



# SMART SOLUTIONS

## WIRELESS

### Remote Soil Moisture Monitoring System

302 Remote Moisture Tracker Transmitter

309 Base Receiver System includes:

312 IMMS™ Soil Moisture Monitoring Software

307R Serial Receiver

308 Installation Kit

323 Soil Temp/Moisture (Watermark™) Sensor

322 Auxiliary Temperature Sensor

#### FEATURES:

- *Reliable 900 MHz Spread Spectrum Digital Wireless Data Transmission*
- *Graphic display immediately shows important trends.*
- *One receiver monitors hundreds of Remote Moisture Tracker sites.*
- *No FCC License Required*

**Operation:** Each RMT transmitter can monitor up to 6 soil moisture sensors and 8 temperature sensors. Standard configuration embeds temperature sensor in each moisture sensor leaving 2 available auxiliary temperature channels. Transmitter periodically polls sensors, creates and transmits uniquely addressed packet (8-bit resolution) of moisture and/or temperature data. 307R receiver converts transmission packet into serial RS-232 output and delivers transmitted remote data to serial communications port of user's computer running IMMS™ software. Software logs data into database and updates graphic display. Each 307R can monitor up to 256 individually addressed RMT transmitters. RMT polling/transmission interval individually programmable as 1, 4, 6, or 12 hours. RMT monitors battery voltages and transmits alarm signal when low voltage detected.

**Display:** IMMS™ software provides graphic display of soil moisture data (left vertical axis) and temperature data (right vertical axis) versus time (horizontal axis). Vertical axis is nominally scaled from (-)200 moisture points (dry) to 0 moisture points (wet). Vertical scale may be dynamically adjusted within this range. Horizontal axis scale may be chosen from preset menu ranging from 1 day to 1 year. User-defined begin/end dates may be chosen for display of historical data. Software also dis-

plays RMT transmission signal strength, low RMT battery voltage alarms, and lost reception alarms if signal from RMT is not received for 18 hours.

**Computer System Minimum Requirements:** Windows® 95 or later operating system; 32 MB RAM; 150 MHz processor; 50 MB available memory.

**Expected Range:** One-half mile, line of sight. Operating range is dependent on site environmental factors unique to each installation such as ambient temperature, mounting height and its relation to obstructing terrain, foliage, or structures, and local 900 MHz noise level. The Isaacs 325 SmartRepeater™ may be used to extend system range.

**Radio:** Narrow band, frequency hopping spread spectrum, data encoding (proprietary protocol).

**Frequency Range:** 902 - 928 MHz.

*This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:*

- (1) This device may not cause harmful interference, and*
- (2) This device must accept any interference received, including interference that may cause undesired operation.*



**Power Requirements:** RMT transmitter: 9V lithium system battery (Ultralife U9VL-FP) and 3V lithium transmitter battery (Duracell DL123A or Panasonic CR123A). 307R receiver: 11 – 14 VDC, 85 mA peak; 1 external power supply (120 VAC to 12 VDC, 725 mA) provided.

**Operating Conditions:** 0 – 95% relative humidity, non-condensing. 32°F to 122°F (0°C to 50°C).

**Enclosure:** RMT transmitter: NEMA 4X molded plastic (polycarbonate). 307R receiver: DuPont® Imron® coated polyvinyl chloride with 1 inch FNPT conduit fitting.

**Dimensions (enclosure):** RMT transmitter: 4.9 x 6.9 x 3.9 inches (12.4 x 17.5 x 9.8 cm). 307R receiver: 4.9 (diameter) x 14.0 inches (12.3 x 35.6 cm).

**Weight:** RMT transmitter: 1.25 lb (.6 kg). 307R receiver: 3.5 lb (1.6 kg).

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