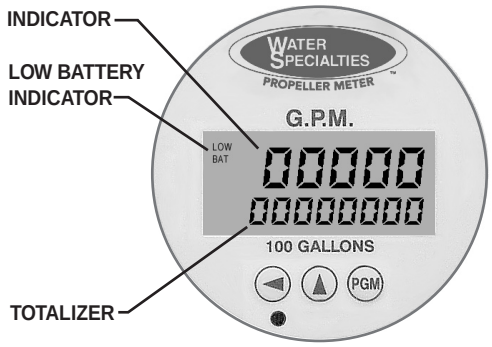
WATER SPECIALTIES™
PROPELLER METER

MODEL TR28-2

INDICATOR - TOTALIZER - TRANSMITTER
SOLID STATE CONSTRUCTION
CURRENT OUTPUT
ONE PULSE PER TOTALIZER COUNT
DIGITAL DISPLAYS



TYPICAL
DIGITAL INDICATOR-TOTALIZER

MADC OUTPUT
4-20 mA @ _____
Green (-)
Red (+)
Shield to ground
PULSE OUTPUT
One Pulse Per Count
White (+)
Black (-)
Shield to ground

DESCRIPTION

MODEL TR28-2 INDICATOR-TOTALIZER-TRANSMITTERS provide a digital flow rate indication, a totalization of flow volume, a 4-20 mA current signal proportional to the rate of flow, and scaled pulse output when mounted on our electronic propeller meters. The unit features a digital indicator-totalizer and solid state construction transmitter.

INSTALLATION is normally made at the factory when the meter is assembled, but installation may be made in the field by removing the CN08-2 (or CN08) and attaching the indicator-totalizer-transmitter and adapter to the meter head. Model TR28-2 is for installation on propeller meters. The unit is furnished complete and ready for installation. An optional kit of adapters, with up to 100 feet of cable, is available to locate a TR28-2 at a remote location.

CONSTRUCTION of the digital indicator-totalizer-transmitter features a sealed housing conforming to NEMA 4X standards which has a padlock hasp. The unit uses the latest solid state components, and is completely encapsulated to protect it from moisture. The TR28-2 is driven by a solid state sensor producing 8 pulses per revolution of the propeller.

DIGITAL INDICATOR-TOTALIZER has a non-volatile EEPROM memory to store totalizer count (updated every 60 minutes while running). The indicator-totalizer will continue to function, even if the 24 VDC loop power is lost, or during battery changing. (If the 24 VDC power is lost battery backup will power the display, but the 4-20mA will not be available.) The indicator dial can be furnished in GPM, CFS, MGD or any standard liquid measuring units with a choice of totalizer measuring units. The display is programmable to update from 0.5 to 5 seconds, and timeout from 1 to 9999 seconds.

INDICATOR (rate) FUNCTION is a five digit indicator with .35" tall numbers, programmable with 0 to 4 decimal point places with 0.0001 to 9999 rate scaling factor. The calculation method is 1/Tau; programmable smoothing of 0 to 99%; rate zero time of 8 seconds.

TOTALIZER FUNCTION is an eight digit indicator with .20" tall numbers, programmable with 0 to 4 decimal places, and a total scaling factor of 0.0001 to 9999. The totalizer can be reset from the front panel or disabled permanently.

TRANSMITTER is driven by the same sensor output as the digital indicator-totalizer. The standard 4-20 mA current output gives 4 mA output at zero flow and 20 mA output at maximum scale range. A 24 VDC power supply in series is required to power the mA output. The transmitter will drive up to a maximum of 600 ohms loop resistance. The standard pulse output is an open collector type. A four lead shielded cable, four feet long, is furnished with each transmitter. Transmitter will operate a Water Specialties Model IN16 up to 1,000 feet away.

SPECIFICATIONS

ACCURACY	Rate	± 0.25 % of reading.
TEMPERATURE RANGE	Operation:	32° to 160° F.
	Storage:	-40° to 160° F.
	Consult factory for special construction for other temperatures.	
INPUT SIGNAL	Type	Voltage pulse.
	Voltage Range	1 to 10V.
	Minimum Frequency	0.125Hz.
	Maximum Frequency	3KHz.
	Minimum Pulse Width	2µs.
OUTPUT SIGNALS	Combination 4-20mA Output and Isolated Scaled Pulse Output:	
	Standard 2 wire loop powered.	
	16 bits resolution.	
	Operating voltage 12 to 32VDC.	
	Power Switch	Automatic battery override.
	Scaled Pulse Output:	
	Open collector MOS transistor.	
	Pulse width	32 milliseconds.
	Maximum Rating	1 to 32 V.
EMI/EMC	Electrostatic Discharge (IEC 1000-4-2 Level 3).	8KV
	Electrical Fast Transient (IEC 1000-4-4 Level 3).	1KV
	RF Susceptibility (IEC 1000-4-4 Level 3).	150 KHz to 230 MHz @ 10V
POWER SUPPLY	24VDC (as supplied by our power supply Model IN-36-1, available separately) wired in series. Indicator-totalizer-transmitter is primarily loop powered, but becomes self-powered via a lithium battery in the event of a power loss. Battery Type - 3VDC Lithium, Replaceable Operating Life - 4 years (when used with the display timeout into sleep mode feature). Low Battery Indication - 6 months before expiration.	
OPTIONAL EQUIPMENT	Remote mounting kit, with up to 100 feet of cable for remote installations.	
SHIPPING WEIGHT	4 pounds.	
ORDERING INFO	Must be specified by the customer and includes: Serial number of meter unit is to be mounted on. Maximum scale range required for 4-20 output. Indicator scale and units. Totalizer dial units. Consult factory for special applications.	

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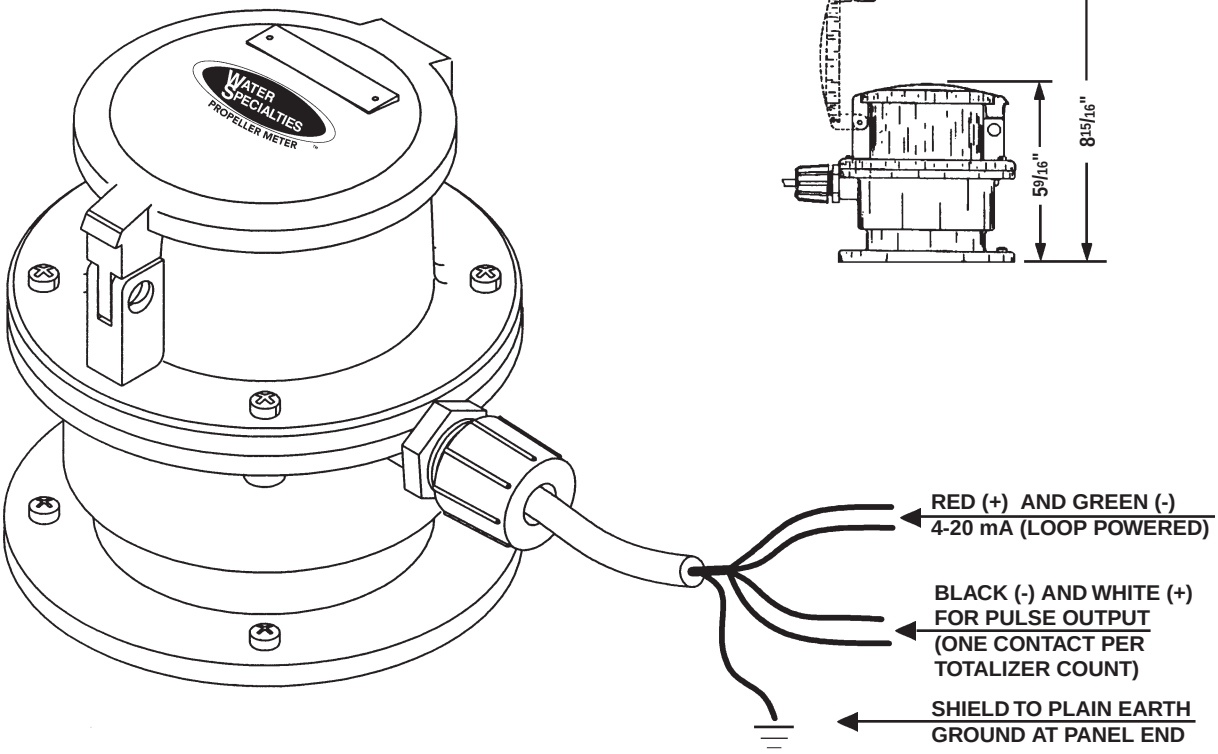

Power Supply	Power Supply Voltage for Loop	Maximum Resistance of Instruments in Loop
Variable	15.0VDC	150Ω
Variable	18.0VDC	300Ω
Variable	21.0VDC	450Ω
IN-36-1(24V)	24.0VDC	600Ω
Variable	27.0VDC	750Ω
Variable	30.0VDC	900Ω

NOTES:

The transmitter will drive up to a maximum of 600 ohms loop resistance.

Wire Size Information:
The distance of the communication line from transmitter to the device the 4-20mA will operate depends on the loop resistance, the wire size, and the power supply. Based on a 24V DC power supply and 22 gauge wire, we recommend a maximum loop of 3,500 feet.

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