ERT-A2 ALERT2™

Reliable Flood warning and Disaster management communications

Description

ELPRO's Industrial Wireless Solutions has 30 years of expertise in solving critical industrial communications in flood warning applications. The ERT-A2 is a new generation ground up redesigned product that extends on the successful ERRTS™ product line.

Designed to meet local conditions the ERT-A2 provides a single product to support remote stations, repeater and base receiver applications. Supporting a large variety of environmental sensors, critically rain fall, river height gauging data collection to support environmental, flood warning and SCADA applications.

The ELPRO ERT-A2 remote station-repeater in a single unit provides the flexibility in mounting, sensors and power sources required to support installations in sometime very remote or city-based situations in traditional tree, platform, or cabinet.

Features

- ALERT2™ protocol supporting Field station transmitter, repeater and receiver functions in the one unit saving on spares
- Licenced/licence-free VHF/UHF radio transceiver, 4G/LTE Cellular or Satellite modem options
- Simple migration of existing ALERT1 equipment with compatible connections and optional ERRTS™ upgrade kit
- Flexible weatherproof enclosure design allows for simple installation in tree (standpipe), cabinet or outdoor situations
- Enhanced security for both cyber and data transmission
- Two Analog inputs (4-20mA) with separate internally generated configurable 24V loop supply
- 4 Discrete inputs capable of pulsed, encoder or simple on/off use
- SDI-12 Interface for Smart Sensors such as ice, wind, level, ground moisture and weather station applications
- Logging support, internal Flash memory for recorded data retrieval
- Innovative power management system including integrated smart solar regulator, internal or external battery, external power options
- Extremely low power field station <200uA
- Wireless Bluetooth BLE configuration/diagnostic interface

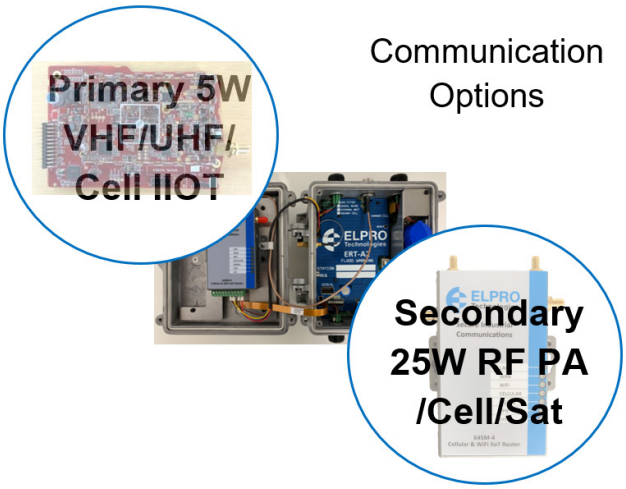
Applications

- Rain Fall and Flood Warning Management
- Automatic Weather Station
- Detection and Indication of Flooded Roads
- Water Quality and Environmental logging
- Tailings leakage and movement detection
- Pipeline monitoring for Environmental protection
- Wellhead monitoring
- Remote I/O connectivity with no fixed power available

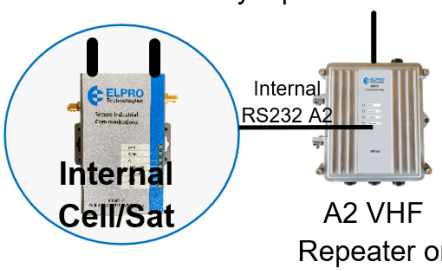
ERT-A2 ALERT2™ Field Station, Repeater & Receiver

Specification	Description
Operation	
Modes - Topology	Field Station, Repeater and Receiver station unit types
Input and Output	
Discrete Input/Output	4 Digital I/O (Discrete/Pulsed, Rain or River encoder)
Analog Inputs	2 Differential analog inputs configurable mA 0-20mA current loop, 16 Bit resolution
Sensor Loop Power	Analog: 24Vdc, max 50mA SDI-12: 12Vdc max 500mA
SDI-12 (V1.4)	Max 15 Sensors, one SDI-12 bus, up to 200 variables
Heater Output	Open Collector Output 2A
GPS (Optional)	Time Synchronization for Logging, location data, ALERT2 TDMA sync
Protocols / Configuration	
User Configuration	Local Access: USB or RS232 (Legacy)
Configurable Parameters	ALERT2™ Binary/ASCII, field/repeater/receiver station, communications setup, unit ID, reporting times, input configuration, analog loop power warmup, date/time, SDI sensor power, logging
RS485	ALERT2 output (Base Receiver output to decoder) ALERT2 Repeater redundancy to Cell/Sat (Future)

Specification	Description
LED Indications and Diagnostics	
LED Indications	Power/OK, Radio TX/RX, Config Enabled, Maintenance Mode
Push Buttons	Front Panel: Maintenance mode/ Send data Internal Test: Maintenance mode/ send data/save logged data to USB/ Firmware update Internal Boot: Boot or Reset unit
Reported Diagnostics	
Radio Diagnostics	Monitoring communications, Radio Signal strength, antenna fail, background noise
Logging	Internal data logging for inputs and other internal events 32MB. Recovered via USB, SD Card or via Radio
Inputs	All Physical Inputs
Connections	
Serial	1 x RS232 ALERT2 or Configuration 1 x RS485 ALERT2 (Note 2)
USB Type B	Local unit Configuration
USB Type A	Retrieval of logged data to USB memory stick
IO/Sensors/Power/RS-232/Solar (Options)	Mil Spec: Multi-pin Connector with standard ALERT1 pin outs Cable Gland: M20 cable gland 5-13mm cable dia, NPT Pipe: ½"NPT Conduit connection
Terminals	Internal wiring terminals (push connect) 0.20 - 1.5 mm² (24 - 16 AWG)
GPS	SMA Female
Primary Antenna	N-Type Female



Communication Options



Redundant Comms Gateway Option

A2 VHF Repeater or Base Rx'er

ERT-A2 ALERT2™ Field Station, Repeater & Receiver

Communications - UHF / VHF Internal Radio

Specification	Description
Frequency (Note 1)	C1: 148 – 174MHz C3: 340 - 400MHz C4: 400 – 480MHz C5: 470 - 520MHz
Transmit Power (Note 1)	C1: 10mW - 5W (+37dBm) C3,C4,C5: 10mW - 10W (+40dBm) All Configurable
Receiver Sensitivity	ALERT2™: 2-FSK -117dBm
Channel Spacing	12.5KHz Software Configurable
Typical Range (LoS)	50km+ (62Miles)
Transmit Current Draw	2.5A @ 13.8Vdc (10W RF) 1.2A @ 24Vdc (10W RF)

Communications - 4G/LTE Cellular Modem

Model	-AU Australia New Zealand South America Asia	-US North America	-EU EMEA/Thailand
LTE	B1/B2/B3/B4/ B5/ B7/B8/ B28/B40	B2/B4/B5/B12/ B13/B14/B66/ B71	B1/B3/B7/B8/ B20/B28A
WCDMA	B1/B2/B5/B8	B2/B4/B5	B1/B8
GSM/EDGE	B2/B3/B5/B8		B3/B8
Carrier	Telstra, Optus, Vodaphone	Verizon/AT&T/ T-Mobile/U.S. Cellular/Rogers/ Telus	Vodaphone, O2, Three, Orange, Deutsche Telecom
Supply Current	Connected average 154mA, peak 192mA@13Vdc		
Connections	2 x Ethernet 10/100 - Gateway Version only		

Communications - External Satellite Iridium Modem

Specification	Description
Frequency Band (Iridium)	1616 - 1626.5MHz
RF Power (Average)	1.6W
Receiver Sensitivity	-117dBm
Receive Current @13.8Vdc	18mA Average, 80mA Peak
Transmit Current @13.8Vdc	80mA Average, 580mA Peak

Power Supply

Specification	Description
Nominal Supply	11-30Vdc, under/over voltage protection
Idle Current Draw @13.8Vdc	Field Station 200µA Repeater Station 50mA
Battery Options	**Lithium Iron Phosphate(LFP):** Internal rechargeable **Lithium Thionyl Chloride(LiP):** Internal non-rechargeable **Lead Acid (Pb):** 12V Battery externally connected
Battery Charger or Solar Regulator	External power supply/MPPT solar panel charges internal lithium (LFP) or external battery Up to 2A charge optimized for 5-30W panel Automatic temperature compensation/ protection
Battery Life 150MHz Rain only	Non Rechargeable Lithium (LiP): 10 years
Battery Life 150MHz Rain/ River 60min Sample Time	Non Rechargeable Lithium (LiP): 6 years

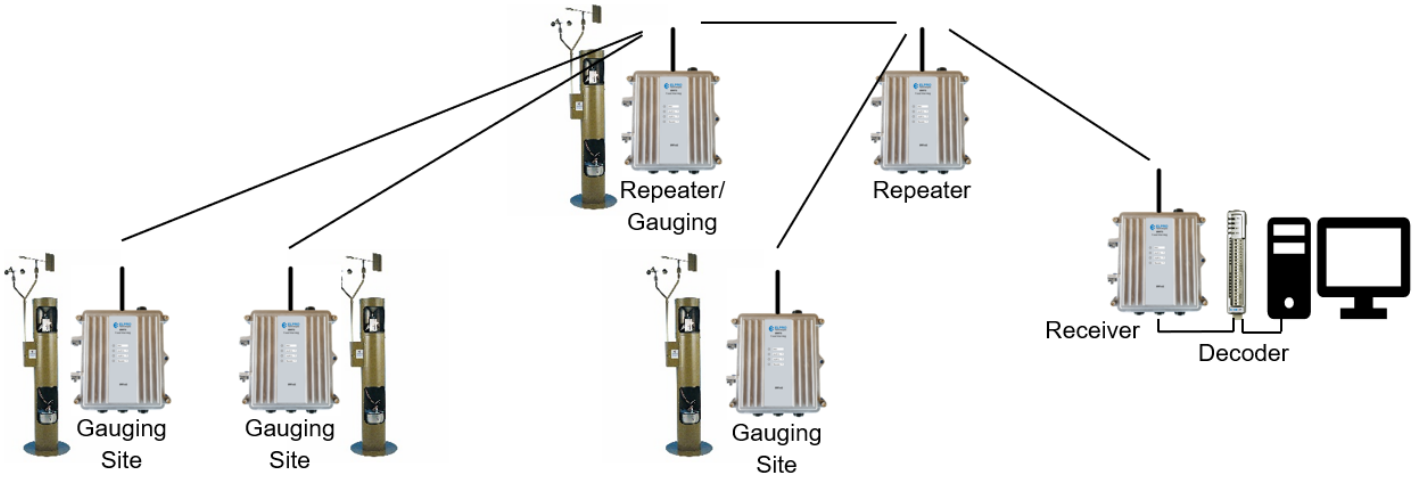
General

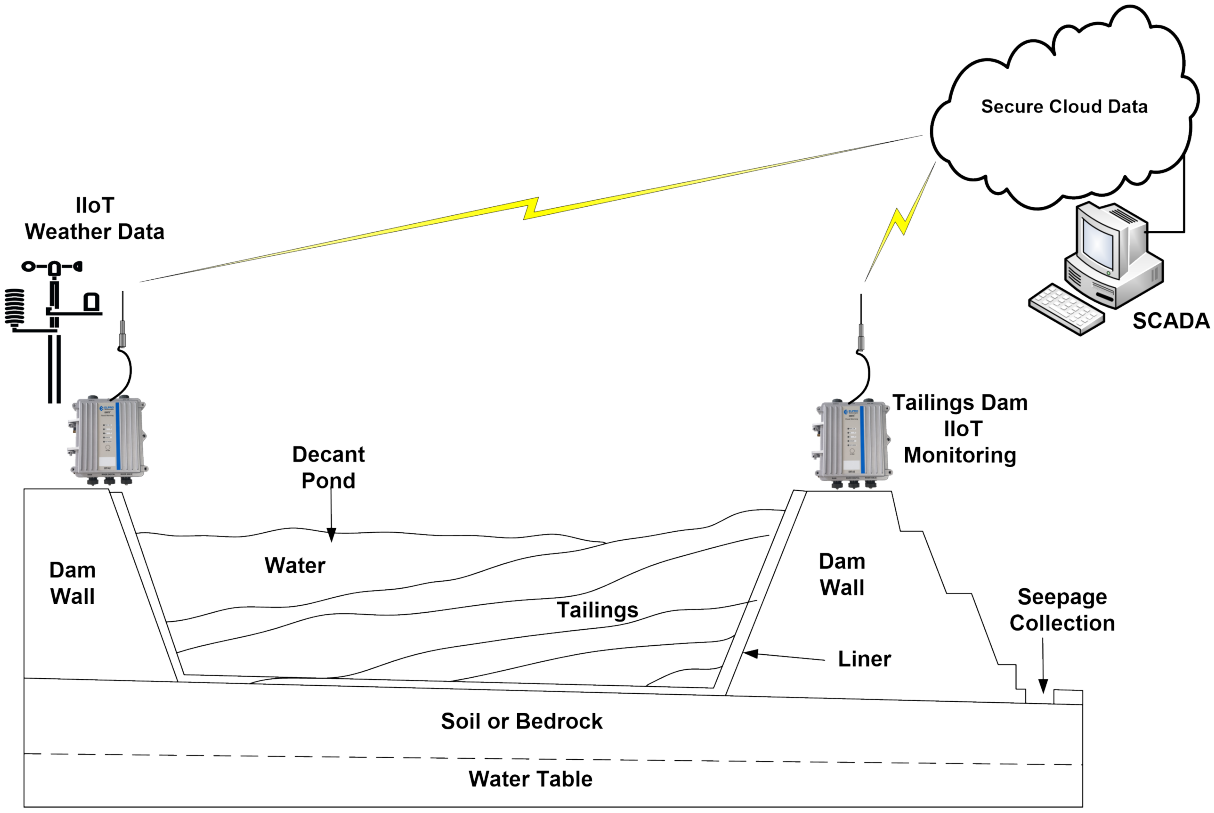
Size	190mm x 197mm x 98mm (7.5” x 7.8” x 3.8”)
Housing	Aluminum cast enclosure with removable door IP66 rated
Mounting	Panel mount standard
Temperature Rating	-40 to +70°C (-40 to +158°F) 0-99% RH non-condensing
Weight	1.8 kg (4.0lb) – not including internal battery
Altitude	0-3000m (0-10000ft)

Compliance

Regulatory UHF/VHF	Australia: RCM, Europe: CE/RED, USA: FCC, Canada: IC RF: FCC CFR47 Part 90; IC RSS 119; EN 300 113; EN 300 220; AS/NZS4295; AS/ NZS4268
Regulatory Satellite	CE: EN301 441, EN301 489-20, EN60950 FCC: CFR47 Parts 2, 15, 25 IC: RSS170
Regulatory Cellular	RCM, FCC, IC, Anatel, JATE/TELEC, NCC, GCF
EMC	FCC CFR47 Part 15; EN 301 489
Safety	EN/IEC 62368

Network examples





Notes:
1. Available RF power and frequency may vary depending on country of application. Please confirm with local regulatory body.
2. SDI-12 disabled when used. RS485 can be used for external communications, ALERT1 data input, ALERT2 output for redundant communications.
3. See Communications Specifications Compliance detail.
4. ALERT2 is a trademark of the National Hydrologic Warning Council.
5. Connectivity only available for 4G/LTE Integrated Gateway Router option.
6. Specifications are subject to change.

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