PermAlert
Environmental Specialty Products

PRODUCT FEATURES / BENEFITS

- Locates multiple leaks without loss of accuracy or sensitivity
- Detects growing leaks
- Locates breaks and shorts to reduce downtime
- Stores information with time and date
- Monitors for leaks up to location of breaks/shorts
- RS-232/RS-485 serial ports
- Accepts probe and cable sensors in one sensor string
- Able to commission system with limited initial lengths of wet cable
- Not susceptible to dust/dirt contamination of the sensor string
- Zener barrier panel (ZBP) provides intrinsically safe sensor cable output circuits for hazardous locations:
    Class I, Division 1, Groups C & D
    Zone 0, Group IIB
- Configured as Modbus RTU slave

PRINCIPLE OF OPERATION

PAL-AT®'s TDR pulse echo technology operates similar to radar. Thousands of times each minute, safe energy pulses are sent out on the sensor cables. As these energy pulses travel down the cable, reflections are returned to the monitoring unit and a "map" of the reflected energy from the cable is stored in memory. The presence of liquids on the sensor cable, in sufficient quantities to "wet" the cable, will alter its electrical properties. This alteration will cause a change of the reflection at that location. When PAL-AT recognizes a change, it enters into alarm mode and automatically creates a new "map". This becomes the base line for the system, allowing PAL-AT to continue monitoring the cable for growing leaks, new leaks, breaks, shorts and/or faults. The alarms are stored in an alarm queue to be acknowledged by an authorized user.

SECURITY SYSTEM

PAL-AT requires a password entry before alarms can be acknowledged or system information can be changed. This feature limits access to only those employees who have been authorized to perform the advanced functions.

SYSTEM ARCHIVES

Date and time history of significant events including power failure and cable leak/fault/break/short are stored in nonvolatile memory providing a documented record of system alarms.

OUTPUT RELAYS

PAL-AT has several dry contact output relays, rated for 10 A @ 250 VAC. A fault relay monitors for loss of power. A common alarm relay is activated when any fault is detected on any cable. It is reset when the audible alarm is silenced. A cable relay can be programmed to activate when any fault occurs or only when leaks are detected. The relay will stay active until the alarm is acknowledged.

COMMUNICATION

PAL-AT has two serial ports, RS-485 and RS-232, for communication to PALCOM® Communication Software or custom software. Refer to the Communication Options Data Sheet for detailed information.
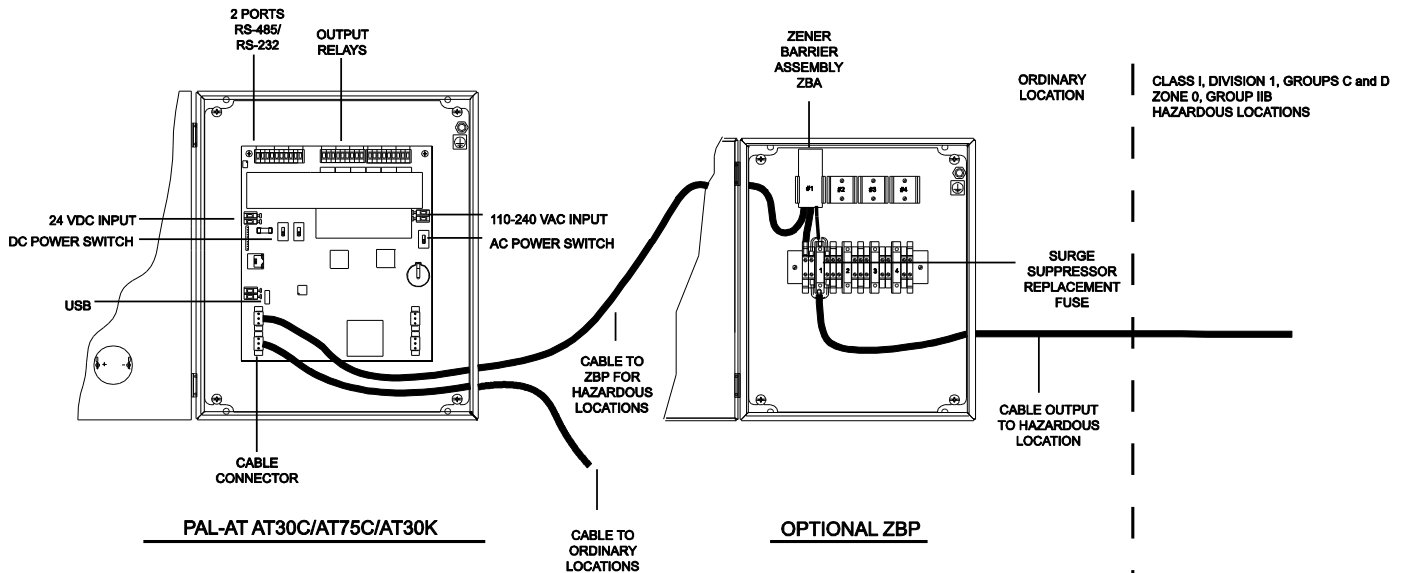
MODBUS

PAL-AT provides Modbus RTU output to pass the cable status to a Modbus host. It also enables the host to acknowledge the alarm queue remotely.

Model No.	Part No.	Cable Capacity	Maximum Cable Range Feet	(Meters)
AT30C	8028300	1	3000	(900)
AT75C	8028310	1	7500	(2300)
AT30K	8028320	4	7500	(2300)

*Refer to Sensor Cables Product Data for Technical details

Leak Detection System
4ER7

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2 PORTS RS-485/RS-232

OUTPUT RELAYS

ZENER BARRIER ASSEMBLY ZBA

ORDINARY LOCATION

CLASS I, DIVISION 1, GROUPS C and D ZONE 0, GROUP IIB HAZARDOUS LOCATIONS

24 VDC INPUT DC POWER SWITCH

110-240 VAC INPUT AC POWER SWITCH

USB

SURGE SUPPRESSOR REPLACEMENT FUSE

CABLE TO ZBP FOR HAZARDOUS LOCATIONS

CABLE CONNECTOR

CABLE OUTPUT TO HAZARDOUS LOCATION

PAL-AT AT30C/AT75C/AT30K

CABLE TO ORDINARY LOCATIONS

OPTIONAL ZBP

HAZARDOUS AREAS

An optional **Zener Barrier Panel (ZBP)** is available if PAL-AT cables or probes are installed in Class I, Division 1, Groups C & D / Zone 0, Group IIB hazardous locations. The ZBP includes one **Zener Barrier Assembly (ZBA)**. One ZBA is required for each cable sensing string. The ZBP is expandable to hold up to four ZBAs.

SURGE SUPPRESSOR

Each ZBA also functions as a surge suppressor to reduce damage to the PAL-AT from external voltage surges. It is used when cable locations are subject to frequent voltage surges or nearby lightning strikes. It has a replaceable fuse to get the system back on-line quickly. Each ZBA protects one cable string.

Model Number	Part Number	Description
ZBP	8028115	Zener Barrier Panel
ZBA	8028110	Zener Barrier Assembly

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92P1

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TECHNICAL DATA:

PAL-AT

- Dimensions: 13.75" x 11.81" x 4.00"
  (350 mm x 300 mm x 102 mm)
- Power: 110-240 VAC, 50/60 Hz, 0.3 A/50 VA
  24 VDC, 1 A/24 VA
- Weight: 14.6 lb (6.6 kg)
- Operating Range:-4°F to 122°F
  (-20°C to 50°C)

ALARM OUTPUTS:

- Fault Conditions: Leak, Break, Short or Probe Activation
- Distance to Fault Location • Date and Time of Fault
- Activation of Output Relays • Red LED Optical Alarm
- BMS Interface • Modbus RTU Output

ZBP:

- Dimensions: 11.81" x 9.84" x 4.00"
  (300 mm x 250 mm x 102 mm)
- Weight: 12.0 lb (5.4 kg)
- Operating Range:-4°F to 140°F
  (-20°C to 60°C)