

# Micro Control Systems

APPLICATION NOTE

APP-010

## Connecting the MCS-8 to a Building Management System

### Revision History

Date	Author	Description
07/21/98	John G. Walterick	Options for connecting to a building management system
10/16/98	Brian Walterick	Modified Portal section

This Application Note outlines the options for connecting the MCS-8 microprocessor system to a building management system.

## Theory

The MCS-8 system provides the user with two options in communicating with a building management system as follows:

A. Communications

Within the communications structure there are three options as follows:

1. RS-232 (J6) – A standard 9-pin female connector, located on the lower right side of the MCS-8 printed circuit board. This is usually used to connect to a PC communicating at 19,200 baud via a windows based software package, 'PCconnection'. It is also used to connect to an MCS-MODEM communicating remotely over the telephone network at 14,400 baud with auto compression and auto recovery. The RS-232 is a short distance communications system. (Usually less than 50 feet.)

As an option, it may be connected to an MCS-GATEWAY printed circuit board, which converts the port to and RS-485 for long distance transmission. This allows for connections of up to 6,000 feet. The port may then be re-converted back to and RS-232 via an MCS-GATEWAY.

2. MCS-I/O (J8) – A three-position terminal block located just to the left of the RS-485 terminal block at the lower right side of the MCS-8. This connection is used exclusively for communications to other MCS devices, such as: MCS-I/O, MCS-STAT, MCS-RO8, MCS-SI8, MCS-SI16, etc. Communications is at 38,400 baud with error checking. Since this is an RS-485 port, communications may be up to 6,000 feet with a two wire shielded cable.
3. RS-485 (J7) - A three-position terminal block located in the lower right side of the MCS-8. This communications port was designed to communicate with a building management system. Since this is an RS-485 port, communications may be up to 6,000 feet with a two wire shielded cable. MCS has an open protocol. Upon request MCS will provide the user with a manual detailing the MCS communications messages to allow an interface to be developed for any building management system.

As part of this capability BacNet, MODBUS and Johnson Controls N2 communications capability will be available through a Portal 1st quarter 1999.

B. Hard Wire

Within the hard wire structure there are six options as follows:

1. RUN / STOP – (BMS to MCS) A RUN / STOP sensor input is provided, by chiller package, to allow the end user to provide an allow disallow signal from a building management system. This input allows for a normal shutdown of the chiller package. (Closing of the Liquid Line Solenoid valve and a normal pump down.)
2. EMER. STOP – (BMS to MCS) The EMER. STOP input is a sensor input that allows for immediate shut down. This feature is used for safety, especially in explosion proof installations. The chiller bypasses the normal shutdown and shuts down immediately.
3. CHILLED WATER RESET – (BMS to MCS) Setpoint #60 is 'MAX TRG RESET' and is a function of a signal from the building management system. This value is used to adjust the control LEV LIQ TARG set point #1. The amount of the actual adjustment is proportionally based upon the associated analog input value. The analog value can be between 0 and 5 volts. A reading of 2.5 volts will result in a zero adjustment. A reading of less than 2.5 will result in a negative adjustment and greater than 2.5 will result in a positive adjustment.
4. DEMAND LIMITING – (BMS to MCS) Setpoint #82 is 'CHILL kW' and can be set via the keypad, through PC-Connection (MCS's Windows based communications system) or via communications from a BMS. This is the maximum KW draw that the micro will allow at any given instance. If the current KW draw exceeds this value the chiller's capacity will be reduced and not allowed to increase until the KW draw falls below this set point.
5. COMPRESSOR RUN – (MCS to BMS) This is a relay output closure from the MCS-8 to the BMS indicating the compressor is running.
6. ALARM – (MCS to BMS) This is a relay output closure from the MCS-8 to the BMS indicating a problem. Communications to analysis the problem may be direct at the keypad, communications through PConnection or direct from the BMS.