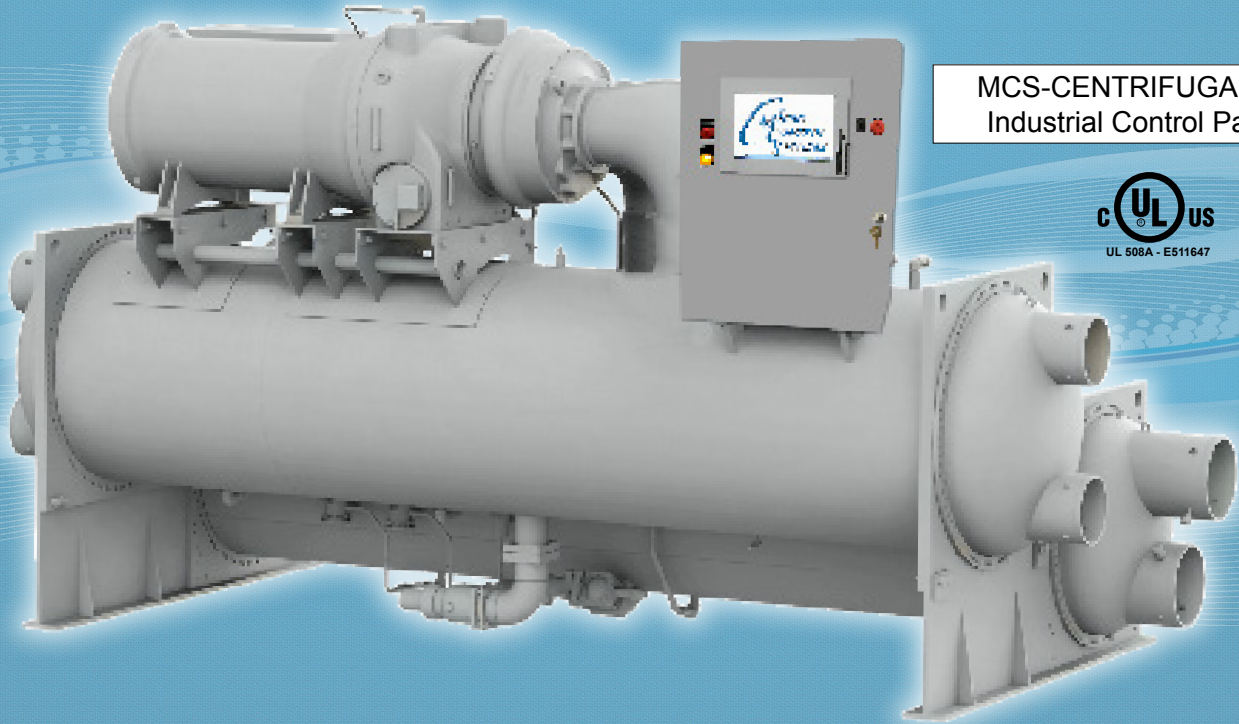




*MCS Total
Solutions for all your
HVAC/R Control Needs*



MCS-CENTRIFUGAL-12
Industrial Control Panel



PEH-WSC CONTROLS - 12 UPGRADE with Optional VFD Control

This brochure describes a standard upgrade package for the McQuay / Daikin Chillers.

Each control upgrade installation is unique. It may be necessary to add additional options to the standard upgrade as described in this brochure.

Fill out the brief questionnaire in the back of this brochure and forward to your sales representative for an estimate.



Revision - 2025-03-27
Subject to change without prior notice

PEH-WSC Control Enclosure Upgrade



MCS CENTRIFUGAL-12 Industrial Control Panel

NEMA rating - Type 1

Dimensions - 27" w x 39.75" h x 8.0" d

Certification - UL508A

MCS-MAGNUM-N-12

Controller Specification

Microprocessor Zilog eZ80 Acclaim! @ 50mhz
Sensor Inputs (SI)..... 12 inputs 0-5vdc (10-bit A/D)
Digital Inputs..... 4 inputs 0 or 5vdc only
Relay Outputs (RO)..... 10 outputs 6.3amps @ 230vac
Analog Outputs (AO) 4 outputs 0-10vdc
Printed Circuit Board Six layer with separate power
and ground planes
Input Power (Standard) 12vdc-90W
MCS-I/O Comm Port 1 @ 38,400 baud
RS-485 Comm Port 1 @ 19,200 baud
Ethernet..... 10/100 Mbps Ethernet
Real Time Clock Battery backup
Power Detection Automatic power fail reset

Touch Screen 15.4

Dimensions..... 12.11"W x 17"L X 3.228"H
LCD Screen 15.4" (16:10 Diagonal),
16.2 Million Colors,
1280x800 Resolution

The **MCS-CENTRIFUGAL-12** comes standard equipped with an MCS-MAGNUM-N -12 controller board, 15.4" Touch Screen, three 16 amp, one 20 amp and one 5 amp circuit breakers. There is also an electrical outlet for laptop plug-in power at the panel.

The panel has the following expansion boards installed:

One (1) MCS-SI-Base, One (1) MCS-SI-BASE with MCS-SI-EXT, and ONE (1) MCS-RO-Base with MCS-RO-EXT.



With the expansion boards you have a total of:

60 Sensor Inputs
30 Relay Outputs
16 Analog Outputs

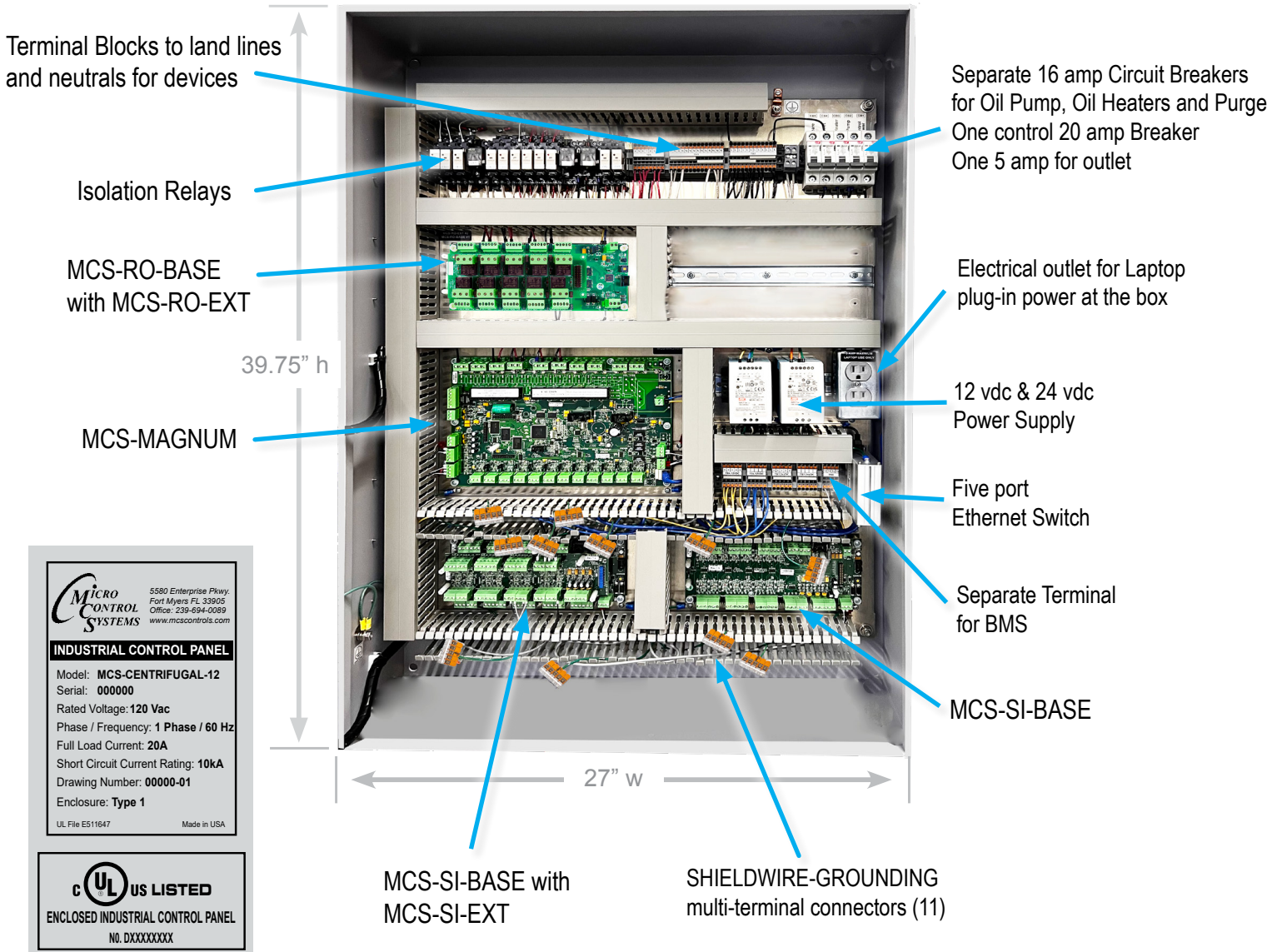
Standard configuration includes: Isolation relays, BMS Network connectivity, (Field selectable hardware or network BMS), and BMS terminal block for chiller relay.

The following warning lights and switches are included in the standard enclosure; Alarm, Warning, Emergency SW, Hand/Off/ Auto Switch.

This panel is intended for use in an environment protected from the weather.

MCS-MAGNUM-CENTRIFUGAL INDUSTRIAL CONTROL PANEL

NEMA Rating Type 1- P20 Rating



MICRO CONTROL SYSTEMS
5580 Enterprise Pkwy.
Fort Myers FL 33905
Office: 239-694-0989
www.mcscontrols.com

INDUSTRIAL CONTROL PANEL

Model: MCS-CENTRIFUGAL-12
Serial: 000000
Rated Voltage: 120 Vac
Phase / Frequency: 1 Phase / 60 Hz
Full Load Current: 20A
Short Circuit Current Rating: 10kA
Drawing Number: 00000-01
Enclosure: Type 1
UL File E511647 Made in USA

UL US LISTED
ENCLOSED INDUSTRIAL CONTROL PANEL
NO. DXXXXXXX

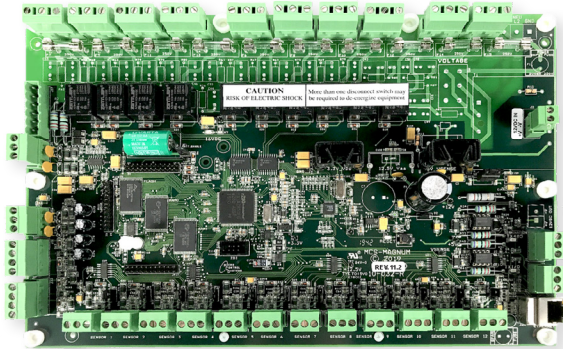
UL 508A Certified Industrial Control Panel

Benefits of selecting an Industrial Control Panel that carries the UL 508A certification include:

- UL 508A certification provides the inspection authority and your customer evidence that the control panel complies with nationally recognized safety standards. These standards ensure public safety and provide assurances that the electrical control panel is compliant with national and local electrical codes.
- For a control panel to carry the UL 508A Listing Mark, the panel must contain only UL recognized and listed components. The UL Mark on a component means that UL has evaluated and tested samples of this component and has concluded that they meet the UL requirements. This protects the quality and integrity of the enclosure and provides guarantee of safe performance.

PEH-WSC Control Enclosure Upgrade

MCS-MAGNUM-N-12



The **MCS-MAGNUM-N-12** is a durable microprocessor based controller designed for the hostile environments in the HVAC/R industry. It is designed to be the primary manager of the package it is controlling.

The Magnum provides flexibility with set points and control options that can be selected prior to commissioning a system or when the unit is live and functioning. The TouchScreen and MCS-CONNECT provide a clear and simple language that informs the user as to the status of the controller.

15.4 Touchscreen

The **MCS-TOUCH-15.4** capacitive touchscreen interface designed to simplify user access with the MCS-Magnum and MicroMag utilizing MCS-Connect to provide both graphics and service mode access to technicians. Input method: Finger, glove, stylus.

Highly accurate and does not require calibration - easy to clean glass surface. Works outdoors, bright screen, water resistant, Exceptional Optics - 1280x800 resolution, sharp and vibrant images.

MCS-TOUCH-15.4 comes preloaded with the MCS-CONNECT program that allows you to view the 'unit's status', 'extended history', 'alerts', 'alarms', setpoints, and more, all in a user-friendly graphic format.



SYSTEM OVERVIEW SCREEN

- Freescale i.MX6 Dual Core 800mhz Motherboard
- ARM 9 32-bit RISC ARM processor
- 1Gb of 512mhz DDR3 RAM memory
- 4Gb of eMMC Flash memory
- 10m/100m/1G Ethernet
- 1 Micro-SD Slots
- 1 USB On-The-Go
- 2 USB Host 2.0
- Real Time Clock w/ Battery
- 3 RS485 communication ports

PEH-WSC Control Enclosure Upgrade

Graphics For Touchscreens

With the new Graphical Interface and MCS-CONNECT, you now have a better view of your controller's many functions as shown on the screens.

The basic graphics package is pre-installed and can be customized by OEMs with the MCS Graphic Builder or custom build by MCS for your controllers. See below some customized screens.

Standard screens include:

- System Overview Screen
- Compressor Overview Screen
- Evaporator/Condenser Overview Screen
- Documents

Additional screens can be added depending on the custom configuration of your system.

Documents, Spec Sheets, Drawings, etc.

Stored in the Touchscreen's flash memory you will find pdf's and documents pertaining to the building of your unit. Each unit's configuration is different, so the 'SITE DOCUMENTS' file will pertain to that unit only and stored at the site.

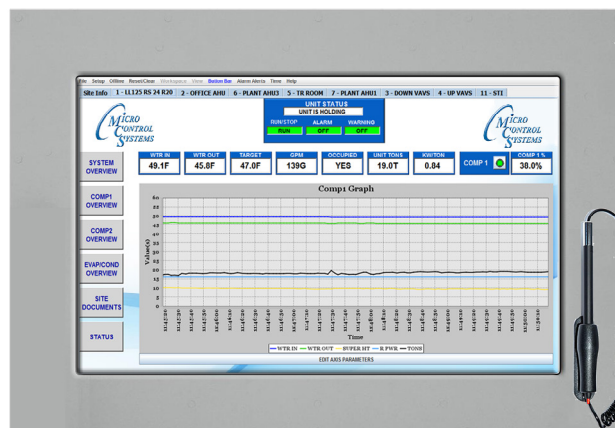
1. DRAWINGS (PDF'S) of the components used in this unit
2. MANUALS (if installed in your unit)
 - a. Getting Started Manual
 - b. Keypad Manual
 - c. Touchscreen Manual
 - d. MCS-CONNECT Manual
 - e. EXV Manual
 - f. BMS-GATEWAY Startup Guide



COMPRESSOR OVERVIEW SCREEN



EVAP/COND OVERVIEW SCREEN



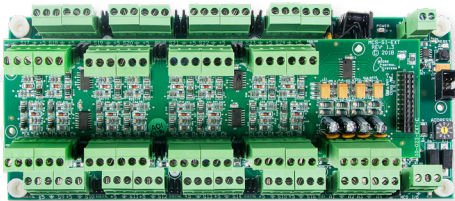
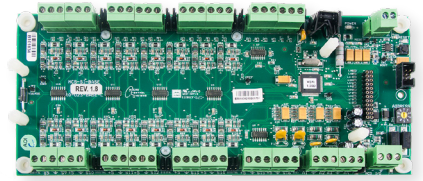
OPTIONAL 'GRAPHS OVERVIEW SCREEN IN REAL TIME'

PEH-WSC Control Enclosure Upgrade

MCS-SI-BASE

The **MCS-SI-BASE** provides a flexible and cost effective way to allow sensor input and analog output expansion for the **MCS MAGNUM**. Each MCS-SI-BASE has a stand-alone microprocessor which communicates with the MCS MAGNUM over the MCS-I/O port at 38,400 baud. All data is check summed with auto error correction. Because communication is over a RS-485 long distance two-wire differential network transmission system, the MCS-SI-BASE may be located up to 5,000 feet away.

Each MCS-SI-BASE board is powered by a 12VDC regulated power supply and has a automatic power fail reset system.



MCS-SI-EXT mounted to
MCS-SI-BASE

MCS-SI-EXT

The **MCS-SI-EXT** provides a flexible and cost effective way to allow sensor input and analog output expansion for the **MCS MAGNUM**.

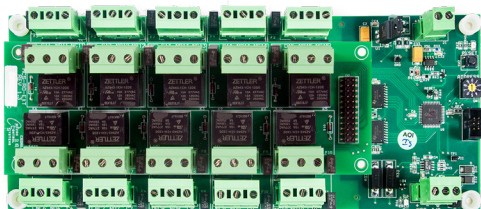
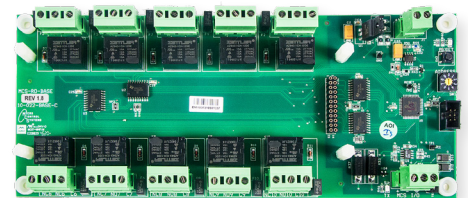
Each MCS-SI-EXT can be paired with a MCS-SI-BASE to double the number of inputs and outputs. Each

MCS-SI-EXT board is powered by the MCS-SI-BASE board once it is stacked on top.

MCS-RO-BASE

The **MCS-RO-BASE** provides a flexible and cost effective way to allow relay output expansion for the **MCS-MAGNUM**. Each MCS-RO-BASE has a stand-alone microprocessor which communicates with a Magnum/Micromag over the MCS-I/O port at 38,400 baud. All data is check summed with auto error correction. Because the communication is over a RS-485 long distance two-wire differential network transmission system, the MCS-RO-BASE may be located up to 5,000 feet away.

The MCS-RO-BASE board is powered by a 12VDC regulated power supply.



MCS-RO-EXT mounted to
MCS-RO-BASE

MCS-RO-EXT

The **MCS-RO-EXT** provides a flexible and cost effective way to allow relay output expansion for the **MCS MAGNUM**.

Each MCS-RO-EXT can be paired with a MCS-RO-BASE to double the number of outputs.

Each MCS-RO-EXT board is powered by the MCS-RO-BASE board once it is stacked on top.

PEH-WSC Control Enclosure Upgrade

MCS-T-100 Temp Sensor



An extremely fast acting temperature sensor built for demanding environments. It is ideal for high moisture locations with continuous freeze and thaw cycles. The sensor is potted with a thermally conductive RTV Cure Silicon Adhesive to guarantee durability and response. Its high accuracy allows for interchangeability in the field. The large resistance range allows the use of over 1000' of cable with no noticeable effect. The MCS-T100 sensor has the ability to move from 32°F to 212°F in approximately 10 to 15 seconds.

MCS-Wells/Tubes

The MCS-WELL was designed to be used with the MCS-T100 temperature sensor, although it has other applications. It is used in the PEH-WSC chillers in the chilled water and condenser water lines. It comes pre-filled with heat conductive compound to aid in temperature to the sensor.



The **MCS-TUBE** can be epoxied to a discharge or suction line on the PEH-WSC chillers in order to obtain temperature readings without the use of a well. It was designed to be used with the MCS-T100 temperature sensor and comes pre-filled with heat conductive compound to aid in transferring temperature to the sensor.

MCS-PHASE

The **MCS-PHASE** is a programmable 3-phase line voltage monitor with 25-fault memory, high temperature LCD display, easy setup and clear diagnostic readout of system faults. The MCS-PHASE was specifically designed to protect motors and other 3-phase loads from premature failure and damage due to common voltage faults such as unbalance, over/under voltage, phase loss, reversal, incorrect sequencing and rapid short cycling.



At power up, the MCS-PHASE evaluates the incoming power for proper phase sequence, amplitude and voltage unbalance. If the three phase input at the line side connections is within user-set parameters, the load energize LED is turned on and the internal relay is energized. Continuity will be across terminals 4 and 6. If connections are made to the load side terminals, the MCS-PHASE will transfer monitoring over to the load side only.

TRANSDUCERS



The **MCS Pressure Transducers** are one of the most economic and durable options on the market for dealing with high-pressure industrial applications.

In addition to being CE and UL approved, the transducers are capable of surviving high vibration. They include a cavity built out of solid 17-4 PH stainless steel 1/4" SAE Female Flare fitting & Schrader valve; 7/16-20 UNF pipe thread which creates a leak-proof, all metal sealed system that makes the transducers ideal for use with rugged HVAC environments. The MCS Pressure Transducers have a output voltage of 0.5 to 4.5vdc (ratio metric) and are also overvoltage protected in both positive and reverse polarity, which adds an extra layer of safeguard against short-circuiting caused by unpredictable power surges.

PEH-WSC Control Enclosure Upgrade

MCS-CT 750



MCS-CT750 current sensor monitors current flowing to electrical equipment. The magnitude of the current is converted to a linear (0-5vdc) output signal which can be read as a standard analog input signal.

The MCS-CT series are the solid-core version, where the conductor runs through the sensor. No cutting, taping or rerouting is required. The current sensors are accurate, reliable, easy to install and require no service.

MCS-USB-RS485

The **MCS-USB-RS485** is a USB to RS485 cable that provides a fast simple way to connect a **MCS-MAGNUM** or **MicromAG** to a Laptop or PC.

The MCS-USB-RS485 cable contains a small internal electronic circuit board, which converts USB to RS485 with LED indicators for transmit (TX=Red) and receive (RX=Green).

When the MCS-USB-RS485 cable is plugged into a laptop or PC, Windows will install a device driver that allows the cable to be used as a standard Window communication port.

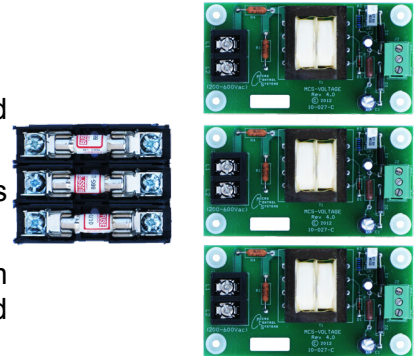


MCS-VOLTAGE-3PH

The **MCS-VOLTAGE-3PH** measures AC voltage between 200-600 AC. It is designed to monitor the voltage of each phase of the main input power to the unit.

The MCS-VOLTAGE-3PH sensor provides three separate DC voltage outputs that correspond to the AC voltage it is measuring.

This sensor allows the **MCS-Magnum** to safely protect the motors on the unit from under voltage, over voltage and voltage imbalance conditions. It also can be used to calculate unit KW (requires amp and power factor sensors).

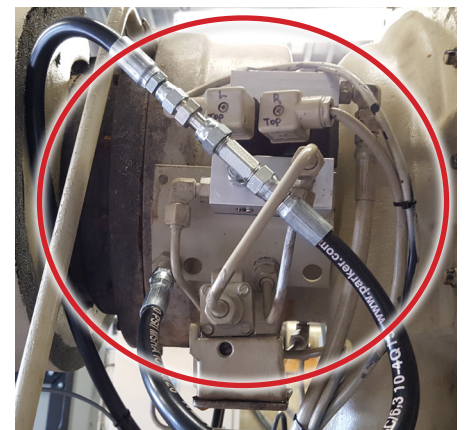
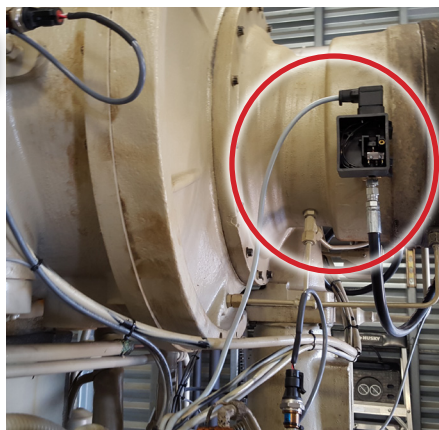


Optional VFD Control

VFD Retrofit Accessory

KIT #3000434509 IS REQUIRED.

When upgrading a MCS Control Panel to a variable frequency drive, a vane open (VO) differential pressure switch must be installed for proper operation as earlier models of chillers do not have a vane open port installed in the IGV.



PEH-WSC Typical Point List

Relay Outputs

#	Output Name	Type	Description
M-1	Comp M	Standard	Compressor Start Main
M-2	Comp D	Standard	Compressor Start Delta
M-3	VaneOpen	Standard	Vane Open: Relay output used to open the compressor guide vane
M-4	VaneClosed	Standard	Vane Closed: Relay output used to close the compressor guide vane
M-5	OilPump	Standard	Oil Pump: Turn ON or OFF
M-6	OilHeater	Standard	Oil Heater: Turn ON or OFF
M-7	Spare	X	Not Used - Reserved for Expansion
M-8	OilCooler	Standard	Oil Cooler: Turn ON or OFF
M-9	Spare	X	Not Used - Reserved for Expansion
M-10	Spare	X	Not Used - Reserved for Expansion

1-1	Spare	X	Not Used - Reserved for Expansion
1-2	Warning	Standard	Warning Light: Unit is in Safety Condition prior to Safety Shutdown.
1-3	Alarm	Standard	Alarm Light: Unit is in Safety Shutdown.
1-4	RunStatus	User Logic	Hardwired or BMS point to notify BMS that the unit is running
1-5	Spare	X	Not Used - Reserved for Expansion
1-6	Spare	X	Not Used - Reserved for Expansion
1-7	Spare	X	Not Used - Reserved for Expansion
1-8	ChwPump1	Standard	Chilled Water Pump #1: Turn ON or OFF
1-9	ChwPump2	Standard	Chilled Water Pump #2: Turn ON or OFF
1-10	CndPump	User Logic	Condenser Pump: Turn ON or OFF

2-1	Spare	X	Not Used - Reserved for Expansion
2-2	Spare	X	Not Used - Reserved for Expansion
2-3	MtrCooling	User Logic	Motor Cooling: Turn ON or OFF
2-4	Spare	X	Not Used - Reserved for Expansion
2-5	Spare	X	Not Used - Reserved for Expansion
2-6	Spare	X	Not Used - Reserved for Expansion
2-7	Spare	X	Not Used - Reserved for Expansion
2-8	Spare	X	Not Used - Reserved for Expansion

PEH-WSC Typical Point List

Relay Outputs (contined)

#	Output Name	Type	Description
2-9	Spare	X	Not Used - Reserved for Expansion
2-10	Spare	X	Not Used - Reserved for Expansion
3-1	Spare	X	Not Used - Reserved for Expansion
3-2	Spare	X	Not Used - Reserved for Expansion
3-3	HwBMS R/S	User Logic	Hardwired BMS Run/Stop
3-4	NtBMS R/S	User Logic	Virtual Network Point for BMS Run/Stop
3-5	Spare	X	Not Used - Reserved for Expansion
3-6	Spare	X	Not Used - Reserved for Expansion
3-7	Spare	X	Not Used - Reserved for Expansion
3-8	Spare	X	Not Used - Reserved for Expansion
3-9	d/aHWRst	User Logic	Disallow Hardwired Reset
3-10	d/aNetRst	User Logic	Disallow Network Reset

Sensor Inputs

#	Input Name	Type	Description
M-1	ChilWtrIN	MCST100	Chill Water In Temperature
M-2	ChilWtrOut	MCST100	Chill Water Out Temperature
M-3	Suct Psi	MCS-200	Suction Pressure
M-4	Disc Psi	MCS-500	Discharge Pressure Transducer
M-5	Hi Oil Psi	MCS-500	Hi Oil Pressure
M-6	Lo Oil Psi	MCS-200	Lo Oil Pressure
M-7	Suct Tmp	MCST100	Suction Temperature
M-8	Disc Tmp	MCST100	Discharge Temperature
M-9	OilFeedTmp	MCST100	Oil Supply Temperature
M-10	Spare	X	Not Used - Reserved for Expansion
M-11	OilSumpTmp	MCST100	Oil Sump Temperature
M-12	Spare	X	Not Used - Reserved for Expansion
M-13	VaneClosed	Digital	Vane Closed: Relay Output used to close the compressor guide vane
M-14	PhaseLoss	Digital	Phase Loss: Phase Imbalance

PEH-WSC Typical Point List

Sensor Inputs (continued)

#	Input Name	Type	Description
M-15	Run/Stop	Digital	Run/Stop Hand Switch
M-16	Emg/Stop	Digital	Emergency Stop Switch

1-1	CndRefTmp	MCST100	Condenser Refrigerant Temperature
1-2	EvapRefTmp	MCST100	Evaporator Refrigerant Temperature
1-3	CmpAmps A	CT-750	Reads Amp Draw on Leg 1
1-4	CmpAmps B	CT-750	Reads Amp Draw on Leg 2
1-5	CmpAmps C	CT-750	Reads Amp Draw on Leg 3
1-6	Volts A	600VAC4	Volts phase A
1-7	Volts B	600VAC4	Volts phase B
1-8	Volts C	600VAC4	Volts phase C
1-9	Hi PSI SW	Digital	Mechanical Hi Pressure Safety
1-10	MtrTmp	Digital	Motor Temperature
1-11	Spare	X	Not Used - Reserved for Expansion
1-12	Spare	X	Not Used - Reserved for Expansion
1-13	Spare	X	Not Used - Reserved for Expansion
1-14	Spare	X	Not Used - Reserved for Expansion
1-15	Trans OK	Digital	Transition Starter
1-16	Spare	X	Not Used - Reserved for Expansion

2-1	Spare	X	Not Used - Reserved for Expansion
2-2	Spare	X	Not Used - Reserved for Expansion
2-3	Spare	X	Not Used - Reserved for Expansion
2-4	Spare	X	Not Used - Reserved for Expansion
2-5	Spare	X	Not Used - Reserved for Expansion
2-6	Spare	X	Not Used - Reserved for Expansion
2-7	ChwFlow	Digital	Proof for Chilled Water Flow
2-8	CndFlow	Digital	Verifies Condenser Water Pump is running
2-9	OilDiffSW	Digital	Oil Pressure Differential
2-10	CndWtrIn	MCST100	Condenser Water Incoming Temperature
2-11	CndWtrOut	MCST100	Condenser Water Outgoing Temperature

PEH-WSC Typical Point List

Sensor Inputs (continued)

#	Input Name	Type	Description
2-12	Spare	X	Not Used - Reserved for Expansion
2-13	HwBmsDmd	DEMAND%	Hardwired Point for Demand %
2-14	HwBmsChwr	TRGTRST	Hardwired BMS Chilled Water Reset: Reset Target Temperature
2-15	SurgeGuard	Digital	Surge Protection Module
2-16	Spare	X	Not Used - Reserved for Expansion
3-1	Spare	X	Not Used - Reserved for Expansion
3-2	Spare	X	Not Used - Reserved for Expansion
3-3	Spare	X	Not Used - Reserved for Expansion
3-4	Spare	X	Not Used - Reserved for Expansion
3-5	Spare	X	Not Used - Reserved for Expansion
3-6	Spare	X	Not Used - Reserved for Expansion
3-7	Spare	X	Not Used - Reserved for Expansion
3-8	Spare	X	Not Used - Reserved for Expansion
3-9	Spare	X	Not Used - Reserved for Expansion
3-10	Spare	X	Not Used - Reserved for Expansion
3-11	Spare	X	Not Used - Reserved for Expansion
3-12	UnitIn/LO	User Logic	Tests for Unit in Lock Out
3-13	CtlRun/Stop	User Logic	Control Run/Stop
3-14	Spare	X	Not Used - Reserved for Expansion
3-15	Spare	X	Not Used - Reserved for Expansion
3-16	Spare	X	Not Used - Reserved for Expansion
4-1	Spare	X	Not Used - Reserved for Expansion
4-2	Spare	X	Not Used - Reserved for Expansion
4-3	ChwGPM	User Logic	Chilled Water Gallons per Minute. Fixed value or true hardwired input.
4-4	Spare	X	Not Used - Reserved for Expansion
4-5	NetBmsRun	BMS_SI	Virtual Network Point for Run/Stop
4-6	NetBmsDmd	BMS_SI	Virtual Network Point for Demand %
4-7	NetBmsChwr	BMS_SI	Virtual Network Point for Chilled Water Reset: Reset Target Temp
4-8	Fla%	User Logic	Full Load Amp % Calculation

PEH-WSC Typical Point List

Sensor Inputs (continued)

#	Input Name	Type	Description
4-9	Lift	User Logic	Lift Calculation
4-10	ChwAppr	User Logic	Chilled Water Approach: Difference between refrigerant temperature/leaving water temperature
4-11	ChwDiffTmp	User Logic	Chilled Water Temperature Differential: Difference between entering/leaving temperature
4-12	CdwAppr	User Logic	Condenser Water Approach: Difference between refrigerant temperature/leaving water temperature
4-13	CdwDiffTmp	User Logic	Condenser Water Temperature Differential: Difference between entering/leaving temperature
4-14	Spare	X	Not Used - Reserved for Expansion
4-15	Subcooling	User Logic	Subcooling Calculation
4-16	SuctSprHt	User Logic	Suction Super Heat Calculation

5-1	Spare	X	Not Used - Reserved for Expansion
5-2	Spare	X	Not Used - Reserved for Expansion
5-3	Spare	X	Not Used - Reserved for Expansion
5-4	Unit Tons	TONS	Measures Unit Tons
5-5	Unit KW	KW	Measures Unit KW
5-6	Kw/Tons	User Logic	KW / Ton Calculation
5-7	PwrFactor	User Logic	Power Factor Calculation
5-8	Spare	X	Not Used - Reserved for Expansion
5-9	Spare	X	Not Used - Reserved for Expansion
5-10	Spare	X	Not Used - Reserved for Expansion
5-11	Spare	X	Not Used - Reserved for Expansion
5-12	Ctl Flow	User Logic	Control Flow - Tests both Condenser and Chilled Water Flow
5-13	Spare	X	Not Used - Reserved for Expansion
5-14	Spare	X	Not Used - Reserved for Expansion
5-15	Spare	X	Not Used - Reserved for Expansion
5-16	Spare	X	Not Used - Reserved for Expansion

6-1	Spare	X	Not Used - Reserved for Expansion
6-2	Spare	X	Not Used - Reserved for Expansion

PEH-WSC Typical Point List

Sensor Inputs (continued)

6-3	Spare	X	Not Used - Reserved for Expansion
6-4	Spare	X	Not Used - Reserved for Expansion
6-5	Spare	X	Not Used - Reserved for Expansion
6-6	HwBmsDMD	User Logic	Hardwired Point for Demand %
6-7	HwBmsRset	User Logic	Hardwired Point for Target Reset
6-8	NtBmsDMD	User Logic	Virtual Network Point for Demand %
6-9	NtBmsRset	User Logic	Virtual Network Point for Target Reset
6-10	BMS R/S	User Logic	Virtual Network Point for Run/Stop
6-11	BMS DMD	User Logic	Virtual Network Point for Demand %
6-12	BMS Reset	User Logic	Virtual Network Point for Target Reset
6-13	d/aHwRst	User Logic	Disallow Hardwired Reset
6-14	d/aNetRst	User Logic	Disallow Network Reset
6-15	Spare	X	Not Used - Reserved for Expansion
6-16	Allow Unit	User Logic	Run/stop indicator for graphic display

PEH-WSC Information

Please visit our website for a fillable form that you can email to: sales@mcscontrols.com

Company: _____ Phone: _____

Name: _____ Title: _____ Email: _____

Mobile: _____ Site: _____

Model Number	Serial Number	Refrigerant Used	Full Load Amps of Compressor

1. **Model of existing Panel:**
2. **What is the Starter Type?** **Are we monitoring the Transition OK or Starter Fault?**
 - a. Does the Compressor have a remote starter? Yes No
3. **Is there a Variable Frequency Drive?:** What is the VFD Make and Model? Make: _____ Model: _____
 - a. Will the VFD be hardwired to MCS controls, over MODBUS or both?
 - b. If you are using a VFD other than a Yaskawa VFD, do you need MCS to control the VFD Enclosure Temperature and Fans? Yes No
4. **What protocol will be used for Building Management communication?**
5. **For the Vane Actuator, is there a Digital Switch or a Potentiometer?**
6. **Will Phase loss need to be monitored?** Yes No **How would you like the pressures to be displayed?**
7. **What kind of Hot Gas Bypass is present?**
8. **Is MCS controlling the Chilled Water Pump(s)?** Yes No **How will they be wired?**
9. **How will the Condenser Water Pump be wired?**
10. **Is MCS controlling Condenser/Evaporator Isolation Valve?** Yes No BMS
11. **Are there Tower Fan(s)** Yes No **Is MCS controlling these fan(s)? How many are there, how are they wired?**
12. **What Main Voltage is being supplied to the unit?** Voltage: _____ Is MCS monitoring Main Voltage? Yes No
13. **What is the Control Voltage being supplied?** Voltage: _____
14. **What is the 'RUN LOAD AMPS' (FLA)** **COMP 1:** _____ **COMP 2:** _____
15. **Will the Chilled/Condenser Water Flow be measured by Flow or Differential?**
16. **Will Ambient Temperature need to be monitored?** Yes No
17. **Is there a Motor Cooler?** Yes No
18. **Will MCS be controlling the Liquid Injection?** Yes No
19. **Is there an Oil Differential Switch?** Yes No
20. **If there is a Surge Guard, will MCS be monitoring it?** Yes No
21. **Does your unit have Electronic Expansion Valve(s)?** Yes No If yes, how many? _____ What model?
22. **Does your unit have a Compressor Temperature Heater?** Yes No If yes, will MCS control the heater? Yes No
23. **COMMENTS (is there any other information we should know?):**



5580 Enterprise Pkwy., Fort Myers, FL 33905

Office: 239-694-0089 • Fax: 239-694-0031

www.mcscontrols.com