SPECIFICATIONS

Physical

Size
Length: 19.0″
Height: 8.1″ (requires 10.5″ of rack space)
Depth: 3.4″

Weight
7.0 lb.

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: mounts in 19″ rack
Optional: 23″ 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: 9 to 36 Vdc

Consumption
Typical: 4 W
Maximum: 5 W (with GPS Receiver and Modem options)

Isolation

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

Digital Inputs
Minimum: 3800 Vdc to any terminal

Analog Inputs
Minimum: 3800 Vdc to any terminal

Input to Adjacent Input
Digital: minimum 3800 Vdc
Analog: minimum 3200 Vdc

Ethernet Port
Minimum: 3800 Vdc to any terminal

USB Host and Device Ports
Minimum: 3800 Vdc to any terminal

Internal Modem (optional)
Designed to meet FCC part 68 standards

Capacities

Inputs
Digital: 256, all optically isolated, AC / DC
Analog: 16, voltage only
Virtual: 16, user-assigned
Train Speed Monitor: 4, user-assigned

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

Event Storage
Standard: 147,480 records
Maximum: 3,095,064 records

Liquid Crystal Display
Characters: 80 total on 4 lines
Viewing Area: 2.8″ by .8″

Front Panel Keypad
Quantity: 20 keys

Physical Inputs

Input Impedance
Digital: minimum 10 KOhms, optically isolated
Analog: minimum 10 MOhms

Range
Digital Input-On: 9 to 36 Vdc
Digital Input-Off: 0 to 1 Vdc
Analog DC Voltage: 3 scales, ±25.5 Vdc, +51.1 Vdc, ±255 Vdc
Analog AC Voltage: 2 scales, 25.5 Vac, 255 Vac

Event Validation Times
Digital: .01 to 327.67 seconds, compatible with fixed rate coding circuits
Analog: fast and slow filter settings

Analog Limit Values

High and Low Limits: in multiples of .1 V or 1 V

Analog Input Accuracy

Typical Vdc: ±.15 Vdc or ±1.5 Vdc
Typical Vac: ±.15 Vac or ±1.5 Vac

Virtual Inputs

Definitions
Any logical association shared by 1 to 4 variables (i.e., Digital, Analog or other Virtual Inputs)
Assigned by defining the state of the Virtual Input for each combination of variable states

Reporting
Creates standard Event Records
Relays can be controlled by each Virtual Input
Modem (optional) can be enabled to dial out Event Records

Temperature Sensing

Usage: measures and reports internal temperature of recorder
High and Low Limits: -67 °F to 257 °F

Train Speed Monitor

Operation
Reports excessive train speed
Logs standard Event Record

Sensors
Digital Inputs: 2 required
Distance: 50′ to 5280′

Limit Values
5 to 180 mph

Memory

Type
Non-volatile, Event Records and Setup Database are stored in flash memory chip
Newest data over-writes oldest data, 129th day over-writes first day

Storage Longevity
Infinite with power off
Rated for 100,000 write operations

Connectors

Power
Detachable, tension clamp, 4-position, 12 to 22 AWG
Dual B and N terminals

Digital Inputs
Detachable, screw-down, 8-position, 12 to 22 AWG

Analog Inputs
Detachable, tension clamp, 8-position, 12 to 22 AWG

Relays (2)
Detachable, tension clamp, 6-position, 12 to 22 AWG
Normally open, normally closed and common terminals per relay

Terminal Port (2)
DE-9 male, configured as modified DCE

USB Host Port
USB Type A female

USB Device Port
USB Type B female

Ethernet Port
RJ-45 female

Telephone Line
RJ-11 female

GPS Receiver (optional)
MCX female

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Ports

RS-232
Quantity: 2, for use with a PC

Terminal Emulation: ANSI

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

Bit Format: 8-N-1

USB Host
Compatible with any FAT-32 formatted 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, data transfer rates of 4.71 Mbps

Ethernet
Type: 10/100 Base-T

Protocols: TCP/IP, Telnet, SNTP-Unicast and -Multicast

Concurrent Sessions: Telnet (1)

Provides remote or local access via TCP/IP

Data transfer rates of 4.70 Mbps

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

Modem (optional)
Provides remote access, auto-answer

GPS Receiver (optional)
Used to provide precise, real-time clock control, latitude and longitude coordinates

Indicators

LCD Panel
Includes LED back lighting for enhanced visibility

Displays numerous command menus for configuring the recorder and retrieving data

Front Panel LEDs (3)
GPS/Alarm: green, red for failure

Terminal: green, flashes with send and receive data

Modem: green, flashes with send and receive data and ringing

Ethernet Port LEDs (2)
Green: link established

Yellow: data activity

Controls

Keypad
Located on front panel, below LCD

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

LCD Contrast Adjust
Single-turn pot., accessible from front panel

Internal Clock

Accuracy
Typical: ±8 seconds per month (3 ppm) when not synchronized

Volatility: maintains accuracy for minimum of 30 days with loss of power

Resolution: .01 seconds for all Event Records

Sync
SNTP-Unicast: via time server, 5 minutes past each hour

SNTP-Multicast: per time server schedule

GPS: once per hour (requires GPS Receiver option)

Operation
Time Zones: selectable from 7 different North American settings and UTC-0

Daylight Saving Time: enable or disable automatic adjustment

Leap Year: automatically adjusted

GPS Receiver (optional)
Includes PCB and external antenna

PCB
Plugs into mating connector inside recorder

Antenna
Size: diameter 1.8″, height .6″ (not including mounting screw)

Weight: 2 oz. (less cable)

Operating Temperature: -40 °C to 85 °C

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

Location: unobstructed skyward orientation, for use outdoors

Password Protection

Administrative Level
Access: unrestricted to all functions

Length: 8 characters

Restricted Level
Access: Event Record and Setup Database viewing only

Length: 8 characters

Passcode
Access: limited modifications to Setup Database via front panel

Length: 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 Virtual Input Event Records if enabled by Virtual Input definition

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

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TRANSFER RATES

Table 13 on page 97 lists typical bit transfer rates for each of the CWR-272A'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)	19.0	38,396	Used as reference
Internal modem	19.4	37,649	1.0 times faster
Terminal Port (115,200)	6.4	114,845	3.0 times faster
USB Host	.8	n/a	22.4 times faster
Ethernet Port	.2	4,704,075	122.5 times faster
USB Device Port	.2	4,714,063	122.8 times faster

Table 13: Bit Transfer Rates by Port

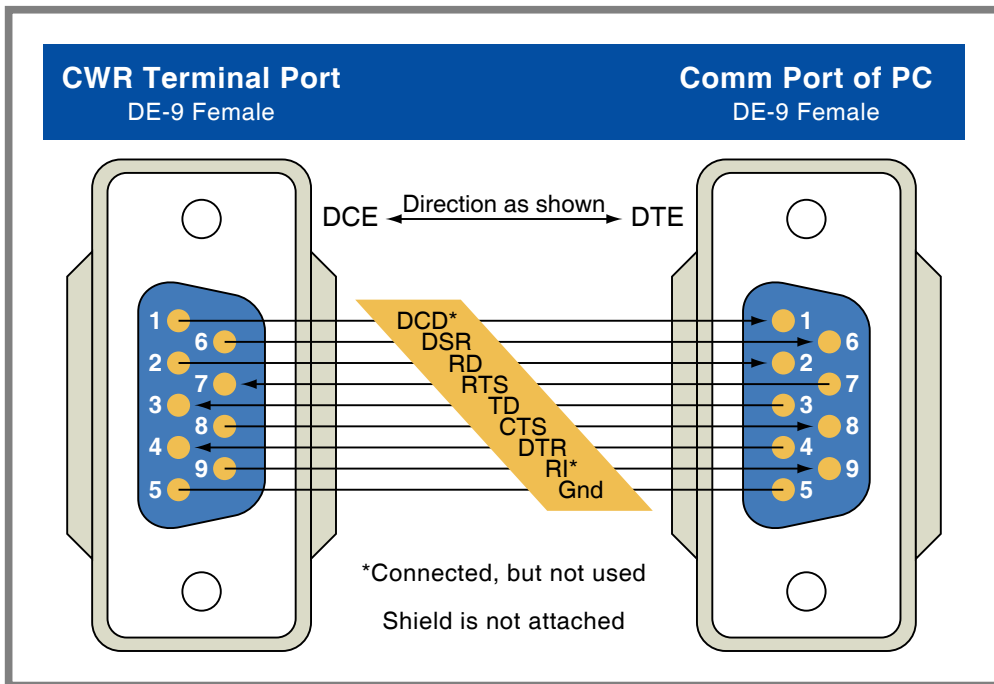# TERMINAL PORT CABLE

The following cable is included with every CWR-272A.

Figure 10: Terminal Port Cable - Wiring Diagram