



Technical Bulletin

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This Technical Bulletin replaces TB-2018-116-BW01

Title: Interfacing the RM Young Wind Monitor to SmartScan NG and NG²

Summary: The model 2300-220 is the interface device that connects the RM Young Wind Monitor to the SmartScan NG or SmartScan NG². This technical bulletin provides instructions for electrical connections and NG/NG² jumper settings.

NOTE: If upgrading an existing defect detector system, make note of all wind monitor terminal connections BEFORE disconnecting! Record the wire color of each wind monitor signal as there are no standard color assignments. This information is required to properly install the 2300-220 Wind Monitor Interface module.

Critical (Affects safe operation of the system)

Informational

Distribution List:

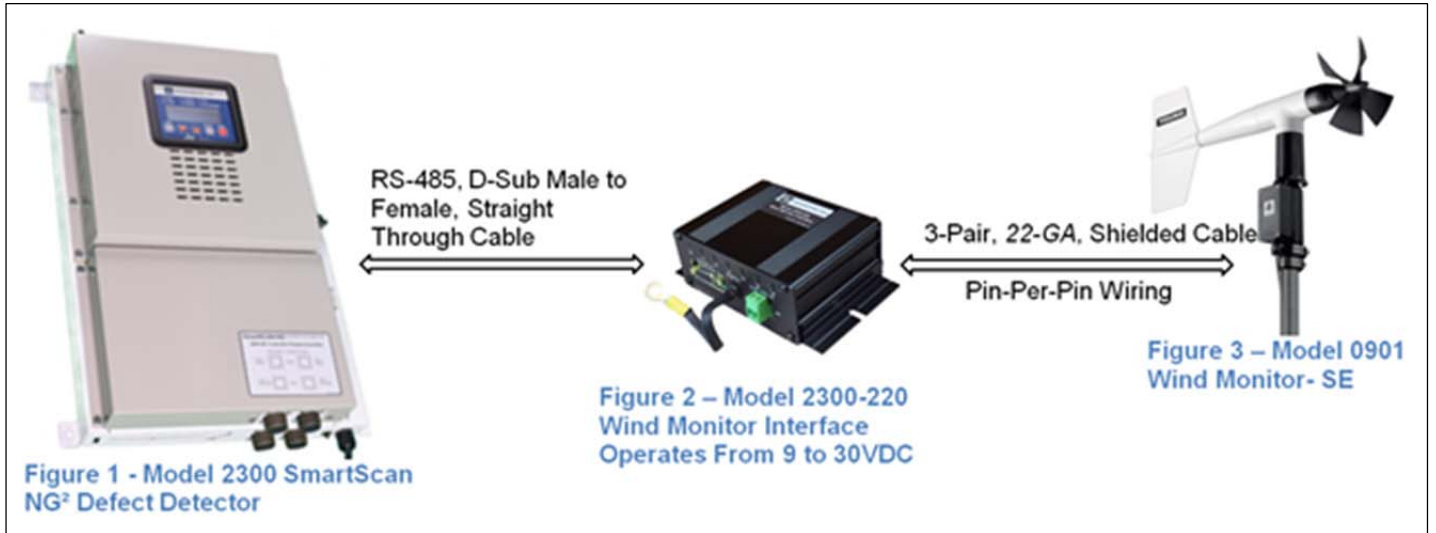
2300-220 WIND MONITOR INTERFACE



The **Model 2300-220 Wind Monitor Interface** offers a convenient means to connect the RM Young Wind Monitor to the SmartScan NG or SmartScan NG² Defect Detector System. The unit provides the following.

- Multi-stage surge protection for power supply and RS-485 with 3KV power supply isolation.
- 9VDC to 30VDC input voltage expands the operating range of the Wind Monitor.

- Additional 12-Volt power terminals can supply applications such as a High/Wide detector.
- Rugged compact design for easy installation and maintenance.
- A Dsub-9 female connector that connects with a straight-through cable to the defect detector's RS-485 port and the wiring terminals are labeled to match the terminals of the RM Young Wind Monitor for ease of installation.
- A grounding strap provides a path to ground for surge currents and to bleed off static electricity from the wind monitor.
- A green status LED indicates the +12V power supply output is present.

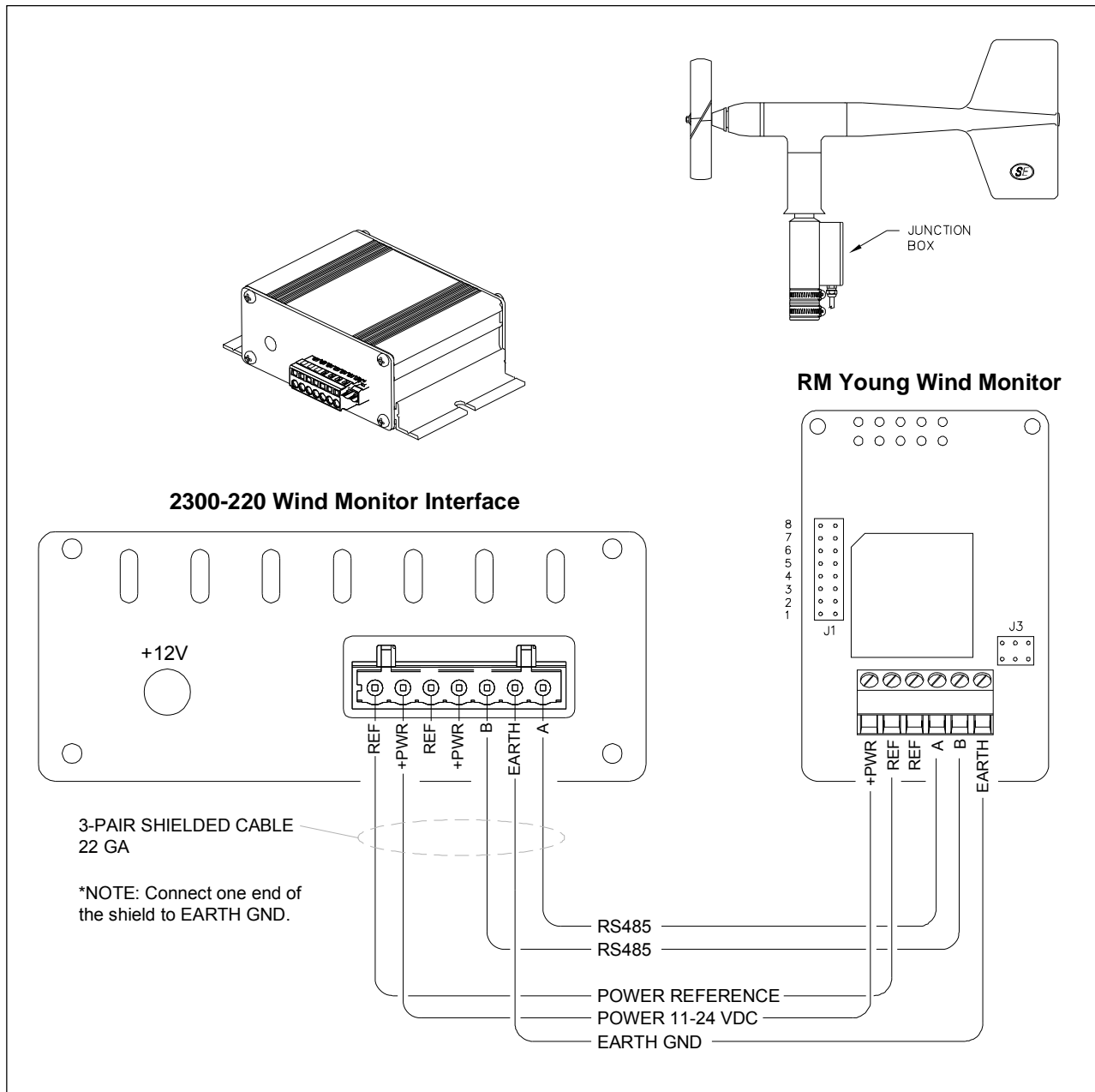


Model 2300-220 Wind Monitor Interface Connections

Wiring Connections From Wind Monitor Interface to RM Young Wind Monitor

2300-220 Wind Monitor Interface	RM Young Wind Monitor
+PWR	+PWR
REF	REF
A	A
B	B
EARTH	EARTH

- Use a twisted pair of wires for +PWR and REF.
- Use a twisted pair of wires for A and B signals.
- Connect one end of the shield of the cable to the EARTH terminal on the 2300-220 Wind Monitor Interface. Do not connect the shield to the Wind Monitor.



Wiring Connections From Wind Monitor Interface to Battery (Use 18AWG or 20AWG)

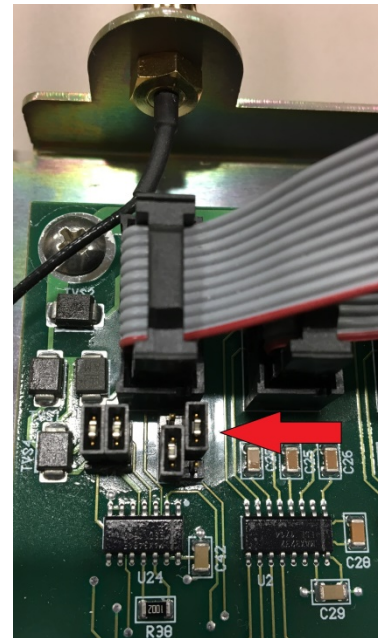
Wind Monitor Interface	Battery (12V or 24V)
+	+
-	-

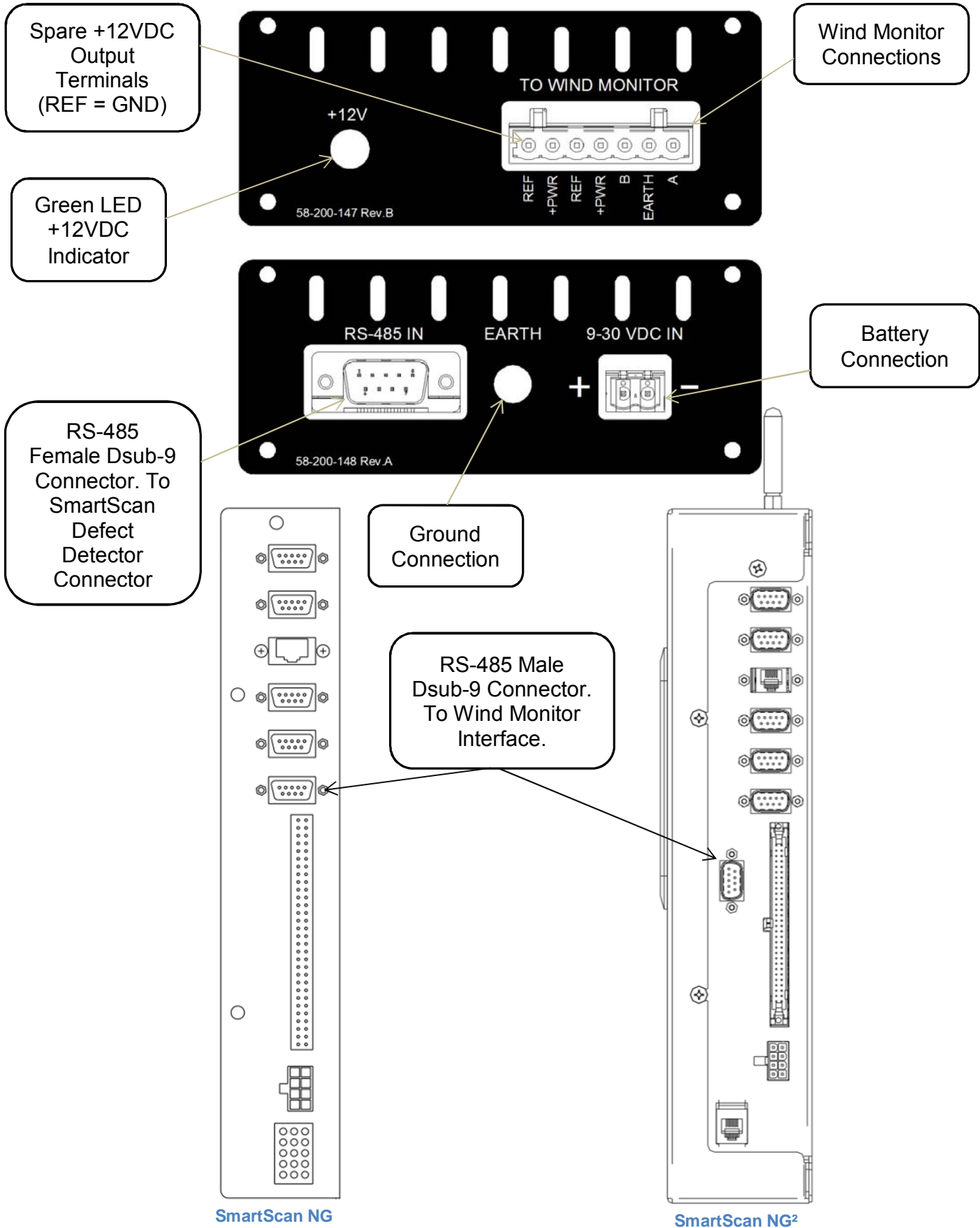
EARTH - Connect integral the grounding strap of the 2300-220 Wind Monitor Interface to a nearby earth ground. Use as short of a grounding wire as practicable for your installation.

RS-485 – Use the supplied serial interface, straight-through, cable to connect from the SmartScan defect detector to the 2300-220 Wind Monitor Interface. See next page for port locations.

NG² J3 Jumper Settings for RS485 Communications

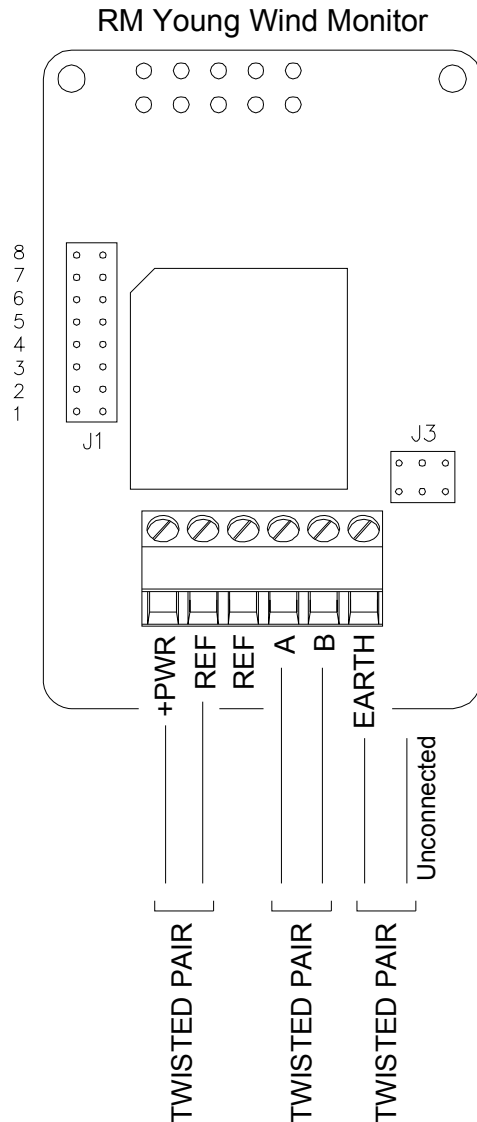
- Power down the detector and take ESD precautions by attaching a ground strap to your wrist.
- Remove the Controller Module cover.
- Locate the pair of jumpers labeled J3 in the upper-left corner of the Controller Module board, just under the bottom-right corner of the serial cable socket labeled "RS485 PROC-B." A red arrow points to these jumpers in the picture at right.
- If necessary, move the J3 headers to match the picture at right. The left-hand header should cover the middle and bottom pins. The right-hand header should cover the top and middle pins.
- Replace the Controller Module cover.
- Power up the system again.





Wire Identification using an Ohmmeter

The RM Young Wind Monitor has five wiring connections: **+PWR**, **REF**, **A**, **B**, and **EARTH**. The following text describes how to use an ohmmeter to identify these wiring connections if the RM Young Wind Monitor is not accessible for wire identification. This document assumes that you are working with an installation using three twisted pairs, but it may also be used to identify wires not organized in pairs. If twisted pairs are employed, one pair is likely **+PWR** and **REF** (+12V and GND); one pair is likely **A** and **B** (data), and the **EARTH** wire is likely in the last pair, which is used to bleed static electricity. The remaining wire is not used and connects to the **EARTH** terminal on the STC Wind Monitor Interface.



Identifying A and B Wires

Please note that these two wires are likely in the same twisted pair. Locate two wires that measure in the range of 100 ohms (Ω) to 265 Ω with both polarity connections. That is, the same measurement occurs regardless of meter lead connections, and that measurement is in the range of 100 Ω to 265 Ω . Connect one of the two wires to the **A** terminal and the other wire to the **B** terminal of the Wind Monitor Interface. Reversing these wiring connections does not result in damage. Swap these wires later if the communications test fails.

Ohm Meter Lead Connections	Ohm Reading
Red Meter Lead on A, Black Meter Lead on B	From 100 Ω to 265 Ω
Red Meter Lead on B, Black Meter Lead on A	The same measurement you read in the last step.

Identifying the Power Supply Wires +PWR and REF

Being careful not to touch the connections with your fingers, locate two wires going to wind monitor that read as an open circuit. They may be in the same twisted pair. Now reverse the ohmmeter leads. If you have the correct wires, swapping the meter leads results in a reading that starts roughly between 300 Ω and 350 Ω and slowly increases to around 400 Ω . These readings will vary slightly between Wind Monitors because it is an indication of a charging capacitor. This rising measurement indicates that the red meter lead is on the wire going to the **+PWR** terminal and the black meter lead is on to the wire going to the **REF** terminal. Connect these two wires to their respective terminals on the Wind Monitor Interface. Note that the Wind Monitor Interface has two **REF** terminals and two **+PWR** terminals. These are two identical sets of 12VDC power supply output terminals. So, you may use either **+PWR** terminal and either **REF** terminal on the Wind Monitor Interface to power the Wind Monitor. The Wind Monitor is reverse polarity protected, which prevents damage if the power supply wires are connected backwards.

Ohm Meter Lead Connections	Ohm Reading
Red Meter Lead touching REF, Black Meter Lead touching +PWR.	Open Circuit <i>The measurement is the same as when the meter leads are not connected to anything.</i>
Red Meter Lead on +PWR, Black Meter Lead on REF	Rising resistance meter reading indicates correct meter polarity. <i>Connect the wire touching the red meter lead to +PWR and the wire on the black lead to REF on the wind monitor interface.</i>

Identifying the Earth Wire

One of the remaining wires goes to the **EARTH** terminal and the other is unused. Twist together the two remaining wires and connect them to the **EARTH** terminal on the Wind Monitor Interface.

RM Young Wind Monitor Power Requirement: 11-24VDC, 20 mA

Wind Monitor Interface Specifications

Internal Power Supply

Internal Power Supply Type:	DC-DC Converter, 3KV Isolation
Input Voltage Range :	9 - 30VDC
Regulated Output Voltage/Amps:	+12VDC, 1 Amp Max.
Output Regulation (0-100% Load Variation):	+/- 1.2%
Minimum Load:	Not Required
Maximum Input Current at Full Output Load ¹ :	1.6 Amps
Nominal Input Current at Full Output Load ² :	480mA
Input Current when Powering Only the Wind Monitor ¹ :	60mA
Output Ripple and Noise:	75mVp-p typ., 115mVp-p full load
Minimum Operating Temperature:	40°C
Maximum Operating Temperature:	65°C
DC Surge Arrestor:	Output – Three Stage Design: Differential Gas Discharge Tube, Common Mode Choke, 13-Joule MOV Input – Two Stage Design: Self- Restoring PTC, 30V/5KW TVS
RS-485 Surge Arrestor:	Four Stage Design: Differential Gas Discharge Tube, Self- restoring PTCs, Current Limiting Resistors, Low Capacitance Diodes with 7V and 12V 1.5KW TVS to pass asymmetrical voltage levels per TIA/EIA-422A standards.

General

Dimensions (Inches):	Overall 3.80L X 5.525W X 1.80H
Weight:	12.2 oz.
Grounding Braid Cable:	3.5"

Note: 1 Measurement taken representing the worst-case power supply input voltage of 9VDC for this specification.

Note: 2 Measurement taken with power supply input voltage of 28VDC for this specification, which represents the average battery voltage of a 28-volt wayside reporting system.