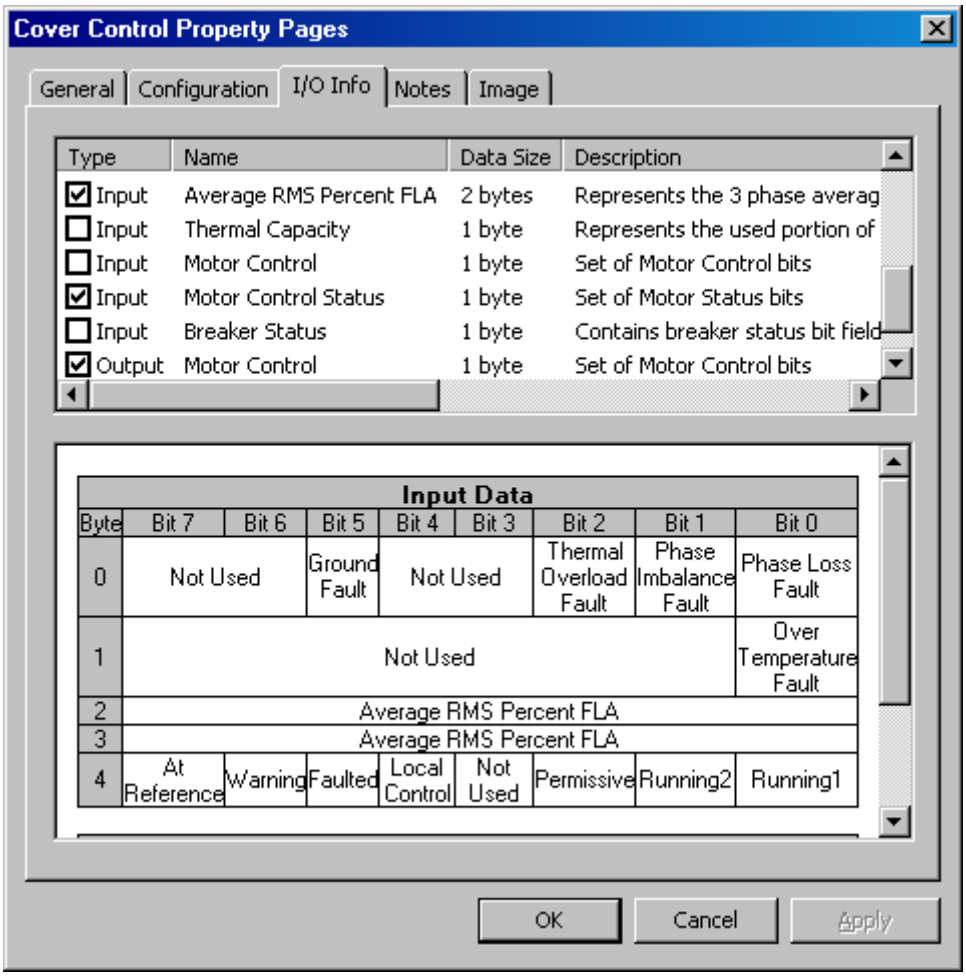


Figure 6 – IO Properties

Once all changes have been made, choose the Apply button and move on to the next Cover Control and perform the process all over again. If all the Cover Control units require the same configuration, select the modified Cover Control and choose copy, then paste as many cover controls as required on the explorer window. Finally edit each Cover Control (double click on each Cover Control) to assign a unique address.

If the project has multiple D77D-DNA's on it go back to the first screen where the D77D-DNA is located and add the next D77D-DNA and Cover Control units, or copy and paste the first D77D-DNA and edit the devices to fit the second D77D-DNA. It is important to remember that the devices on the DeviceNet network also need unique MAC ID's (addresses).

At this time save the project and continue on to the Online Configuration section.

Performing an Online Configuration

If the network adapter has not been installed, refer to the CH Studio Component Manager help to aide in the installation. The how to is in the shipping container with the registration form and the CH Studio CD.

Go Online

Connect the DeviceNet wiring to the network adapter and note the baud rate of the devices on the DeviceNet network. All devices on a DeviceNet network must be configured for the same baud rage; the default for all DeviceNet products is 125K. To change the baud rate open the Property Page (right mouse click and choose Properties) for the network adapter and change the baud rate.

Double click the DeviceNet icon and choose Go Online. At this time CH Studio Component Manager will Go Online and display the DeviceNet devices on the DeviceNet network. To access the QCPort devices connected to at D77D-DNA, double clock its icon, then double click it Channel A icon. All QCPort devices for Channel A that are in the D77D-DNA's scan list will be displayed. If the D77D-DNA has not been configured by the factory, then there will not be any Cover Control units under the Channel A screen. If the D77D-DNA has been configured then each Cover Control will be represented on the explorer window. Verify from the job documentation that each Cover Control is represented on the explorer window. If any Cover Control units are missing from the explorer window but are physically present in the MCC, refer to the trouble shooting section of this manual.

If the D77D-DNA has not been configured, perform an Auto Configuration by right clicking on the D77D-DNA and choosing Reset and then Rebuild D77D-DNA device list and IO mapping. This will instruct the D77D-DNA to go out and discover all the Cover Control units and build a scan list to represent them. After doing this, all the Cover Control units will be displayed in the explorer window under Channel A. If any of the Cover Control units do not show up, refer to the trouble shooting section of the manual.

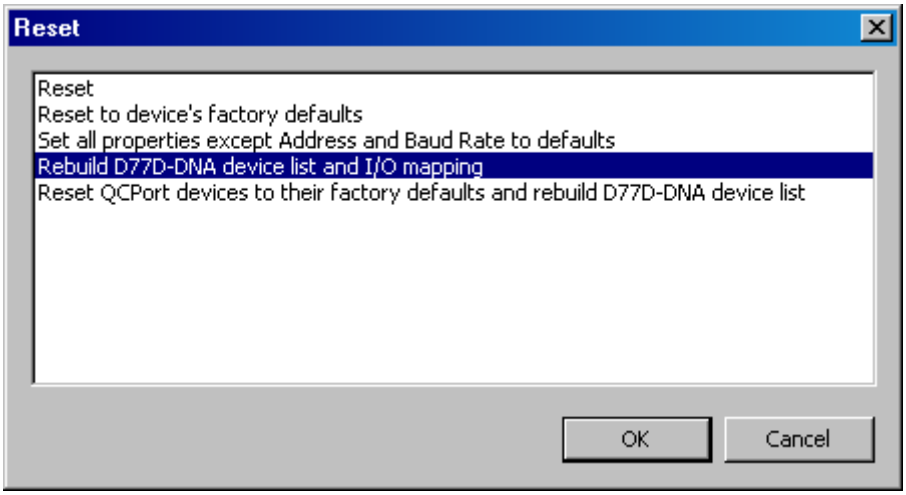


Figure 7 - Reset Window

Start Synchronization

The last step is to perform a "synchronize" of the offline project to the online system. It is important to verify that the addresses for both the Cover Control units and the D77D-DNA for the offline project match the online system. If they do not match, change one or the other until they do. The synchronize function will work on an entire DeviceNet subnet, a single DeviceNet node (D77D-DNA) or a single QCPort device (Cover Control). The method is the same for all; this example will demonstrate how to synchronize a single D77D-DNA.

Start with the offline project and select the offline D77D-DNA that is to be synchronized to the online system. Place the cursor on the D77D-DNA and click once to highlight it. At this time perform a right mouse click and choose Synchronize or choose Synchronize from the toolbar. This window will appear.

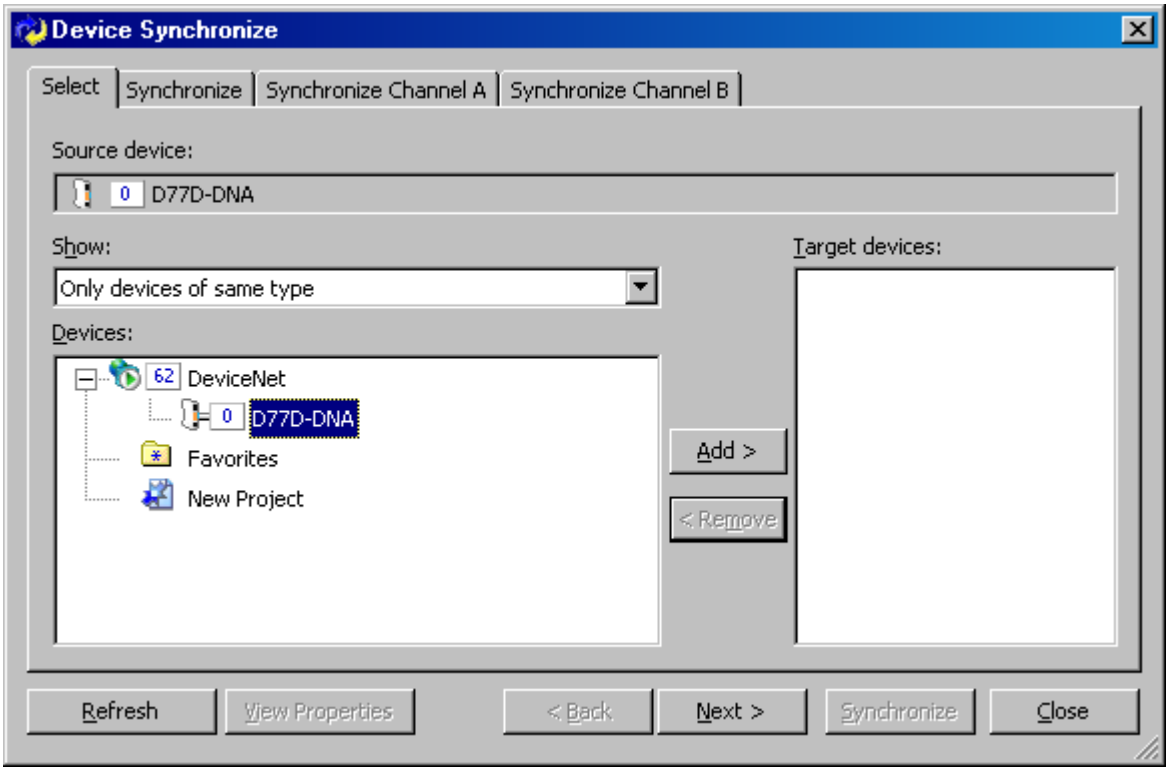


Figure 8 - Synchronize Window

Next select the target device and choose Add, this will add it to the Target devices section of the Device Synchronize window.

After that device shows up in the Target Devices window, select the Synchronize Channel A tab. This tab will display all the devices from both the offline project and the online system (MCC) and if they need to be synchronized. If the device needs to be synchronized, a check mark will be present next to that device. if it is important to synchronize only some of the parameters with in a device, then go to the View Properties for Device Synchronization section, or else, if no other changes are required, then at this time press the Synchronize button to synchronize to the online system.

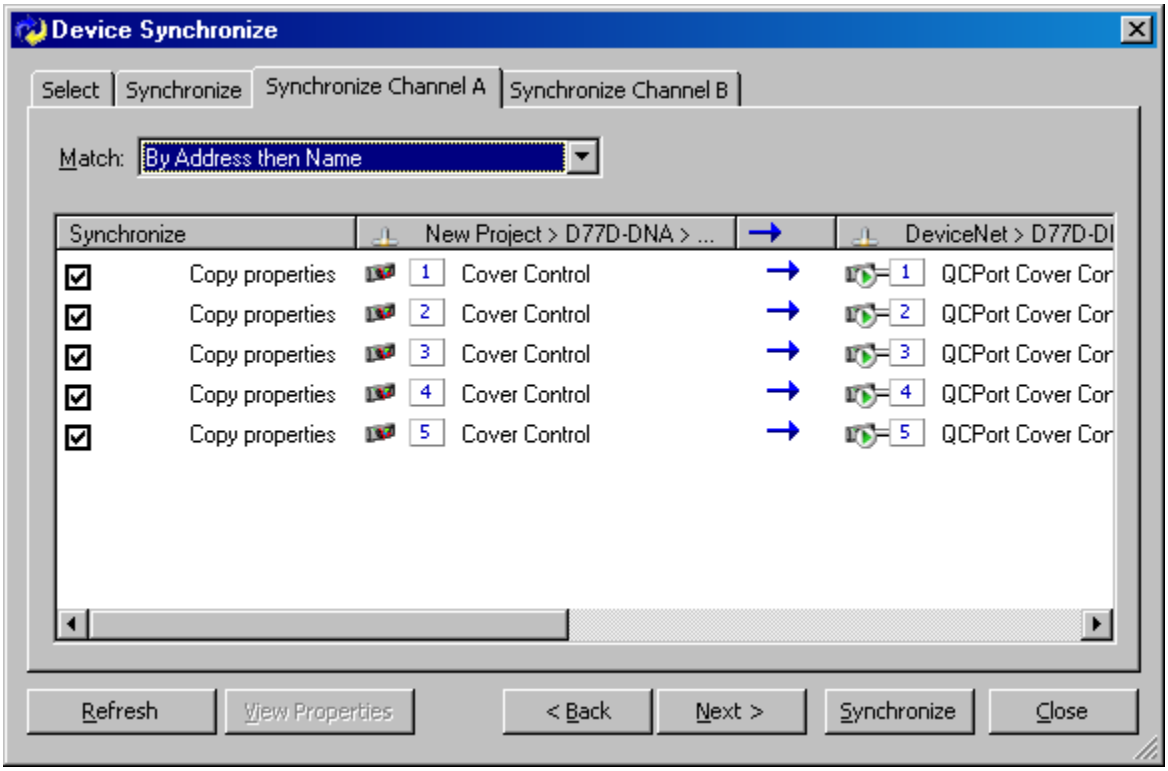


Figure 9 - Synchronize Channel A Tab

View Properties for Device Synchronization

If it is important to view the properties of the devices prior to synchronization, then select the device and press the View Properties button. This will show the offline project device next top the online device, the boxes with checkmarks next to the devices indicate a parameter that will be synchronized.

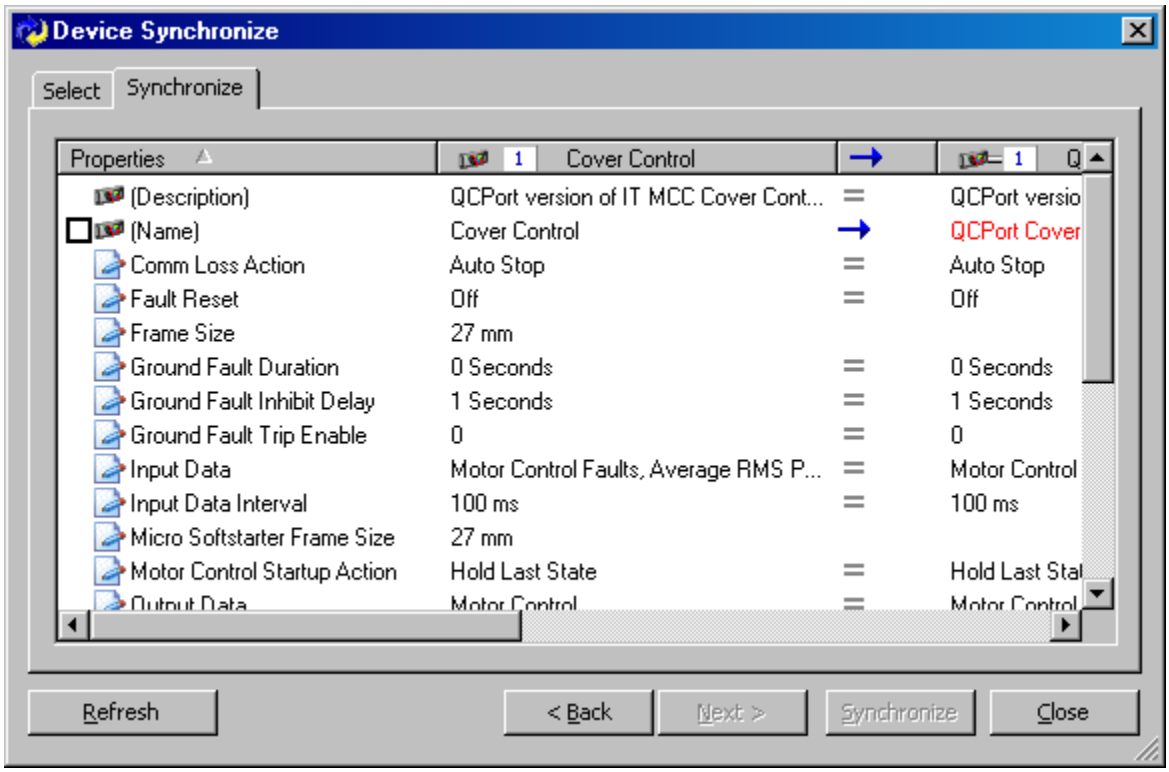


Figure 10 – Property Synchronize Tab

It is possible to synchronize an individual device from this window, after modifying the synchronization choices, choose the Synchronize button. It is required to perform this procedure for all devices since this procedure will only synchronize one device at a time.

Performing a Run a Report

The next step is to run a report to view the IO data of the D77D-DNA and the parameters with in the QCPort devices. The report can be run on an individual device, a system of devices under a D77D-DNA or for an entire DeviceNet subnet. For this example, the report will be run for only the D77D-DNA and will include all the device parameters and IO data for the QCPort devices under the D77D-DNA.

Run Report

Go to the online system and choose the D77D-DNA from the explorer window that the report is to be run on. Once the device is selected, choose Tasks/Run Report from the down menu or right click on the D77D-DNA and choose Run Report. At this time the report function will run creating a HTML or text document that can be saved to a file.

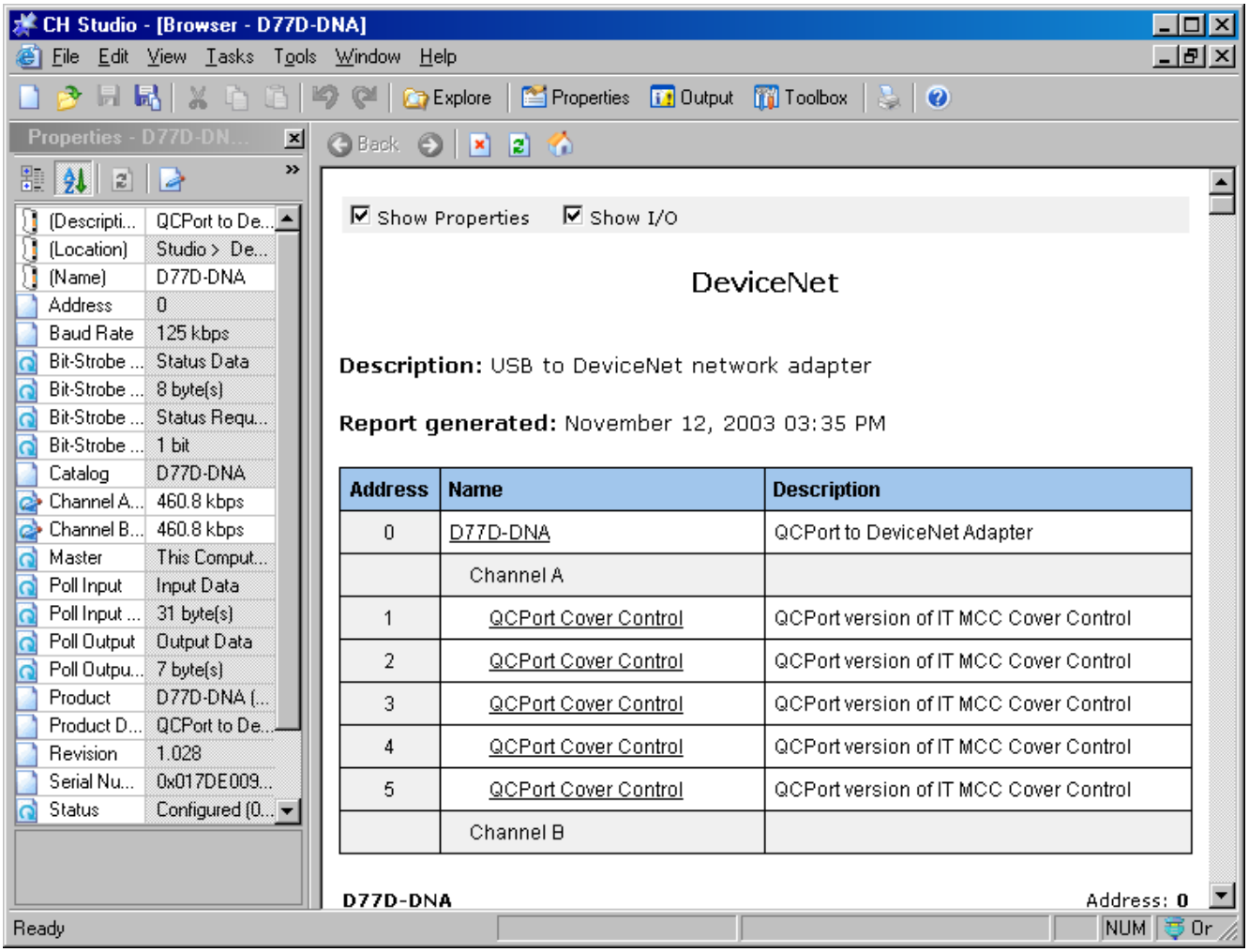


Figure 11 – Report Generation

By scrolling down the report, all the IO and parameter information that is needed for the control program can be viewed.

System Layout:

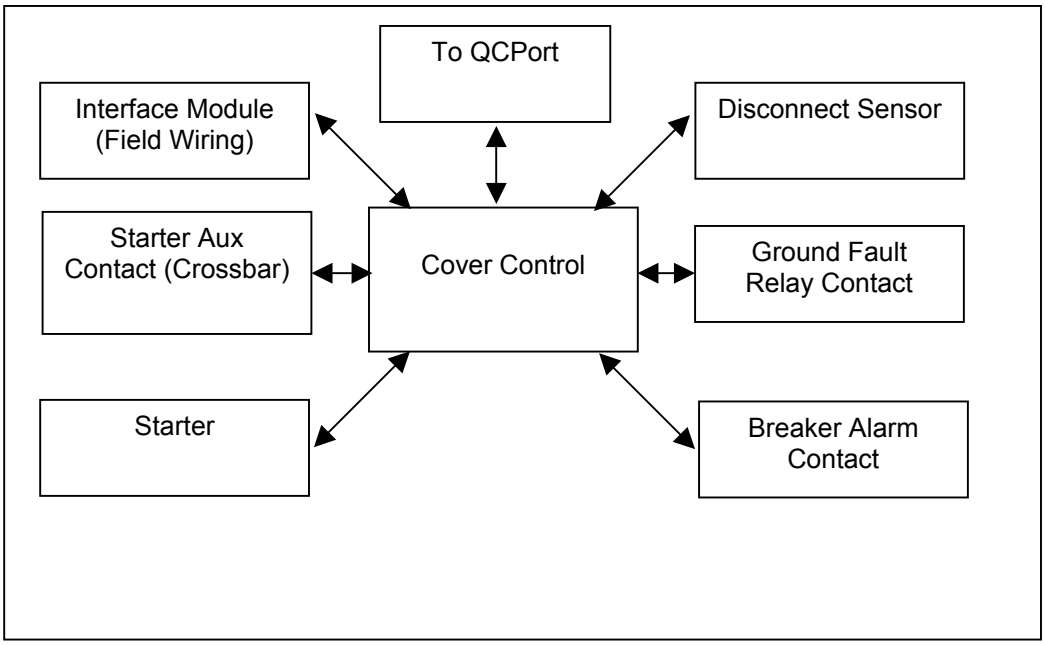


Figure 12 – System Layout

Connector Schematic

The Cover Control (CC) device connects to many peripheral devices using pre-manufactured jumpers with unique mating connectors; to avoid misconnecting any of the peripheral devices. The peripheral devices are the Interface Module, IT Starter, Breaker Fault, Ground Fault and Starter Auxiliary contacts.

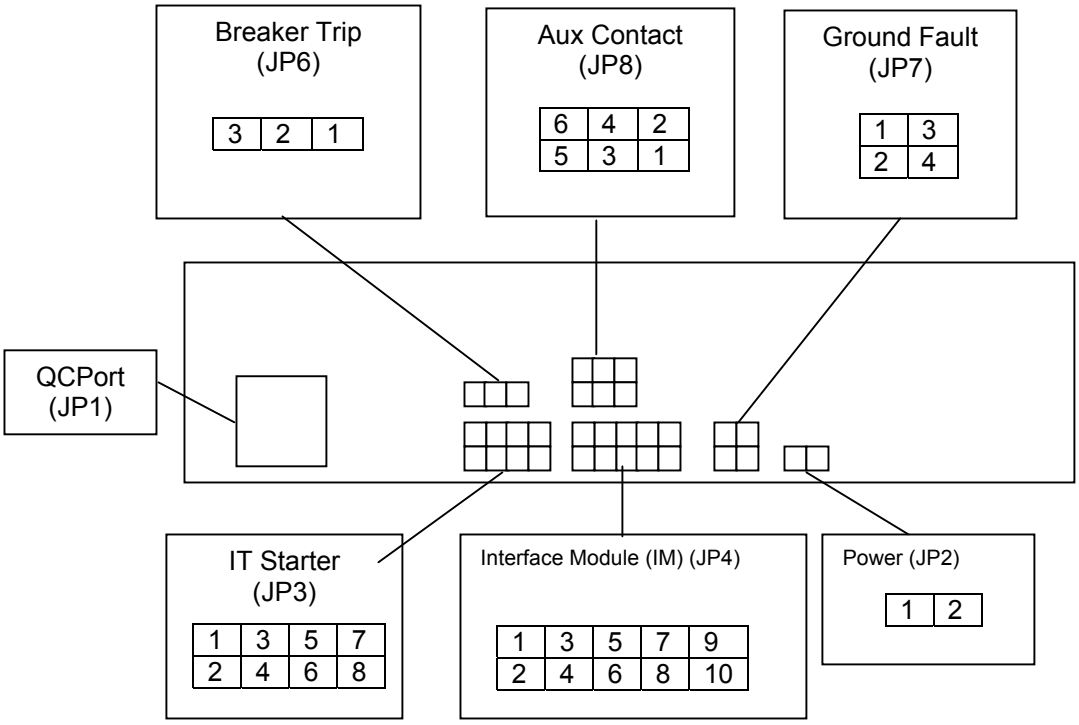


Figure 13 - Cover Control Connections

Pin	JP2	JP8	JP4	JP7	JP6	JP3
1	G	+24	G	G	G	G
2	+24	+24	+24	+24	+24	+24
3		N/C	Local/Auto	Ground Fault	Breaker Trip	(P)ermissive
4		N/C	Run1 (Forward)	N/C		(F)orward
5		Reverse Sense	Run2 (Reverse)			(R)everse
6		Forward Sense	Reset			(1)Reset
7			N/C			(2)Alarm +
8			Fault Output			(3)Alarm -
9			E-Stop			
10			Auto Output			

Table 1 - Cover Control Terminal Designation

Interface Module Field Wiring

Introduction

The interface module terminals are broken into 3 basic functions.

- Terminals +, E, E1, and E2 on the unit's side of the input module and terminals E1 and E2 on the wireway side of the input module are used for E-Stop circuits.
- Terminals 1, 2, 3, 4 & 5 on the wireway side of the input module are used for control inputs from field devices. These inputs have an internal 250 ms debounce which will remove any false starts or stops due to bounce from an external input.
- Terminal 6, 7, 8 & 9 on the wireway side of the input module are N.O. relay outputs for indication of unit status.

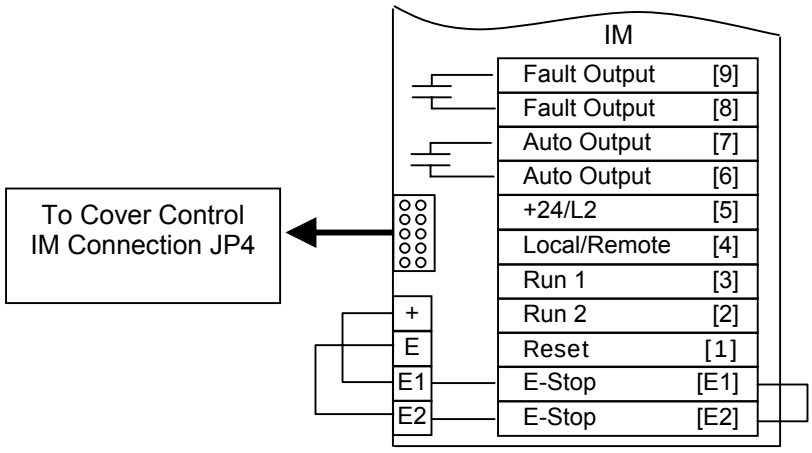


Figure 14 – Interface Module Terminal Designation

For additional information see wiring application note.

E-Stop Circuit

The E-stop circuit for the IT MCC is a true E-stop. This circuit carries the power from the voltage source to the coil of the starter. Interrupting this circuit at any point will prohibit the starter from energizing under any circumstance. The terminal for the e-stop circuit will typically come from the factory wired as shown in Figure 15.

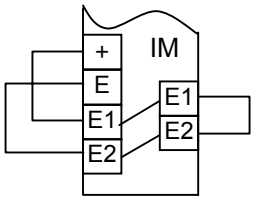


Figure 15 – E-Stop Wiring Jumpered Out

The two E1 terminals are solidly connected internally to the input module and are the same point electrically. The same is true for the two E2 terminals. To connect a N.C. E-Stop device, remove the E1-E2 jumper and connect the device between the terminals as shown in Figure 16.

When the E-Stop circuit is required to be AC, a relay can be added in the bucket where the coil is across E1 and E2 and the contacts are wired to + and E. An AC retrofitted can be performed in the field though it is best spec this out for the factory to provide.

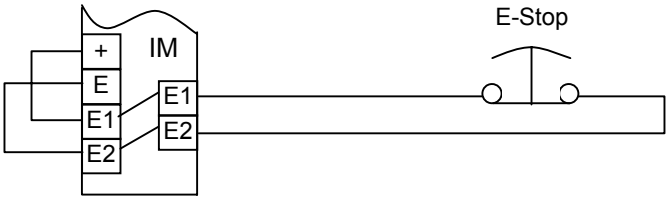


Figure 16 – E-Stop Wiring

When the E-Stop circuit is broken, the green Off light on the cover control will begin flashing indicating that the E-stop circuit is open and the starter is disabled.

Output Relays

Terminals 6, 7, 8 & 9 on the wireway of the input module are isolated N.O. relay contacts. These contacts are rated 240V AC, 50V DC and function as shown in Figure 17.

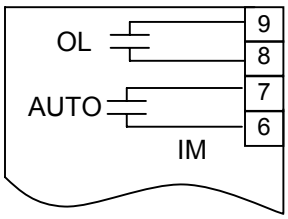


Figure 17 – Output Relays

The contact between terminals 8 & 9 is the fault contact. It closes due to the following conditions: OL Trip of an EM starter, phase loss or phase unbalance trip of an EM starter, any fault of a RVSS or in a ground fault condition if an optional ground fault relay is in the unit. If the EM unit is a communicating unit, the fault relay will also close, if any of these features are enabled: under load trip, motor stall, and motor jam.

The contact between terminals 6 & 7 is an auto contact. This contact is only active when a Hand-Off-Auto membrane panel is provided. This contact closes when the unit is in auto and is open when in off or hand.

Control Relay Circuits

Terminals 1, 2, 3, 4 & 5 on the wireway side of the input module are used as control inputs for FVNR, FVR, 2 Speed and RVSS Units. The functionality of inputs 1, 2, 3 & 4 changes based on the type of membrane cover control selected. Terminal 5 changes functionality based upon whether the input module is an AC or DC unit.

If a DC input module is provided terminal 5 is 24V DC source for the MCC inputs. (Figure 18)

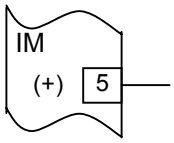


Figure 18 – Terminal 5 for DC

If an AC input module is provided, terminal 5 is the AC common for all the inputs and should be connected to L2 of the 120V source providing the AC inputs. IT MCC units with AC input module's are wired as separate source units and terminal 5 will be jumpered to terminal 21 which is the L2 for the separate source 120V. Terminal 14 will be the L1 for the separate source 120 and terminal 15 will be the 120V source for the control inputs. (See Figure 19)

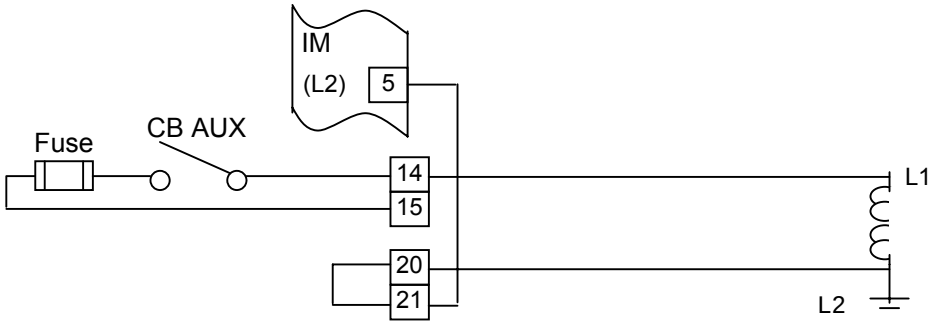


Figure 19 – Terminal 5 for AC

Overlays

FVNR units

RUN STOP Indication

Figure 20 – Overlay 2

When an indicating only overlay is provided (Figure 20), the interface module determines where the starters run commands come from. Terminal 4 is the control from network input. When terminal 4 is high or has a signal, the starter will get its run command from the communication network. Terminal 4 is always shipped from the factory with terminal 4 jumpered to 5 or 15. When terminal 4 is low or has no signal, the starter gets its run commands from terminal 3. Terminal 3 is a 2-wire input Run/stop input. When it is closed, the starter will energize. When it is open, the starter will de-energize. Figure 21 shows a field mounted HOA switch.

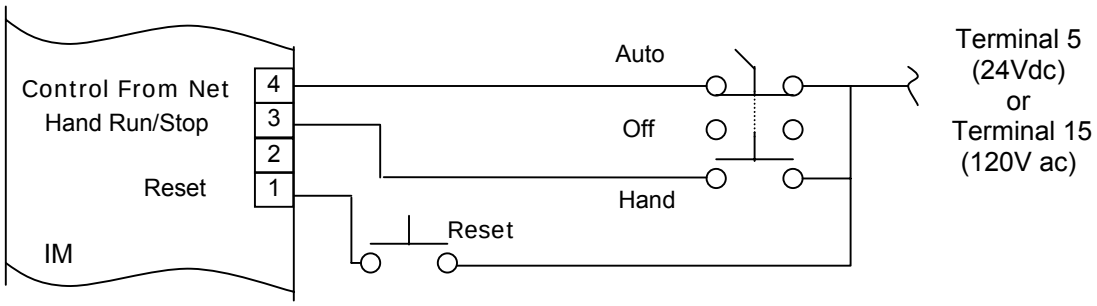


Figure 21 – Field HOA

HOA

Figure 22 – Overlay 15

An HOA configuration (Figure 22) will provide a behavior of a hard-wired HOA selector switch. When Auto is selected, the starter will get its run and stop commands from the network. Terminal 4 is "hand local / remote". When Hand is selected, terminal 4 determines where the starter gets its run and stop commands. Terminal 2 has no function and Terminal 1 is remote reset.

When terminal 4 is high or sees a signal, the starter is in local control and will energize as soon as the hand button is pressed. See Figure 23. If the starter is running in Hand Local and power is lost or if the unit experiences a fault the state of the starter will change from Run to Stop. After restoration of power or resetting of the fault the starter will remain stopped until the Hand button is pressed again.

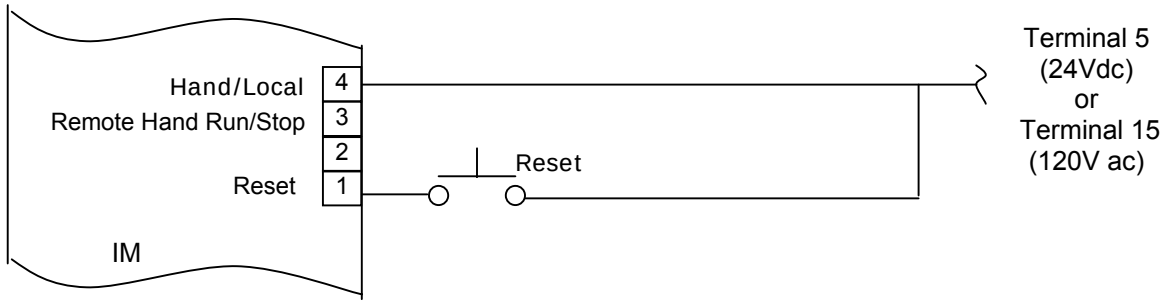


Figure 23 - Hand Local

2 wire Hand Button

To have the Hand button behave like a true 2 wire selector switch wire the unit as shown in Figure 24. When the hand button is pressed, the Starter will energize instantly. If the starter is running in 2-wire Hand and power is lost, or if the unit experiences a fault, the starter will de-energize. However, the unit will remain in Hand Run. After restoration of power or resetting of the fault, the starter will re-energize.

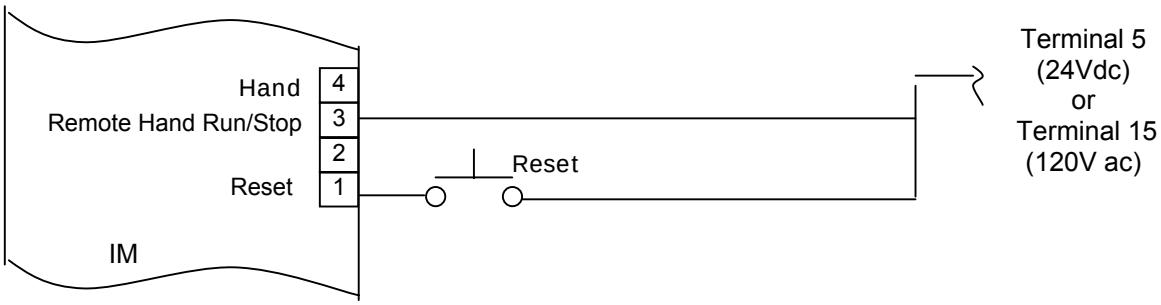


Figure 24 - Hand 2-wire

Remote hand control

To connect a remote hand circuit in 2 and 3- wire configuration wire as shown in Figure 25 & Figure 26.

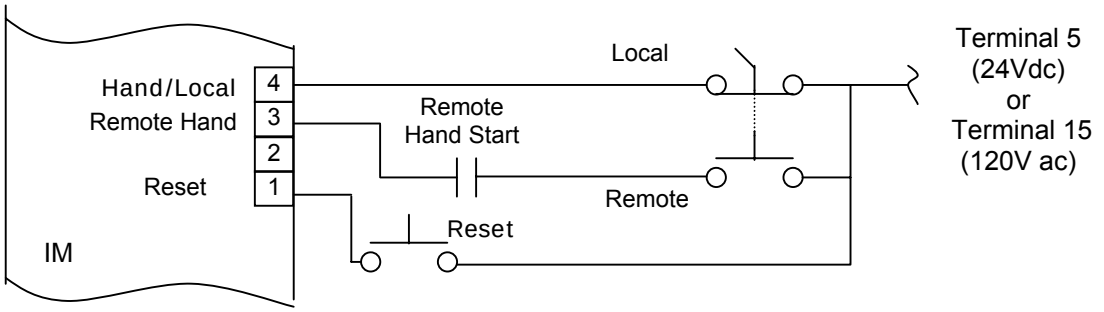


Figure 25 - 2-Wire

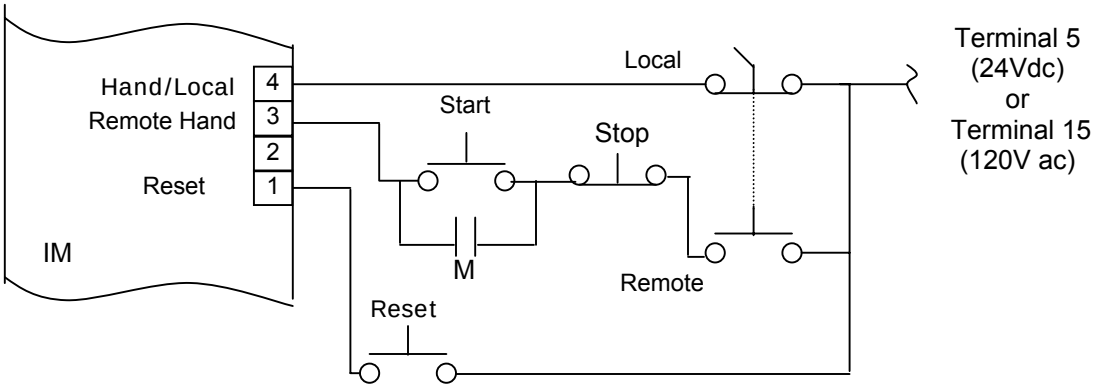
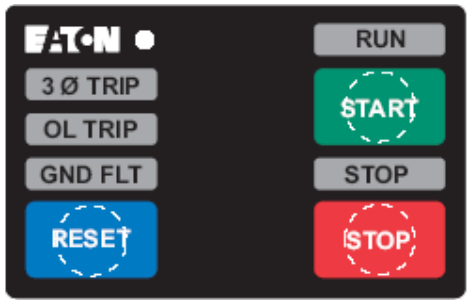


Figure 26 - 3-wire

When in Auto, a loss of power or a fault will not cause the unit to change states, and the unit will remain in Auto.

Start Stop



The Start Stop overlay (Figure 27) is a hand only control with network monitoring. In this configuration, the 4 terminal controls if the run input is from the field wiring or from the keypad overlay. When the 4 terminal is high, the control is from the keypad, when the 4 terminal is low, the control is from the field. In all field run conditions, the keypad overlay is the permissive to the field run command. To perform a field run, the proper run state must be chosen from the keypad overlay and then the corresponding field run input must be held high.

Figure 27 – Overlay 4

To operate the starter from the keypad overlay only, tie terminal 4 (Remote/Local) as shown in Figure 28. When the Start button is pressed the starter will start and Stop will stop the starter. If the starter is running and power is lost or if the unit experiences a fault the state of the starter will change from Run to Stop. After restoration of power or resetting of the fault the starter will need to restarted using the Start button on the keypad overlay.

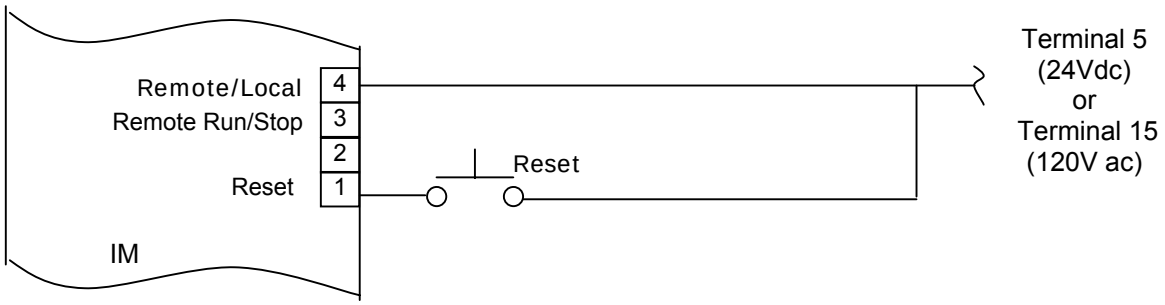


Figure 28 - Local

Remote Control

To connect a remote hand circuit in 2 and 3- wire configuration wire as shown in Figure 29 & Figure 30. Local control has the same behavior as the behavior in Figure 28. Remote behavior requires a permissive from the keypad overlay. In this behavior, the Run button on the keypad overlay must be pressed as the permissive prior to the remote start activating the starter. When in a Remote mode, the RUN LED will be illuminated and the STOP LED will be illuminated when not running. When running, the RUN LED will be illuminated and the STOP LED will not be illuminated.

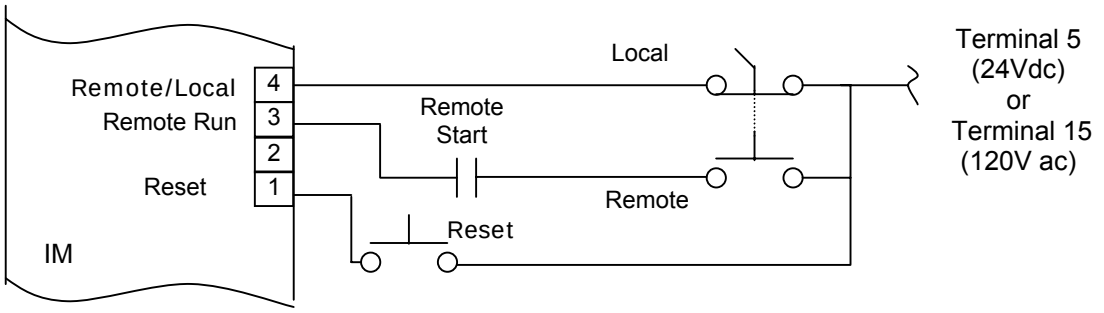


Figure 29 - 2-Wire

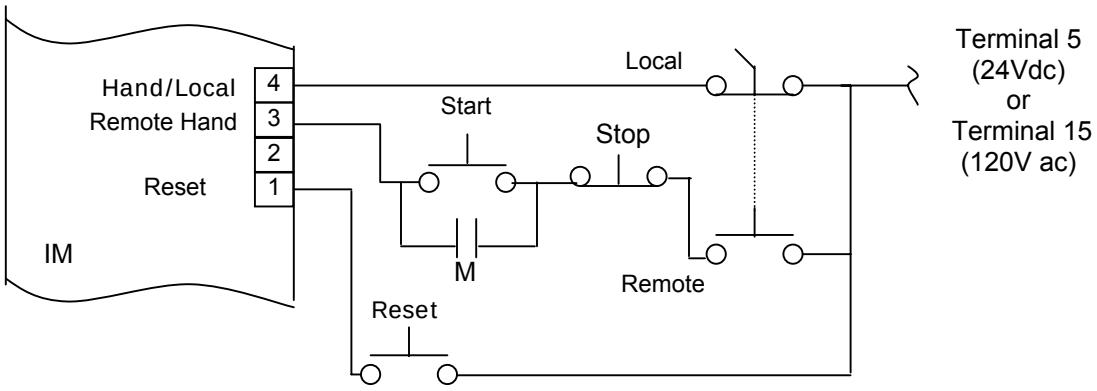


Figure 30 - 3-wire

Jog Off Auto

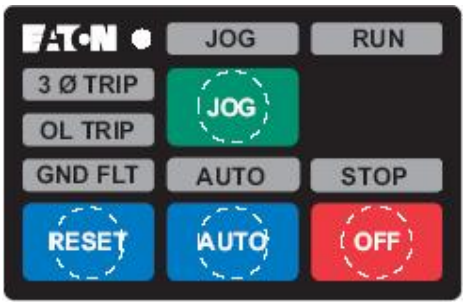


Figure 31 – Overlay 18

A JOA configuration (Figure 31) has a behavior of auto from the network or Jog from the overlay keypad. When Auto is selected, the starter will get its run and stop commands from the network. The Jog function is a momentary function where the unit will transition from Auto to Jog for as long as the Jog button is pressed. Once the Jog button is released, the unit will always revert to the OFF state requiring the use to select AUTO for auto control.

The factory default wiring for the Interface Module is for terminal 5 (DC) or terminal 15 (AC) (source voltage) to be jumpered to terminal 4 (Hand/Local). In this configuration, when the Jog button is pressed the unit will transition from Auto to Jog and start the motor. Once the Jog button is released the unit will revert to Off requiring the operator to manually put the unit back to Auto for Auto control.

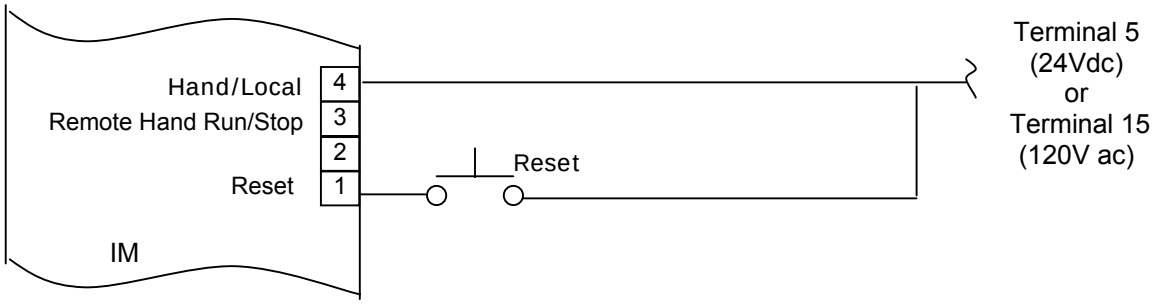


Figure 32 – Factory Default

When a Jog is to be performed using the Field Permissive method, remove the jumper between terminal 4 and the source voltage, and then connect the field permissive between terminal 3 (Remote Hand Run/Stop) and the source voltage. The 3 terminal must be held true (high) while the Jog button on the keypad is pressed for the starter to start. If only the field permissive or the Jog button on the keypad is true, the starter **will not** start Once the Jog button is released the unit will revert to Off requiring the operator to manually put the unit back to Auto for Auto control.

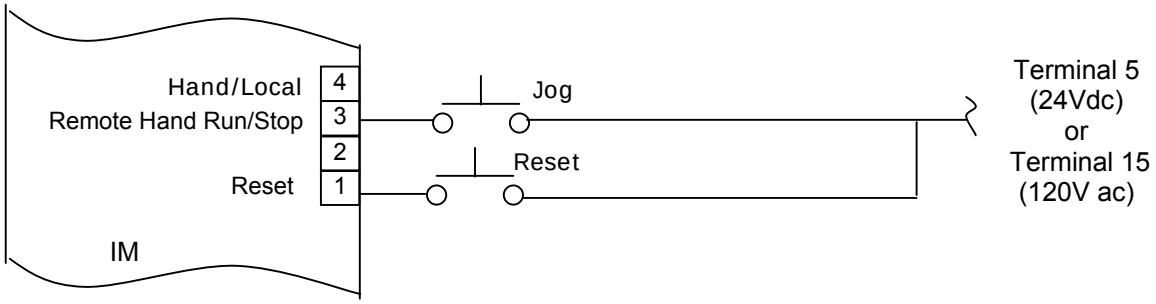


Figure 33 – Jog With Field Permissive

FVR Units

FWD REV Indication

When an indicating only overlay is provided, (Figure 34) the interface module determines where the starters run commands come from. Terminal 4 is the control from network input. When terminal 4 is high or has a signal, the starter will get its run command from the communication network. When terminal 4 is low or has no signal, the starter gets its run commands form terminals 2 and 3. Terminal 4 is always shipped from the factory jumpered to 5 or 15. Terminal 3 is a 2-wire Fwd/Stop input. Terminal 2 is a 2-wire Rev/Stop input. When terminal 2 or 3 is closed, the starter will energize in that direction. When it is open, the starter will de-energize. Figure 35 and Figure 36 show field wiring schemes for 2-wire and 3-wire remote HOA applications.

Figure 34 - Overlay 6, 10

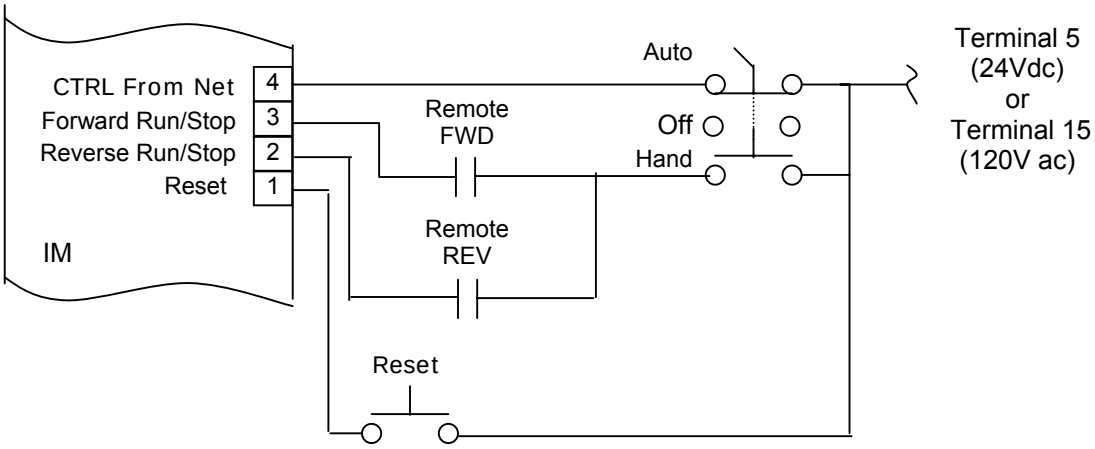


Figure 35 – 2-Wire

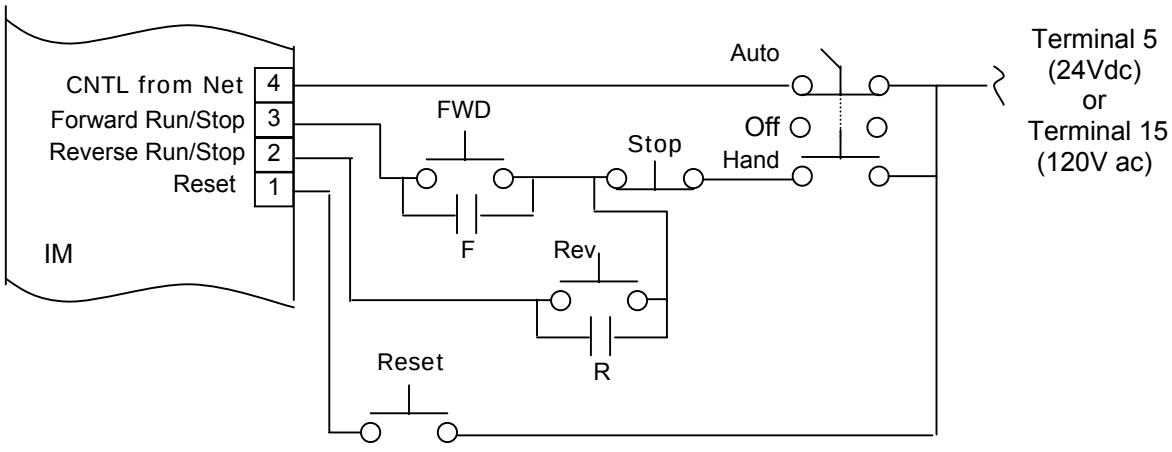
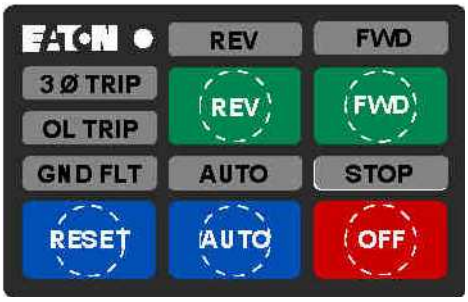


Figure 36 – 3 Wire

FWD REV HOA



An FWD REV HOA configuration (Figure 37) will provide a behavior of a hard-wired FWD REV HOA selector switch. When Auto is selected, the starter will get its run and stop commands from the network. Terminal 4 is "hand local / remote". When FWD or REV is selected, terminal 4 determines where the starter gets its run and stop commands. Terminal 1 is remote reset.

Figure 37 – Overlay 9, 13

When terminal 4 is high or sees a signal, the starter is in local control and will energize as soon as a direction button is pressed. See Figure 38. If the starter is running FWD or REV in Local and power is lost or if the unit experiences a fault the state of the starter will change to OFF. After restoration of power or resetting of the fault the starter will remain stopped until a direction button is pressed again.

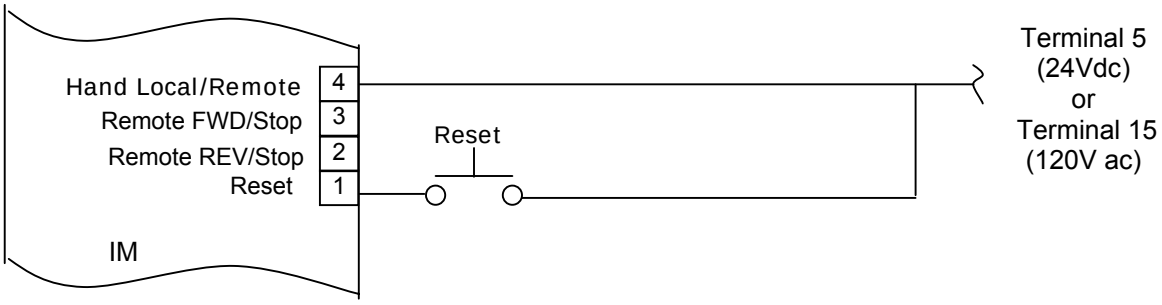


Figure 38 - FWD REV Local

2 wire Hand Button

To have the FWD REV buttons behave like a true 2-wire selector switch, wire the unit as shown in Figure 39. When the FWD or REV button is pressed, the Starter will energize instantly in that direction. If the starter is running in this mode, and power is lost or if the unit experiences a fault the starter will de-energize however the unit will remain in FWD or REV. After restoration of power or resetting of the fault, the starter will re-energize in the previously selected direction.

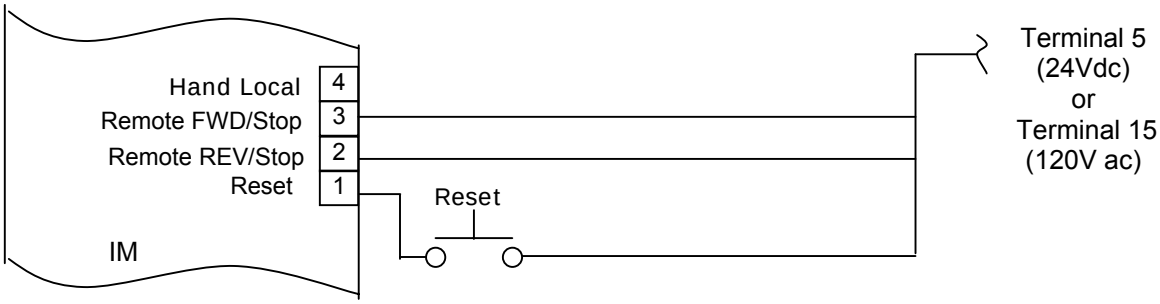


Figure 39 - FWD REV 2 wire

Remote hand control

To connect a remote FWD REV circuit in 2 and 3-wire configuration, wire as shown in Figure 40 & Figure 41.

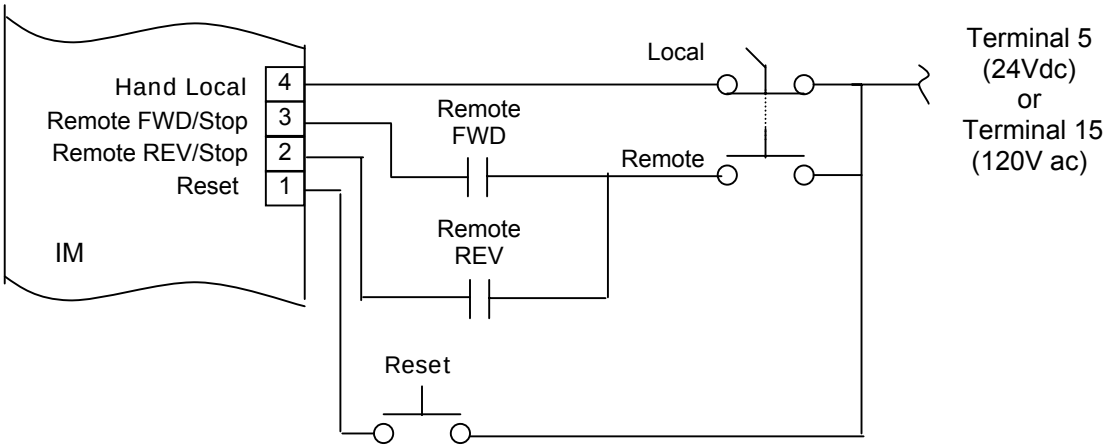


Figure 40 - 2-wire

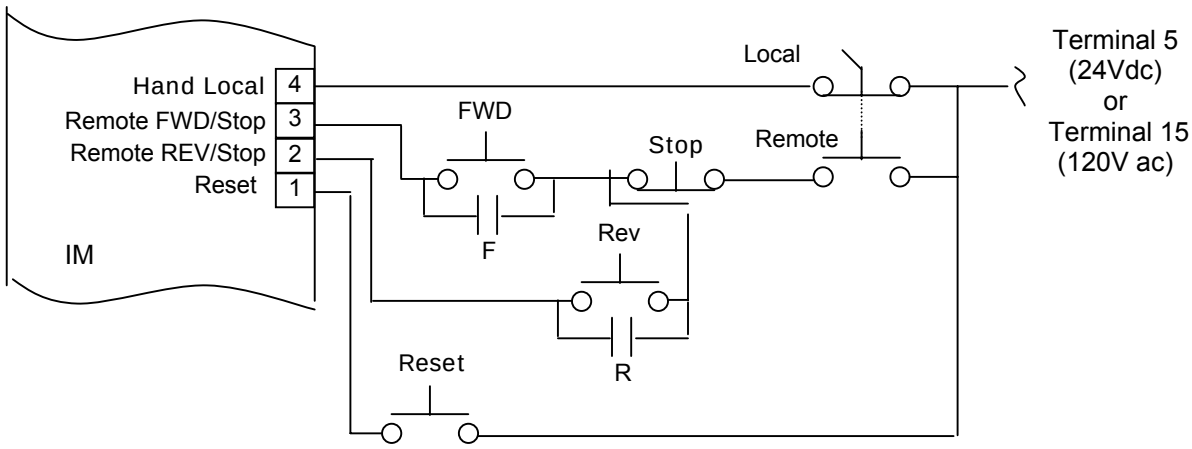
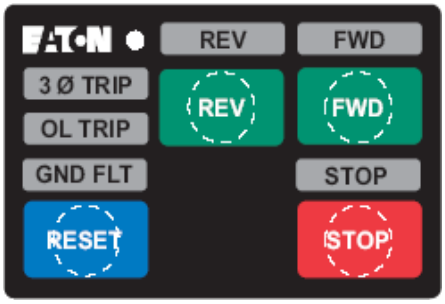


Figure 41 - 3-wire

When in Auto, a loss of power or a fault will not cause the unit to change states, and the unit will remain in Auto.

FWD REV STOP



The Forward Reverse Stop overlay (Figure 27) is a hand only control with network monitoring. In this configuration, the 4 terminal controls if the run input is from the field wiring or from the keypad overlay. When the 4 terminal is high, the control is from the keypad, when the 4 terminal is low, the control is from the field. In all field run conditions, the keypad overlay is the permissive to the field run command. To perform a field run, the proper run state must be chosen from the keypad overlay and then the corresponding field run input must be held high.

Figure 42 – Overlay 8

To operate the starter from the keypad overlay only, tie terminal 4 (Remote/Local) as shown in Figure 43. When the Start button is pressed the starter will start and Stop will stop the starter. If the starter is running and power is lost or if the unit experiences a fault the state of the starter will change from Run to Stop. After restoration of power or resetting of the fault the starter will need to restarted using the Start button on the keypad overlay.

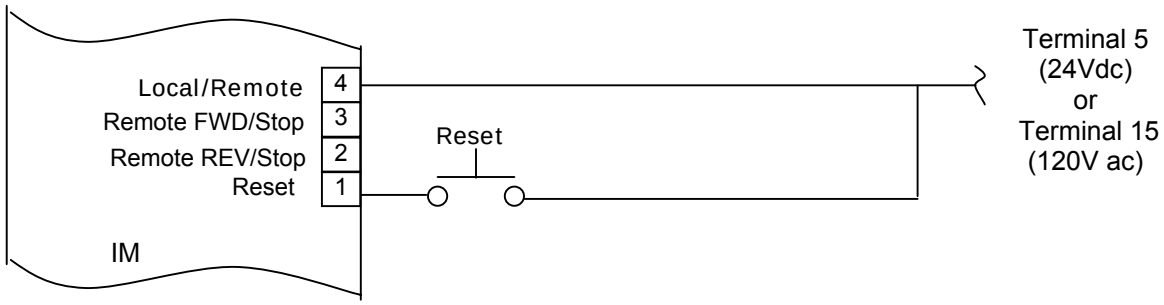


Figure 43 - FWD REV Local

Remote hand control

To connect a remote hand circuit in 2 and 3- wire configuration wire as shown in Figure 44 &Figure 45. Local control has the same behavior as the behavior in Figure 43. Remote behavior requires a permissive from the keypad overlay. In this behavior, the FWD or REV button on the keypad overlay must be pressed as the permissive prior to the remote start for that direction activating the starter. When in a Remote mode, the appropriate FWD or REV LED will be illuminated and the STOP LED will be illuminated when not running. When running, the appropriate FWD or REV LED will be illuminated and the STOP LED will not be illuminated.

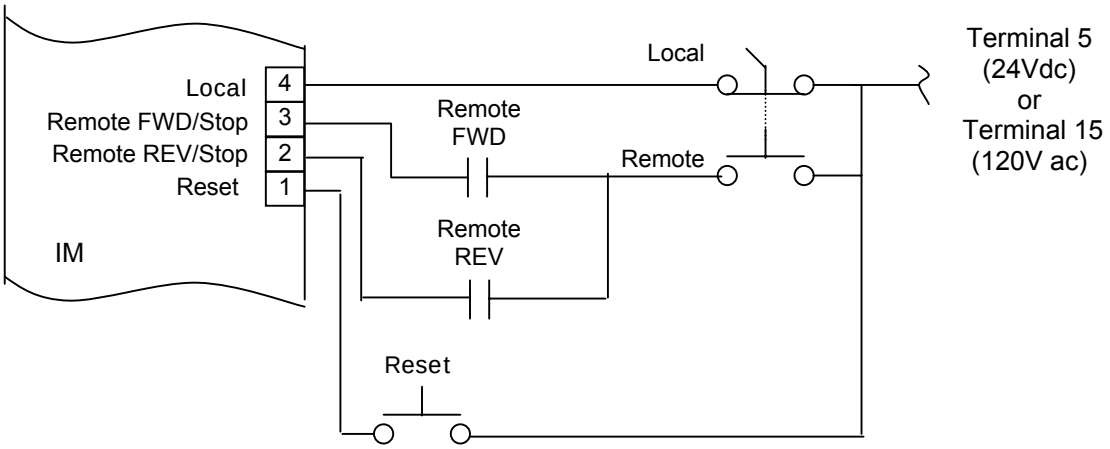


Figure 44 - 2-wire

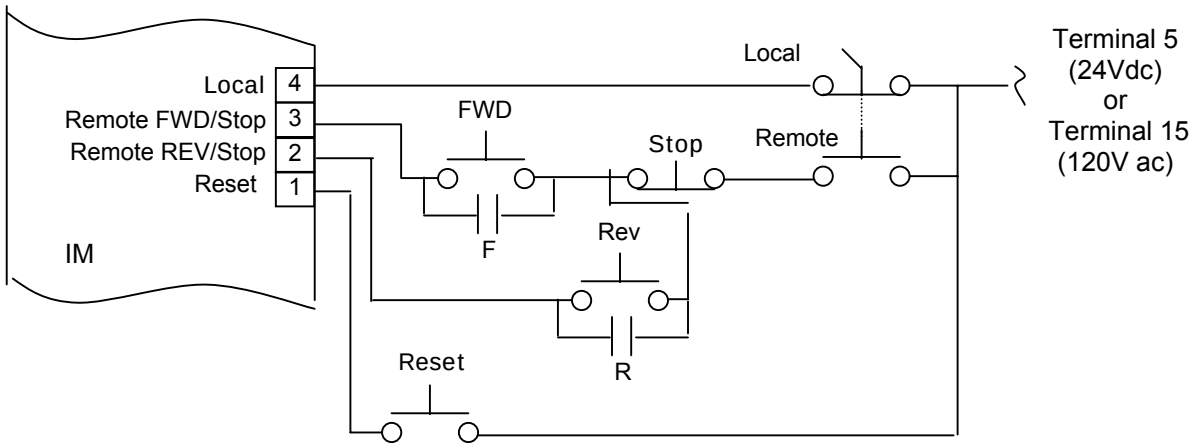


Figure 45 - 3-wire

Jog Off Auto

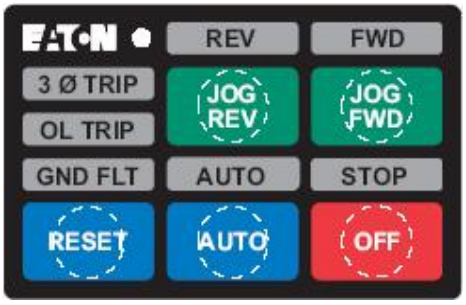


Figure 46 – Overlay 17

A JOA configuration (Figure 46) has a behavior of auto from the network or Jog from the overlay keypad. When Auto is selected, the starter will get its run and stop commands from the network. The Jog function is a momentary function where the unit will transition from Auto to Jog for as long as the Jog button is pressed. Once the Jog button is released, the unit will always revert to the OFF state requiring the use to select AUTO for auto control.

The factory default wiring for the Interface Module is for terminal 5 (DC) or terminal 15 (AC) (source voltage) to terminal 4 (Hand/Local). In this configuration, when the Jog button is pressed the unit will transition from Auto to Jog and start the motor. Once the Jog button is released the unit will revert to Off requiring the operator to manually put the unit back to Auto for Auto control.

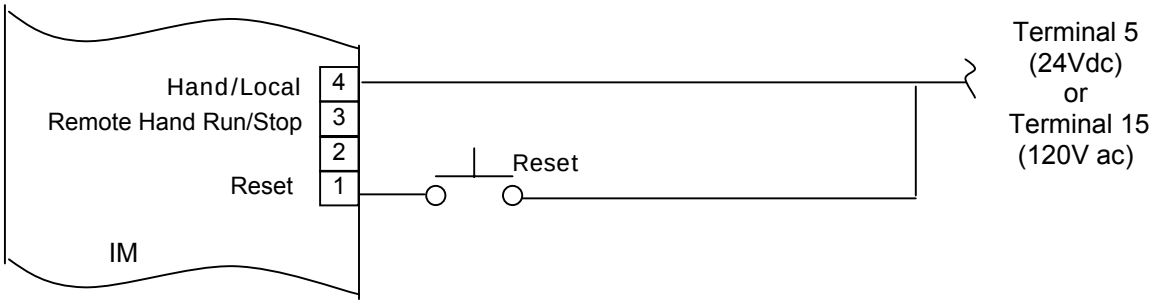


Figure 47 – Factory Default

When a Jog is to be performed using the Field Permissive method, remove the jumper on terminal 4 and the source voltage, then connect the field permissive between the source voltage and terminal 3 (Remote Hand Run1/Stop) and terminal 2 (Remote Hand Run2/Stop). The appropriate terminal (3, 2) must be held true (high) while the corresponding Jog button on the keypad is pressed for the starter to start. If only the field permissive or the Jog button on the keypad is true, the starter **will not** start Once the Jog button is released the unit will revert to Off requiring the operator to manually put the unit back to Auto for Auto control.

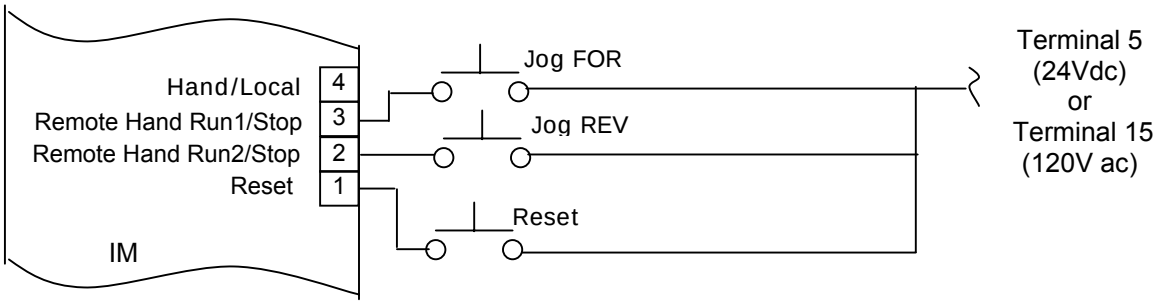


Figure 48 - Jog With Field Permissive

Option Inputs

Cross Bar Sensors

The cross bar sensor is a normally closed Aux contact mounted on the contactor. The purpose of the cross bar sensor is to indicate the contactor position. On a soft start, it also indicates end of ramp. If the contactor does not act as expected, (ex. pull in when a Run1 command is sent) a warning is generated that is reflected in the warning bit of the Motor Control Status Byte and a warning code in the warning word. There are 4 possible warnings (see list below) for the cross bar sensor. A warning will not prevent the starter from energizing.

The "Application Warning Status" parameter will indicate the warning as:

40009 - Run 1 fail to Close

40010 - Run 1 Fail to Open

40011 - Run 2 Fail to Close

40012 - Run 2 Fail to Open

This warning is self-clearing so a reset is not required. The parameters: Motor Control Status, Motor Control Warning and Application Warning Status will automatically clear when the warning condition clears.

The cross bar sensor needs to be installed when first initializing the cover control for use with a starter. The cross bar sensor is used to determine if the starter is a FVR or FVNR starter. The three fault LEDS will flash if the sensor(s) are not installed durring initialization.

Circuit Breaker Trip Alarm

Circuit Breaker alarm contact is a normally closed alarm contact. It indicates to the network whether the circuit breaker is tripped. This is a two wire circuit with a dedicated 3 pin jumper that is connected to the flying leads from the CB and attaches to the back of the Cover Control.

Ground Fault Relay Contact

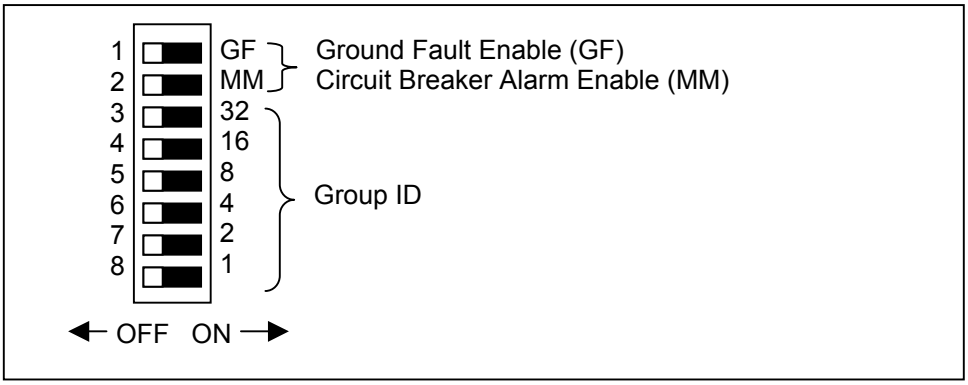
Ground fault module is a normally closed contact on a zero sequence ground fault relay. It signals to the cover control when a ground fault is detected. This is a two wire circuit with a dedicated 2x2 pin jumper that is connected to the flying leads from the GF and attaches to the back of the Cover Control.

Disconnect Sensor

Disconnect sensor is integral to the Cover Control, it signals whether the disconnect is in the on or off position. This will not detect a trip for the circuit breaker.

Group ID and Option Selection

There is an 8 position DIP switch for user configuration the Cover Control. The switch will perform the following functions:



When a ground fault sensor or circuit breaker trip is installed, the dipswitches must be turned on to allow the fault to trip the starter and be presented to QCPort. This will also activate the front-mounted LED. If the fault is enabled, and the hardware option is not attached, the fault will be broadcast and the corresponding LED will flash.

The Group ID is a unique address the Cover Control requires to communicate on QCPort. The setting for the Group ID is performed by selecting the address you want from the bottom 6 switches. If you select an address of 18, select switch 5 (16), and switch 2 (2) to be on with the remainder off. For more information on QCPort, refer to the QCPort System Install and Planning Guide MN05001002E.

Reset Services

Out of Box

This reset is usually used when all the configuration and data parameters and baud and mode settings need to be reset back to factory default. This will also force the association of the Cover Control to the starter.

To perform an "Out of Box" reset set all the switches to the left (off) and toggle switch 8 (Group ID 1) from on to off 5 times. When the Cover Control goes through a reset all the LED's will illuminate once and then reset. **When setting the Cover Control to "Out of Box" all parameters will be reset to factory defaults**. When performing an "Out of Box" reset, only the parameters are reset, the registers are not.

Application Parameters (V1.4 later)

This reset is usually used when all the configuration and data parameters and baud and mode settings need to be reset back to factory default without affecting the input and output data tables.

To perform an "Out of Box" reset **with out** affecting the produced and consumed data parameters (IO configuration), set all the switches to the left (off) and toggle switch 7 (Group ID 2) from on to off 5 times. When the Cover Control goes through a reset all the LED's will illuminate once and then reset.

Baud and Mode (V1.4 and later)

This reset is used to reset that baud and mode settings with out affecting any of the configuration or data parameters.

To reset the Cover Control baud rate and Mode to factory defaults, set all the switches to the left (off) and toggle switch 6 (Group ID 4) from on to off 5 times. When the Cover Control goes through a reset all the LED's will illuminate once and then reset.

Hot Swap (V1.4 and later)

This reset is usually used when a V1.4 Cover Control is to be hot swapped into a system with out a hot swap network adapter (pre V1.30 D77D-DNA).

To reset the Cover Control baud rate, Node ID and Mode to factory defaults, set all the switches to the left (off) and toggle switch 5 (Group ID 8) from on to off 5 times. When the Cover Control goes through a reset all the LED's will illuminate once and then reset.

LED Indication

There are many LED's located on the face of the Cover Control, the state of the LED's will signify varying states or conditions that the Cover Control or the starter is in.

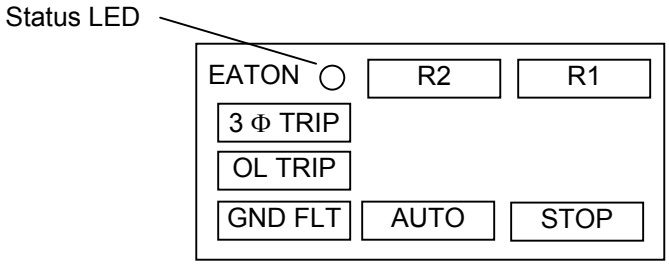


Figure 49 LED Positions

Typical LED States After Powerup

Note: Not all Cover Control units have all LED's viewable

Status LED – Mostly Off (not being scanned) or Mostly On (being scanned)

Stop LED – On (Stopped)

R1, R2, 3 Φ TRIP, OL TRIP, GDN FLT – OFF (not running and no faults)

Auto LED – On if in Auto or Off if in Hand

Status LED

The status LED is the unmarked LED in the upper left of the overlay. This LED is used to determine the QCPort status of the Cover Control.

Mostly Off (10% Duty Cycle) = Off Line, OK

50% Duty Cycle = Faulted

Mostly On (90% Duty Cycle) = On Line

Strobe = Identify or Off Line and Undiscovered

3 Φ TRIP (Breaker Trip)

When an auxiliary is connected to the breaker (and the MM switch is set to ON), this LED will illuminate when the breaker is tripped and the Cover Control handle is in the ON position. A warning will be available to QCPort to indicate that the breaker is tripped. The warning code is 40004.

OL TRIP

When the starter detects any trip, a thermal overload, phase loss, phase imbalance or a test trip, the OL TRIP LED will illuminate indicating the trip.

GND FLT

When a ground fault device is connected to the Cover Control (and the GF switch is set to ON), then when a ground fault is detected, the GND FLT LED will illuminate. When the parameter Ground Fault Enable is set to 0 (default) the Cover Control will not trip the starter and a warning will be created to indicate a ground fault warning (warning code 40007). If the Ground Fault Enable is set to 1, then when a ground fault is detected the Cover Control will trip the starter and a fault code of 8 will be produced.

AUTO

When the Cover Control is in Auto mode, the AUTO LED will be illuminated. This indicates that the industrial network has control of the Cover Control. Auto is initiated by pressing the AUTO button on the overlay.

STOP

When the starter is not energized, the STOP LED is illuminated. If an E-Stop is active, the STOP LED will flash at a 50% duty cycle until the E-Stop is cleared.

R1/R2

The R1 and R2 LED's are used to indicate the state of the starter. When the starter is running in forward, run or slow, the R1 LED will be illuminated, when the starter is running in the reverse or fast state, the R2 LED will be illuminated. For a FVNR HOA overlay, the R1 LED is indication of run and the R2 LED is indication of HAND control.

Unconfigured State

If the Cover Control has not been configured to operate with a starter (starter not connected) then the 3 Phase, OL TRIP and GND FLT LEDs will all flash at the same rate (50% duty cycle). This will indicate an inter device loss of communication fault or an unconfigured Cover Control. Once in this state, after connecting up to a starter the reset button must be pressed to reset the fault. This fault will also occur if the starter the Cover Control was connected to one size starter and a replacement starter of another size or OL range is then connected to it. If the Cover Control is to be re-configured to work with a different starter the Cover Control must be set to out of box as described in the section Reset Services on page 36.

When the Cover Control and the starter are first powered up the Cover Control becomes "associated" with the starter. If the auxiliary contacts are not connected to the starter and to the Cover Control during this time, the Cover Control will enter the Unconfigured State.

LED Function Matrix

		LED State			
LED	**Condition**	**Off**	**On**	**SLOW FLASH**	**FAST FLASH**
OFF			Stopped		
FWD			Running Forward		
FWD & OFF			Stopped, hand, hard wired R1 enabled		
REV			Running Reverse		
REV & OFF			Stopped, hand, hard wired R2 enabled		
AUTO		Hand mode	Auto mode		
HAND		Auto mode	Hand mode		
3 ϕ TRIP				3 ϕ Warning	
OL TRIP		No fault		▪ High Temp fault ▪ Phase Loss fault ▪ Phase Imbalance fault ▪ Thermal Capacity fault ▪ Test Trip	
OL TRIP	Reset asserted				Resetting OL Trip
GND FLT		No fault		Ground Fault Warning or Fault	
GND FLT	Reset asserted			Ground Fault Warning	Resetting Ground Fault trip
3 ϕ TRIP OL TRIP GND FLT				Application Communication Fault	
3 ϕ TRIP OL TRIP GND FLT	Reset asserted				Resetting Application Communication Fault
All (7) LEDs	Power up, Reset, or manual LED Test		ON momentarily		
Alternating FWD / REV				Illegal Motor Direction Command	
Status See Status LED on page 38		No power	Mostly On – OK and is being actively scanned	Mostly Off – OK and is ready to be scanned	50% duty cycle – device is faulted Strobe – Undiscovered or Identify

ALARM WITHOUT TRIP FUNCTION

This feature is available on the IT FVR and FVNR starters only and applies only to an Overload Trip (thermal overload, phase loss, phase imbalance) and a ground fault trip. This feature is not available on the S751 Soft Start. In this mode, the starter will alarm that there is a fault, but will not trip. The intended use for this feature is to provide the ability to run a motor in a "no matter what" situation where it is more important to have the motor run than to provide protection.

This option indicates that the overload has exceeded the fault threshold by setting the alarm output but does not disable the starter. To enable this option, you must turn the starter mounted reset button to the auto reset position. Then jumper terminal 1 on the interface module to either terminal 5 for DC control applications or terminal 15 for AC control applications. The Cover Control will flash the run LED after an overload trip has occurred to indicate an alarm without trip condition is active. A flashing run LED indicates to the user that an overload trip has/had occurred at some point. The run LED will continue flashing even after the overload trip alarm has cleared. Stopping the unit will clear the flashing run LED and clear the fault.

If an Overload trip is present, the Overload LED on the Cover Control will flash more rapidly than during a normal Overload trip. The same will be true for a Ground Fault trip.

I/O Data

The produced (input) and consumed (output) data for the Cover Control will be identical regardless if the Cover Control is connected to an IT non-reversing, reversing or S751 soft start. The default data is the data present when an out of box reset is performed or when received from the factory as factory default. Each item of data can individually be added or removed from the I/O message using CH Studio; allowing for custom I/O mapping configurations.

Default Input Data

Data	Byte
Motor Control Faults (low byte)	0
Motor Control Fault (high byte)	1
% of FLA - running current/FLA setting on overload (low byte)	2
% of FLA - running current/FLA setting on overload (high byte)	3
Thermal Memory (byte)	4
Motor Control Status (byte)	5

Motor Control Faults

Bit	Description
0	Phase Loss (Loss of one or more of the line phases or a Circuit Breaker Trip)
1	Phase Imbalance (current imbalance of greater than 50%)
2	Thermal Overload (starter trip due to thermal overload)
3	Reserved
4	Reserved
5	Ground Fault (trip due to a ground fault, separate ground fault sensor required)
6	Reserved
7	Reserved
8	Device Over Temperature (Device temperature limit exceeded, S751 only)
9	Reserved
10	Reserved
11	Motor Control E-Stop (Device is in the state of an Emergency Stop)
12	Reserved
13	Reserved
14	Reserved
15	Other, refer to Application Status (0x0004) and Fault Queue (0x001A)

% FLA Word

The % FLA word is a real number of 0 to 65535 that indicates the % of FLA that the motor is running at. The % FLA is the running current divided by the FLA setting on the overload. For example, %FLA of 100 equals the RMS average current equal to the FLA setting on the overload.

% Thermal Memory

The % thermal memory is a byte that models the temperature of the motor. When the % thermal memory reaches 100%, the overload will trip on thermal overload.

Motor Control Status

Bit	Description
0	Running 1 (starter is commanded to run forward/fast)
1	Running 2 (starter is commanded to run reverse/slow)
2	Permissive
3	Reserved
4	Local Control
5	Faulted
6	Warning
7	At Reference

Running 1, if this bit is set, it means that the Cover Control is commanding the starter to run (fwd) and has applied 24V to both the permissive and the run1 (FWD) terminals of the starter. It does not mean that the unit has energized, only that it has been commanded to.

Running 2, if this bit is set, it means that the Cover Control is commanding the starter to run (rev) and has applied 24V to both the permissive and the run2 (REV) terminals of the device. It does not mean that the unit has energized, only that it has been commanded to.

Permissive, if this bit is set it means that the Motor Control permissive is set.

Local Control, if this bit is set, the motor controller is being controlled by the key pad or by the field wiring. When this bit is not set, rick the cover control is being controlled by QCPort and is in auto. This bit is set by the action of the HAND or STOP button only on the Cover Control.

Fault, this bit is set when a fault has occurred. This could be any of the faults listed. It is latched and requires a reset to clear the bit.

Warning, this bit is set when a warning is present. This could be any of the warnings listed on page 70 Fault and Warning Codes. It is not latched and will automatically clear when the warning clears. A reset has no affect on a warning.

At reference, this bit indicates the state of the auxiliary cross bar sensors located on the motor controller. When the contactor is pulled in this bit is true, when the contactor has dropped out, this bit is false. A contactor that failed to open, for example, will show up as the At Reference bit being true, the Run1 (or Run2) being false and a warning bit that is true. The warning will be a failed to open warning. For a S751 softstart, this bit will represent when the S751 is in bypass.

Extended Input Data

Application Status

Data	Byte
Most Recent Fault/Warning Low Byte	0
Most Recent Fault/Warning High Byte	1

See 0x0004 (4) Application Status on page 49 for more information.

RMS AC Line Current (3 Φ average) (Amps)

Data	Byte
Low Byte	0
Middle Byte	1
Middle Byte	2
High Byte	3

See 0x0012 (18) RMS AC Line Current (3 Φ average) (Amps) on page 51 for more information.

DC Control Voltage

Data	Byte
Low Byte	0
High Byte	1

See 0x0016 (22) DC Control Voltage on page 51 for more information.

Fault Queue

Data	Byte
Most Recent Fault/Warning Low Byte	0
Most Recent Fault/Warning High Byte	1
Fault/Warning (second) Low Byte	2
Fault/Warning (second) High Byte	3
Fault/Warning (third) Low Byte	4
Fault/Warning (third) High Byte	5
Fault/Warning (fourth) Low Byte	6
Fault/Warning (fourth) High Byte	7
Fault/Warning (fifth) Low Byte	8
Fault/Warning (fifth) High Byte	9

See 0x001A (26) Fault Queue on page 52 for more information.

Ave Pole Temperature

Data	Byte
Low Byte	0
High Byte	1

See 0x0029 (41) Ave Power Pole Temperature on page 53 for more information.

Breaker Status

7	6	5	4	3	2	1	0	Byte
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Breaker Circuit: Open = 1 Closed = 0	Handle On = 1 Off = 0	0

See 0x0031 (49) Breaker Status on page 53 for more information.

Compressed Production Data

7	6	5	4	3	2	1	0	Byte
Handle Position ON	CB Input Status	No E-Stop	Ground Fault	Underload Warn	Thermal OL	Phase Imbalance	Phase Loss	0

See 0x0057 (87) Compressed Production Data (V1.4 and later) on page 53 for more information.

Phase Loss – true when a phase loss is detected in the overload or when a circuit breaker trip is active
Phase Imbalance - true when a phase imbalance is detected in the overload
Thermal Overload – true when a thermal overload occurred in the overload
Underload Warning – true when a underload warning occurs
Ground Fault – true when a ground fault is active (circuit is open); ground fault should be latching to maintain the ground fault
No E-Stop – false when there is an E-Sop
CB Input Status – true when the CB Trip input circuit is open (JP9)
Handle Position ON – true when the handle is in the ON position

RMS Scaled Current

Data	Byte
Low Byte	0
High Byte	1

This two-byte value will indicate the scaled RMS current.
See pages 54to 54 for more detail.

Parameter 88 is scaled to 0.001 amps (mili A), 65536 = 65.536 amps
Parameter 89 is scaled to 0.01 amps (centi A), 65536 = 655.36 amps
Parameter 90 is scaled to 0.1 amps (deci A), 65536 = 6553.6 amps
Parameter 90 is scaled to 1 amps (A), 65536 = 65536 amps

Field Wiring Status

7	6	5	4	3	2	1	0	Byte
Remote R2	Remote R1	Remote/ Local	Aux 2 State	Aux 1 State	GF Input Status	CB Input Status	Handle Position ON	0

See 0x005C (92) Field Wiring Status (V1.4 and later) on page 55 for more information.

Handle Position ON – true when the handle is in the ON position
CB Input Status – true when the CB input circuit is open (JP9)
GF Input Status – true when a ground fault input circuit is open (JP8)
Aux 1 State – state of the primary contactor auxiliary contact, contactor open = 1
Aux 2 State – state of the secondary contactor auxiliary contact, contactor open = 1
Remote/Local – state of the local/remote terminal on the Interface Module, Remote = 1
Remote Run 1 = state of the Run 1 terminal on the Interface Module, Run1 = 1
Remote Run 2 = state of the Run 2 terminal on the Interface Module, Run2 = 1

3-Wire Control Output Data (default)

Data	Byte
Motor Control (byte)	0

Motor Control:

Bit	Description	State
0	Run 1 (command the primary contactor to energize)	Momentary
1	Run 2 (command the secondary contactor to energize)	Momentary
2	Permissive (permissive to energize the starter)	Maintained
3	Reset	Momentary
4	Reserved	NA
5	Reserved	NA
6	Reserved	NA
7	Reserved	NA

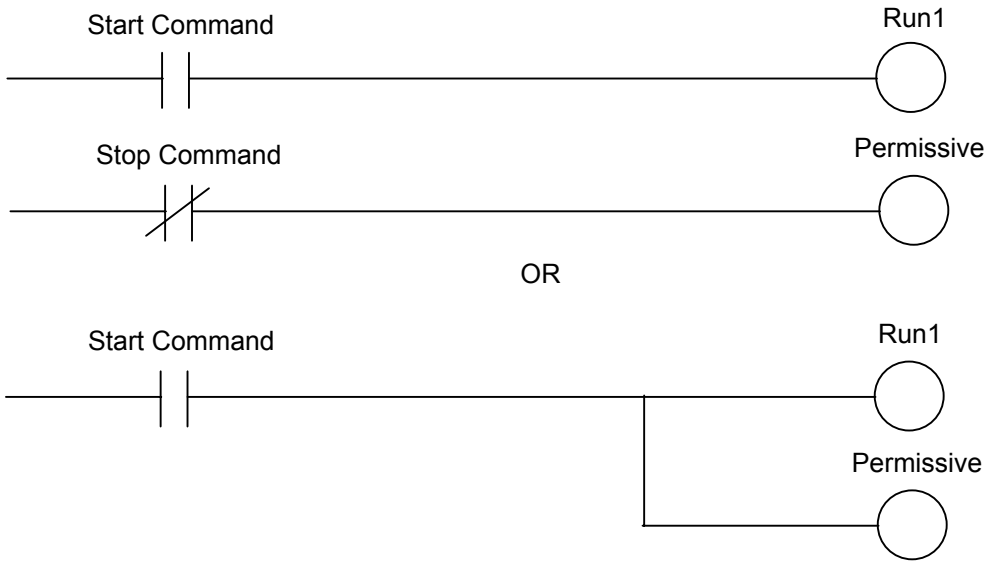
Run1, this bit and the permissive must be true for the motor controller to energize in the forward direction. Once the motor controller is running, this bit is not required to be true to continue running.

Run2, this bit and the permissive must be true for the motor controller to energize in the reverse direction. Once the motor controller is running, this bit is not required to be true to continue running.

Permissive, this bit is required to be set any time the motor controller is expected to be running. If the permissive is not set, the motor controller can not run.

The internal logic is a 3 wire control circuit, permissive has to be true and maintained to energize the starter (and keep it energized). The Run 1 ad Run 2 commands are momentary, though one can keep this maintained with the Permissive and drop both the bits (Run1 and Permissive or Run2 and Permissive) when a stop is required.

3-Wire Logic



2-Wire Control Output Data (Version 1.5 and greater)

Data	Byte
Motor Control (byte)	0

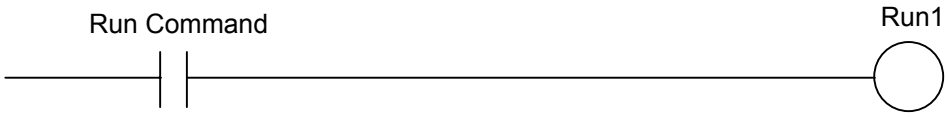
Motor Control:

Bit	Description	State
0	Run 1 (command the primary contactor to energize)	Momentary
1	Run 2 (command the secondary contactor to energize)	Momentary
2	Reserved	NA
3	Reset	Momentary
4	Reserved	NA
5	Reserved	NA
6	Reserved	NA
7	Reserved	NA

Run1, this bit must be true for the motor controller to energize in the forward direction. When the bit is false the motor controller will de-energize.

Run2, this bit must be true for the motor controller to energize in the reverse direction. When the bit is false the motor controller will de-energize.

2-Wire Logic



Data Parameters

0x0001 (1) Production Data

Supported in IO - No

Size:
Varies
Description:
This list contains the concatenated values of QCPort Parameters specified in QCPort Configuration Parameter 0x800C, Production List.

0x0002 (2) Consumption Data

Supported in IO - No

Size:
Varies
Description:
This list contains the concatenated values of QCPort Parameters specified in QCPort Configuration Parameter 0x800D, Consumption List.

0x0003 (3) QCPort Status

Supported in IO - No

Size:
1 byte
Description:
This parameter indicates the QCPort fault condition that caused a device to enter the Fault Mode, as enumerated below:

0x00 – No QCPort Fault.
0x01 – Node ID Conflict
0x02 – Invalid Node ID in Master/Slave
0x03 – Physical Node ID does not match actual ID
0x04 – Duplicate configured nodes online.
0x05 – Dynamic Node ID overflow
0x06 – Invalid baud rate selected
0x07 – Errant Device fault
0x08 – Problem with data in non-volatile memory

0x0004 (4) Application Status

Supported in IO - Yes

Size:
2 bytes
Description:
This parameter indicates the application status of the QCPort device. It reports the most recent fault or warning code. If there have been no faults or warnings, it reports 0. Reset clears this parameter.

0x000B (11) 3-Wire Motor Control

Supported in IO – Yes (Default Output Data)

Size:
1 byte
Description:
One byte comprised of 8 bits assigned as follows:

0 – Run1
1 – Run2
2 – Permissive
3 – Fault Reset
4 – Local Control Request (Not used in Master Slave mode)
5 – Reserved
6 – Reserved
7 – Reserved

0x000C (12) Motor Control Status

Supported in IO – Yes (Default Input Data)

Size:
1 byte
Description:
One byte comprised of 8 bits assigned as follows:

0 – Running1
1 – Running2
2 – Permissive
3 – Reserved
4 – Device Under Local control
5 – Fault
6 – Warning
7 – At reference

0x000D (13) Motor Control Faults

Supported in IO – Yes (Default Input Data)

Size:
2 bytes
Description:
Two bytes comprised of 16 bits assigned as follows:

Bit
0 – Phase Loss (Loss of one or more of the line phases or a Circuit Breaker Trip)
1 – Phase Imbalance (current imbalance of greater than 50%)
2 – Thermal Overload (starter trip due to thermal overload)
3 – Reserved
4 – Breaker Fault
5 – Ground Fault (trip due to a ground fault, separate ground fault sensor required)
6 – Reserved
7 – Reserved
8 – Device Over Temperature (Device temperature limit exceeded, S751 only)
9 – Reserved
10 – Reserved
11 – Motor Control E-Stop (Device is in the state of an Emergency Stop)
12 – Reserved
13 – Reserved
14 – Reserved
15 – Other fault, see Fault and Warning Codes

0x000E (14) RMS AC Line Current (3 Φ ave) (% of FLA)

Supported in IO – Yes (Default Input Data)

Size:
2 bytes
Description:
A two byte number representing the average of the three RMS line currents in % FLA

0x0012 (18) RMS AC Line Current (3 Φ average) (Amps)

Supported in IO – Yes

Size:
4 bytes
Description:
A four-byte IEEE floating-point number representing the average of the three RMS line currents in amps.

0x0016 (22) DC Control Voltage

Supported in IO – Yes

Size:
2 bytes
Description:
Two-byte number representing voltage in millivolts.

0x0017 (23) Thermal Memory

Supported in IO – Yes (Default Input Data)

Size:
1 byte
Description:
1 byte number representing thermal memory percent. Other terms for this parameter include thermal capacity and thermal pile.

0x001A (26) Fault Queue

Supported in IO – Yes

Size:
10 bytes
Description:
Faults are assigned numbers in the range 1 – 39,999. Warnings are assigned numbers 40,000 – 65,535. The fault queue is a chronological listing of the 5 most recent faults and warnings. Note that each new fault or warning replaces the previous most recent entry provided that it is a different number. Consecutive duplicate numbers should not occur.

See Fault and Warning Codes

0x0023 (35) Motor Control Warnings

Supported in IO – Yes

Size:
2 bytes
Description:
Two bytes comprised of 16 bits assigned as follows:
Bit
0 – Circuit Breaker Warning (Circuit Breaker tripped)
1 – Reserved
2 – Reserved
3 – Over Current (Device exceeded the over current threshold)
4 – Reserved
5 – Ground fault (Detection of a Ground Fault)
6 – Reserved
7 – Reserved
8 – Reserved
9 – Under Current (Device operating less than the lower current threshold)
10 – Impending Trip (running current greater than 115% of FLA)
11 – Motor Control E-Stop (Device is in the state of an Emergency Stop)
12 – Reserved
13 – Reserved
14 – Reserved
15 – Other fault, see Fault and Warning Codes

0x0029 (41) Ave Power Pole Temperature

Supported in IO – Yes

Size:
2 bytes
Description:
Signed 16 bit integer representing the average power pole temperature in tenths of a °C.

0x0031 (49) Breaker Status

Supported in IO – Yes

Size:
1 byte
Description:
Reports the status of the circuit breaker. When the MM switch is ON, a Motor Phase Loss Fault (6) is generated when the breaker status input (JP9) is open, when the MM switch is OFF, no faults or warnings are generated. If the breaker status input is not being used, the breaker tripped bit will always be true. For feeder breaker configurations, there will not be a fault, instead there will be a Motor Phase Loss Warning (40004).
00 = circuit closed 02 = circuit open
One byte comprised of 8 bits assigned as follows:

0 – On/Off Set to 1 if the handle is in the on position
1 – Circuit Breaker Tripped (V1.3 and above) 0 = OK (closed circuit), 1 = Tripped (open circuit)

0x0057 (87) Compressed Production Data (V1.4 and later)

Supported in IO – Yes

Size:
1 byte
Description:
A short version of all the important bits provided by the cover control:

0 – Phase loss fault
1 – Phase imbalance fault
2 – Thermal overload fault
3 – Underload warning (low current warning)
4 – Ground fault (GF) – true when a ground fault is active
5 – No E-stop active – true when there is Not an E-Stop
6 – Circuit breaker (CB) Input Status – true when the CB input circuit is tripped or (JP9) open
7 – Handle Position On – True when the handle is in the ON position

0x0058 (88) RMS Average Scaled Current (mili Amp) (V1.4 and later)

Supported in IO – Yes

Size:
2 bytes
Description:
RMS Average current scaled to 0.001 amps:

A two byte value for the RMS average current of the motor controller. A value of 65536 = 65.536A.

0x0059 (89) RMS Average Scaled Current (centi Amp) (V1.4 and later)

Supported in IO – Yes

Size:
2 bytes
Description:
RMS Average current scaled to 0.01 amps:

A two byte value for the RMS average current of the motor controller. A value of 65536 = 655.36A.

0x005A (90) RMS Average Scaled Current (deci Amp) (V1.4 and later)

Supported in IO – Yes

Size:
2 bytes
Description:
RMS Average current scaled to 0.1 amps:

A two byte value for the RMS average current of the motor controller. A value of 65536 = 6553.6A.

0x005B (91) RMS Average Current (amps) (V1.4 and later)

Supported in IO – Yes

Size:
2 bytes
Description:
RMS Average current:

A two byte value for the RMS average current of the motor controller. A value of 65536 = 65536A.

0x005C (92) Field Wiring Status (V1.4 and later)

Supported in IO – Yes

Size:
1 byte
Description:
Provides feedback of all the device specific inputs on the cover control:

0 – Handle on position
1 – CB Input Status – true when the CB input circuit is open (JP9)
2 – GF Input Status – true when the GF input circuit is open (JP8)
3 – Aux 1 state (primary contactor open = 1)
4 – Aux 2 state (secondary contactor open =1)
5 – Remote/local on field IO block (Remote = 1)
6 – Remote R1 state of the Interface Module
7 – Remote R2 state on of the Interface Module

0x006A (106) 2-Wire Motor Control (Version 1.5 and greater)

Supported in IO – Yes

Size:
1 byte
Description:
One byte comprised of 8 bits assigned as follows:

0 – Run1
1 – Run2
2 – Reserved
3 – Fault Reset
4 – Local Control Request (Not used in Master Slave mode)
5 – Reserved
6 – Reserved
7 – Reserved

Configuration Parameters

None of the Configuration Parameters support IO data.

0x8001 (32769) Device Identity

Size:
14 bytes
Default:
See below
Description:
This read-only parameter contains information that uniquely identifies a device, including the following elements:

Product Code (2 bytes) 0x8107	
Vendor ID (2 bytes)	0x0001
Serial Number (4 bytes)	A device's serial number shall be reported. This value shall be unique for a particular manufacturer across all device types.
Hardware Revision (2 bytes)	Major revision shall be reported in the MSB. Minor revision shall be reported in the LSB.
Firmware Revision (2 bytes)	Major revision shall be reported in the MSB. Minor revision shall be reported in the LSB.
QCPort Revision (2 bytes)	Major revision shall be reported in the MSB. Minor revision shall be reported in the LSB.

0x8002 (32770) Configuration CRC

Size:
2 bytes
Default:
N/A
Description:
Used for confirmation of a device's configuration. Normally, the initial values of selected configuration parameters would be included in the calculation. The product instruction leaflet should describe which parameters are actually included. To facilitate node replacement, Device Identity information should not be included in this calculation.

0x8003 (32771) Node ID

Size:
2 bytes
Default:
0x0000
Description:
This parameter specifies a device's Node ID. The Group ID is the Most Significant Byte and the Member ID is the Least Significant Byte.

An Initial Value of 0x0000 indicates an unconfigured state. In this state, a device shall assume a current value based on the level of switch support implemented in hardware:

0x8004 (32772) Operating Mode

Size:
1 byte
Default:
0x00
Description:
This parameter specifies a device's operating mode, as follows:

Mode	Description	Active/Passive
0x00	Unconfigured	Passive
0x01	Simple System	Passive
0x02	Master/Slave	Active
0x03	Wire Replacer	Passive
0x04	Faulted	Passive

0x8005 (32773) Baud Rate

Size:
1 byte
Default:
0x03
Description:
This parameter specified the QCPort baud rate for a device as indicated below:

0x00 – 9600
0x01 – 19,200
0x02 – 38,400
0x03 – 57,600
0x04 – 115,200
0x05 – 230,400
0x06 – 460,800

Note that the current value of the baud rate cannot be directly modified. The current value is set to the initial value upon reset. Therefore, writing to the initial value and resetting the device sets a new current value.

0x8006 (32774) Slave Address

Size:
1 byte
Default:
0x00
Description:
This parameter specifies the address used by a Master for data transfers in the Master/Slave Data Protocol.

The default value shall be 0x00 (unconfigured), requiring a Master to set this value prior to use of the Master/Slave Data Protocol.

0x8007 (32775) Production Destination

Size:
2 bytes
Default:
0x0000
Description:
This parameter specifies the destination Node ID to be used by a device in either the Simple System or Wire Replacer Data Protocols. The MSB indicates the Group ID; the LSB indicates the Member ID.

An Initial Value of 0x0000 indicates an unconfigured state. In this state, a device shall assume a current value equal to its Group ID and a Member ID of 0x00. This results in its Production Data being targeted at all members of its Group.

0x8008 (32776) Device ID Tag

Size:
32 bytes
Default:
QCPort Cover Control
Description:
This parameter specifies the 32-character ASCII string ID tag assigned to a device, pre-assigned at the factory but settable by the user.

0x8009 (32777) Production Interval

Size:
2 bytes
Default:
50
Description:
This parameter specifies the rate, in milliseconds, at which a producing device generates a Data Protocol message in either Simple System or Wire Replacer mode.

A value of 0 disables this timer.

0x800A (32778) Consumption Interval

Size:
2 bytes
Default:
2000
Description:
This parameter is the value to which the consumption timer is set whenever there is a set of the current value of any parameter on the consumption list.

Expiration of this interval shall cause the module to executed communications loss behavior.

A value of 0 disables this timer.

0x800B (32779) Parameter List

Size:
104 bytes
Default:
N/A
Description:
This read-only list specifies the n QCPort Parameters that a device supports.

0x800C (32780) Production List

Size:
2 bytes
Default:
0x000C, 0x000D, 0x000E, 0x0017
Description:
This 2xn-byte read-only list specifies the n QCPort Parameters included in a device's QCPort Data Parameter 0x0001, Production Data.

Setting Parameter Attribute 0x09, "Production List Member", to TRUE, designates a Parameter's membership in this list. Only Parameters supporting Attribute 0x09 are eligible for inclusion in this list.

Ordering of Parameter IDs in the Production List is based first on Parameter data size and then sequentially within Parameters of like size. For example, all Parameters with an even number of bytes would appear first sequentially, followed by Parameters with an odd number of bytes.

0x800D (32781) Consumption List

Size:
2 bytes
Default:
0x000B
Description:
This 2xn-byte read-only list specifies the n QCPort Parameters included in a device's QCPort Data Parameter 0x0002, Consumption Data.

Setting Parameter Attribute 0x0A, "Consumption List Member", to TRUE, designates a Parameter's membership in this list. Only Parameters supporting Attribute 0x0A are eligible for inclusion in this list.

Ordering of Parameter IDs in the Consumption List is based first on Parameter data size and then sequentially within Parameters of like size. For example, Parameters with an even number of bytes would appear first sequentially, followed by Parameters with an odd number of bytes.

0x800E (32782) Languages Supported

Size:
n bytes
Default:
N/A
Description:
This is a list of languages supported in the product. It consists of a list of bytes, each representing a different language.

0x00 English
0x01 Spanish
0x02 French
0x03 German
0x04 Italian

0x800F (32783) Language Selection

Size:
1 byte
Default:
0x00
Description:
Holds the currently selected language from the list in parameter 800E.

0x8010 (32784) Device Semaphore

Size:
4 bytes
Default:
N/A
Description:
The purpose of this parameter is to provide a method for tools to access a QCPort node in a non-conflicting manner.

0x8020 (32800) Overload Trip FLA Value

Size:
4 bytes
Default:
N/A
Description:
IEEE floating point value of Full Load Amps (FLA) in amps.

0x8021 (32801) Overload Trip Class Value

Size:
1 byte
Default:
N/A
Description:
Motor trip class.

0x8022 (32802) Percent Initial Torque

Size:
1 byte
Default:
N/A
Description:
This parameter is intended for use primarily with a soft starter. It consists of a single byte that specifies the starter's initial torque in percent.

0x8025 (32805) Motor Start Ramp Time

Size:
2 bytes
Default:
N/A
Description:
Used primarily with soft starters, defines the duration of the start ramp in tenths of a second.

0x8026 (32806) Motor Stop Ramp Time

Size:
2 bytes
Default:
N/A
Description:
Used primarily with soft starters, defines the duration of the stop ramp in tenths of a second.

0x802B (32811) Motor Over Current Warning Enable

Size:
1 byte
Default:
Enabled
Description:
Enables/disables the over current warning

0x802C (32812) Motor Over Current Warning Level (% FLA)

Size:
2 bytes
Default:
150
Description:
The minimum level of current (as a percent of FLA) that must exist for the over current warning duration to cause an over current warning.

A product may use either 0x802C or 0x802D, but not both.

0x8033 (32819) Motor Under Load Warning Enable

Size:
1 bytes
Default:
Disabled
Description:
Enables/disables the under load warning

0x8034 (32820) Motor Under Load Warning Level (% FLA)

Size:
1 bytes
Default:
0
Description:
The maximum level of current (as a percent of FLA) that must exist for the under load warning duration to cause an under load warning.

0x8037 (36823) Ground Fault Enable

Size:
1 bytes
Default:
Enabled
Description:
Enables/disables ground fault detection.

0x8038 (32824) Ground Fault Duration

Size:
2 bytes
Default:
100
Description:
The length of time, in hundredths of a second, for which a ground fault condition must exist to cause a ground fault.

0x803A (32826) Ground Fault Inhibit From Start Delay

Size:
2 bytes
Default:
100
Description:
The length of time, in hundredths of a second, which must elapse after a start before a ground fault is recognized.

0x804D (32845) Physical Node ID setting

Size:
2 bytes
Default:
0x00
Description:
This parameter may be used with modules having a hardware node ID switch and represents the actual setting of that switch.

0x804E (32846) Motor Communication Loss Action

Size:
1 byte
Default:
0x00
Description:
Determines motor action in the event of a communications timeout in network communications. Note that this parameter only applies when the node is on line and in Auto mode. The following values are allowed:

0x00 = Auto Stop – go to auto and stop
0x01 = Auto Run1 – go to auto and Run1
0x02 = Auto Run2 – go to auto and Run2
0x03 = Hold Last – hold last state
0x04 = Local Stop – go to local and stop
0x05 = Local Run1 –go to local and Run1
0x06 = Local Run2 – go to local and Run2
0x07 = All Stop – leaves in last control mode (local or auto) and stop
Note: All Stop causes a fault and needs a reset to clear.

0x8071 (32881) Motor Control Startup Behavior

Size:
1 byte
Default:
0x00
Description:
Determines motor control at startup. The following values are allowed:

0 – Hold last state
1 - Local
2 - Auto

Data Registers

None of the Data Registers are support IO data.

Register 1; Overload Device Type

Size:
1 Byte, Read only
Default:
N/A
Description:

Upper Nibble	Lower Nibble
00 – Reserved	00 – Reserved
01 – Contactor	01 – 27 mm
02 – Remote IT Overload	02 – 45 mm
03 – IT Starter	03 – 54 mm
04 – Reserved	04 – 76 mm
05 – Reserved	05 – 105 mm
06 – Micro Soft Starter	06 – 140 mm
07 – Reserved	07 – Reserved

Register 2; Overload Serial Number

Size:
4 Bytes, Read only
Default:
N/A
Description:
Serial number scheme will abide by the DeviceNet rules

Register 3; Overload Firmware Revision

Size:
2 Bytes, Read only
Default:
N/A
Description:
Code version utilizes Cutler-Hammer's method of revision control

Register 4; S751 Soft Starter Device Type

Size:
1 Byte, Read only
Default:
N/A
Description:

Upper Nibble	Lower Nibble
00 – Reserved	00 – Reserved
01 – Reserved	01 – Reserved
02 – Reserved	02 – Reserved
03 – Reserved	03 – 54 mm
04 – Reserved	04 – Reserved
05 – Reserved	05 – Reserved
06 – Micro Soft Starter	06 – Reserved
07 – Reserved	07 – Reserved

Register 5; S751 Soft Starter Firmware Revision

Size:
2 Bytes, Read only
Default:
N/A
Description:
Code version utilizes Cutler-Hammer's method of revision control

Register 6; Number of Contactors

Size:
One Byte, Read only
Default:
N/A
Description:
Bit 0: Contactor controlled by Run1 present.
Bit 1: Contactor controlled by Run2 present.

Note: If a Run1 contactor is not detected, a warning will be issued

Register 7; Membrane Type

Size:
1 Byte, Read Only
Default:
N/A
Description:
This register specifies the type of front panel on the unit

Register 8; Cover Control Serial Number

Size:
4 Bytes, Read Only
Default:
N/A
Description:
This register holds the serial number for this node

Register 9; Field Inputs

Size:
1 Byte, Read Only
Default:
N/A
Description:
Bit
0 RUN1,
1 RUN2,
2 Control (0 = local, [field terminals] 1 = remote [key pad buttons])
3 Reset,
4 ESTOP (reverse logic, 1 = no e-stop)
5 Ground Fault (1 = True)
6 Circuit Breaker Fault (1 = True)

Register 10; Field Outputs

Size:
1 Byte, Read Only
Default:
N/A
Description:
Bit
0 Alarm Relay,
1 Auto Relay

Register 11; Hardware Enablers

Size:
1 Byte, Read Only
Default:
N/A
Description:
Bit
0 Ground Fault,
1 Mains Monitor

Register 12; Total Run1 State Changes

Size:
UINT32, Read Only
Default:
N/A
Description:
Total number of Run1 commands executed.

Register 13; Total Run2 State Changes

Size:
UINT32, Read Only
Default:
N/A
Description:
Total number of Run2 commands executed.

Register 17; Firmware Revision Number

Size:
3 bytes, Read Only
Default:
N/A
Description:
The format will be XX.YY.ZZ where XX is the major revision, YY is the minor revision and ZZ is the minor minor revision. The data will be low byte first (ZZ).

Register 18; CB Handle OFF Interlock (V1.4 and later)

Size:
1 byte, Read Write
Default:
0
Description:
Setting of this register to a 1 (Normal Mode) will disable a run (automatic, hand or local) of the starter while the breaker handle is in the Off position (default). When this register is set to 0 (Test Mode), the starter is not disabled when the breaker handle is in the Off position.

Register 19; E-Stop Reset Mode Select (V1.4 and later)

Size:
1 byte, Read Write
Default:
0
Description:
Setting of this register to a 1 will enable the requirement for a reset (keypad, remote or network) to be activated after an E-Stop to clear the fault *E-Stop Fault* (54). The default for this register is 0, which will activate a warning, *E-Stop Warning* (40013). This warning will self clear after the E-Stop is removed.

Register 31; % FLA Log Interval (V1.61 and later)

Size:
UINT, Read Write
Default:
0
Description:
This register controls the sample interval set in seconds for logging of % FLA. A setting of 0 will disable logging, the interval can be set from 1 to 65534 seconds. By default, the setting is disabled (0).

Register 32; % FLA Log (V1.61 and later)

Size:
Array of bytes, Read Only
Default:
0
Description:
This register contains the log of % FLA.

Register 34; Thermal Memory Interval (V1.61 and later)

Size:
UINT, Read Write
Default:
0
Description:
This register controls the sample interval set in seconds for logging of Thermal Memory. A setting of 0 will disable logging, the interval can be set from 1 to 65534 seconds. By default, the setting is disabled (0).

Register 35; Thermal Memory Log (V1.61 and later)

Size:
Array of bytes, Read Only
Default:
0
Description:
This register contains the log of Thermal Memory.

Fault and Warning Codes

When bit 15 is set in the fault or warning code, it signifies that the fault or warning is extended. The codes for the extended faults and warnings are listed below.

Fault Codes

Fault	Code Hex	Code Dec
No Fault	0x00	0
Application Communication Failure	0x03	3
Control Device High Temperature (S751 only)	0x05	5
Phase Loss	0x06	6
Phase Imbalance	0x07	7
Ground fault	0x08	8
Bypass Failure	0x0D	13
Thermal Overload Fault	0x0E	14
Test Fault	0x0F	15
Invalid Device Connected to Cover Control (Micro SoftStart Ver. A)	0x11	17
Motor Control Communication Loss All Stop Fault	0x24	36
E-Stop Fault (Register 19 = 1)	0x36	54

Warning Codes

Warning	Code Hex	Code Dec
Overcurrent warning	0x9C40	40000
Underload warning	0x9C41	40001
Motor phase loss warning (Micro SoftStart only)	0x9C44	40004
Impending Trip	0x9C46	40006
Ground Fault warning	0x9C47	40007
Device Configuration is Invalid	0x9C48	40008
Run1 Bypass failure to close	0x9C49	40009
Run1 Bypass failure to open	0x9C4A	40010
Run2 Bypass failure to close	0x9C4B	40011
Run2 Bypass failure to open	0x9C4C	40012
Emergency Stop Warning	0x9C4D	40013
Motor Direction Command Conflict	0x9C4E	40014

Trouble Shooting Guide

General Troubleshooting Hints

If the listed solutions do not solve the problem, consult the factory or technical support.

Problem	Solution
The STOP led is flashing	The E-Stop circuit is open. Refer to the wiring section of this manual for proper wiring guidelines of the E-Stop circuit or the wiring diagram supplied with MCC. Check that the terminal block located inside the bucket on the Interface Module labeled E1, E2, +, E is installed properly with the two jumpers from E1 to + and E2 to E. Check the 11 pin terminal block of the Interface Module in wire way has the jumper installed between E1 and E2 and that the terminal block is seated properly.
All three fault LEDs are flashing	This represents a loss of communication between the CC and the starter. Verify that the harness between the Cover Control and the starter is correctly installed and all the wires are tight into the 8 pin terminal block on the IT starter. Verify that the aux contact is properly installed on the starter and that the harness is properly connected to both the aux and the Cover Control. Verify that the starter has power by pressing the test button for a short period of time; the status LED on the starter will illuminate. If the CC was moved from one starter to another with a different OL range, a reset will be required to rematch the CC and the starter. This reset can be performed from CH Studio Component manager by right clicking on the CC and choosing Reset and then Reset to Factory Defaults. This will reset all parameters and IO data to factory defaults as well as rematch the CC and the starter. Another way to do a Reset to Factory Defaults is to set all DIP switches to off and then to toggle DIP switch 0 from off to on 5 times. When all LEDs on the CC pulse on and then off the CC will be reset. Reset the MM, GF and address DIP switches to application requirements. If you have a custom IO configuration, then perform the Application Parameters Reset as described on page 36 so the IO configuration will not be affected. The CC may have a board failure and will need to be replaced.

Problem	Solution
The Three Phase trip LED is flashing.	This is signaling that the breaker has tripped and will need to be reset. After resetting the breaker, the Reset button on the overlay needs to be pressed. Refer to the wiring diagram for the bucket, if there is not an aux contact installed in the breaker the MM DIP Switch on the CC needs to be disabled.
The GF Trip LED is flashing.	Refer to D64 manual for operation of Ground Fault module for resetting of the module. Refer to the wiring diagram for the bucket, if there is not Ground Fault adapter installed in the breaker the GF DIP Switch on the CC needs to be disabled.
For the HOA overlay, when the CC is in Hand, the starter cannot be energized.	The jumper from 4 to 5 on the IM (interface module) in the wire way is not installed. This jumper is for switching from Local to Remote control while in hand. Local control (open) signals that control is from the terminals while Remote control (closed) signals that control is from the keypad. When the Local/Remote circuit is open, there needs to be a valid run command on the Run1 terminal, terminal 3, signaling that is OK to operate in Hand. If none of these solutions work, contact factory since Cover Control may not be properly configured.
For Reset Only overlay the starter cannot be energized.	The jumper from 4 to 5 on the IM (interface module) in the wire way is not installed. This jumper is for switching from Hand to Auto control. Hand control (open) signals that control is from the terminals while Auto control (closed) signals that control is from the industrial network. When the Hand/Auto circuit is open, there needs to be a valid run command on the Run1 terminal, terminal 3, signaling that is OK to operate in Hand. If none of these solutions work, contact factory since Cover Control may not be properly configured.

Problem	Solution
The starter will periodically drop out while running.	Check the length and routing of the E-Stop wiring. It is possible that the length of the E-Stop circuit is too long. To test this place a jumper between E1 and E2 on the IM terminal in the vertical wire way and see if the problem goes away. If it does an interposing relay may need to be installed between the E-Stop circuit and the IM terminals. Verify that the control program is not dropping the starter out inadvertently. One or more of the Cover Control units are not communicating back to the D77D-DNA and the system controller or the data is not correct with in the system controller. Check the system controller to verify that the scan bit is set in the D77D-DNA (bit 0 of byte 0 for CH_A and bit 0 of byte 1 for CH_B). Verify the offsets with in the memory map in the system controller for errors. Check the status LED for the selected devices.
Has a constant "Fail to Open" or "Fail to Close" warning.	The auxiliary contact on the starter is damaged or missing. The jumper from JP2 to the auxiliary contact is damaged or unplugged.
While On-Line with CH Studio the Network Adapter or the Cover Control disappears.	It may be that the controller is not allowing enough time for the CH Studio messages and the connection between CH Studio and the Network Adapter is timing out. You may have to take the system controller off-line to continue.
While looking at the CC it is noticed that the status LED (LED located near the Eaton) is solid on.	If no other LED's are on it is possible the CC was placed into a firmware download mode, cycle power to the CC and see if the LED behaves properly. It is possible that you are looking at a non QCPort CC, for that type of CC the status LED is a power indication and is always ON. Refer to the wiring diagram for the bucket to verify if the bucket is communicating or non-communicating.

Communication Troubleshooting Hints

Explanation of LED duty cycle states

Mostly Off	One short blink ON every 2 seconds
Mostly On	One short blink OFF every 2 seconds
50%	ON and OFF blinking same amount of time; ½ second cycle
Rapid Flash	Strobe

Status LED	Description	Explanation
Mostly Off ☺	Offline	Everything is OK with in the CC and the CC is not being scanned. Check that the D77D-DNA is commanded to scan QCPort. This is done by setting bit 0 of byte 0, for channel A, in the output assembly.
Mostly On ☺	Online	Everything is OK with in the CC and the CC is being scanned.
50% On ☹	Faulted	Internal memory fault (cycle power) Verify that there are not any duplicate Group ID's (address). Check that the address is unique for the QCPort system. The Group ID was changed and a reset is required Buss fault. All the devices on the QCPort will have the same status LED behavior. A buss fault is caused by an open or shorted buss.
Rapid Flash ☹	Unacquired	The CC has not been discovered/acquired by the D77D-DNA, verify that the node ID is set correctly for the system. The D77D-DNA has not auto configured the QCPort system. In this case all the CC's will have the same behavior of the status LED. Perform an auto configuration. CH Studio is identifying that bucket. When the bucket is highlighted in CH Studio this is a way to identify in the field which bucket is being highlighted. Remove the highlight from CH Studio and verify that the Rapid Flash disappears.
Solid On ☺ ☹		It is possible the CC is in firmware download mode, cycle power to exit that mode. If the LED stays solid On after the power cycle the CC may be a non communicating CC or the memory is corrupt.
Off ☹	No Power	The CC is not powered or a memory fault in NV RAM has occurred that will require the CC to be replaced.

Communication Hints

Problem	Solution
Are all the buckets connected to one Network Gateway with in the MCC not communicating? Are all the Status LED's either Rapid Flash or 50% On	Check the Network Adapter, is the ST LED Green? – If the LED is green, then perform an auto configuration of the Network Adapter and see if the problem goes away.
	There may be a damaged CC or a shorted blue communication rail that is prohibiting QCPort from working. Unrack all the CC's so the 24Vdc is no longer on the bucket (pull out approximately 1 inch) buckets. Unplug the Network Adapter from the industrial network. Cycle power to the Network Adapter. One by one rack the buckets and verify that the status LED is mostly off as they are racked. When the bucket the causes the structure to fail is plugged in, the CC's status LED will rapid flash or 50% flash only. Remove the bucket and verify that the blue rail connector is not damaged. This can be done by using a flashlight to view if the tabs inside the connector are damaged. If the connector is damaged that bucket cannot be used at that location until the rail is replaced. If the connector is not damaged, replace the cover control. When all the buckets are online, plug the Network Adapter into the industrial Network.
	It is possible that the terminating resistors are damaged, replace the terminating resistors located in the power supply buckets at both ends of QCPort (blue rail) system.

Problem	Solution
Is there a single bucket in the MCC that is not communicating?	The problem may be that the single bucket has a fixable internal communication failure. This could be due attempting a hot swap on a pre version 1.4 CC with out first performing a reset. Refer to the "How to Swap Out a Bucket" section for help in performing a swap.
	It is also possible the Group ID DIP switches were changed after auto configuration. Check the DIP switches and verify that they are in the correct position for that address. Physically move the DIP switch from one position to another to verify that it is in the correct position (there will be a "snap" when it reaches the ON or OFF state). Unrack the bucket to remove 24Vdc from the bucket only and then rerack the bucket and check that the problem disappears.
	It is possible that the communication jack is damaged or unplugged; replace the cable between the Cover Control and the blue communication rail.
	It is possible that the Network Adapter is damaged, replace the Network Adapter.
	It is possible that the terminating resistors are damaged, replace the terminating resistors located in the power supply buckets at both ends of QCPort (blue rail) system.
During auto configuration the Network Adapter will not detect any of the buckets.	Check the status LEDs on the CC units, if the LEDs are rapid flashing or 50% On refer to the above problem for a solution.
	If the status LEDs on the CC units are all slow flashing, the Network Adapter has already connected to the CC units and the problem is that the CH Studio software is not displaying the CC units. This can be because the scanner is not allowing CH Studio to send long messages.
	The Network Adapter cannot perform an auto configuration if the system controller is scanning the Network Adapter. Disconnect the Network Adapter from the industrial network and reattempt the auto configuration.

How to Swap Out a Bucket

This procedure is for CC units with code 1.3 and earlier and D77D-DNA with code 1.28 and earlier (prior to February 2004 date code V040201).

1. Remove the failed bucket.
2. Find the bucket that will replace that bucket.
3. The overlay type has to be identical on both buckets. The overlay is the keypad on the front for control and monitoring of the bucket, it covers the LEDs.
4. Does the bucket have an IO configuration other than default? **If no, then go to step 8.**
5. The replacement bucket will need to be configured just like the failed bucket, this includes the IO configuration, overlay type and configuration parameters (GF enable, under load…). If a tool was used to set up the original buck a tool will need to be used to set up the replacement bucket.
6. Verify that the Group ID (address) is set the same as the failed bucket, and then using CH Studio Component Manager and preferably a spare D77D-DNA, perform a Factory Reset (Reset to device's factory defaults) on the replacement CC. Once the CC is reset, configure it identical to the failed unit; use the Synchronize function in CH Studio Component Manager if possible.
7. Insert the replacement bucket into the failed buckets location. **Go to step 9**.
8. Insert the bucket into the structure and perform a factory reset by setting all the Group ID DIP switches to OFF and then toggling the 1 DIP switch from 0 to 1 five times. When the CC resets (all LEDs will flash) set the Group ID (address) to that of the failed bucket.
9. The D77D-DNA will have to be brought out of scan mode (disable bit 0 of byte 0 of the output message on DeviceNet) until the new bucket is picked up (approximately five seconds). The indication that the new bucket is picked up is that the status LED on the CC will be mostly off.
10. Put the D77D-DNA back into scan mode (set bit 0 of byte 0 back to a 1).

This procedure is for CC units with code 1.4 and later and D77D-DNA with code 1.30 and later (after February 2004 V040201).

1. Remove the failed bucket.
2. Find the replacement bucket.
3. The overlay type does not have to be identical on both buckets. The overlay is the keypad on the front for control and monitoring of the bucket, it covers the LEDs.
4. Does the bucket have an IO configuration different than the failed bucket? **If no, then go to step 7**.
5. The replacement bucket will need to have the same IO configuration as the failed bucket. If a tool was used to set up the original bucket a tool will need to be used to set up the replacement bucket.
6. Verify that the Group ID (address) is set to that of the failed bucket, and then using CH Studio Component Manager and preferably a spare D77D-DNA, perform a Factory Reset (Reset to device's factory defaults) on the replacement CC. Once the CC is reset, configure it identical to the failed unit; use the Synchronize function in CH Studio Component Manager if possible.
7. Set the DIP switches for Group ID (address) the same as the failed buckets Group ID.
8. Insert the replacement bucket into the failed buckets location. This can be performed both when the system is scanning (online) and when it is not scanning (offline).
9. Verify that the new bucket is picked up by viewing the status LED on the CC. If the system is scanning, the status LED should be mostly on, if the system is not scanning the status LED should be mostly off.

Technical Support

**For additional information on this product,
Please call our Customer Support Center at:
1-800-809-2772
or
1-800-356-1243**

**For service or start-up assistance
24 hours/day, 7 days/week,
please call:**

1-800-498-2678

Company Information

Eaton Electrical Inc. is a global leader in electrical control, power distribution and industrial automation products and services. Thorough advanced product development, world-class manufacturing methods, and global engineering services and support, Eaton Electrical® provides customer-driven solutions under band names such as Cutler-Hammer®, Durant®, Heinemann®, Holec® and MEM®, which globally serve the changing needs of the industrial, utility, light commercial, residential and OEM markets. For more information visit www.eatonelectrical.com.

Eaton Corporation is a global diversified industrial manufacturer with 2003 sales of $8.1 billion that is a leader in fluid power systems, electrical power quality, distribution, and control; automotive engine air management and fuel economy; and intelligent drivetrain systems for fuel economy and safety in trucks. Eaton has 51,000 employees and sell products in more than 50 controls. For more information visit www.eaton.com.

Eaton Electrical
1000 Cherrington Parkway
Moon Township, PA 15108-4312
USA
Tel: 1-800-525-2000
www.eatonelectrical.com

EATON | Cutler-Hammer

Publication No MN05009001E
November 2004