MRC 7700



The MRC 7700 recorder, controller, and profiler– automatically calculates relative humidity.

No more look-up tables and calculators

Let the MRC 7700 do the math for you!

With the MRC 7700's automatic calculation feature the need to use charts, graphs, and arithmetic to manually figure relative humidity is eliminated. Moreover, it compensates for barometric pressure changes and differences in temperature.

The MRC 7700 records, controls, and profiles relative humidity and/or temperature using dry bulb/wet bulb temperatures, from a variety of inputs, on a circular chart. The calculation of R/H and compensation for barometric pressure changes and temperature differences using a special algorithm increases accuracy and saves time. Using the wet-bulb/dry-bulb sensing rather than a humidity sensor, the recorder operates efficiently and accurately even in elevated ambient temperatures and dirty environments that normally harm humidity sensors.

The MRC 7700 also offers many valuable features: auto transfer, position proportioning output, remote setpoint, remote run/hold, auto/manual operation, setpoint lockout, output limiting, ten-inch circular chart, displays for each process value, no DIP switches, full parameter programming with large tactile keys, up to six-events, relay outputs or SSR drivers, two alarms per channel (process/deviation/deviation band reverse or direct), eight profiles with six ramp/soak segments each, and process value retransmission. In addition, it has a security enable mode system feature which protects all parameters and data from unauthorized changes. Each version may be specified with an RS-485 communications option for easy access to process variables via your computer.

MRC 7700 Specifications

INPUT

Thermocouple: J, K, T, E, N, R, S, B and C
RTD: 100Ω (0.00385Ω/Ω/°C),
Current/Voltage: 4 to 20mA DC/0 to 20mA DC (with resistor), 0 to 5V DC and 1 to 5V DC
Remote Run/Hold: Dry contact closure

OUTPUTS

Relay: SPST, SPDT. 5A @115V AC, 2.5A @230V AC
SSR Driver: Open collector 4V DC @20mA, 3V DC @40mA
Short circuit protected @100mA max.
Current: 4 to 20mA DC into 650Ω max.

ALARMS

Process, Deviation, Deviation Band, with Alarm Hysteresis

PERFORMANCE

Measurement Error Limit:
T/C type J, K, T, E, N, C, and RTD
± 0.25% of reading plus 1° @ 25 °C
T/C type R, S, B ± 0.25% of span @ 25 °C
mA and V DC ± 0.25% of scaled span plus one whole digit @ 25 °C
Ambient Temperature Error: 0.01 % of span per °C deviation from 25 °C
Scan Rate: 1 scan/second
Display Decimal Positions: 1, 2, or 3 decimal places (0.1° or 1° for T/C RTD)
Noise Rejection:
Normal mode, 85dB min. at 60Hz or greater.
Common mode, 90dB min. 115V AC max.
Line Voltage: 115/230V AC ± 10% 50/60 Hz
Power Consumption: 25VA max.
Operating Temperature: 32° to 131 °F, 0° to 55 °C (ambient)
Storage Temperature: -40° to 149 °F, -40° to 65 °C
Humidity: 0 to 90% RH, non-condensing
Dimensions: 13.19" H x 15.13" W x 3.63" D
Weight: 20 pounds max.
Sensor Fault Detection: Displays "SnSr" for sensor or transmitter break. Outputs go off. PV Out to 100%, Events status remains same. Fault detection is not functional for 0-5V or 0-20 mA inputs.
Agency Approvals: CE, UL and CSA Listed
Transmitter Power Supply: Provides up to 40mA of current at 24V DC
Relative Humidity: Based on 100Ω RTD (.00385Ω/Ω/°C) input, the Relative Humidity Accuracy is ± 2% RH @ 25 °C and ± 3% RH @ 5 to 50 °C range. (Below 0.5 °C/33 °F wet bulb sensed temperature, the RH value will be set to 100%).
Algorithm Accuracy: Typically better than 1%; however, actual user accuracy depends on the quality of the sensors used, the proper installation of the sensors, the input correction adjustments, and the barometric pressure adjustments.

CONTROL AND PROFILE PARAMETERS

Control: PID, auto/manual reset, auto/manual bumpless transfer, hysteresis, manual output, setpoint and output limiting.
Profile: 8 user programmable profiles with 1 to 6 segments per profile (1 ramp and soak per segment), user selectable profile time base, profile interrupt action, profile end control. Assured soak available. Remote Run/Hold optional. 6 possible event outputs per pen.

RECORD AND DISPLAY

Chart: 10" circular chart; 100 charts furnished with each instrument if standard range.
Chart Range: -9999 to 9999 °/units
Chart Drive: DC stepper motor
Chart Rotation: User configurable from 0.1 to 999.9 hours per revolution.
Pen Type: Disposable fiber-tip
Pen Color: Pen 1 – Red, Pen 2 – Green
Digital Display: one per installed pen. Red LEDS 0.56" high.
Status Indicators: LED indicators for alarms, outputs, process units.

DIGITAL COMMUNICATIONS

Type: RS-485 serial communications port. Half-duplex bi-directional communications scheme.
Character Format: ASCII
Protocol: Per ANSI X3.28 subcategories 2.5 & A4
Configuration: User configurable to Monitor (read only) or Normal (read and write)
Bit Rate: User configurable to 300, 600, 1200, 2400, 4800, or 9600 bits per second
Address: User configurable for each pen; 0 to 99

MRC 7700 Benefits:

Direct reading of % RH—eliminates the need for lookup tables and lengthy calculations

Wet bulb/Dry bulb sensing—allows for the device's use in elevated ambient conditions and/or dirty installations

Compensates for changes in barometric pressure and differences in temperature—increases accuracy and reduces operator interface time

Optional RS-485 communications—provides easy access to process variables via your computer

Security lockout of keypad—prevents unauthorized or accidental changes

Available as a single or dual pen recorder, recording controller, or recording profile controller—there is a recorder in the MRC 7700 line to match your needs

Isolated process input—offers protection from electrical noise

Battery back-up—protects against memory loss in case of power outage

24V DC transmitter power supply for use with mA DC input—additional flexibility for your unique application demands

UL, CE and CSA approval—ensures standards of quality and performance

Three-year warranty—protects you against factory defects

PROCESS CONTROL
LISTED 88BO

MRC 7700 MODEL CONFIGURATION

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Pen 1 & Pen 2 Options
1 One Pen Recorder
2 One Pen Recording Controller
3 One Pen Recording Profile Controller
4 Two Pen Recorder Only
5 Two Pen Recording Controller
6 Two Pen Recording Profile Controller

*** Relay Outputs**
0 None
1 One SPST
2 Two SPST
4 Four SPST
6 Six SPST

*** SSR Driver Outputs**
0 None
1 One
2 Two
4 Four
6 Six
8 Eight

4 to 20mA Outputs
0 None
1 One
2 Two
3 Three
4 Four

Transmitter Power Supply
0 None
1 24V DC Regulated/Isolated

Option Suffix
Blank - None
N3 - NEMA3 †
CE - CE Compliance

Voltage
1 115V AC Input
2 115/230V AC Input
CSA Approved
4 115V AC Input
5 115/230V AC Input

Enclosure Option
2 Standard Cover (plastic windows)
4 Door Lock**
6 Sealed Conduit Connectors
7 Combination 4 & 6**

Digital Communications
0 None
2 RS-485 Total Access

Pen 2 Auxiliary Input
0 None
1 Position Proportioning
2 Remote Setpoint

Pen 1 Auxiliary Input
0 None
1 Position Proportioning
2 Remote Setpoint
3 Remote Run/Hold***

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* Total quantity of SPST Relays and SSR Drivers must be less than or equal to 8. When SPDT relays are included, the total must be less than or equal to 6.
** This option comes with a structural foam cover
*** Applies to Models 773XXXXXXXXX and 776XXXXXXXXX
† NEMA3 Equivalent Spray Resistant Enclosure
Note: 4-20mA inputs are accommodated using the 1-5V input and a 250Ω shunt resistor, P/N 64411701 (provided with unit) or the 10-50 mA input and a 2.5Ω shunt resistor, P/N 64411702.