

# **Specification Guideline**

# **Aqueous Chemical/Solvent Leak Detection – Pinpoint Location Systems**

Furnish a complete system, including digital electronic alarm and locating module, modular sensing cable, map, and auxiliary equipment as manufactured by Tyco Thermal Controls and known as the TraceTek leak detection and location system.

**SENSING CABLE:** The system shall provide pre-connectorised sensing cable and sensing cable components all with locking connectors. The sensing cable shall, for the majority of cases, be capable of being cleaned in situ with a damp cloth. The sensing cable shall be capable of withstanding all liquids within the designated areas, such that it can be reused after cleaning. The sensing cable and all interconnecting jumper cables shall comply with class 2 plenum rating for LSF (low smoke and fume). Polyethylene cable materials shall be prohibited due to smoke and fumes generated in case of fire. The sensing cable shall be vibrant orange for easy identification within floor voids, drip trays and general service areas. The cable shall be of a four-wire construction, in order to provide continuous verification of sensing circuit integrity. The four wires shall have a fluoropolymer insulation or coating and be wound helically around a central fluoropolymer core. The sensing cable shall be of such construction that no metallic parts are exposed in order to avoid corrosion. The sensing cable system may feature modular branching connectors in order to introduce tee splices into the layout. The sensing cable shall be TraceTek TT3000/TT7000 as supplied by Aquilar Ltd T: 01403 216100

**ALARM & LOCATING MODULE:** The digital alarm and locating module shall be capable of monitoring systems up to 1500 m of sensing cable as a single channel alarm panel and shall also be able to monitor up to 127 system interface units (TTSIM’s with upto 1500 metre monitoring capability on all channels) with pinpoint location of the leak to within +/- 1 m.

The alarm and locating module shall indicate that a chemical/solvent has contacted the sensing cable by (a) sounding an alarm, (b) displaying a digital readout of the location of the first point of contact with a chemical/solvent, (c) activating a range of output interfaces (relays, 4-20 mA, RS-232/485, Modbus RTU), and (d) displaying a digital readout of the distance from the start of the sensing cable to the location of the first contact with a chemical/solvent for any of the 128 SIM units. Subsequent events: the panel shall poll and update for any new alarm. Upon detection of a leak, the alarm and locating module shall record the time, date and leak location to non-volatile memory. All operator interactions shall also be recorded in non-volatile memory with date/time stamp, including: alarm silenced, leak cleared and relay reset. The location of the first contact with water shall be retained on the display until the sensing cable has been dried and the module has been reset.

The alarm module shall continue to monitor the sensor cable for spread or migration of the initial leak beyond a user adjustable dead band. The alarm and locating panel shall also be capable of monitoring the sensing cable for additional leak events that are spatially separated from the initial event. Upon detection of a second event or if the initial leak is determined to have spread beyond the dead band, the alarm panel shall re-alarm with an audible alarm, alphanumeric message and event logging.

Each SIM unit shall continuously monitor the sensor cable for build up of contaminants and alert the operator via the master control panel if contamination is detected. Upon detection of a contamination event, the alarm panel shall cause an audible alarm, alphanumeric message; service needed relay actuation and event logging.

The alarm module shall continuously monitor the sensor cable for continuity faults. The loss of continuity in any of the wires shall result in an audible alarm, actuation of a fault relay, an alphanumeric status message indicating fault and an event logged to non-volatile memory.

The alarm module shall have built in self-test capability activated from the front panel by user command. The event memory shall be capable of logging 1024 events. The alarm panel shall be capable of communicating to host systems via RS-232 or RS-485 at the user's option using Modbus (J-Bus) format (ASCII or RTU) In RS-485 mode, multiple alarm panels shall be addressable from the same host system RS-485 port. The alarm panel shall also be capable of generating a 4-20 mA analogue interface signal.

The digital alarm panel shall provide separate status relays for alarm (leak detected), service needed, and trouble conditions. Relays shall be dual Form - C type rated for 3 Amps at 230 vac/ 24 vdc.

Electrical service shall be provided to the alarm panel at (24 Vdc, 24 Vac, 110 Vac or 240 Vac) (select one). Provide a dedicated 3 amp unswitched fused spur for each alarm panel.

The alarm panel and “system interface module” shall be Model TTDM-128/TTSIM-1/1A/2.

The TTDM-128 alarm panel shall have the facility to provide Alphanumeric display, providing a name and distance location to the position of a leak. The alphanumeric display shall further have the capability to present up to ten (10) user input “region labels” for each of the 128 monitored SIM channels.

The digital alarm and locating module shall have LEDs indicating 'monitoring' (green), 'service required' (yellow), ‘leak’ (red), 'fault' (red). These shall result in an audible alarm, a leak LED signal on the face of the unit, and shall operate a relay for remote alarm. The location of the first water contact shall be retained on the display until the cable is dry and the module is reset. The current status of the system shall also be displayed.

System and product approvals: all products should be manufactured within an ISO 9001 certified factory; copies of the certification should be available upon request.

**INSTALLATION:** The installation shall not take place until all construction work to the area of installation is completed, all debris and construction by products have been taken away and the area cleaned. The sensing cable system and alarm and locating module shall be of the type that is simple to install, commission and maintain without the need for special tools, e.g. oscilloscopes, sine wave generators, etc. Sensing cable shall be removed should it be necessary to conduct any local building modifications and replaced when completed. The appointed contractor shall ensure that the system is installed by a TraceTek trained partner who shall create a graphic display map of the installation. The map shall be of good quality and show location of alarm and locating module, sensing cable layout, room landmarks. It should be suitably framed or laminated and located beside the module. Upon completion of the installation the TraceTek system shall be commissioned in strict accordance with the manufacturer's instructions by the TraceTek trained partner to ensure compliance with the warranty requirements

The sensing cable system supplier shall provide a small portable test box for maintenance purposes. Features shall include measured current flow levels and exact location.

**The system shall be supplied by Aquilar Ltd, Weights & Measures House, 20 Barttelot Road, Horsham, West Sussex. RH12 1DQ. Tel: 01403 216100 Email: info@aquilar.co.uk**

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