

# **Specification Guideline**

**Hydrocarbon (Fuel/Oil) Leak Detection – Pinpoint Systems**

Furnish a complete system, including electronic alarm and locating module, modular TraceTek TT5000/TT5000-HUV/TT5000-HS sensing cable, AquiTron™ Optical fuel/oil sensing probes, auxiliary components and BMS interface as supplied by Aquilar and manufactured by TraceTek and AquiTron™.

**SENSING CABLE:** The fuel sensing cable shall detect the presence of diesel, gasoline, jet fuel and other hydrocarbons but shall not detect water. The fuel sensing cable shall consist of a four wire core, conductive polymeric jacket, and a fluoropolymer overbraid. The core shall consist of two sensing wires and two insulated wires. The sensing wires shall be jacketed with a conductive fluoropolymer. The cable shall be constructed with no metal parts exposed to the environment. The sensing cable system shall be capable of accommodating any number of branches using TraceTek branching connectors. Jumper cable shall be available to interconnect sensing cables or to facilitate remote mounting of the electronic panel. Use of interconnect wiring to remotely mount the electronic panel shall not reduce the maximum amount of sensing cable that the electronic panel can monitor. The sensing cable shall be TraceTek TT5000/TT5000-HUV/TT5000-HS as supplied by Aquilar Ltd T: 01403 216100

**OPTICAL HYDROCARBON SENSING PROBE:** The AquiTron™ AT-OPSEN Optical liquid detection sensor shall provide instant detection of fuel oils and any other none aggressive liquids. The AT-OPSEN shall be powered by a 12Vdc from a PSU-1 power supply unit. The orange epoxy powder coated, low profile guard plate will ensure that the probe will not fall over and bright colour give high visibility. LED’s for power (green) and (red) leak alarm shall be provided on the top of the IP67 enclosure. AT-OPSEN interlink cable shall be used to connect multiple sensor to one alarm system.

**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 hydrocarbon 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 water, (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 hydrocarbon 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 a hydrocarbon shall be retained on the display until the sensing cable has been replaced 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.

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 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**