



# YORK<sup>®</sup>

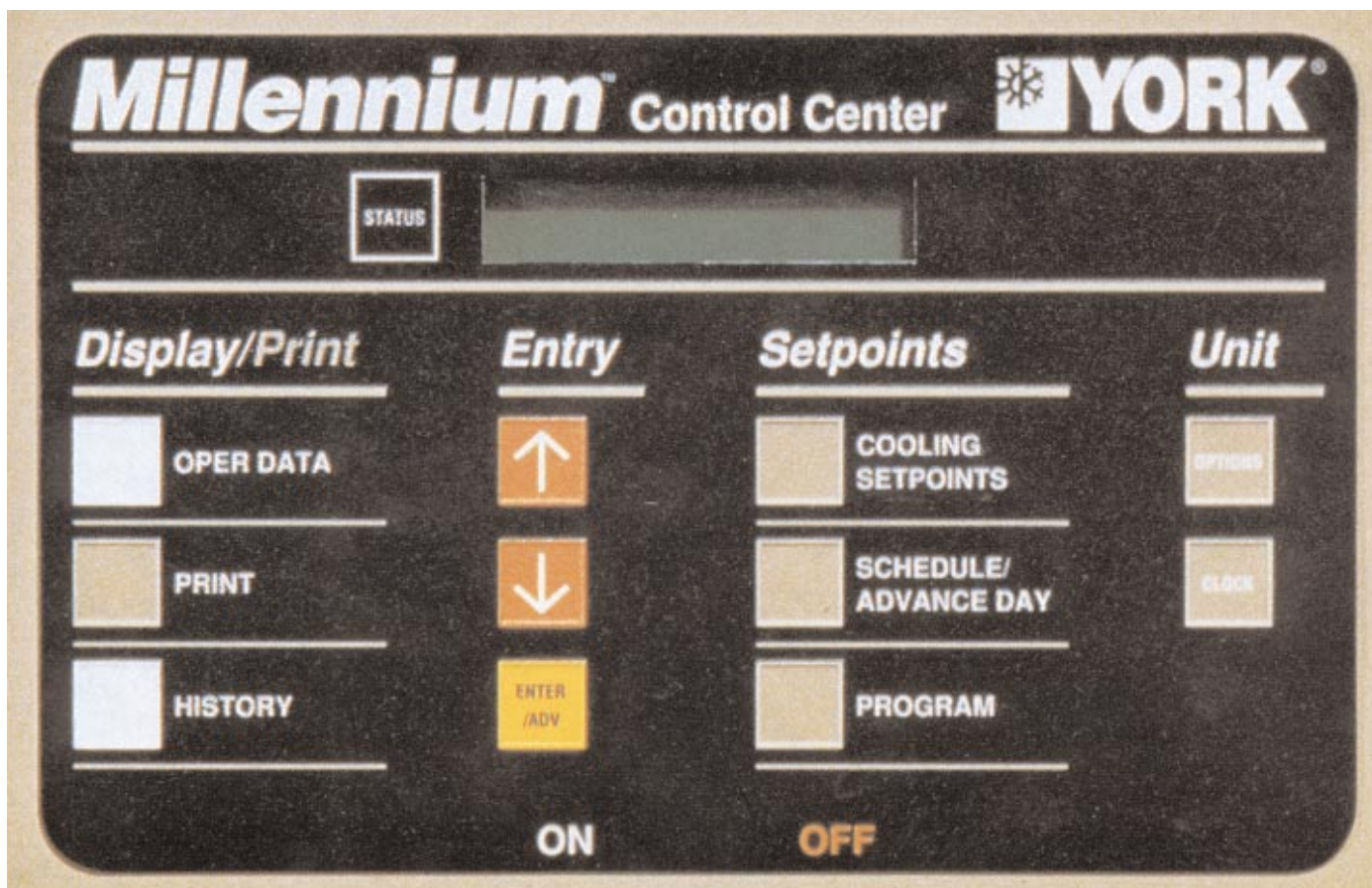
## *Multiple Unit Sequencer*

### **Advanced System Control**

YORK<sup>®</sup> brings you an advanced Multiple Unit Sequencer option for up to 8 chillers at a very cost attractive level. The units can even be of unequal capacities and different designs (air cooled recip, scroll or screw or water-cooled recip, centrifugal or screw or combinations of these). The Multiple Unit Sequencer will orchestrate the sequencing of the units to control to the desired leaving mixed temperature (water or brine) in the common leaving liquid manifold piping. The operator

can choose whether he wants to manually define the unit starting sequence or if he wants to let the Multiple Unit Sequencer do it automatically based on the actual run hours of the units. The Multiple Unit Sequencer can be used to do the daily scheduling (including holidays) and the starting of the chilled liquid pump. From one location, the operator can track the leaving mixed water temperature and view the various unit's operating status along with their run hours. This is advanced system control which gives Consulting Engineers and Building Operators the flexibility they desire at a very affordable level.

*The screen below shows the common leaving liquid temperature, or the number of operating chillers, plus more.*



# Advanced System Control

## Applicable Models

The Multiple Unit Sequencer (MUS) can be used with these York Chillers 50 and 60 HZ.

- YCAL 10-80 ton
- YCAZ 50-90 ton
- YCAJ 110-230 ton
- YEAJ 240-350 ton
- YDAJ 370-450 ton
- YCW 50-250 ton
- YCR 50-225 ton
- YCAS100-440 ton

## Size/Installation

- Size: 17"W X 17"H X 5"D; Approximate 20 Lbs.
- Enclosure: NEMA 1 painted steel case (Desert Tan) with durable vinyl keypad for indoor use only
- Mount: Bolted wall-mount
- Power Requirement: 120-1-50/60
- Control Wiring: two 28V or 120V (depending on the chiller input) from MUS panel to each chiller
- Mixed Water Temperature Sensor (MWTS) from the MUS panel to a well in the common leaving liquid manifold piping. The MWTS is by York and the interconnecting wiring is by others. It should be of the 2-conductor (20 AWG 300V) with foil shield and drain wire type

(i.e. Alpha 5462 or Belden 9320 or Quabbin 0165)

## Functions

The MUS panel is a microprocessor-based system designed to control multiple units, which are piped in parallel on the chilled liquid side. They're four basic components: microprocessor; transformer; display; and keypad. The MUS may be applied with up to 8 units. The units may be of unequal capacities. The units may be of different types (i.e. air cooled recip or screw; water cooled recip, screw or centrifugal; indoor or outdoor or combinations there-of). A master ON/OFF switch is included to activate or de-activate the entire system. The MUS performs the following basic functions:

- Chiller sequencing
- Mixed liquid temperature control
- Displays status
- Daily scheduling of the units and chilled liquid pump

## Display/Keypad

- Type: 40 total characters; 2 lines with 20 characters per line
- Liquid Crystal Display (LCD) type
- Lighted background for night or sunlight viewing

- Displays operating and programmed information
- Keypad allows changing and retrieval of system parameters via the following means/buttons:
  - Status
  - LCD
  - OPER DATA
  - PRINT
  - HISTORY
  - UP ARROW KEY
  - DOWN ARROW KEY
  - ENTER/ADV
  - COOLING SETPOINTS
  - SCHEDULE/ADVANCE DAY
  - PROGRAM
  - OPTIONS
  - CLOCK

## Battery Back-up

The microprocessor board includes a Y2K compliant Real Time Clock integrated circuit chip with integral battery back up. This assures that any programmed values (i.e. setpoints, clock, cutout, etc.) are not lost during a power failure regardless of the time involved.

## Transformer

A 40 VA, 120/24 VAC 50/60 HZ transformer, UL listed as class 2 is included. This assures a sufficient power supply for the micro board to power the display, sensors and transducers.

## MUS Inputs/Outputs

The MUS interfaces with the system via analog and digital signals. These include the mixed leaving liquid temperature sensor, flow switch, remote start/stop (if used), liquid pump output, and up to 8 chiller run signals.

## General Overview

The MUS can be initiated when all run permissives are satisfied (flow switch, time clock, or remote start/stop) and no faults exist. The Daily Schedule or remote start/stop initiates the first phase of the sequence. The evaporator pump contacts are energized to start the flow. The MUS will compare the MWT to the programmed setpoint and will start chillers in order to satisfy the desired, programmed setpoint. On board anti-recycle and load timers prevent rapid staging.

## Displays

The following operating and fault shutdowns will be shown on the LCD.

- Leaving liquid temperature
- Return liquid temperature (if desired)

- Run hours (for each chiller)
- Load and unload timer seconds remaining
- Cooling demand listing the number of operating chillers
- Chiller starting sequence (denoting which one is in the lead)
- Pump status
- Day, date and time
- Daily and holiday start/stop times
- Setpoint/Range
- Chilled water or glycol mode
- Imperial or SI units of measure
- Automatic or manual Lead/Lag sequence control
- Manual override
- Unit switch off
- Daily shutdown
- No run permissive (flow switch or remote stop)
- No cooling load
- Chiller run enabled
- 115VAC under voltage unit fault
- Low battery warning

## Print-out Capability

The micro includes an RS 232 outlet port. This can allow for a hardcopy printout the operating data from a Weigh-Tronix IMP-24, compact 3-pin dot matrix printer.

