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AN AMPHENOL COMPANY



LET-Plus

Alarm module (Non Locating)
Leak and Breakage Detection Module

The **Thermometrics LET-Plus Communication Protocol** adopts standard Modbus-RTU protocol, standard asynchronous serial two - wire RS485 communication port, and the interval between the host computer reading LET-Plus data is not less than 500ms, and the recommended value is 1s. LET-Plus factory default device address is 01, the device address can be changed through host computer command or LEAK-Talk debugging software, and supports BACnet IP and Modbus RTU/TCP protocols.

Features

- LET-Plus detection alarm module is a multi-functional water leakage detection device with a maximum connection of 500 meters of detection cable. It can also be compatible with other detection probes, through its output relay contact signal and RS485 communication function, to achieve remote alarm and remote equipment control.
- LET-Plus module circuit system adopts highly sensitive components which can not only ensure high sensitivity during detection, but also avoid false alarms caused by various external factors, 12-30 VDC, 12-24 VAC wide voltage input, suitable for various industrial centralized power supply environment.
- The small size of the module and the ABS waterproof housing facilitate wall mounting and all field wiring installations can be easily completed through the pluggable cable terminals in the module.
- Two groups of leakage alarm relay output, 1 group of disconnection alarm relay output, convenient for linkage of a variety of equipment.
- The LED indicator and LCD display screen synchronously display the three states of module operation source, leakage, and disconnection.
- Through the button, the module communication address can be quickly set and quickly access to various centralized monitoring systems.
- The module can detect cable disconnection and leakage alarms at the same time, and issue alarm signals.
- Manual reset / automatic reset dual mode selection to meet different usage needs.
- Typical applications include leak detection for data centers, communication rooms, air conditioning and refrigeration units, liquid storage tanks, pipelines, valves, pumps, and other equipment where liquid leakage monitoring is required.

Technical Descriptions

Part	Description
Detection Cable	Compatible with connecting 2-core and 4-core inspection cables
Detection Cable Length	Maximum cable length is 500 meters
Work Environment	Temperature -10~80 degrees Celsius. Humidity 90%, white ABS / IP65 waterproof can be installed outdoors
Weight and Size	Weight 250g; Size L120mm x H85mm x W55mm
Detection Sensitivity	The detection sensitivity is stepless, and the response time is less than 1 second (when the sensitivity is the highest)
Power Input	12 - 30 VDC, 12 - 24 VAC power supply
Relay Output	3 SPDT normally open normally closed output rated power is 220VAC / 2A
RS485 Output	MODBUS-RTU communication protocol, device address 1 - 255

Amphenol
Sensors

LET-Plus Sensor Specifications

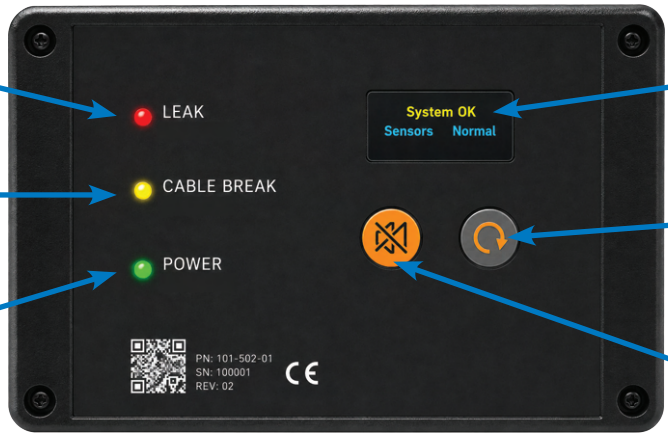
CAUTION

Please carefully confirm the power supply voltage before powering on, and ensure that the power cable is connected to the correct port, otherwise the Alarm module may FAIL.

Leak
The red light lights up when the leakage alarm is issued

Cable Break
The yellow light lights up when the cable is interrupted

Power
Solid green light during operation

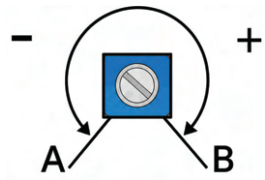


LCD Display
Display module status and device address

Reset Button
In manual mode Reposable relay output

Mute Button
Eliminate alarm sounds
**When the system is turned on, the alarm buzzer will sound six times and then stop.*

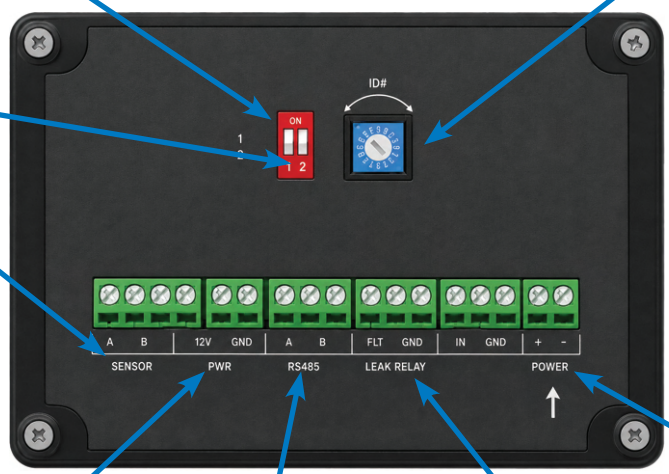
1 Reset Mode Selection
Automatic reset mode when switching ON In this mode, when the once the leak source has been corrected and cable has dried, the module automatically returns to the normal state When switching OFF manually reset the mode, in this mode, a leakage alarm occurs, the alarm output is locked, and the alarm state is consistent



2 Buzzer Switch
When switching ON, the buzzer is active When switching OFF the buzzer turns OFF

Leak Sense
1. When connecting the four-core detection line, connect it in the following lead line order:
A - red
B - green
C - yellow
D - black

2. When connecting the two core detection lines, connect B and C (regardless of order) and short - connect A - B and C - D



Detection Sensitivity SENS
Rotate counterclockwise to reduce sensitivity, point A has the lowest sensitivity value, and requires more water to trigger the alarm

Rotate clockwise to increase the sensitivity, point B sensitivity value is the largest, can detect water drop

Power
12 - 30 VDC, 12 - 24 VAC
The wiring does not distinguish between positive and negative poles

RS485
RS485 Two-wire communication 9 A+ 10 B-
***For details, please read the product communication agreement.*

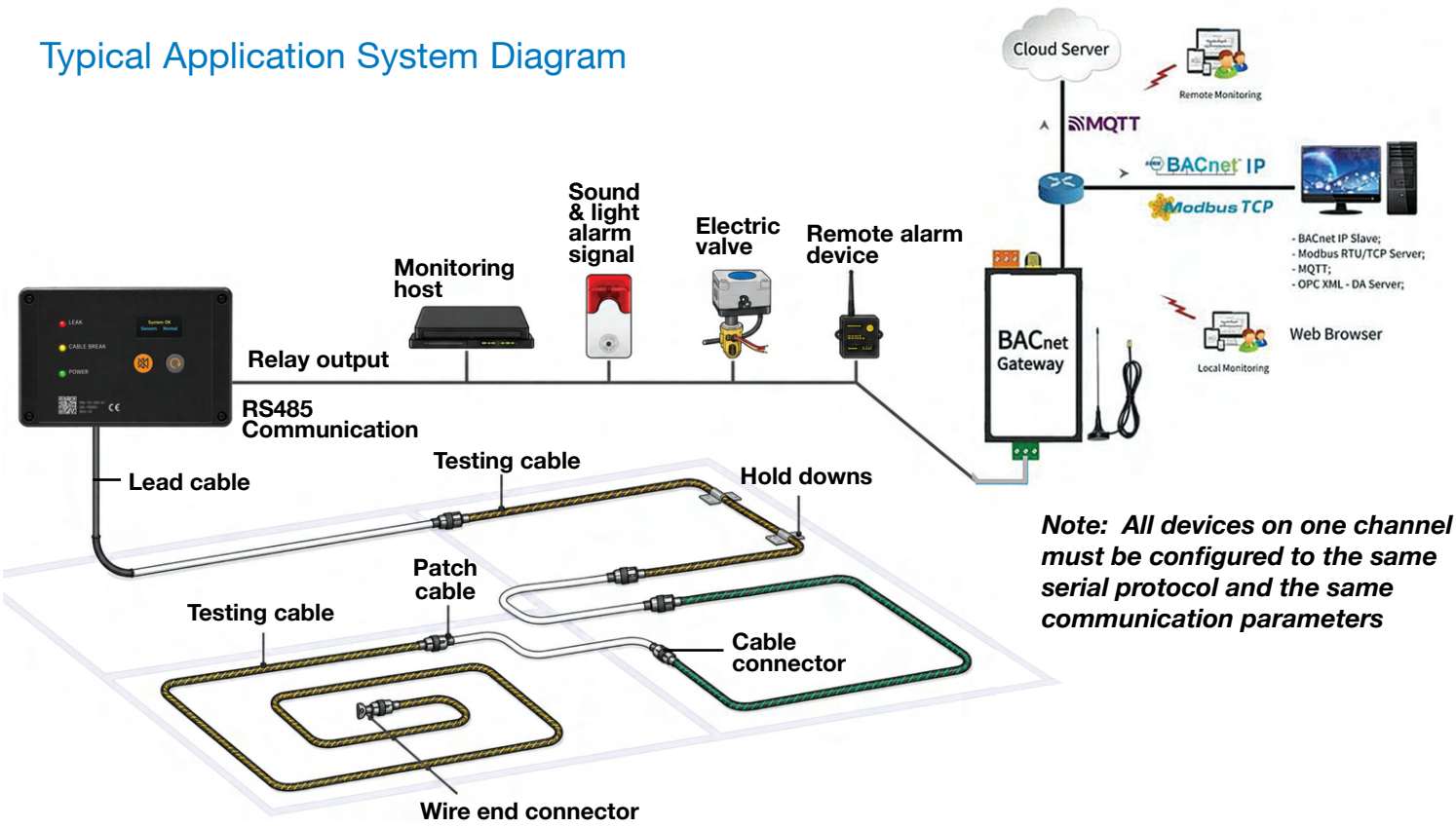
Break
Relay dry contact signal:
NC: Normally Closed
C: Common
NO: Normally Open

Leak Relay
Two sets of leakage alarm relay outputs:
NC: Normally Closed
C: Common
NO: Normally Open

The maximum output power of the relay is 220VAC / 2A

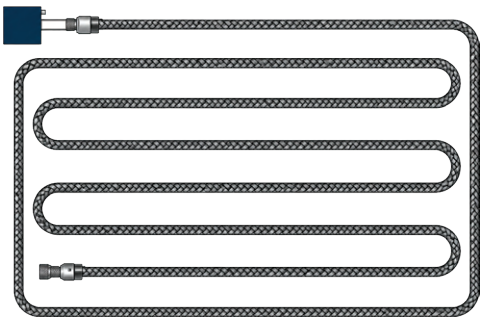
LET-Plus Sensor Specifications

Typical Application System Diagram

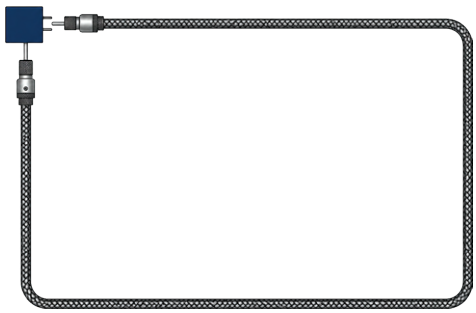


Note: All devices on one channel must be configured to the same serial protocol and the same communication parameters

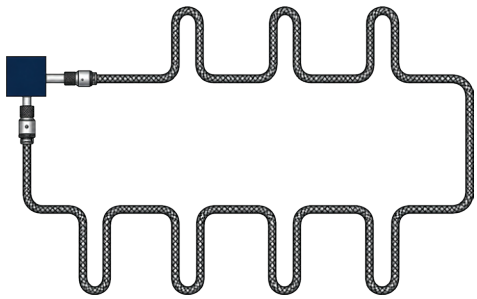
Sense Cable Layout



Cover the whole area
Comprehensive protection
for critical areas

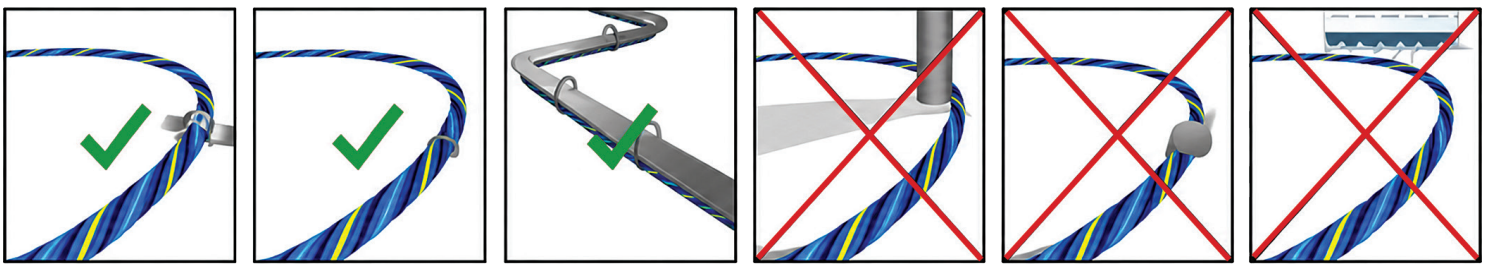


Cover the edge area
Identifies leaks at perimeter



Covering air - conditioned areas
Key protection against major leakage
sources such as air conditioners

Sense Cable Installation and Fixing



Dedicated line card installation | Hoisting along the pipeline | Fixed with metal boundless | Facing air conditioner | Glue fixed | Cable harness fixed

The Leak Sensing Cable should be installed away from high-temperature sources, open flames, strong magnetic fields, and wet or dusty environments. Avoid exposing the cable to sharp objects that could scratch, cut, or damage the cable sheath.

LET-Plus Sensor Specifications

Communication Protocol

Data transfer rate:	Baud rate 9600 BPS
Data transmission format:	N (parity check), 8(data bit), 1(stop bit)
Device default address:	01
RS485 wiring port:	Standard two-wire asynchronous communication, 8RS+, 9 RS-

LET-Plus Communications Protocol

(1) The Upper Computer Sends Commands:

Address	Function Code	Data start bit (high + low)		Number of Data (high + low)		CRC16 Check
1 byte	1 byte	1 byte	1 byte	1 byte	1 byte	2 byte

(2) Equipment Return Information:

Address	Function Code	Byte Length	Data Value (high + low)		CRC16 Check
1 byte	1 byte	1 byte	1 byte	1 byte	2 byte

(3) Protocol Data:

Function Code	Register Bit	Data Address	Number of Data	Data Value Definition
04H	30001	0000H	1	Device address code: 01-255
	30002	0001H	1	Query equipment status: 00 normal, 02 alarm
06H	40001	0000H	1	Modify the device address: 01-255

Example

Content	Dispatch Orders	Return Information	Explain
Read device address	01 04 00 00 00 01 31 CA	01 04 02 00 01 78 F0	The device address is 01
Query to device address	00 04 00 00 00 01 30 1B	01 04 02 00 01 78 F0	The address of the device found is 01
Modify device address	01 06 00 00 00 02 08 0B	01 06 00 00 00 02 08 0B	Change the device address 1 to 2
Modify device address	02 06 00 00 00 01 48 39	02 06 00 00 00 01 48 39	Change the device address 2 to 1
Read device status	01 04 00 01 00 01 60 0A	01 04 02 00 00 B9 30	Device status is normal (00)

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LET-Plus Sensor Optional Gateway with Wifi

Functional Description

The gateway (with 1 Ethernet port, 1 RS485 serial port, dynamically supporting 256 points) supports the collection of Modbus RTU/TCP and more than 500 protocols, simultaneously forwarding it to BACnet IP and Modbus RTU/TCP servers. It also features WeChat alarms, MQTT server and the ability to upload projects to the cloud. The gateway is configured using X2View software. Users can configure it based on the existing equipment's point list, convert it to standard BACnet IP or Modbus RTU/TCP, and upload it to the hardware gateway. BACnet/Modbus clients can then access the data of on-site equipment through the gateway.

Note: For the data collection side of this gateway, Modbus registers start from decimal address 1 (Base1), while hexadecimal addresses start from 0 (Base0); for the forwarding side, Modbus register base addresses all start from 1 (Base1).

Operating Environment

The X2View configuration software supports multiple operating systems, including Win 7, Win 8, Win 10, Win 11, Win Server 2008, Win Server 2016, and more. The hardware gateway comes with a built-in WEB server, which supports remote access to the configuration screens within the gateway using browsers such as Google Chrome, Microsoft Edge, Apple's Safari, Firefox, Opera, and 360 Speed Mode.

Supported Register Types and Quantities

Note: The number of register points is dynamically supported, with a total limit of up to 256 points. The BACnet/Modbus register types and maximum number of points supported are shown in the table below.

BACnet Register Types	BACnet Register Points
AI (Read-only)	256
AO (Read and Write)	256
AV (Read and Write)	256
BI (Read-only)	256
BO (Read and Write)	256
BV (Read and Write)	256
MI (Read-only)	256
MO (Read and Write)	256
MV (Read and Write)	256

Modbus Register Types	Modbus Register Points
0X (Coil Status) Read and Write	256
1X (Input Status) Read-only	256
4X (Holding Register) Read and Write	256
3X (Input Register) Read-only	256

Notes:

4X and 3X register address = transfer register address *2+1

0X and 1X register address = transfer register address +1

Hardware Parameters

OS	Linux	Power supply	AC/DC 12~24V
CPU	1 Core 750MHz	Dimensions (L×W×H):	119mm x 55mm x 33mm
RAM	64M	Weight:	200g Not including antenna
Flash	32M	Material:	Galvanized Steel
Power	6W	Installation:	DIN-Rail/Wall-mounted
Ethernet Ports:	1x 10M/100M NIC	Temperature:	-20 ~ +70°C (working) -40 ~ +85°C (storage and transportation)
Serial Ports:	1x RS485 (Electromagnetic isolation)	Humidity:	Operating: 20-90% RH (non-condensing) Storage and Transportation: 15-95%RH (non-condensing) 15 95 no condensation (storage and transportation)

WiFi Connection: Support WiFi 5

LET-Plus Sensor Specifications

Type	Product	Specification	Description
LET-Plus	Leak Controller	Dimensions/Weight	L120*W54*H85mm; 240g
		Plastic Casing	Black fire-resistant ABS material, with IP65 protection level
		Detection Sensitivity	Full-range stepless adjustment, response time less than 1 second (at maximum sensitivity)
		Power Requirement	12-30VDC, 12-24VAC power supply
		Relay Output	3SPDT (single-pole double-throw) normally open and normally closed output, with a maximum output power of 220VAC/2A
		RS485 Output	RS485 serial interface, MODBUS-RTU protocol
	Non-Positioning Detection Cable	Weight	30g/m
		Cable Diameter	5.5mm
		Cable Length	15m supplied with kit. Custom lengths are avaialble up to 500m
		Maximum Exposure Temperature	85°C
	Module	Patch Cable	Optional
		Lead Cable	Length 3m
		Cable Connector	Standard component
		Hold Downs	Standard component

The LET-Plus System includes:

- Controller
- Power Extension Wire
- Lead Cable - 3 meters (~10ft)
- Testing Cable - 15 (~50ft)
- Wire end connector

LET-Plus Ordering Number: RLDS-P-L15

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