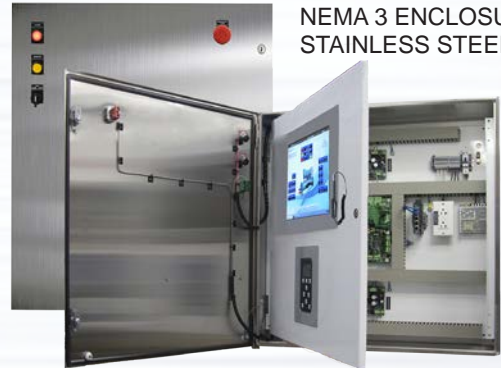


# Upgrades for Control Enclosures and Screw Compressors



NEMA 4 ENCLOSURES



NEMA 3 ENCLOSURE  
STAINLESS STEEL



MCS-MAGNUM-8-DOOR  
UPGRADE



MCS-15.4 ENCLOSURE



CENTRIFUGAL SCREW  
COMPRESSOR



RC2 SCREW  
COMPRESSOR



RG SCREW  
COMPRESSOR



# Working with MCS to upgrade HVAC/R equipment

## Reason for upgrading

- *Failing in the economizers*
- *Continuous shut down trips*
- *Existing controls are obsolete*
- *Excessive man hours spent on sight visits*

## Steps to take:

- *Remove old Compressor & Install Hanbell Compressor(s)*
- *Install MCS standard EXV's VALVES and MCS-EXV-DRIVER*
- *Remove old controls and install MCS-Magnum Controls*

A poorly controlled HVAC system can have substantial impacts on the costs of facility operation and the Environment.

By design, these control systems are self-adjusting to maintain comfort so the first warning of a serious problem occurs when continuous shut downs trip the unit.

There are at least 3 stages of decline:

1. The cost of operation is higher than it could be with optimal control and well maintained equipment. Efficiency losses can exceed 25 percent. Most facilities are in this category.
2. If things get worse, more equipment is needed to maintain the environment of care and redundant equipment may be turned ON to compensate for system inadequacies. At this point, the facility no longer has adequate redundancy in the event of equipment failure.
3. The HVAC system is unable to adequately heat, cool and/or ventilate sections of the facility. There may be enough equipment capacity but poor control/maintenance compromises the environment of care.

**Improvements to HVAC systems can save 40 to 60 percent in energy costs.**

HVAC systems typically consumes 30 to 35 percent of the total electrical energy and over 50 percent of the heating energy. Equipment improvements in the form of variable speed drives, new chillers, cooling towers, boilers, piping, pumping and ventilation modifications coupled with optimal control can save 40 to 60 percent.

Facility electric bills can be reduced by 20 percent and heating bills can be reduced by 30 percent.

Bundling low/no cost improvements with capital improvements may reduce the package payback to 4± years versus over 10 years in some cases when bundling is not used.

**NEW COMPRESSORS WITH  
3 YEARS WARRANTY with MCS CONTROLS  
AT NO ADDITIONAL COST!**

**NON-PROPRIETARY SOFTWARE  
FOR EASY FUTURE CHANGES**



# MCS-MAGNUM and MICROMAG CONTROLLERS

## MCS MAGNUM CONTROLLER



- ◆ Controls up to 20 Compressors (all types)
- ◆ BACnet IP, Modbus IP and Modbus RTU standard
- ◆ Chillers, Roof Top Units, Loop Control & Plant Manager
- ◆ 1008 History Samples of all Data
- ◆ 100 Alarms w/120 seconds Graphing of Details
- ◆ Ethernet Port (Internet Ready)
- ◆ Expandable to 80 Relays, 112 Sensors  
28 Analog Output Points

## MICROMAG CONTROLLER

- ◆ Controls up to 6 Compressors (Fix Step only)
- ◆ BACnet MSTP & Modbus RTU Standard
- ◆ Packaged Units or Chillers
- ◆ 300 History Samples of all Data
- ◆ MCS Communicating Thermostat - Zone Installed
- ◆ 1 Digital Scroll, 26 Relays, 42 Sensors,  
12 Analog Output Points
- ◆ Two RS-485 communicating ports



## MCS-Magnum-Touch 15.4. 10.1 & 7

- ◆ *Support for Chiller, Condensing Unit, Packaged Roof Top Units*
- ◆ Support for up to 20 compressors
- ◆ Support for Screw, Scroll, Reciprocating, Centrifugal w/Variable Frequency Drive
- ◆ Custom Graphics using MCS-Graphic-Builder (version 3.07)
- ◆ Nema4 Outdoor rated max ambient 70C(158F)
- ◆ Service Tools –status windows, Last 100 alarms with 120 second of run data for comp safeties
- ◆ Alarm alert history/emails/SMS,
- ◆ Extend history/graph data storage
- ◆ Unit/site Documentation PDF files (manuals, drawings, etc.)



# MCS MAGNUM ENCLOSURES

## MCS-MAGNUM-MLB-15.4 ENCLOSURE SHOWN

NEMA 4 enclosures are available.  
A NEMA4 Box Enclosure is suitable for outdoor installation or for areas that are subject to water wash-down or extreme harsh environments.  
The MCS-TOUCH-15.4 temperature range is  
-20oC to 70oC / -40F to 158oF.



The MCS-MAGNUM-MLB-15.4 consists of a **MCS-MAGNUM**, **MCS-S116-A04** expansion board, and a Touchscreen 15.4" display. The **MCS-TOUCH-15.4** is a new touchscreen interface designed to simplify user access with the MCS-MAGNUM utilizing **MCS-CONNECT** to provide both graphics and service mode access to technicians. Information and graphics on the MCS- TOUCH-15.4 are shown on a 15.4" high resolution (1280x800) LCD display with LED backlighting, which will guarantee long-life operation.

Optionals warning lights and switches can be added to the standard enclosure. Additional options are available.

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



## MCS-MAGNUM-MLB

The MCS-MAGNUM-MLB comes standard equipped with a Magnum micro controller board, a MCS-SI116-AO4, Keypad/LCD, 20 amp circuit breaker and a electrical outlet for plug-in power at the box.

Options lights and switches can be added as shown.

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

## MCS-MAGNUM-NEMA4-15.4

The MCS-MAGNUM-NEMA-15.4 consists of a MCS-MAGNUM along with a touchscreen 15.4" display, 20 amp circuit breaker and an electrical outlet for plug-in power at the box.

The **MCS-TOUCH-15.4** is a new touchscreen interface designed to simplify user access with the MCS-MAGNUM utilizing **MCS-CONNECT** to provide both graphics and service mode access to technicians. Information and graphics on the TOUCH-15.4 are shown on a 15.4" high resolution (1280x800) LCD display with LED back lighting, which will guarantee long-life operation.



**CUSTOM ENCLOSURES ARE AVAILABLE - CALL OR EMAIL MCS SALES FOR ADDITIONAL INFORMATION**

*For Refrigeration Applications, Neoprene sealed*



The cable is available in either 20', 40 or 60' lengths with a removable Packard connector to provide easy serviceability.

## The right sensors helps create more stable HVAC systems

The **MCS-150AC**, **MCS-200C**, **MCS-500C** and the **MCS-667C** are designed for use in refrigerant chiller system. MCS carried an extensive line of pressure transducers, including the **MCS-150AC** absolute pressure transducer which uses absolute zero as a definitive reference point, absolute pressure remains precise and accurate regardless of changes in ambient or process temperature.

When specifying sensors, consider quality, accuracy, consistency, ease of installation and replacement, and interoperability. High performing sensors help reduce the design costs, development and testing cycle time.

## Heavy duty pressure transducers

Higher pressure applications within HVAC systems – rooftop cooling towers, boilers, pumps and chillers – require pressure transducers that are durable, CE compliant, designed for IP66K sealing protection, and able to withstand wide temperature ranges and contact with harsh media (e.g., refrigerants, driving rains, hydraulic fluids and compressed air up to 1000 psi). With stainless steel housing and ports, these transducers can minimize moisture infiltration and shorts at the sensor location, and in turn, downtime and replacement costs.

## Heavy duty pressure transducers provide two measurements:

1. The amount of pressurized air being delivered to the application
2. The presence of air pressure leaks

These measurements come from continuously monitoring the pressure of the compressor outlet, chiller outlet, evaporator coil outlet and the cooling tower supply, ultimately providing data to regulate the flow of heating/cooling media during partial load conditions.

**MCS PRESSURE TRANSDUCERS PROVIDE  
THE SECURITY AND ASSURANCE  
THAT YOUR HVAC SYSTEM NEEDS**

# MCS-EXV-DRIVER and EXPANSION VALVES



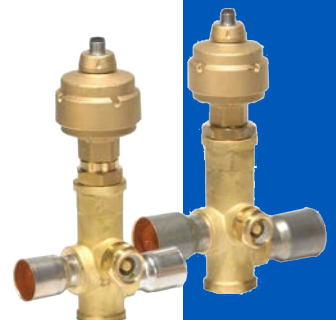
MCS-SEHI - 175, 400  
MCS-SERI - G, J, K, ,L  
MCS-SER - D



MCS-EXV-DRIVER SUPPORT FOR:  
ALCO, CAREL, DANFOSS,  
& SPORLAN



*Used for the positioning  
of  
Stepper Expansion Valves*



# SCREW COMPRESSORS

## RT Centrifugal Compressor Features 11 MODELS RANGING 550 to 1400 TONS

- High efficiency motor and dedicated to refrigerant R134a
- COP - the highest-efficiency centrifugal compressor for HFC-134a in the market.
- Built-in oil pump for better lubrication of bearings and gears.
- Fewer rubbing parts, energy efficient and with higher refrigerant flow than a similarly sized reciprocating compressor.
- Lower discharge temperature and higher COP due to application with economizer and sub-cooler.



RT Centrifugal Compressor

VFD OPTION  
AVAILABLE

## RC2 Screw Compressor Features 26 MODELS RANGING 15 to 500 TONS

- Quiet Operation
- High and Low Temp Application
- Multiple Refrigerant Application
- VFD Compatible
- Serviceable Oil Filter



RC2 Screw Compressor

VFD OPTION  
AVAILABLE

## RG Screw Compressor Features 5 MODELS RANGING 65 TONS to 380 TONS



- Flange-on (with bracket) or aligned (without bracket) motor mounting
  - Balanced mechanical seal
  - Liquid injection to chamber for additional cooling
  - Discharge temperature sensor as protection
  - Dual capacity control
  - Durable bearing structure for radial and axial resistance

 **HANBELL**



**Providing HVAC/R  
Solutions Worldwide**

## ***The MCS Commitment***

*The founders of Micro Control Systems Inc. have been in the manufacture of Microprocessor Controls their entire careers and have over eight decades of combined HVAC/R Microprocessor Controls experience. MCS was founded to meet the needs of the Utility and HVAC/R Industries with products based on the following design criteria:*

- ◆ **Quality & Service**
- ◆ **Cost Effectiveness**
- ◆ **Ease of Use**

*Our commitment is to provide practical solutions for the industries needs and to be both a leader and partner in the effective use of Microprocessor Controls.*

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