

TECHNICAL DATA

CWR-40E / 72E Specifications

Physical

Size

Length: 10.4"

Height: 3.1"

Depth: 7.6"

Weight

3.0lb.

Environmental

Storage

Temperature: -50°C to 85°C

Humidity: 0 to 95%, non-condensing

Operating

Temperature: -40°C to 72°C

Humidity: 0 to 95%, non-condensing

Mounting

Standard: shelf or back board mounting (includes brackets)

Optional: 19" rack mounting brackets available

Construction

Chassis

Fully enclosed, anodized aluminum

Externally accessible keypad, LEDs and connectors

Electrical

All components mounted on conformal coated, internal PCBs

Power

Voltage

Range: 10 to 36Vdc

Consumption

Typical: 2W

Maximum: 4W (with GPS Receiver, Ethernet and Modem options)

Isolation

Power

Minimum: 3800Vdc from B and N terminals to chassis and inputs

Digital Inputs

Minimum: 3800Vdc to any terminal

Analog Inputs

Minimum: 3800Vdc to any terminal

Input to Adjacent Input

Digital: minimum 3800Vdc

Analog: minimum 3200Vdc

USB Host and Device Ports

Minimum: 3800Vdc to any terminal

GPS Receiver and Ethernet Port (optional)

Minimum: 3800Vdc to any terminal

Internal Modem (optional)

Designed to meet FCC part 68 standards

Capacities

Inputs

Digital: 32 / 64, all opto-isolated

Analog: 8 total, voltage or current (optional)

Virtual: 32, user assigned

Timer: 32, user assigned

Outputs

Relay: 2, form C, rated for 2A at 24Vdc or 1A at 125Vac, maximum switching capacity of 125VA or 60W, service life 1 million electrical (typical)

Event Storage

111,481 records, expandable to 2,947,289 records

Capacities (continued)

Liquid Crystal Display

Characters: 80 total on 4 lines

Character Set: A-Z upper- and lower-case, 0-9, various symbols

Viewing Area: 2.8" by .8"

Front Panel Keypad

Quantity: 20 keys

Keys: 0-9, Browse, Alpha, Setup, Esc, Enter, Save/., left, right, up, down/-

Inputs

Input Impedance

Digital: minimum 10KOhms, opto-isolated

Analog: minimum 10MOhms

Range

Digital Input - On: 9 to 36Vdc

Digital Input - Off: 0 to 2Vdc

Analog DC Voltage: 3 scales, ± 25.5 , $+51.1$, ± 255

Analog AC Voltage: 2 scales, 25.5, 255

Analog Current: 2 scales (optional), ± 25.5 Adc, 25.5Aac

Event Validation Times

Digital: .01 to 327.67 seconds, compatible with fixed rate flashing circuits

Analog: fast and slow filter settings

Analog Limit Values

Voltage

Separate high and low limits, in multiples of .1V or 1V

Current (optional)

Separate high and low limits, in multiples of .1A

Internal Temperature

Separate low and high limits, -67°F to 257°F

Analog Input Accuracy

Typical Vdc: ±1% full scale
Typical Vac: ±1.5% full scale
Typical Current: ±2% full scale

Virtual Inputs

Quantity

32, user assigned

Definitions

Any logical association shared by 1 to 4 variables (i.e., Digital, Analog, Timer or Virtual Inputs)

Assigned by defining the state of the Virtual Input for each combination of variable states

Reporting

Creates standard Event Record
Relay can be controlled by each Virtual Input

Modem (optional) can be set up to dial-out Event Record

Timer Inputs

Quantity

32, user assigned

Programming

Any input can be assigned as the trigger or terminating source

On or Off events can be assigned as the trigger or terminating source

Limit Values

Separate high and low limits per assigned Timer Input, in multiples of .1 seconds

Range: 0.0 to 999.9 seconds

Reporting

Measured Time is reported in each Timer Input Event Record

Violation of Limit Values are also reported

Train Speed Monitor

Quantity

4, separately programmable

Operation

Reports excessive train speed

Logs standard Event Record

Sensors are wired to 2 spare Digital Inputs

Limit Values

5 to 180mph

Sensor Distance

50' to 5280'

Memory

Type

Non-volatile, Event Records and Setup Database are stored in flash memory chip

129th day over-writes first day, newest data over-writes oldest data

Storage Longevity

Infinite with power off

Rated for 1 million write operations

Ports

RS-232

Quantity: 1, for use with a PC

Emulation: ANSI

Baud Rates: 300, 600, 1200, 2400, 4800, 9600, 19,200, 38,400, 57,600, 115,200

Bit Format: N-8-1

USB Host

Compatible with any USB Flash Drive

Can create a text file of Event Record data from any time span

Can be used to update firmware

USB Device

Eliminates need for serial comm port

Provides local access via a PC

Data transfer rates of 960Kbps

GPS Receiver (optional)

Used to provide precise, real-time clock control

Provides latitude and longitude coordinates

Ethernet (optional)

Type: 10/100 Base-T

Speed: 100Mbps

Protocol: TCP/IP, Telnet, SNTP

LED Indicators: Green - link established; Yellow - data activity

Provides remote or local access via TCP/IP

Data transfer rates of 850Kbps

User assignable IP Address, user port, sub-net mask

Supports Telnet and SNTP

Modem (optional)

Provides remote access, auto-answer

Connectors

Digital and Analog Inputs

Detachable, tension clamp, 8 terminals each, 12 to 22AWG

Power

Detachable, tension clamp, 4-position, 12 to 22AWG

Dual B and N terminals

Alarm Relay

Detachable, tension clamp, 6-position, 12 to 22AWG

N.O., N.C. and common

Terminal Port

DE-9 male, configured as DCE

USB Host Port

USB Type A female

USB Device Port

USB Type B female

Telephone Line

RJ-11 female

GPS Receiver (optional)

MCX female

Ethernet Port (optional)

RJ-45 female

Controls

Keypad

20 keys, located on front panel

LCD Contrast Adjust

Single-turn potentiometer, accessible from front panel

Indicators

LCD Panel

Includes LED back lighting for enhanced visibility

Displays numerous command menus for configuring the recorder and retrieving data

LEDs (3)

Power: green

Terminal: green, flashes with send/rcv data

Modem: green, flashes with send/rcv data and ring-in

Internal Clock

Accuracy

Typical: ±8 seconds per month (3ppm)

Resolution

Event Records are time stamped to nearest .01 seconds

Internal Clock (continued)

Sync

Via GPS (requires GPS Receiver option)

Via SNTP (requires Ethernet option)

Via spare Digital Input, once every 15 minutes

Operation

Full calendar, auto-adjusted for leap year

Enable or disable of automatic Daylight Saving Time adjustment

Non-drift, precise control with GPS Receiver option

Non-drift, precise control via SNTP (requires Ethernet option)

Non-volatile with power off
Y2K compliant

GPS Receiver (optional)

Includes PCB and external antenna

Module

Plugs into mating connector inside recorder

Antenna

Size: Dia 1.8" H .6" (not including mounting screw)

Weight: 2oz. (less cable)

Operating Temp: -40°C to 85°C

Mounting: bulkhead mountable to surface less than 3/8" thick

Location: unobstructed skyward orientation, for use outdoors

Password Protection

Administrative Level

Access to all functions, limit 8 characters

Restricted Level

Access to Event Record and Setup Database viewing, limited access to Setup Database functions, limit 8 characters

Passcode

Provides limited alterations to Setup Database via front panel, limit 8 digits

Internal Modem (optional)

Type

V.34, 33,600 Baud, data compression and error correction

Usage

Remote access via auto-answer operation

Allows dial-out alarm reporting of Virtual Input records

Compliance

Designed to meet FCC part 68 standards

Dial-out Alarms (optional)

Calling Method

Primary and secondary dial numbers, multiple attempts

Tone or pulse dialing

Data

Issues Event Record for enabled Virtual Inputs

MICRO-AIDE reserves the right to make changes, at its sole discretion, to any specifications listed herein.

Transfer Rates

The following table lists measured bit transfer rates for each of the CWR-72E's user accessible ports. In each case the same 20,000 Event Records with no-detail formatting were either dumped to a PC file or saved directly to a flash drive. The times listed are normalized relative to 1,000 Event Records. If speed is a concern, using the USB Device Port is highly recommended.

Port	Time to transfer 1,000 Event Records (sec)	Actual transfer rate (bps)	Relative speed compared to 38,400
Terminal Port (38,400)	18.78	38,352	Used as reference
Internal modem	14.48	50,638	1.3 times faster
Terminal Port (115,200)	6.28	114,569	3.0 times faster
USB Host	5.83	123,607	3.2 times faster
Ethernet Port	.84	853,851	22.3 times faster
USB Device Port	.75	960,103	25.0 times faster

Table 14 - Bit Transfer Rates by Port

Terminal Port Cable

The following cable is included with every CWR-72E.

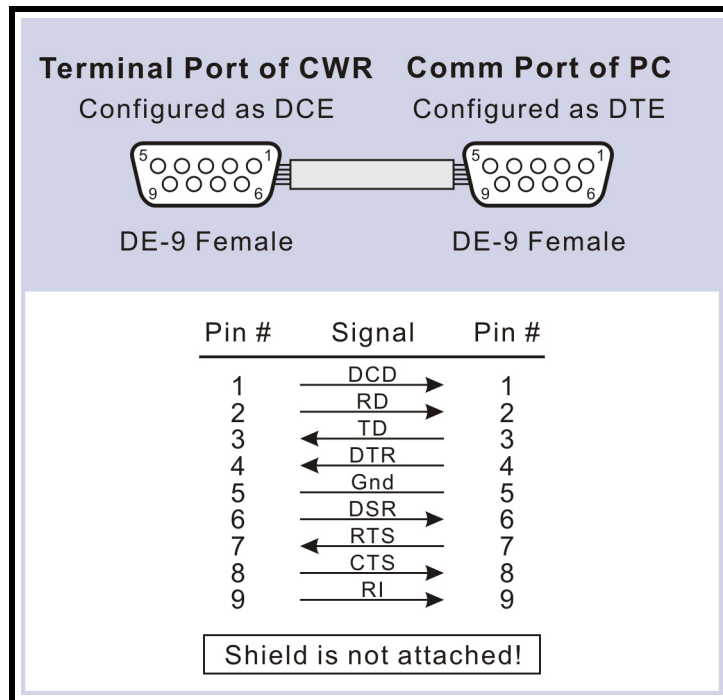


Figure 7 - Terminal Port Cable - Wiring Diagram