

# DESIGN AND APPLICATION GUIDE



# Scope of this Guide

This guide will help you select TraceTek & Aquitr<sup>™</sup> products for water detection in commercial buildings. Additional TraceTek products are available for other liquids, fuels and oils, organic solvents, aqueous chemicals and other types of applications.

## Modular Design Approach

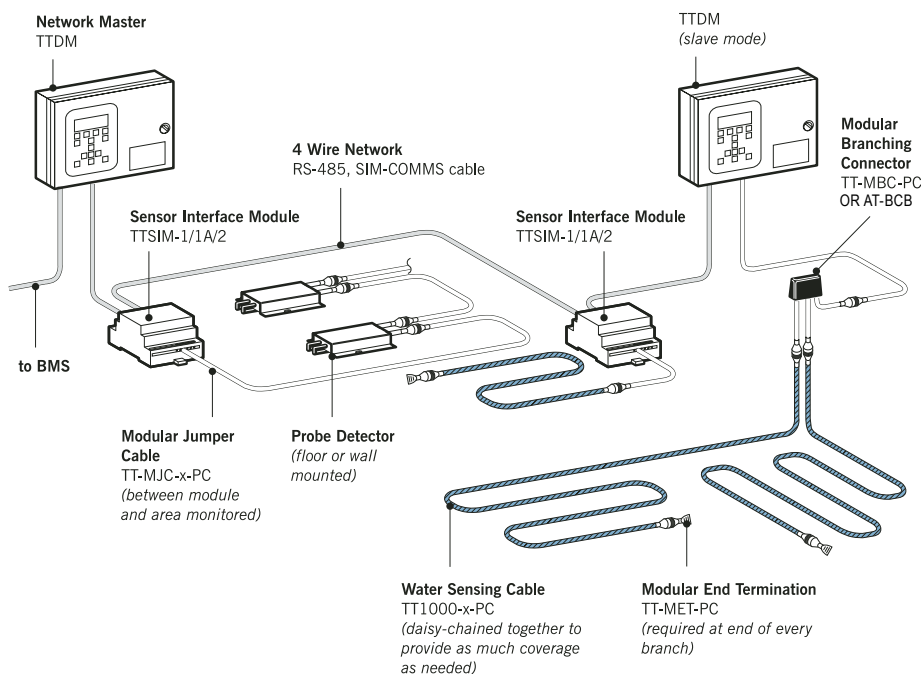
TraceTek leak detection is a versatile modular system, with interchangeable components that can be configured in many different ways. Standard lengths of TraceTek cable plug together with no special tools, making it easy to modify or add to the system in the future. The range of TraceTek alarm modules and modular components allows you to tailor the monitoring approach and layout to the application.

## Contents of this Guide

The first six pages of this guide show typical configurations for TraceTek leak detection systems. Many other configurations are possible. The last two pages present a guide to calculating the amount of sensing cable or probes required and an overview of application areas.

Other Aquilar, Aquitr<sup>™</sup> & TraceTek literature can be obtained from our web site [www.aquilar.co.uk](http://www.aquilar.co.uk) and [www.tracetek.co.uk](http://www.tracetek.co.uk)

# Alarm and Locating System



A TraceTek locating system can pinpoint a leak to within 1 metre and often includes these additional circuit components:

- Branching connectors
- Weighted lengths

These components make it possible for a locating system to monitor one or more large areas.

A locating system also requires:

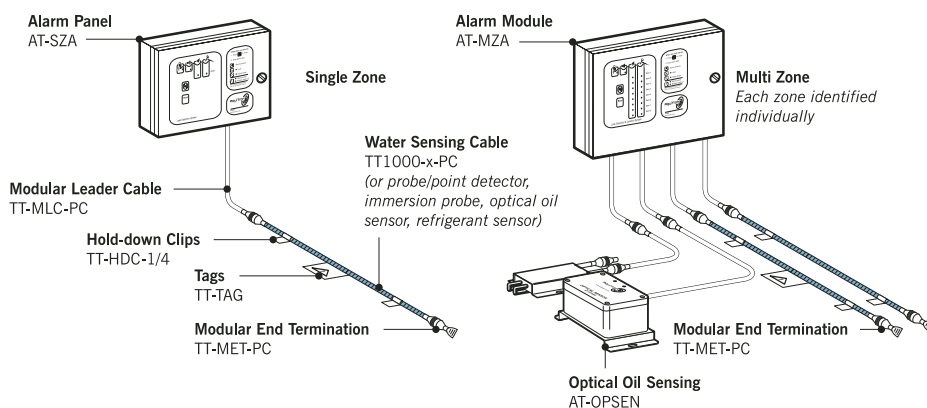
- A graphic map (as installed layout drawing with distance points)

Note: Each area and room can be given an alpha-numeric room name to identify the leak position (regions).

## Zone System

The pin point location system can be configured into a zone system by either using branch connectors or localized slave controller TTSIM-1/1A/2.

# Alarm Only System, Single and Multi Zone



## A Basic System

Every TraceTek / Aquitr<sup>™</sup> leak detection system has these basic parts:

- An alarm module / panel
- Leader and / or jumper cables (non-sensing cables between the module and the areas monitored)
- Sensing cable / probes
- End termination
- Accessories such as hold-down clips and tags

For large and / or separate areas, consider a TraceTek locating system.

## Wide Area Coverage: TraceTek Locating System

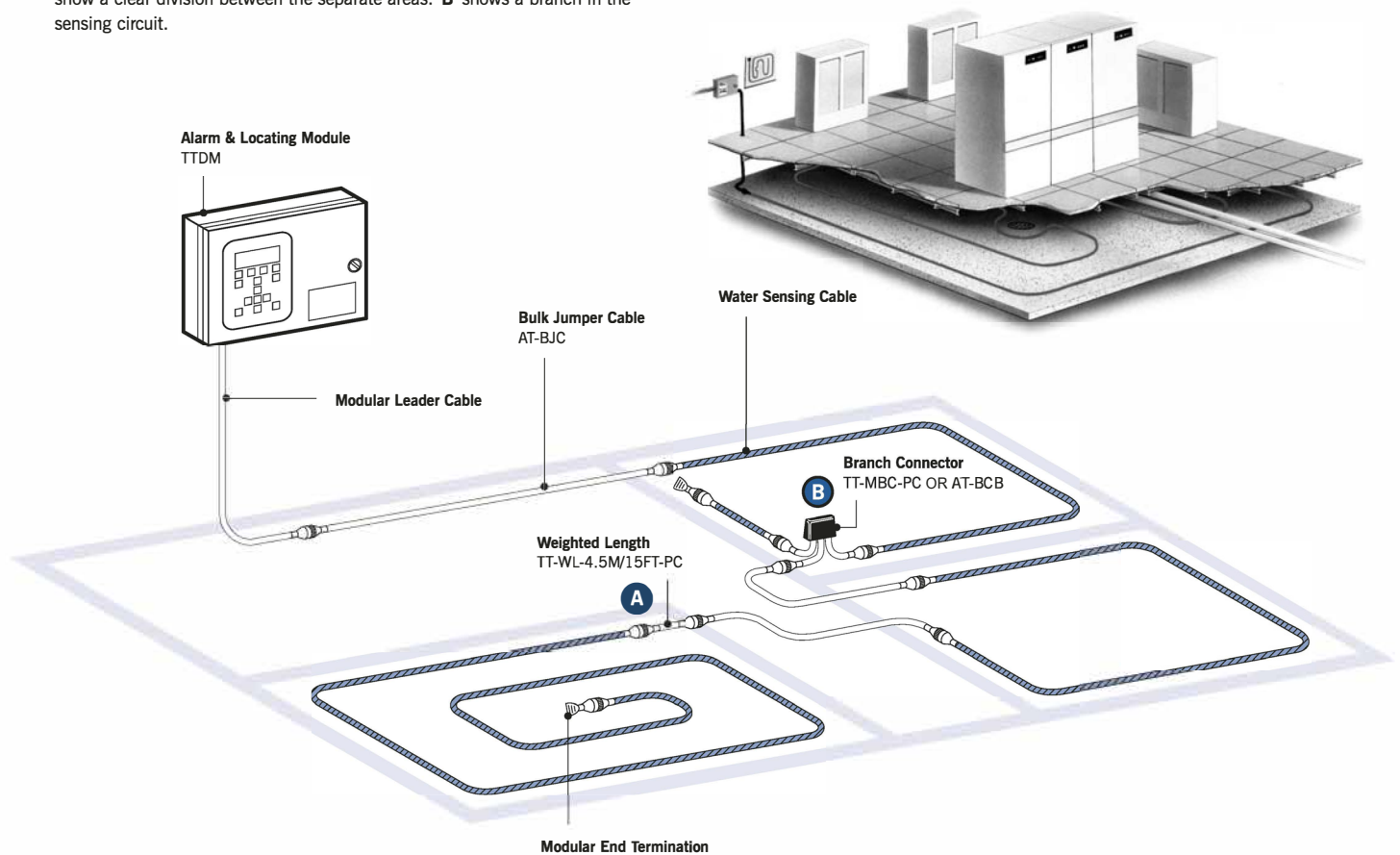
A TraceTek locating system can monitor one or more large areas. If water contacts the sensing cable, the alarm and locating module indicates the location with a digital display. A system map created after installation provides reference points (see illustration below) to facilitate a quick, effective response. 'A' shows where the sensing circuit jumps to a new room and a weighted length is used.

The weighted length simulates 5 mtrs of sensing cable so the system map will show a clear division between the separate areas. 'B' shows a branch in the sensing circuit.

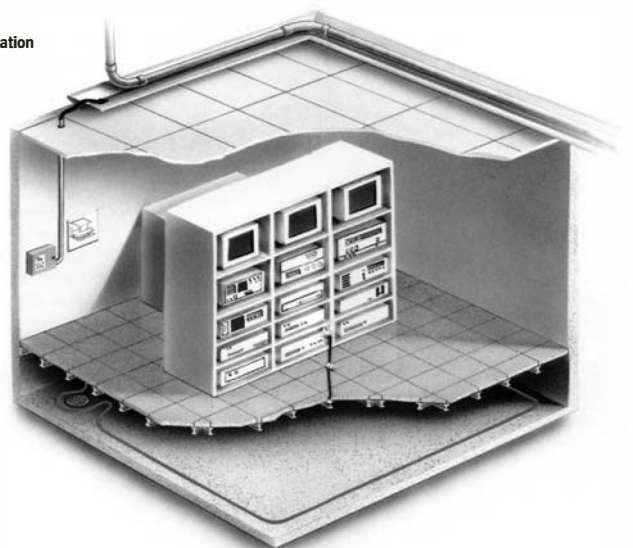
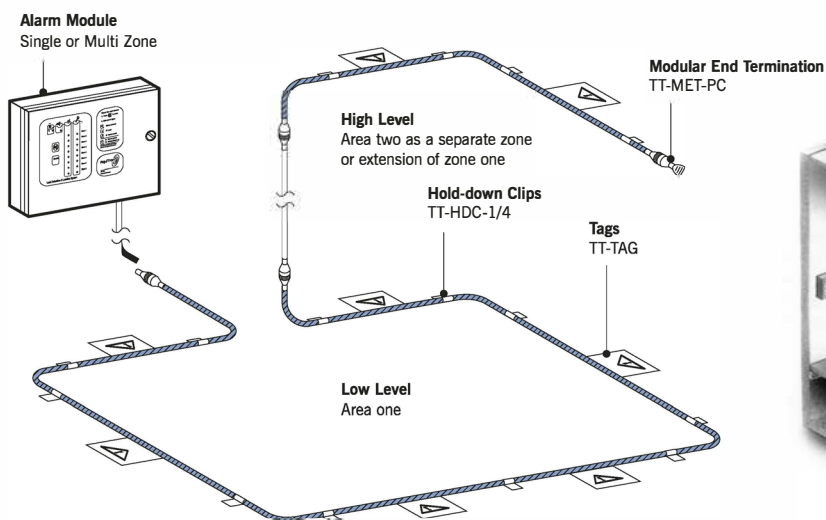
A TraceTek branching connector is wired so the connected branches appear in series, middle leg first. The branching connector also adds a simulated cable length of 5 mtrs on each branch to make a clear division between areas.

Although not shown, a system may have branches within branches.

*The number of branches is limited only by the total length of the sensing circuit.*

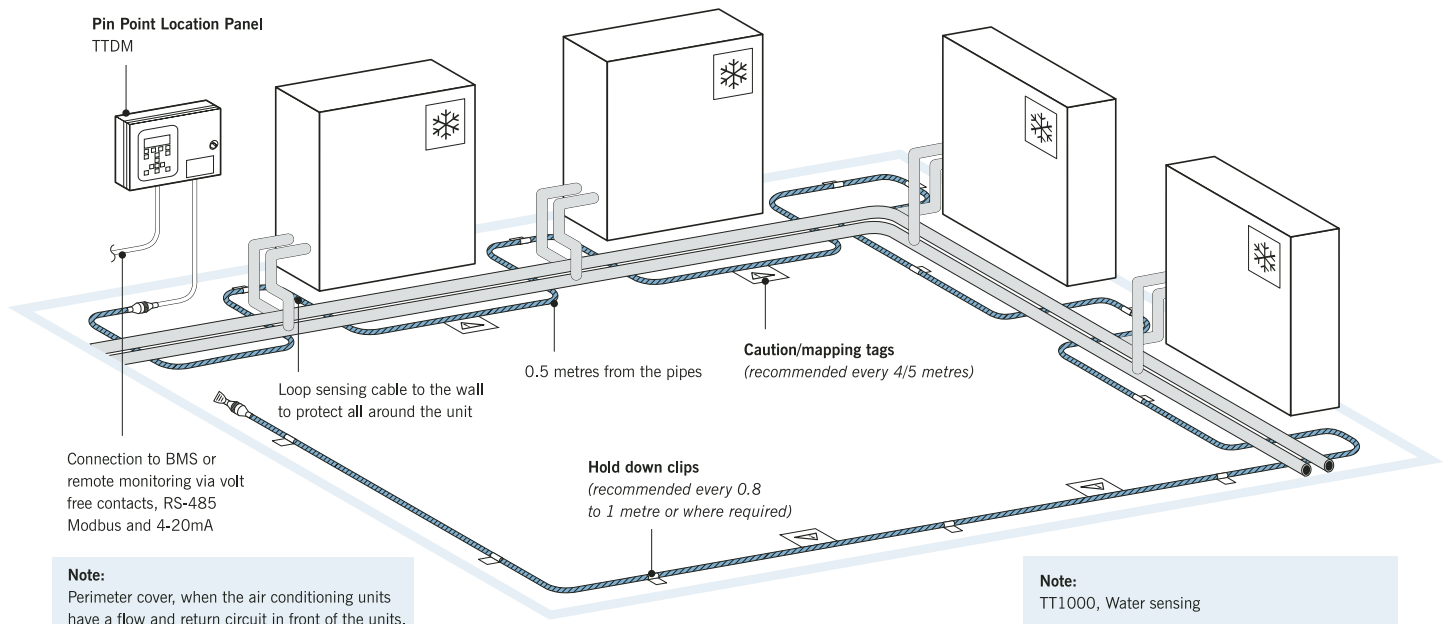


## Small Area Coverage: Basic TraceTek / AquiTron™ Alarm System

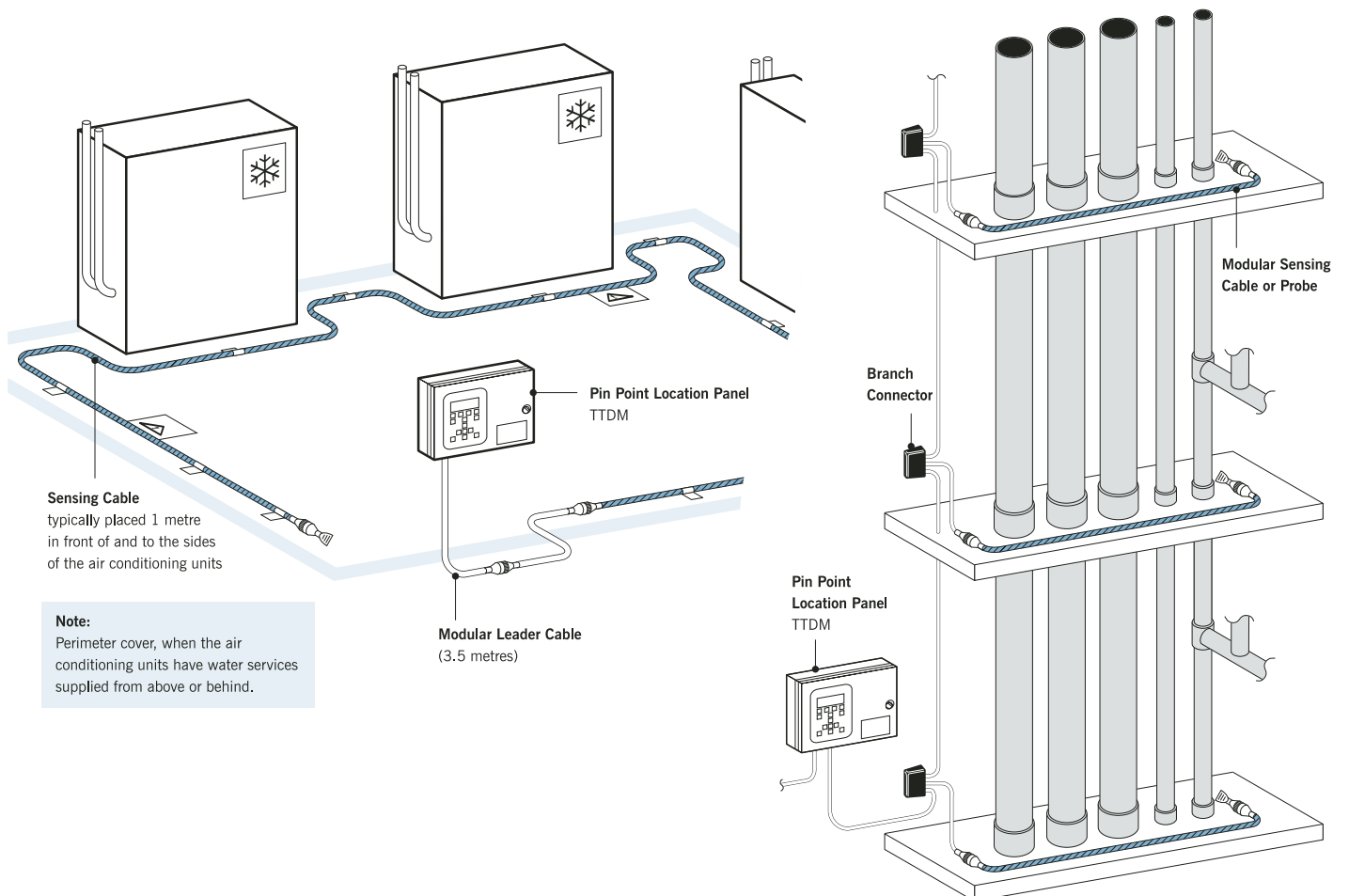


The alarm panel can be installed in an occupied area to make use of the module's audible alarm. The use of jumper cable allows the alarm module to be positioned in a location remote from the sensing cable it monitors.

# Raised Floor Applications

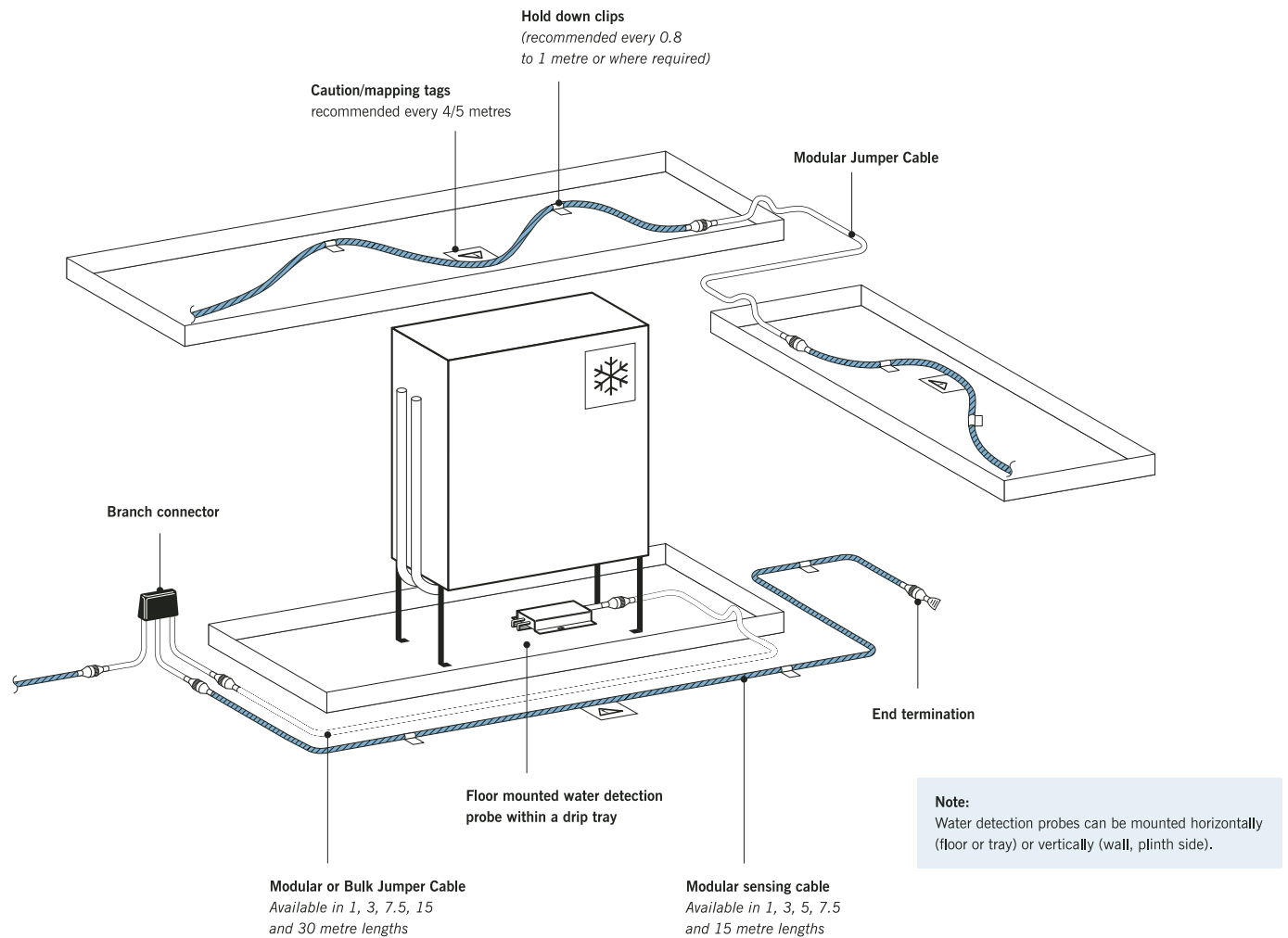


- Note:**  
TT1000, Water sensing
- Modular sensing cable, available in 1, 3, 5, 7.5 and 15 metre lengths
  - Modular jumper cable, available in 1, 3, 7.5, 15 and 30 metre lengths
  - Select components with plastic connectors (PC suffix for TT1000)

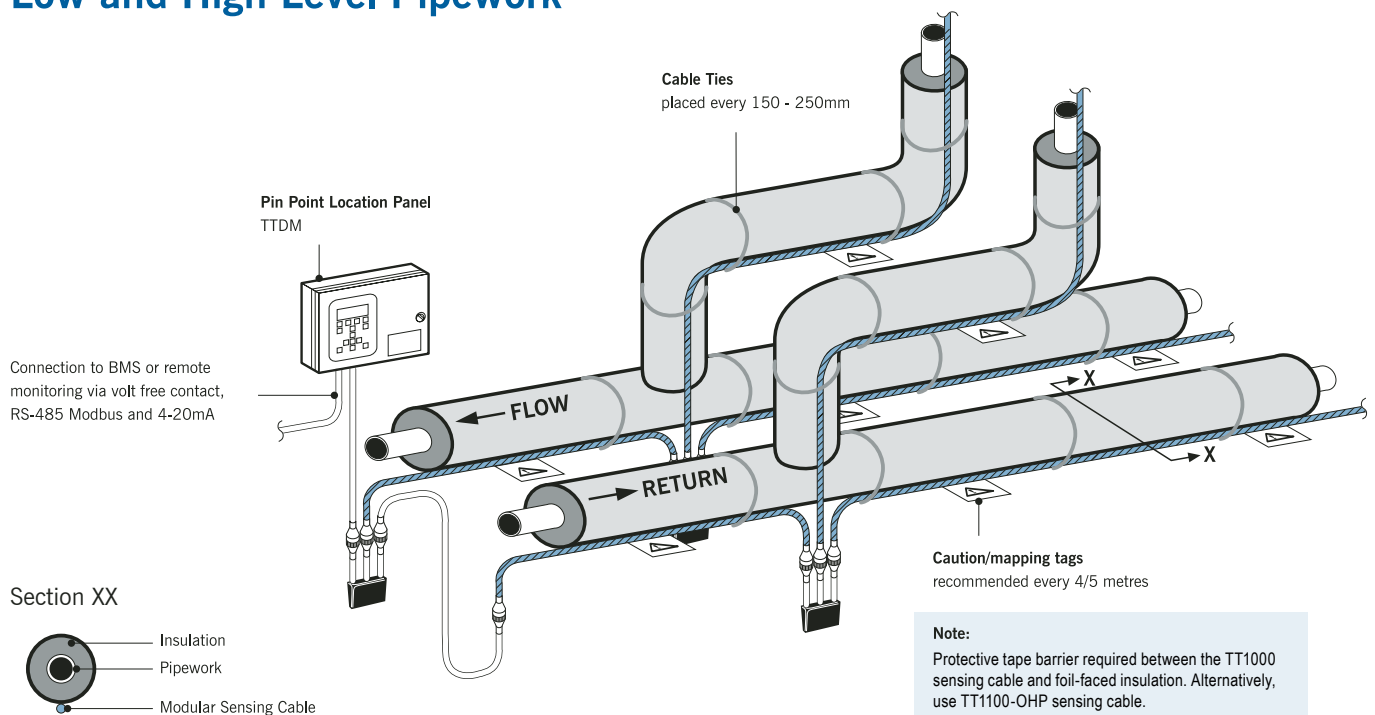




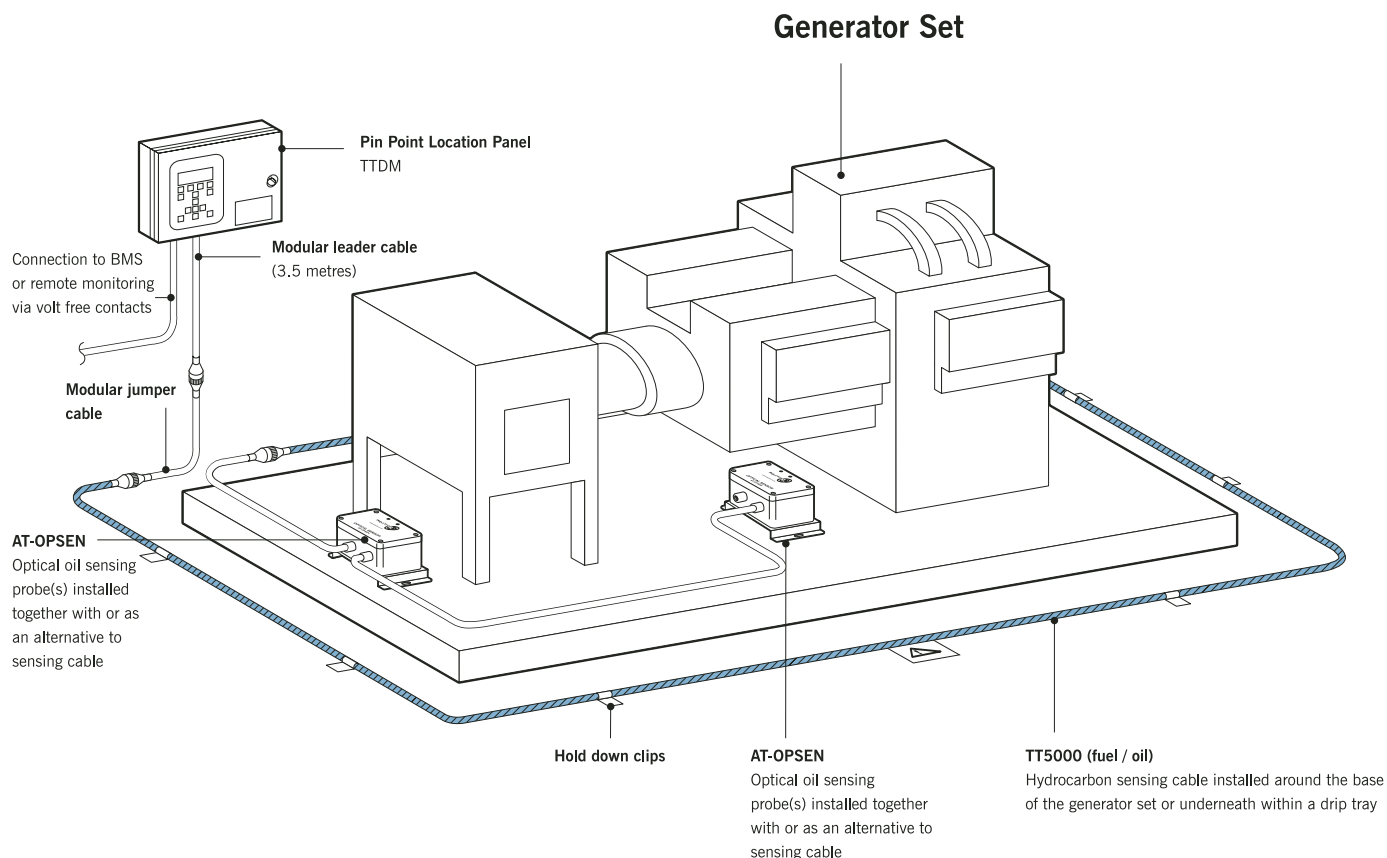
## Low and High Level Drip Trays



## Low and High Level Pipework



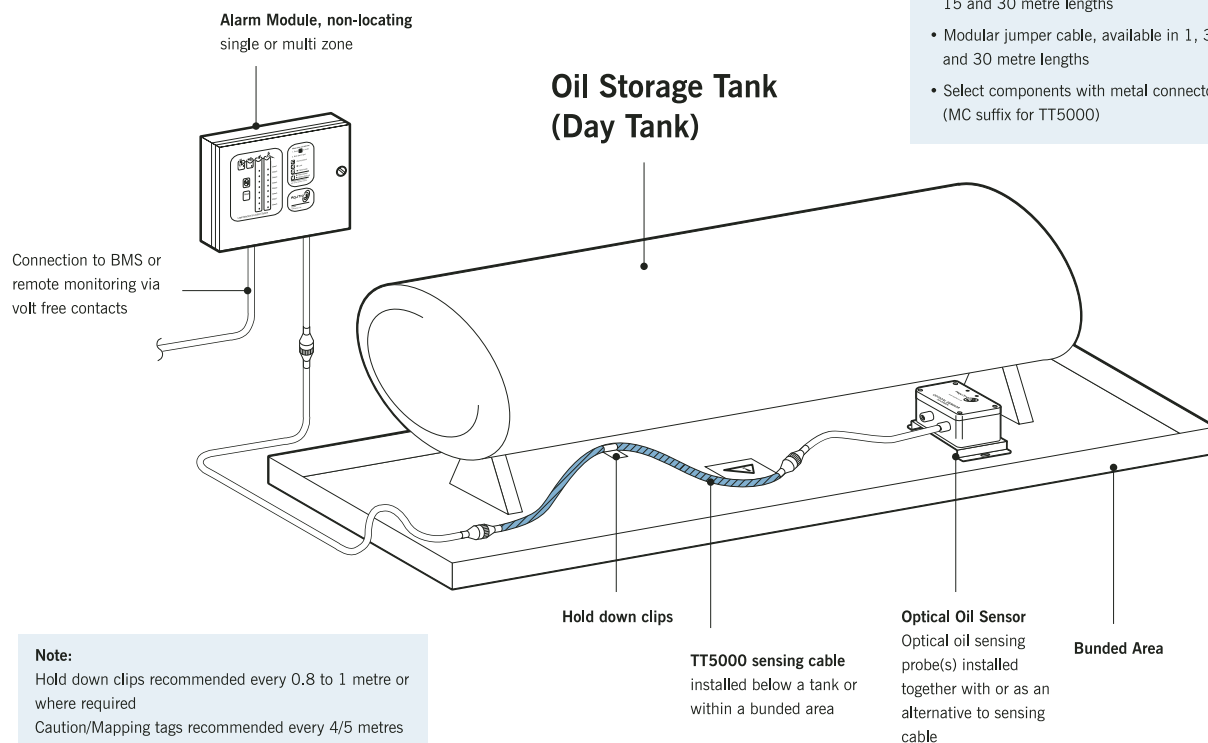
# Fuel / Oil Detection



## Note:

TT5000, Fuel / Oil sensing

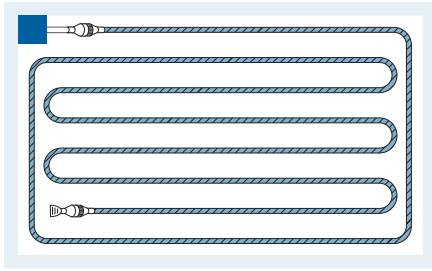
- Modular sensing cable, available in 0.3, 1.5, 3, 4.5, 7.5, 15 and 30 metre lengths
- Modular jumper cable, available in 1, 3, 7.5, 15 and 30 metre lengths
- Select components with metal connectors (MC suffix for TT5000)



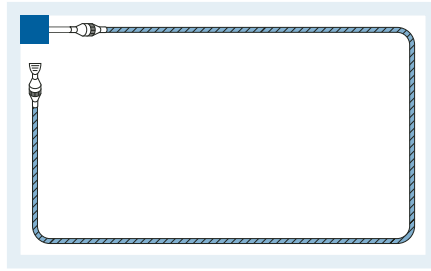
## Note:

Hold down clips recommended every 0.8 to 1 metre or where required  
Caution/Mapping tags recommended every 4/5 metres

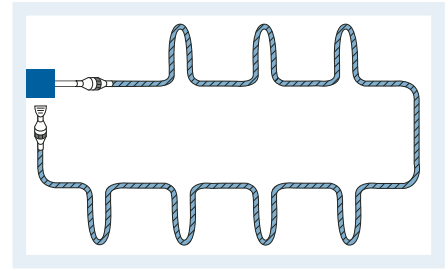
# Calculate the Sensing Cable & Probes Required



Full Coverage



Perimeter Coverage



Perimeter ACU coverage

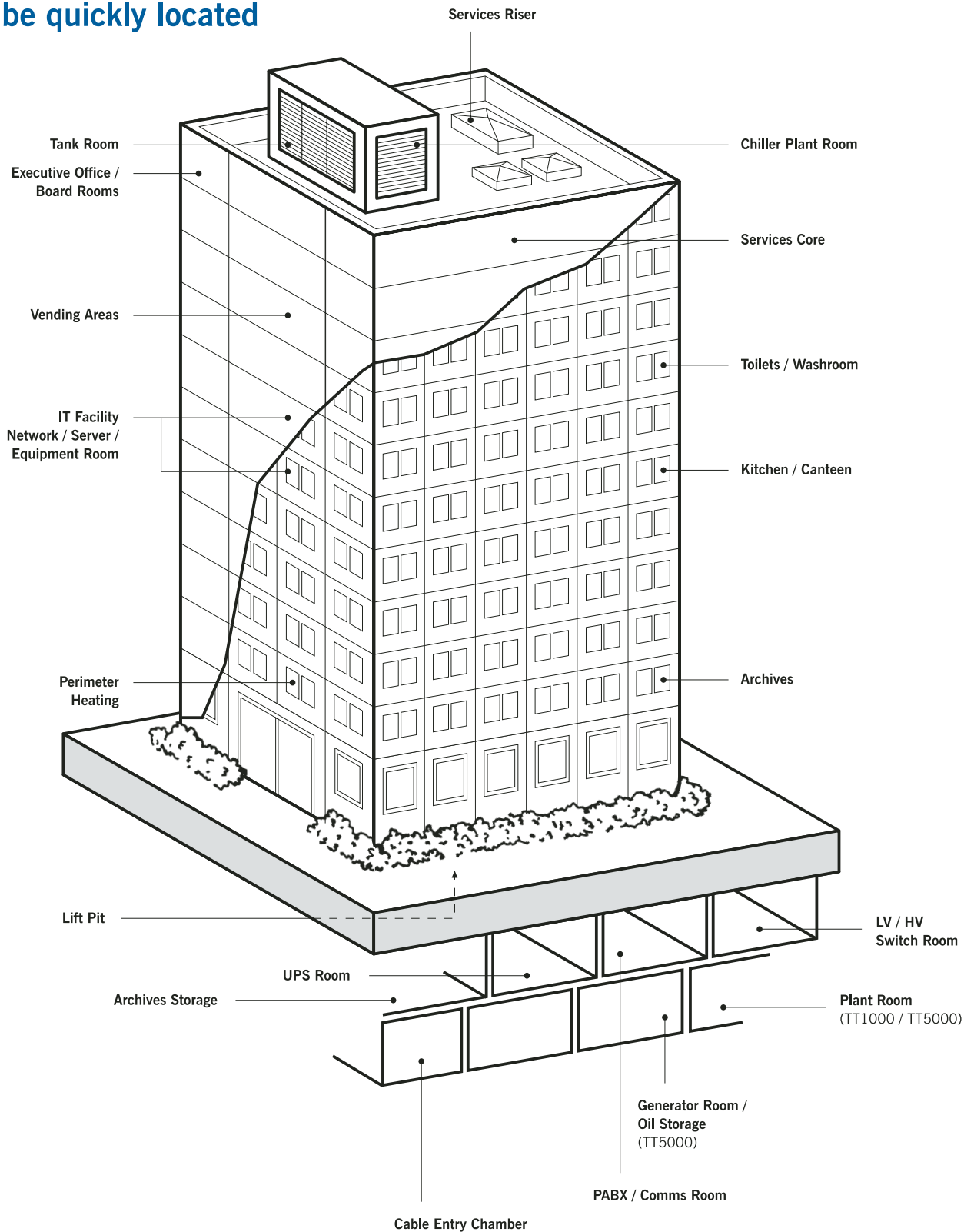
Sensing cable layout	Distance between cable serpentine loops (meters)	Calculation factor (m per M <sup>2</sup> )
1. Typical raised floor protection (extensive wiring density) allowing perimeter and total floor coverage: (2 floor tiles).	1.2	0.85
2. Typical raised floor protection (low wiring density) allowing perimeter and total floor coverage: 2 metre spacing (3 floor tiles).	1.8	0.55
3. Room perimeter protection: Sensing cable typically installed between 100 and 300mm from the walls.	-	Cable length = room perimeter.
4. Perimeter ACU coverage: cable installed 1 metre in front of the air conditioning units and looping towards the perimeter (walls).	-	Cable length = room perimeter plus sensing 4 metres per ACU.
5. Position the Probes below or close to pumps, valve sets, drains, AHU's, sumps, chillers, tanks and vessels.	Approx 3 to 4 metres between probes in plant or banded areas	-
<b>Notes</b> <ul style="list-style-type: none"> <li>Add additional cable for trouble areas (such as floor drains, chiller lines, condensate lines or service piping) + 10% extra length</li> <li>Due to uneven and undulating floor slabs, point detectors are not ideal for open raised floor areas.</li> <li>Link areas together. Connect sensing cables in different areas using jumper cable. A weighted length resistor is used to clearly separate two adjoining areas. A branching connector allows a 'T' or branch in the sensing circuit.</li> </ul>		

	Maximum Length per Circuit	Maximum number of circuits	Digital Distance Display	Leak Location Accuracy	Volt Free Contacts	Status LED's	Audible Alarm	Alpha Numeric Display	RS485 Serial Port (Modbus Data)	Operating Voltage	Cable Compatibility	All AquiTron Probes / Sensors / Float Switches
AT-SZA	100M	1	NO	Circuit**	3	YES	YES	NO	n/a	120/220Vac & 12Vdc	ALL	YES
AT-MZA	100M	2 to 8	NO	Circuit**	10	YES	YES	NO	n/a	120/220Vac & 12Vdc	ALL	YES
TTC-1	60M	1	NO	Circuit**	2	YES	NO	NO	n/a	12/24V ac/dc	ALL	YES
TTDM-128	1500M	128*	YES	+/- 1M	3***	YES	YES	YES	YES	120/220Vac & 24Vac	ALL	YES
TTSIM-1	1500M	1	NO	+/- 1M	n/a	YES	NO	NO	YES	24Vac	ALL	YES
TTSIM-1A	150M	1	NO	+/- 1M	1	YES	NO	NO	YES	120/220Vac & 24Vac	ALL	YES
TTSIM-2	150M	1	YES	+/- 1M	1	YES	NO	NO	YES	120/220Vac & 24Vac	ALL	YES
TTA-SIM-1	150M	1	NO	+/- 1M	1	YES	YES	NO	YES	120/220Vac	ALL	YES
TTA-SIM-2	150M	1	YES	+/- 1M	1	YES	YES	NO	YES	120/220Vac	ALL	YES

\* - TTDM-128 can support up to 128 channels of information using a separate TTSIM-1/1A/2 for each channel, 4-20mA transmitter optional  
 \*\* - "Circuit" leak location accuracy implies monitoring the entire connected circuit as a single element

\*\*\* - Can be extended to 320 by using the TT-NRM  
 ALL - Cable compatibility = TT1000, TT1100, TT3000, TT5000 & TT5001.

## Wherever a leak occurs, it can be quickly located



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