

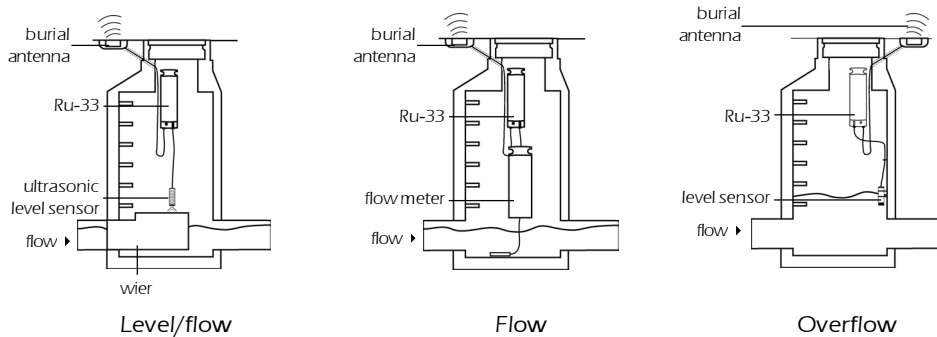
Ru-33 Recording Telemetry Unit

Wireless RTU for underground monitoring



Ru-33 pictured with the Telog ultrasonic sensor

Applications



Telog's Ru-33 **Recording Telemetry Unit**, (RTU), provides real-time monitoring and alarming of instruments and sensors found in the harsh environment of sewers and underground water vaults.

The Ru-33 has low power requirements and automatically monitors level, flow, pressure and water quality sensors. Data is forwarded wirelessly to a host computer operating Telog host application software, Telogers for Windows or Telog Enterprise. Data communication may be scheduled frequently (e.g. daily, hourly, every five minutes, etc.) and/or immediately in response to site alarm conditions.

The Ru-33 supports multiple sensor interface options including RS-232, RS-485, analog and digital inputs. For example, when connected to an open-channel flowmeter via

RS-232, the RTU can interrogate the meter for its most recent level, flow velocity and battery voltage measurements.

Telog also provides optional sensors that may be directly attached to the Ru-33 including ultrasonic and pressure level, water quality Sondes, pH and conductivity, temperature, level switches and a rain gauge.

Wireless communication is supported via packet switched (e.g. 1xRTT) or circuit switched (e.g. CDMA) cellular. An optional burial antenna may be embedded in the street pavement producing a complete underground wireless monitoring solution.

The RTU is powered from a single, 6-volt lantern battery providing an operating life of six months to two years depending on sensor interface and call schedule.

Directly Monitor:

- Popular Open-channel Wastewater Flowmeters
- Pressure Level Sensors
- Ultrasonic Level Sensors
- Water Quality Sensors and Sondes

Communicate Via:

- Local Connection
- Cellular
- Land-line Telephone

Powered by:

- 6V Lantern Battery
- External DC

Alarm Notification

Two Year Battery Life

Burial Antenna Option

Submersible Enclosure

Web Application Software



Ru-33 Specifications

(for more detailed specification information refer to Telog's Ru-33 Product Specification Paper, document #PS-33u)

Recorder

Model	Telog Ru-33
Type	Multi-channel underground RTU (Recording Telemetry Unit)
Recording	
Sample rate	Programmable from 1/sec up to 8 hours; each channel
Data interval	Programmable from 1/sec up to 8 hours; each channel
Memory	
Size:	512 Kbytes
Storage Method	Wrap around (first-in; first-out),
Data Capacity	Dynamically allocated to active channels, any combination of:
Analog Input	270,000 values
Pulse Input	200,000 values
Event Input	67,000 values
ComSensor Input	100,000 values
Communication:	
Standard:	Local RS-232 4 pin circular connector rated IP-67 Auto-selected baud rate to 19.2K Land line telephone
Optional	Telog M-324 2400 baud modem Auto-dial/Auto-answer FCC and CSA approved Cellular data modem Provides both 1xRTT packet switched and CDMA circuit switched data.
Inputs	Limited to one ComSensor + one analog + one digital
ComSensor/Meter	Selectable RS-232 or RS-485 to 19.2 Kbaud. Protocol determined by meter or sensor
Analog	
Selectable ranges	0-1 VDC, 0-5 VDC, 4-20 ma
Excitation	Pulsed +5 or +12 VDC, (selectable duration)
Resolution	0.025%; 12 bits
Accuracy	±0.1% of full range at 25° C ±50 ppm
Digital (one channel)	
Type	Selectable pulse counter or event recorder
Input	Contact closure or logic driven input
Excitation	5VDC at 20 μAmps (max)
Pulse Width	10 mS minimum
Battery	
Factory Installed	Single 6V alkaline lantern battery Eveready Energizer model 529
Battery Life Example:	
Input ComSensor	Sigma 9x0 Flowmeter
Sample Rate	five minutes
Communication	Wireless 1xRTT
Call Schedule	
5 minutes	Battery life = 1 month
15 minutes	Battery life = 3 months
2 hours	Battery life = 1 year
24 hours	Battery life = 2 years
External Power Input	9 to 15 VDC @ 1 amp max
Enclosure	
Size	Cylindrical 4.5" x 15.4"
Weight	7 lbs.
Material	PVC
Environmental	
Temperature	0 to 70° C -30 to +70° C powered externally IP67 (NEMA 6)
Submersible	
Support Software	
S-3PC	Telogs for Windows
S-3EP	Telogs Enterprise
Data Transfer Unit	IP-67 rated PDA running Palm OS and Telog application program

Supported Sensors

Pressure Level Sensor	Submersible Pressure Sensor
Model	Telog PMP-1030
Ranges	0-5 PSI thru 0-300 PSI
Accuracy	±0.25% of full scale
Construction	316 stainless steel
Vent	In-line dry box with user replaceable desiccant
Ultrasonic Level Sensor	Ultrasonic transmitter (ComSensor)
Model	Massa M5000/95
Frequency	95 KHz
Range	one foot to 13 feet
Beam Angle	8° Conical
Accuracy	±0.25% over any range segment exceeding 12 inches (homogeneous environment)
Temperature Sensor	
Model	AT-3u ambient temperature sensor
Range	-20 to +70° C
Accuracy	±0.2° C
Size	Stainless Steel probe (4" x 1/4") with three meters of cable
pH Sensor	
Model	ISI pHs-M11tc
Type	Double junction reference cell (KCl/AgCl and KNO ₃)
Range	0-14 pH
Output	±59.16 mV/pH unit @ 25° C Pre-amplified and temperature compensated. Includes internal lithium battery

Ru-33 Telog Supplied Options



Burial Antenna



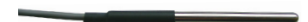
Ultrasonic sensor



pH-31 sensor



Pressure sensor



Temperature sensor

Ru-33 Supported Meters & Sensors

Flowmeters

Via RS-232 or RS-485
Interface to meter
Serial interface port

Hach Sigma 900 Series
ISCO 2150
Marsh McBirney Flo-Dar & Flo-Tote3 Meters
MGD/ADFM & accQmin
ADS Flow Shark

Sensors

Hydrolab Sondes
Hach WMD Pipe Sonde

Water Quality

Hach Hydrolab Multiparameter Sondes
DataSonde 4a, MiniSonde 4a
DS5X, DS5, MS5
Hach WDM Pipe Sonde



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