

The MiniRanger Plus level monitor uses non-contacting ultrasonic technology to provide effective monitoring for a range up to 15 m (50 ft.) on liquids and 7.5 m (25 ft.) on solids.

It offers optional volume calculation for 8 standard vessel configurations or open channel flow with 11-point characterization. It comes with 2 relays and a true isolated 4-20 mA output.

MiniRanger Plus has built-in Sonic Intelligence® advanced echo-processing software for superior reliability.

It is economical and easy to use. The unit can be programmed using the keypad or through a laptop using Milltronics' Dolphin Plus software.

It is compatible with chemical-resistant Echomax® transducers and can be used in hostile environments at temperatures as high as 145°C (293°F).

MiniRanger Plus is also available in a wall mount version.



## Product Features

- Universal power supply
- Multi-field backlit LCD
- Two alarm/pump control relays
- High level switch operation
- Lead/lag pump operation
- Dolphin Plus compatible via RS-232
- Isolated mA output
- Sonic Intelligence®
- Integral keypad
- Optional level to volume conversion and open channel monitoring (OCM)
- Bi-polar communications loop

## Technical Specifications

### Power

- 9 – 250 Vac, 40-70 Hz, 38 VA, 12W or 9-250 Vdc, 11W

### Environmental

- location: indoor
- altitude: 2000 m max.
- ambient temperature: -20 to 50°C (-5 to 122°F)
- relative humidity: 80% for temperature up to 50°C (122°F)
- installation category: II
- pollution degree: 2

### Range

- solids applications: 7.5 m (25 ft.) (transducer dependent)
- liquid applications: 15 m (50 ft.) (transducer dependent)

### Accuracy

- 0.25% of range or 6 mm (0.24"), whichever is greater

### Resolution

- 0.1% of program range\* or 2 mm (0.08"), whichever is greater

### Memory

- program stored in non-volatile FLASH memory, for software upgrades via optional Dolphin interface
- parameters stored in non-volatile EEPROM

### Display

- 75 x 20 mm (3 x 0.8") multi-field backlit LCD

### Enclosure

- **Rack Mount:** DIN 3U/14HP, 4 rail plug in unit suitable for standard 84HP (19") sub rack
- **Panel Mount:** suitable for DIN 43700, 72 x 144 standard panel cut-out

### Outputs

#### Transducer Drive

- 43.5 kHz, 250 V peak pulses of 1 ms max. duration at max. repetition rate of 300 ms

#### Relays

- 2 alarm/pump control relays
- 1 form 'C' SPDT contact per relay, rated 5 A at 250 Vac non-inductive

#### mA

- optically isolated 0/4 to 20 mA
- max loading: 750 Ω
- resolution: 0.1% of 20 mA

### Transducer

- compatible models: ST-H and Echomax® models XPS-10/10F, XPS-15/15F, XCT-8, XCT-12, XRS-5, XKS-6

### Cable

- co-axial to be RG62-A/U low capacitance
- signal to be 2-3 copper conductors, twisted, with foil shield, drain wire, 300V 0.5 – 0.75 mm<sup>2</sup> (22 – 18 AWG)
- relay/power to be copper conductors per local requirements to meet 250V 5A contact rating

### Weight

- 0.5 kg (1.1 lbs.)

### Options

#### Open Channel Monitoring

- for weirs and flumes, using a total of 11 point characterization

#### Volume Conversion

- automatic level to volume conversion for eight standard vessel configurations

### Communications

- Dolphin Plus compatible via RJ-11 phone jack/RS-232

### Approvals

- CE\*\*, FM, CSA NRTL/C

\* Program range is defined as the empty distance to the face of the transducer plus any range extension.

\*\*EMC performance available upon request.

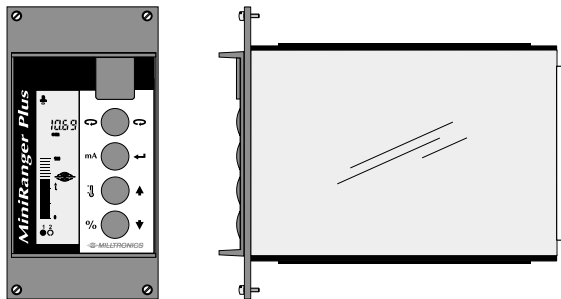
Specifications are subject to change without notice.

# MiniRanger Plus – Rack and Panel Mount

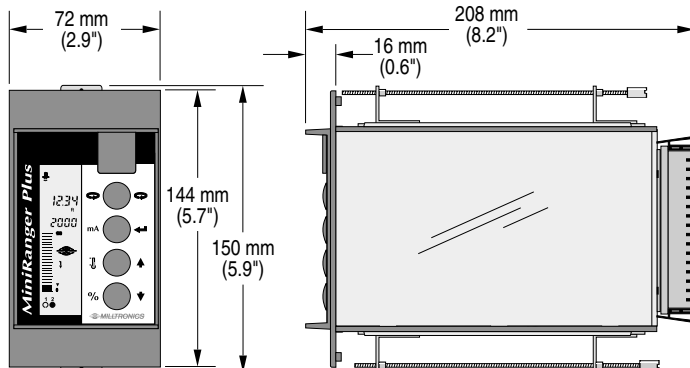
## Dimensions

### Rack Mount

DIN 3U/14HP, 4 rail plug in unit suitable for standard 84HP (19") sub rack.

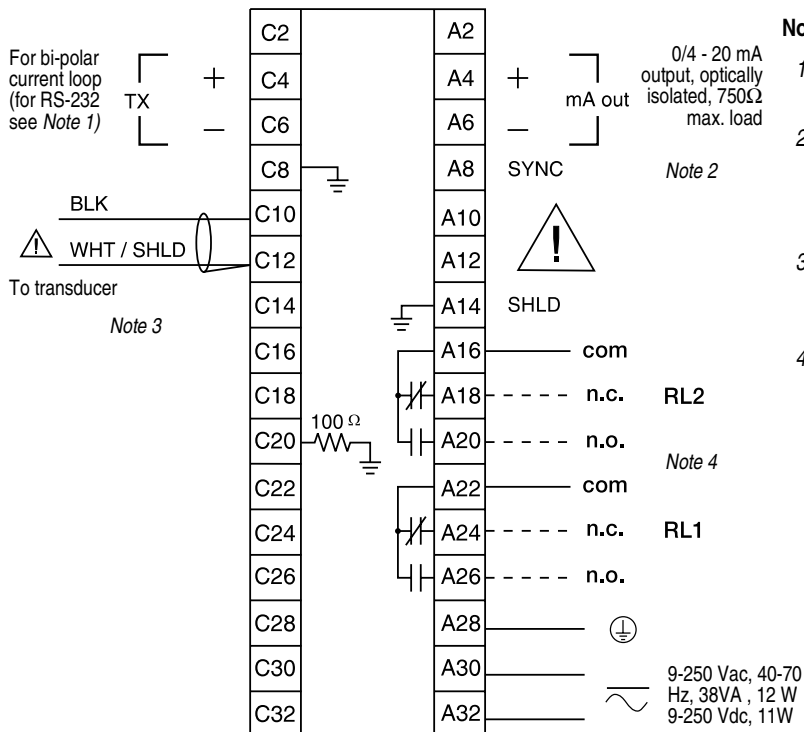


### Panel Mount



Slipping on mounting bracket top and bottom. Screws to be tightened to no more than 5.9 Nm (1 inch-lb. torque)

## Wiring



### Notes:

- To convert the bi-polar current loop to RS-232 use C4 as TX and C20 as ground.
- Required only if mounted adjacent to other Milltronics equipment (with the exception of the MultiRanger Plus and HydroRanger). Interconnect all 'SYNC' terminals with a single 18 gauge (0.5 mm<sup>2</sup>) wire.
- Use RG-62 A/U Coaxial (or equivalent) for extensions up to 365 m (1200 ft.). Run in grounded metal conduit, separate from other wiring.
- Each relay has 1 set of form 'C' (SPDT) contacts, relay rated at 5A 250 Vac, non-inductive, when equal or lower rated limiting fuses are installed. Relay de-energized when in alarm conditions and energized for pump control.

Relays shown in de-energized position.



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