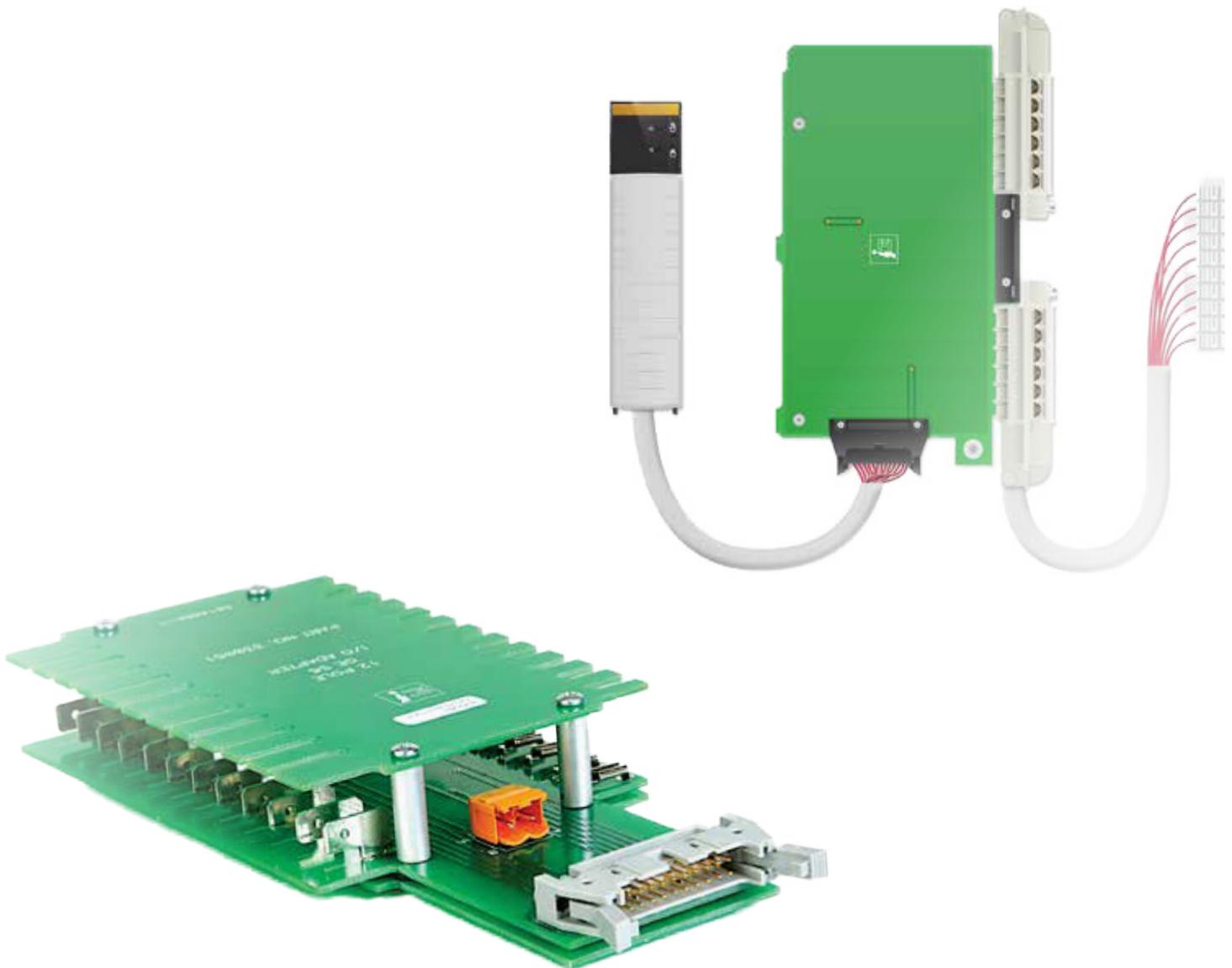


# Control System Migration OVERVIEW



# Emphatec MiBridge®

## Product Overview

### CONTROL SYSTEM MIGRATION

**The reasons for upgrading a DCS are many but a major one is the lack of support for legacy systems as new generations of DCS are introduced. Eventually there will be no spare parts available for the legacy system and users will be forced to upgrade – or hope nothing fails and shuts down their production!**

DCS upgrades allow new technologies to be used and could allow integration of all manufacturing/production assets. This could allow for greater flexibility and thus an ability to meet changing market needs while remaining profitable.

Upgrading or migrating control to a new DCS is not an easy task. It is expensive, planning is critical and there is risk involved. However, not migrating to a new system could prove to be more expensive than staying with the existing system. Some systems are upgraded incrementally while others are completely changed in one step. There are advantages and disadvantages to both approaches but the key deciding factor is the length of time the plant can be out of operation and not generating revenue.

A major question regarding control system migration is whether it can be done without shutting down production for an extended period of time. This applies to both a phased-in migration and a complete system migration. Ideally migration would take place while the facility is running. The next best scenario is for the migration to occur during a planned outage. To make this possible most customers insist that the migration does not involve the part of the system that is operating trouble free and is not nearing the end of its useful life – the field wiring (the wiring between the DCS I/O points and the sensors and actuators throughout the plant).

If control is to migrate from a legacy system to a new system, either a DCS or in some cases a PLC based system, the preference is for it to happen without modifying the field wiring. In fact, the preference is to not even touch the field wiring. The old adage “if it ain’t broke don’t fix it” applies here. Changes to field wiring increases risk by introducing the potential for wiring errors and this could delay restarting the plant, i.e. lost revenue.

Figure 1 shows a typical wiring configuration. Wiring to and from field devices such as transmitters, switches, sensors, relays, indicators, etc. terminates on terminal blocks in junction boxes or marshalling cabinets. The terminal blocks are often a combination of feed through, fused and disconnect types. Here the signals are grouped together and taken via cables to I/O cards in racks. In some cases the terminal blocks are replaced by interface modules which might include functions not available in terminal blocks.



Figure 1

At the I/O card end of the cable is a connector of some type. Often this is a connector proprietary to that particular DCS system. This is where migration to a new control system can get challenging. The operator of the plant does not want to touch the field wiring because re-wiring is time consuming and a potential source of errors and delays in restarting, i.e. increased costs. But the chances of the cable plugging directly into the new system are slim. Even if the new control system is from the same supplier as the legacy system the existing cables and new I/O may not be compatible.

A solution is to install another layer of interface between the existing field wiring and the new control system I/O. This consists of an adapter module and a new cable. The adapter module is an interface between the existing proprietary connector and a new cable that connects to a new I/O card. The best scenario is to re-use the existing I/O chassis but when this is not practical it is often possible to install the new chassis in place of the legacy system I/O chassis. In some cases the new I/O can be mounted on the face of the adapter module chassis. This eliminates the need for additional cabinets and minimizes the lengths of the new cables.

The advantage of the configuration shown in figure 2 is that the existing field wiring remains and is not disturbed. Adapter modules are usually completely passive meaning there is no electronic circuitry.

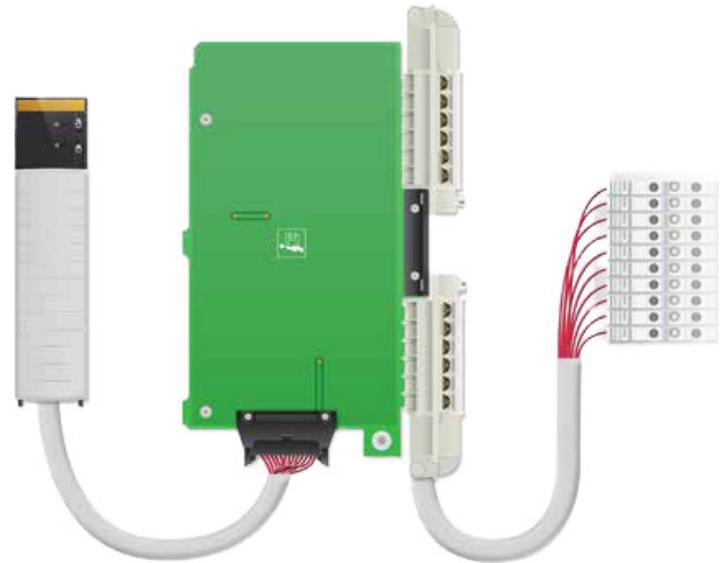
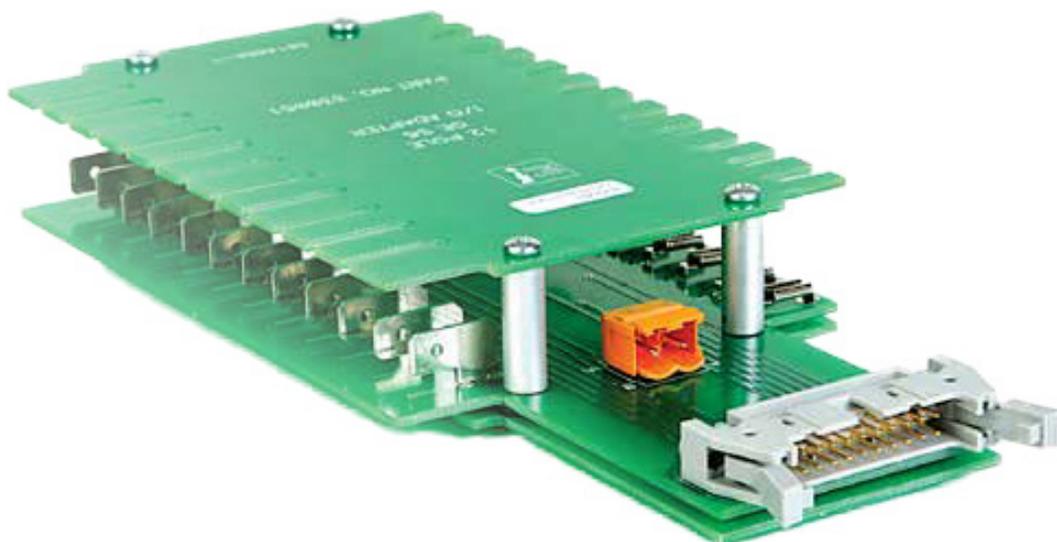


Figure 2



# IPC620

## Migration Solutions

### Replacement Chassis



Type	Order Number
Replacement chassis: includes hinged cover	<b>330300</b>
6/8 ch adapter, 22AWG:	<b>330302</b>
16 ch adapter, 22AWG:	<b>330303</b>
32 ch adapter, 22AWG:	<b>330304</b>
4ch analog adapter, 22AWG:	<b>330348</b>
16 ch adapter, 18AWG:	<b>330350</b>
6/8 ch adapter, 18AWG:	<b>330365</b>
16 ch adapter, 18AWG:	<b>330386</b>
6+2 ch adapter, used with 8 channel PLC cards, 2 extra channels are available on front of adapter	<b>330607</b>

Consult Weidmuller for cable part numbers. Please specify the IPC card being replaced, the replacement I/O card part number, the required length and wire gauge. When the replacement I/O is mounted on the hinged cover the cable length is typically 2 feet. When replacement I/O card has more channels than the original IPC card it is possible to use cables that interface 2 adapters to 1 replacement I/O card.

### Low Profile Chassis



Type	Order Number
Low profile chassis: includes hinged cover	<b>330394</b>
6 pole, top adapter:	<b>330395</b>
6 pole, bottom adapter:	<b>330395</b>
11 pole, top adapter:	<b>330396</b>
11 pole, bottom adapter:	<b>330397</b>
24 pole adapter:	<b>330399</b>

Adapters for the low profile chassis include terminals for the cable to the replacement I/O cards. For adapters hard wired to the cable please specify the IPC card being replaced, the replacement I/O card number, the required cable length and wire gauge. When the replacement I/O is mounted on the hinged cover the cable length is typically 2 feet.

The hinged cover is pre-drilled for the Rockwell Controllogix 10 and 13 slot racks. Consult Weidmuller for other PLC's.

To determine cable part numbers please tell us the IPC620 card part number and the corresponding replacement card part number, the desired cable length and wire size - we will provide drawings and part numbers.

### Retrofit Kit

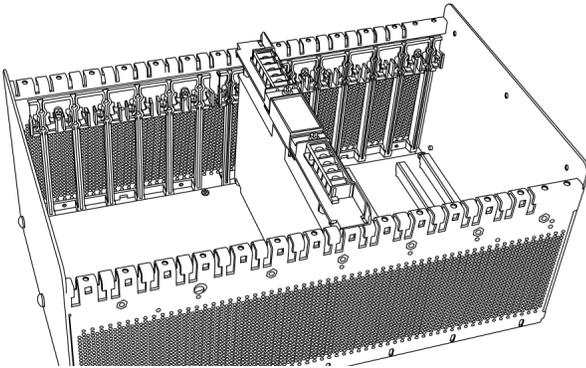


Type	Order Number
Honeywell chassis retrofit kit: includes hinged cover	<b>330617</b>
6/8 ch adapter:	<b>330608</b>

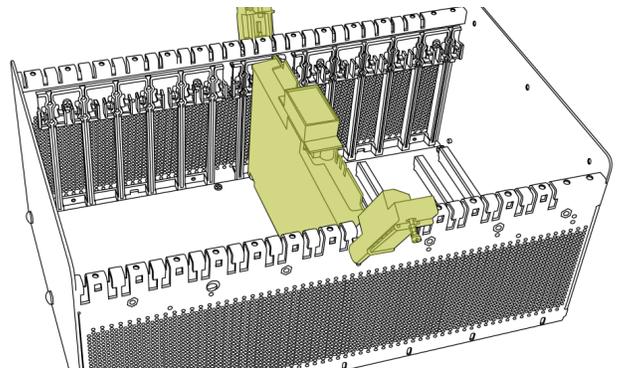
Adapters for the chassis retrofit solution include terminals for the cable to the replacement I/O cards. For adapters hard wired to the cable please specify the IPC card being replaced, the replacement I/O card number, the required length, and the wire gauge. When replacement I/O is mounted on the hinged cover the cable length is typically 2 feet. The adapters can be mounted in an existing Honeywell IPC620 chassis without the retrofit kit if the new I/O is not mounted on the front of the existing chassis.

# Replacing a Honeywell IPC620 Chassis with Weidmuller's Adapter Card Chassis

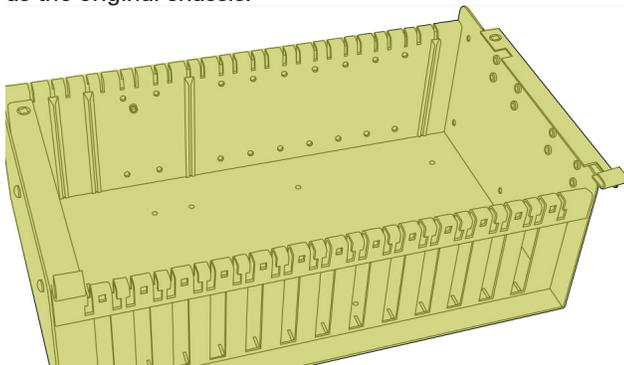
**1.** Existing Honeywell IPC620 chassis.



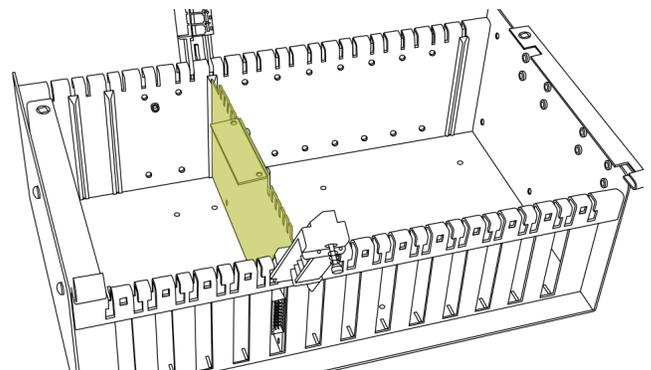
**2.** Field wiring connectors are removed from I/O card.



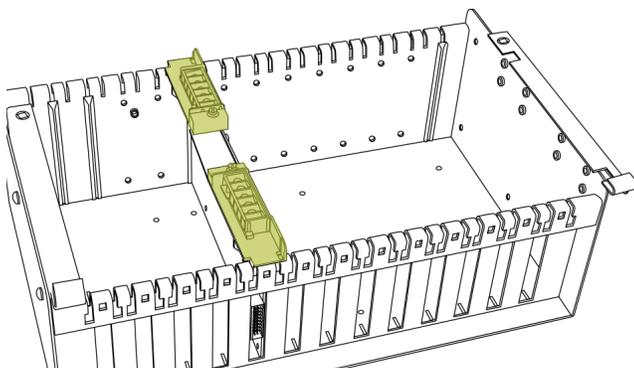
**3.** Honeywell chassis is replaced by Weidmuller adapter card chassis. New chassis uses the same mounting holes as the original chassis.



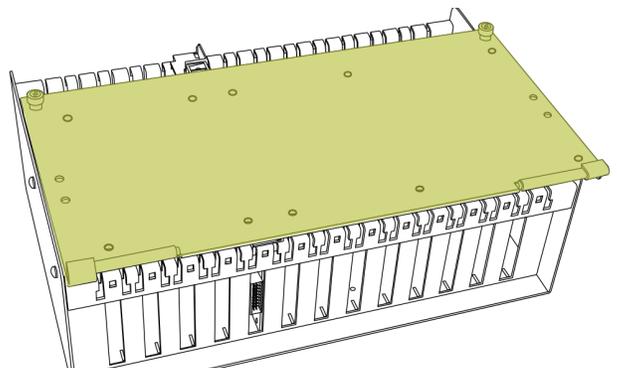
**4.** Adapter cards are installed in place of I/O cards.



**5.** Field wiring connectors are re-installed.

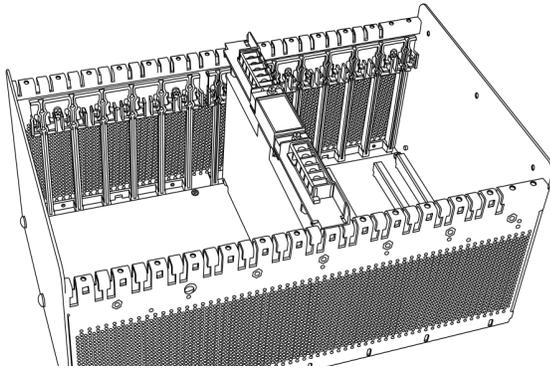


**6.** Hinged cover plate is installed. New I/O system can be mounted on the cover to minimize cable lengths and eliminate the need for additional cabinets. Cover is pre-drilled for the Rockwell ControlLogix system

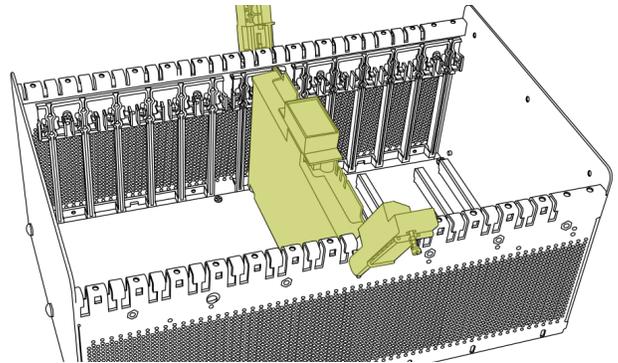


# Replacing a Honeywell IPC620 Chassis with Weidmuller's Low-Profile Adapter Chassis

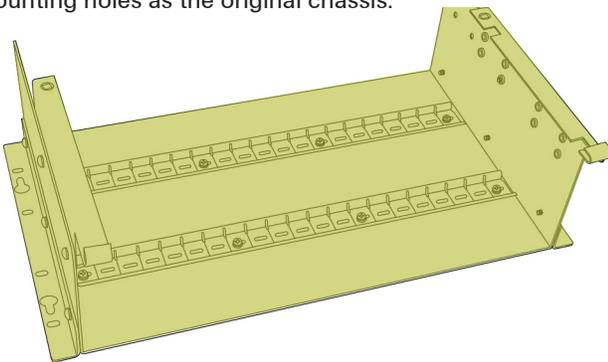
**1.** Existing Honeywell IPC620 chassis.



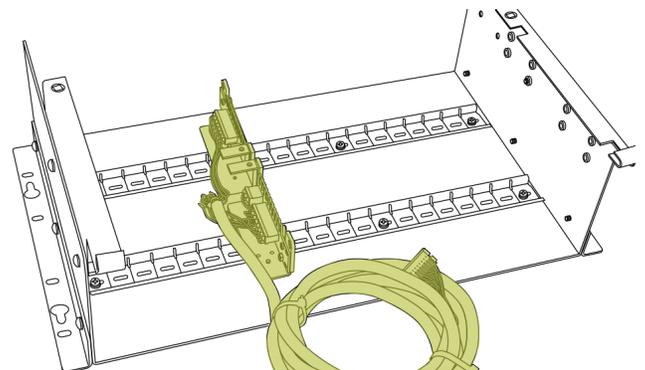
**2.** Field wiring connectors are removed from I/O card.



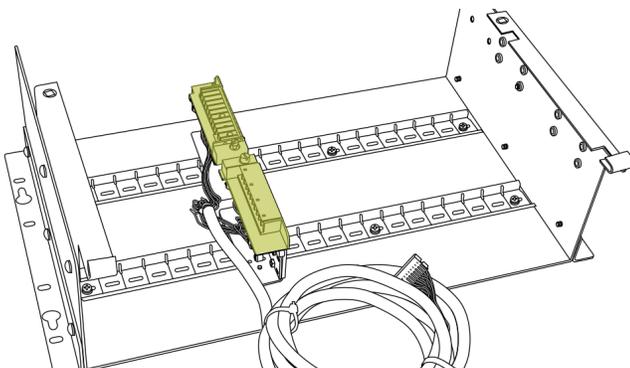
**3.** Honeywell chassis is replaced by the Weidmuller adapter card chassis. New chassis uses the same mounting holes as the original chassis.



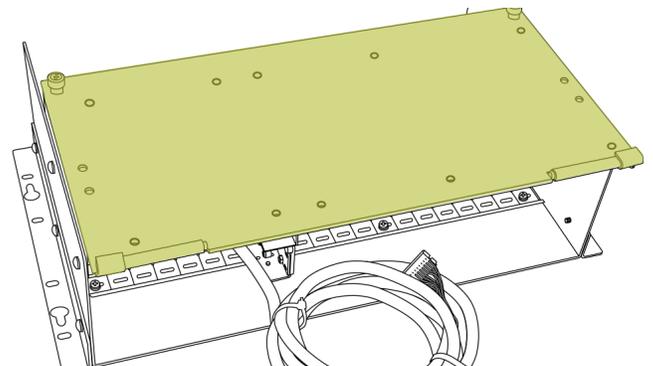
**4.** Adapters are mounted on DIN rails. Each adapter includes the cable to the new I/O card.



**5.** Field wiring connectors are re-installed.

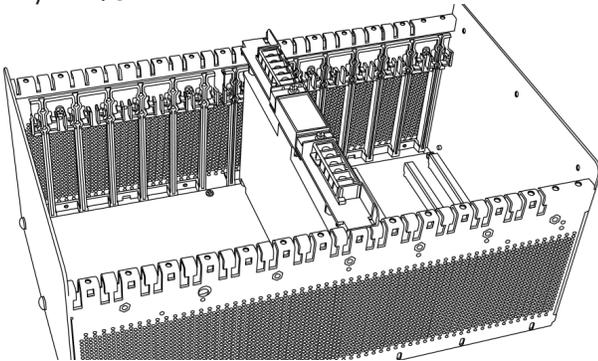


**6.** Hinged cover plate is installed. New I/O system can be mounted on the cover to minimize cable lengths and eliminate the need for additional cabinets. Cover is pre-drilled for the Rockwell Controllogix system.

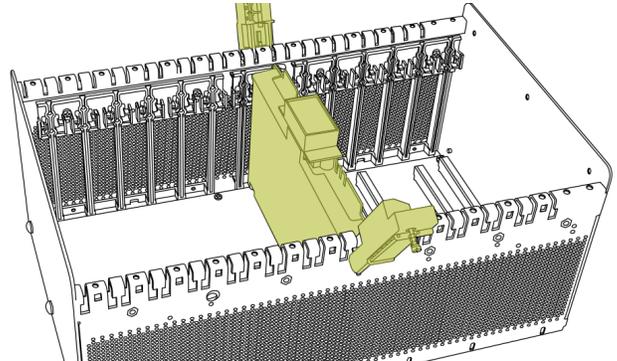


## Replacing a Honeywell IPC620 Chassis to Accept Adapter Cards

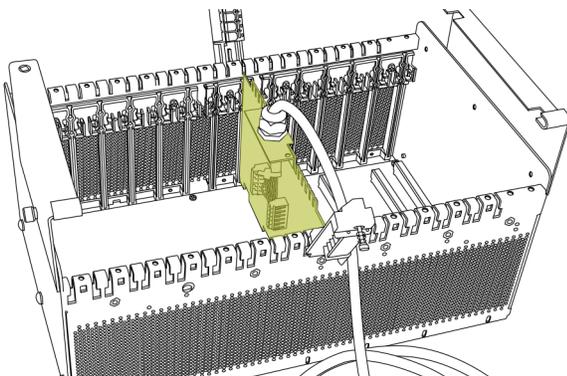
**1.** Cover mounting brackets are installed on the existing Honeywell I/O chassis.



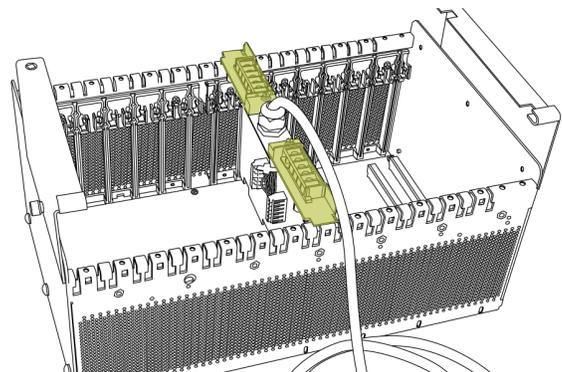
**2.** Field wiring connectors are disconnected and the existing I/O cards are removed.



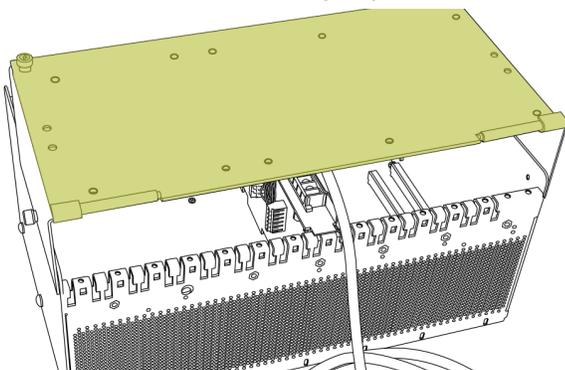
**3.** Adapter cards are installed in the Honeywell chassis.



**4.** Field wiring connectors are connected to the adapter cards.



**5.** Hinged cover plate is installed. New I/O system can be mounted on the cover to minimize cable lengths and eliminate the need for additional cabinets. Cover is pre-drilled for the Rockwell Controllogix system.



# MODICON SERIES 200 SOLUTION

## Chassis Installation

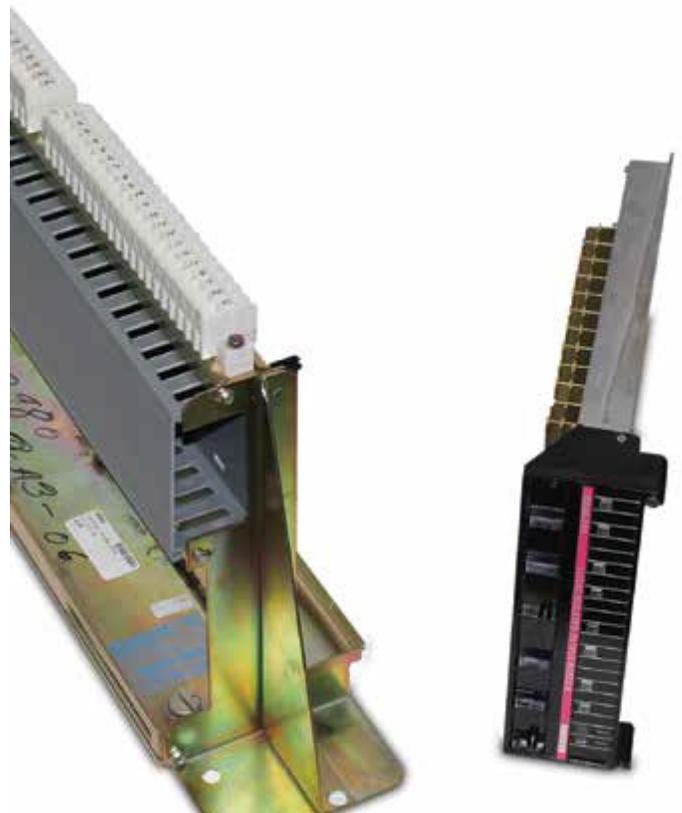
The Modicon Series 200 migration solution reuses part of the existing card rack. The wiring assembly that includes the field wiring terminals/card connector and the wire duct is modified to fit deeper in the control cabinet while the field wiring remains intact.

Each Series 200 I/O card is replaced by an adapter assembly. This includes a cable to the new I/O card and a connector that mates with the Series 200 field wiring terminals/card connector. Installation is quick and very secure.

It may be possible to install additional hardware over top of the re-configured card rack that would provide a location for the new I/O rack.

1. Two card Modicon 200 rack consisting of support chassis, wiring assembly with wire duct and I/O card

2. Remove I/O cards



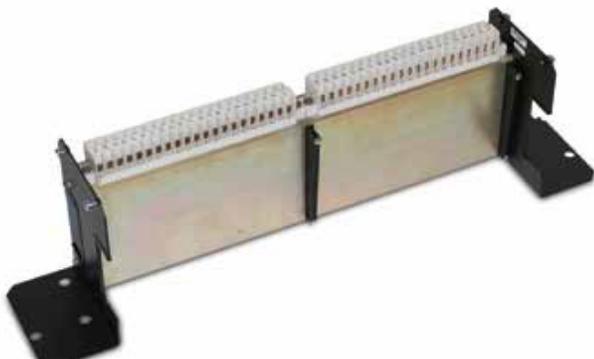
**3.** Remove wiring assembly (secured to support chassis by 4 screws). The support chassis is then removed from the control panel and discarded.



**4.** Install Weidmuller's low profile mounting brackets.



**5.** Wiring assembly with new mounting brackets installed. This modified wiring assembly is installed in the control cabinet using the same mounting holes and hardware as the original Modicon 200 rack.



**6.** Modified wiring assembly and Weidmuller adapter assembly



**7.** Modified wiring assembly with adapter installed. Adapter cable shown is ready to be connected to Controllogix I/O card.



Order number for low profile mounting bracket kit: 330571.  
For catalog numbers for adapters with cables please consult Weidmuller.  
Please provide the part numbers of the Modicon 200 I/O card and the replacement I/O card.

# MODICON SERIES 800 SOLUTION

## Chassis Installation

Weidmuller’s Modicon Series 800 migration solution replaced the Series 800 card chassis with a low profile adapter chassis that also provides a location for the new I/O or PLC.

The adapter interfaces the new I/O cable to the existing Series 800 field wiring connector. Existing field wiring remains intact – no loose connections or wiring mistakes.

The Weidmuller adapter chassis is substantially shallower than the Series 800 card chassis – approximately 91mm. This can allow the new I/O or PLC to mount on the adapter chassis cover. The standard adapter chassis cover is pre-drilled for Rockwell’s ControlLogix system.

Order number for 11 slot chassis: 330449

Order number for 11 slot chassis with hinged cover: 330606

For order numbers for adapters with cables please consult Weidmuller.

Please provide the part numbers of the Modicon 800 I/O card and the replacement I/O card.

**1.** Loosen retaining screws securing the I/O card in the chassis



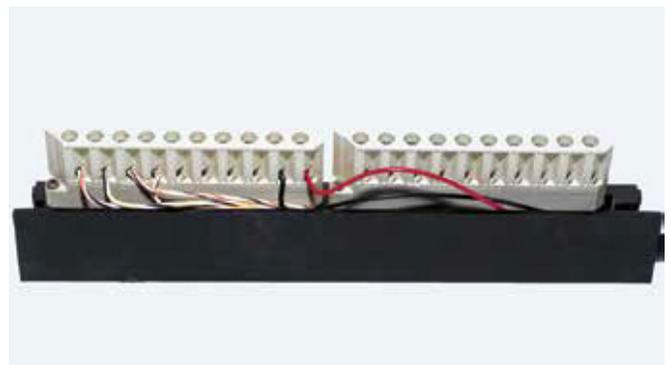
**2.** Pull I/O card out of chassis.



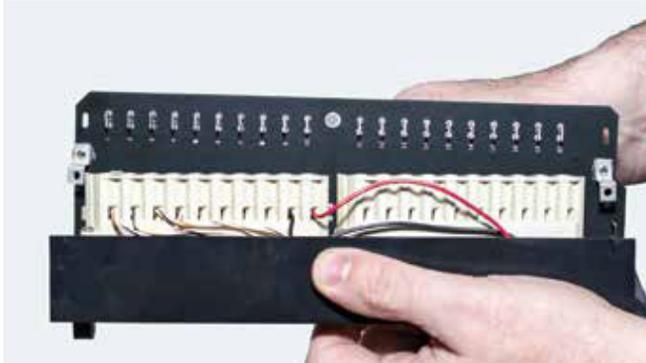
**3.** Remove screws securing the field wiring connector in the chassis.



**4.** Remove field wiring connector with wiring intact.



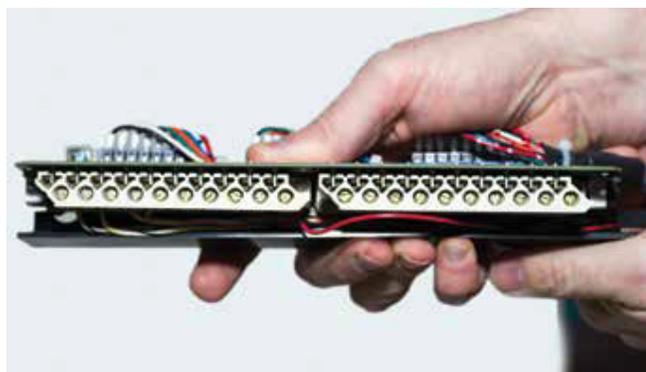
**5.** Field wiring connector slides on to the contacts on the Emphatec MiBridge® adapter.



**6.** Ensure the Z bracket on the adapter is positioned as shown.



**7.** Ensure the contacts on the adapter mate correctly with the field wiring connector.



**8.** Install the adapter/connector pair on the replacement chassis.



**9.** Tighten the retaining screw.



**10.** Mount the cover plate on the chassis after all the adapters have been installed.



# MODICON QUANTUM SOLUTION

## Chassis Installation

The Emphatec MiBridge® Modicon Quantum solution requires the existing mounting plate to be replaced by Weidmuller's adapter mounting plate. A cover is available that provides space for the new I/O system. As with all the Emphatec MiBridge® products, the field wiring is not altered in any way so there is no chance of wiring errors.

**1.** QUANTUM I/O card installed on mounting plate.



**2.** Field wiring connector is removed from I/O card.



**3.** I/O card is removed from mounting plate.



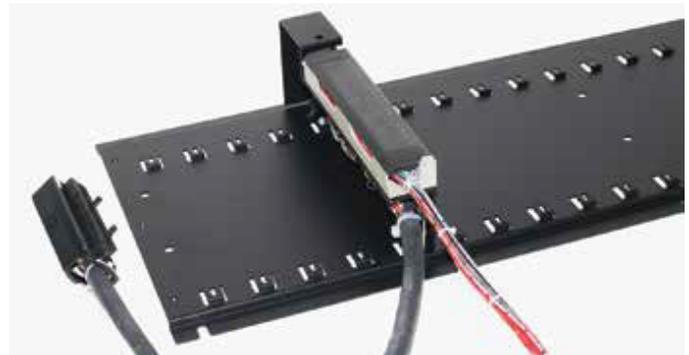
**4.** Modicon mounting plate is replaced by Weidmuller adapter mounting plate to the new I/O card.



**5.** Adapter is installed on mounting plate.



**6.** Field wiring connector is installed on adapter. Adapter is provided with cable to new I/O system.



A cover plate is available that mounts on top of the adapters and provides space for the new I/O system. The standard cover is provided pre-drilled for a Controllogix mounting rack.

## OTHER MIGRATION PRODUCTS

These are migration products that are available or have been prototyped but may not be complete offerings.

**Foxboro IA adapter**



**Foxboro IA adapter**



**Moore APACS adapter**



**GE 9030 adapter**



**Westinghouse WDPF adapter**



**ABB/Bailey INFI90 adapter**



**GE Series 6 "T" adapter**



## EMPHATEC PRODUCT FAMILIES

### **Emphatec VanGuard®**

AC power distribution products including our family of AC outlet modules

### **Emphatec DC Plus®**

DC power supplies and innovative accessories designed to protect and increase integrity of DC power systems

### **Emphatec SigNext®**

Interface products primarily for PLC and DCS I/O such as relays, optocouplers and analog signal conditioners

### **Emphatec InstaLink®**

PLC interface modules and cables that simplify connection of field wiring to PLC I/O.

### **Emphatec DePro®**

Innovative and unique modules for use in Class 1 Division 2 and Zone 2 hazardous locations

### **Emphatec MiBridge®**

Hardware for DCS I/O migration

---

### **Weidmuller Ltd.**

10 Spy Court  
Markham, ON  
Canada  
L3R 5H6  
Toll Free: (800)268-4080

[www.klippon-engineering.com/emphatec](http://www.klippon-engineering.com/emphatec)

Subject to technical changes

07/21 CA KE | LIT 1036