WLMX

Water Leak Monitor X

INSTALLATION & OPERATION

Please read these instructions carefully before use and retain for future reference.

These instructions can also be downloaded in electronic form on the product website.

For specific requirements that may deviate from these instructions – contact your supplier.

snsnorthern.com

Contents

Important Information

Copyrights

Manufacturer's Warranty

The manufacturer warrants to the original consumer purchaser, that this product will be free of defects in material and workmanship for a period of **3 years** from the date of purchase.

The manufacturer's liability hereunder is limited to replacement of the product with repaired product at the discretion of the manufacturer. This warranty is void if the product has been damaged by accident, unreasonable use, neglect, tampering or other causes not arising from defects in material or workmanship. This warranty extends to the original consumer purchaser of the product only. Any implied warranties arising out of this sale, including but not limited to the implied warranties of description, merchantability and intended operational purpose, are limited in duration to the above warranty period. In no event shall the manufacturer be liable for loss of use of this product or for any indirect, special, incidental, or consequential damages, or costs, or expenses incurred by the consumer or any other user of this product, whether due to a breach of contract, negligence, strict liability in tort or otherwise. The manufacturer shall have no liability for any personal injury, property damage or any special, incidental, contingent, or consequential damage of any kind. This warranty does not affect your statutory rights.

During the above warranty period, your product will be replaced with a comparable product if the defective product is returned together with proof of purchase date. The replacement product will be in warranty for the remainder of the original warranty period or for six months – whichever is the greatest.

Disposing of Electrical & Electronic Equipment (WEEE)

When this product has reached the end of its life it must be treated as Waste Electrical & Electronics Equipment (WEEE). Any WEEE marked products must not be mixed with general household waste, but kept separate for the treatment, recovery and recycling of the materials used.
Please contact your supplier or local authority for details of recycling schemes in your area.

Revisions

Every effort is made to ensure the accuracy of this document; however, **S&S Northern Ltd** can assume no responsibility for any errors or omissions in this document or their consequences.

S&S would greatly appreciate being informed of any errors or omissions that may be found in the content of this document. For information not covered in this document, or if there is a requirement to send comments/corrections, please contact **S&S** Northern Limited.

Safety Statements

⚠ Take extra care where this symbol is used throughout this document to understand the nature of potential hazards and how to avoid them.

⚠ Before any installation, use or maintenance read this manual carefully.
⚠ The information contained within this manual should be referenced for typical installation and operation only.
⚠ For site specific requirements that may deviate from the information in this guide – contact your supplier.
⚠ If the equipment is used in a manner not specified by the manufacturer, the safety and protection provided by the equipment may be impaired.
⚠ Installation must be in accordance with recognised standards in the country concerned.
⚠ Cables must be protected against mechanical damage.
⚠ This device requires a continual supply of electrical power – it will not work without power.
⚠ A switch or circuit breaker must be fitted, it must be accessible and marked as the disconnecting device!

Installation

General Description

⚠ **Installation must be in accordance with recognised standards in the country concerned.**

The Merlin WLMX is a water leak monitor with precise leak detection. The leak position is displayed in meters, allowing for leaks to be quickly identified. The monitor can be used standalone, connected to a BMS using Modbus RTU, or used as part of the WLMX+ water detection system with connectivity up to 16 zones.

Mounting & Cabling

⚠ **If mounting direct to wall - ensure the wall surface is flat to prevent base distortion!**
⚠ **Where suitable cable glands/conduits are used for wire entry, use 20mm (3/4 inch) separated by at least 20mm!**

1. Carefully remove the front cover from the unit by using an M3 hex wrench.

2. Using the rear base - mark mounting holes to the wall or align with an appropriate gang/pattress box.

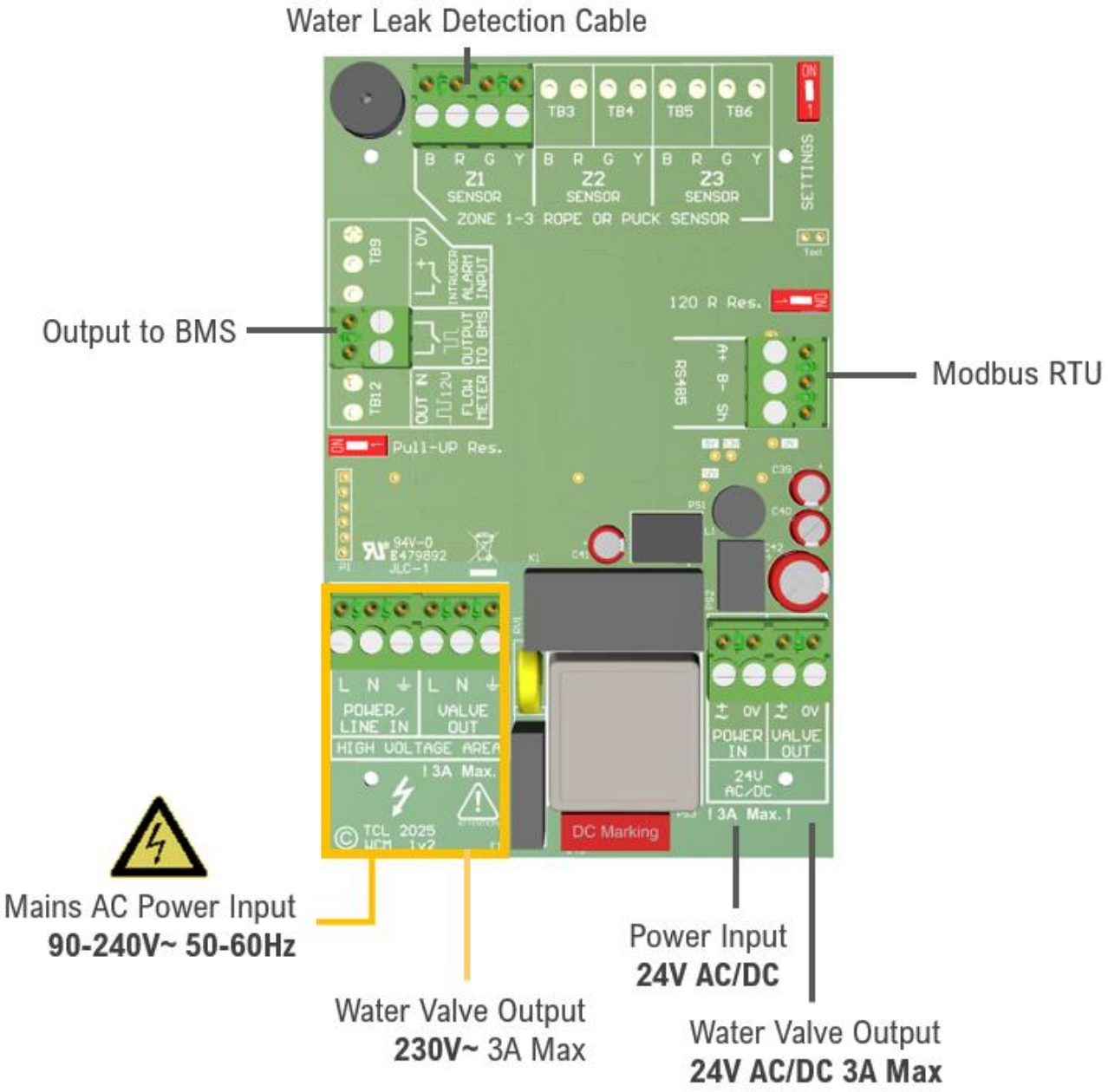
3. Fixing straight to wall – drill 0.2” (5mm) hole, insert plugs and use the four screws (No.4 Pozi) provided. Alternatively – Fix direct to a vertical 2-gang/double electrical pattress box.

4. There are pre-fractured areas for cable entry on the rear of the base and pilot holes positioned on the top and bottom of the enclosure suitable for entry points up to ¾” (20mm). Drill out as necessary ensuring all swarf is removed from the box and holes have smooth edges.

5. Secure the front cover with all M4 bolts and insert security caps provided.

Circuit Board Overview

⚠ **Damage to PCBs when creating cable entry points may void any warranty.**
⚠ **Take care when making connections to high voltage connectors.**
⚠ **Any damage attempting to remove the circuit board may void any warranty.**
⚠ **All Class 2 wiring is to be installed within flexible tubing to maintain segregation between circuits.**
⚠ **Wiring of different circuits shall be separated by means of routing, clamping or barrier.**
⚠ **A switch or circuit breaker must be fitted, it must be accessible and marked as the disconnecting device.**
⚠ **Restrain the hazardous live wiring from accidental loosening to prevent wires from moving after installation and touching parts of opposite polarity or at low voltages.**
⚠ **Isolate the equipment from all hazardous live power sources before opening the cover.**



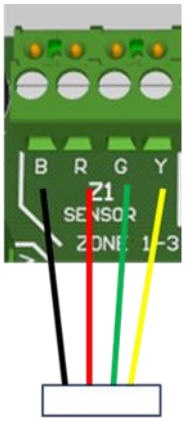
Note: Valve voltage and input voltage must match

Wiring – Power

The controller requires a power supply of either 24VDC/AC (21.5 – 26.5V) connected to [24V AC/DC POWER IN] terminal or mains AC (100-240V~) connected to the [POWER/LINE IN] terminal using a 3A switched fused spur.

Wiring The Sensor Terminal

The WLMX is compatible with 4-wire leak detection rope. The rope requires a lead wire to be connected to the [Z1 SENSOR] terminals as shown.

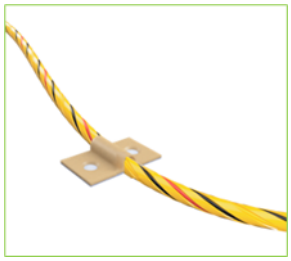


B: Black
R: Red
G: Green
Y: Yellow

4-wire
Rope Sensor

The leak detection rope can now be connected to the lead wire using the screw connection.

The leak detection cable is flexible and easy to install using the floor mounting brackets provided.

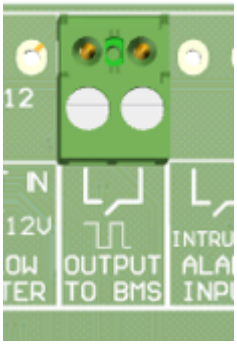


Other rope/cable considerations when laying. Avoid:

- Wrapping around sharp objects that might cause damage
- Using glue compounds
- Direct contact with metal conductive objects/surfaces
- Installation near air conditioners and other appliances that create moisture and cause false alarms.

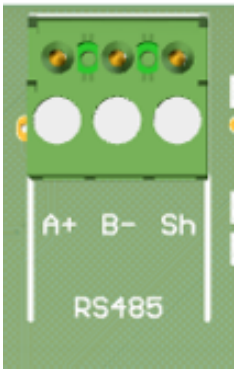
Output to BMS

The BMS output is a volt-free contact, it will be switched on a system alarm and can be connected to a BMS controller.

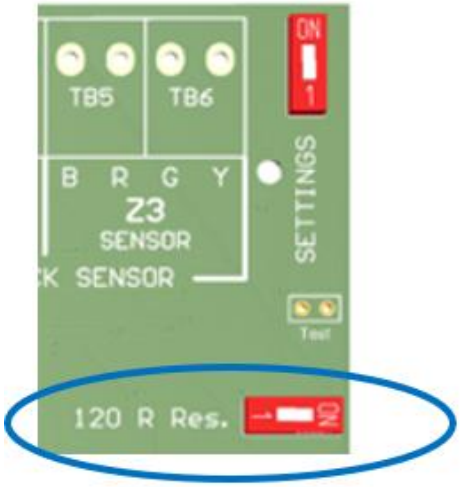


RS485 Output

The RS485 connections allows for Modbus RTU wiring to a BMS controller, or a WLMX+ water detection system (See WLMX+ user guide)



It is advisable to use a shielded cable with twisted pair wiring, and ensure the 120-ohm termination resistance dip switch is turned on at the end of the cable run.



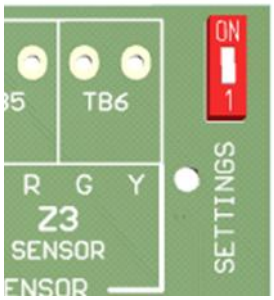
Operation Overview

Before powering up the monitor, ensure the water leak detection cable is connected.

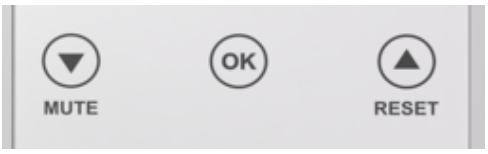
On initial powering, the monitor will display “ERROR” and require calibration as follows:

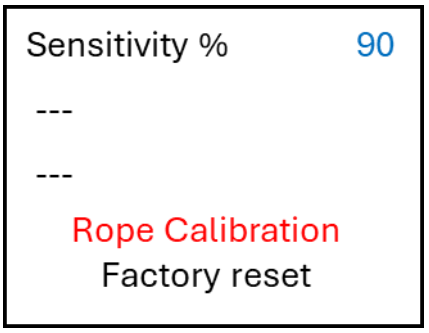
ID:1	Water ON
Status	GOOD
Rope Length	! ERROR !

Change the setting dip swich and enter the settings menu.

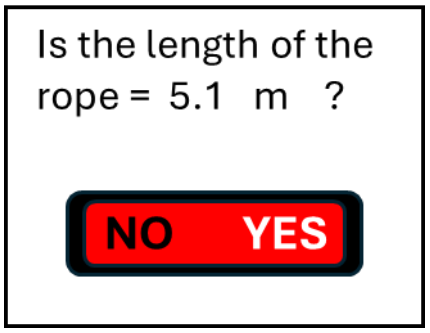


Using the arrow buttons on the front, scroll to page 2 of the settings, and click OK to select **Rope Calibration**.





If the predicted length is correct, select YES and press OK.



If the predicted length is incorrect, select NO and follow the instructions before trying again.

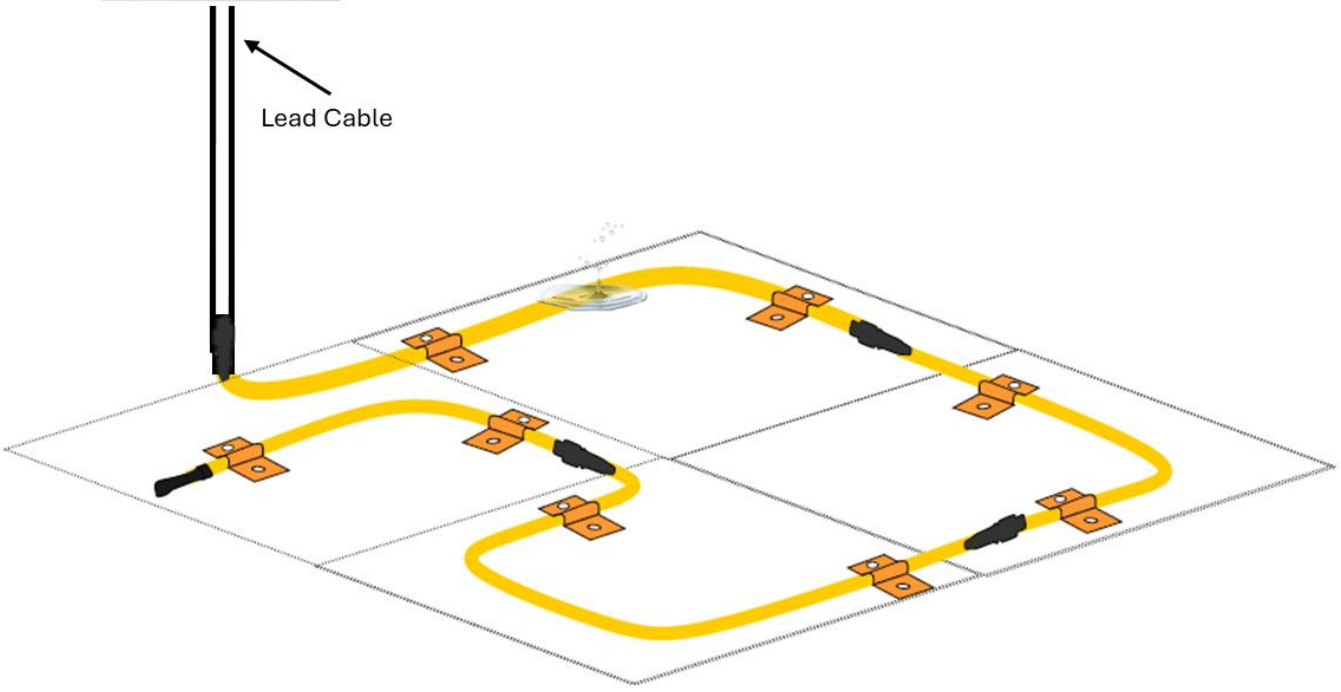
1.Check rope length 2.Be sure rope isn't wet or touch any of the conductive materials

When the calibration has been completed, turn off the settings dip switch and return to the main screen, and the correct rope length should be displayed as follows.

ID:1	Water ON
Status	GOOD
Rope Length	5.1 m

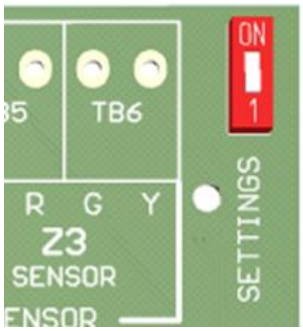
If a water leak is detected the status will change to Alarm, the exact leak position will be displayed in meters, and the screen will turn red with an audible alarm activated.

ID:1	Water ON
Status	ALARM
Leak Position	5.1 m



Settings

With the settings switch turned on the following parameters can be adjusted.



ID Address	1
Baud Rate	19200
Parity	8N1
Valve Test days	30
Buzzer	Const.

Sensitivity %	90

Rope Calibration	
Factory reset	

Settings	Description	Default
ID address	**ID Address** - Modbus Address range from 1 – 247 (1 Default)	1
Baud Rate	**Modbus Baud Rate** - Modbus data exchange speed (bit per second). Selection of: 4800, 9600,19200, 38400, 57600,115200.	19200
Parity	Modbus Parity	8N1
Valve test days	Valve Test (0-90) This setting will automatically exercise the water valve to prevent seizing, OFF as the default.	0 days (OFF)
Buzzer	Audible Buzzer Pattern. 3 beeps every 30 seconds or continuous sound.	Const. = Continuous sound in alarm.
Sensitivity %	Adjust to make the water leak detection more sensitive to activation, 90% is recommended for most applications	90%
Rope Calibration	Water leak detection rope calibration, this is required when changing the water leak rope length	

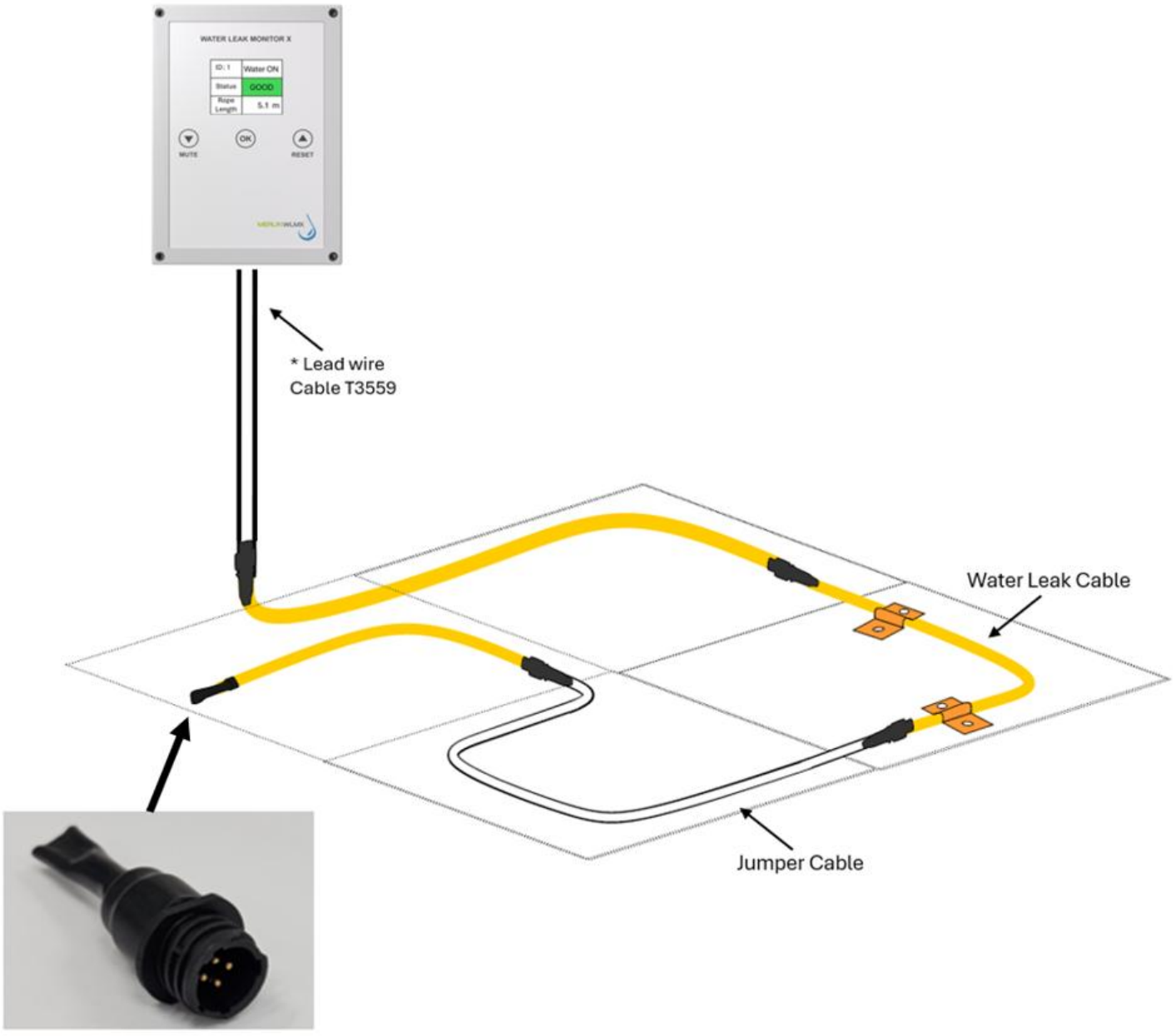
Water leak rope configuration

Wire the lead cable (T3599) to the WLMX as described in the installation section, screw the black connector on the water leak detection rope.

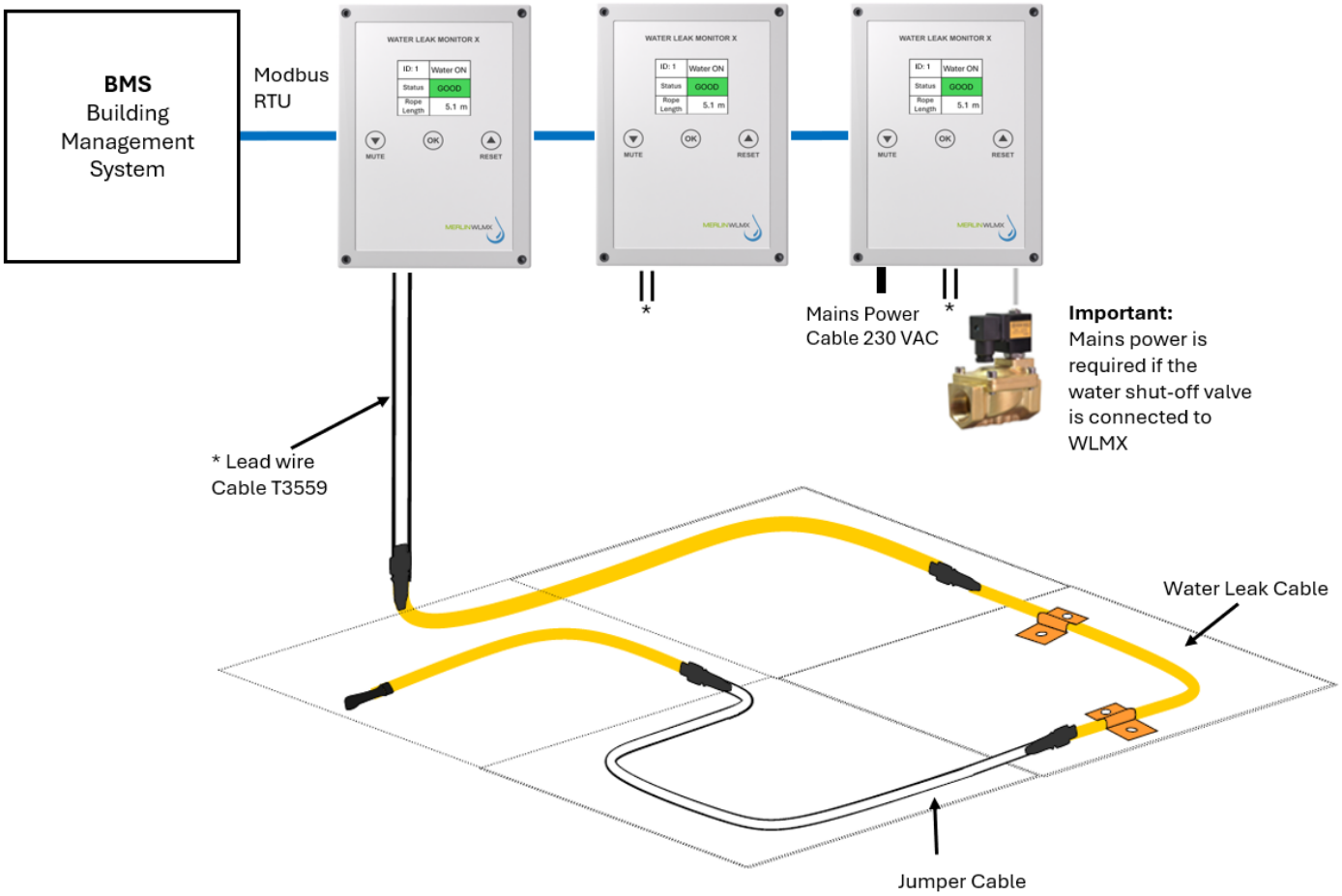
The system can be extended with additional lengths if required, and jumper cables can be used for extending areas where leak detection is not required. For part numbers, see the list of accessories below.

The system must have an end termination fitted which is supplied together with the lead cable (T3599)

Stand-alone Configuration:



BMS Configuration:



Maintenance

Cleaning the Equipment

Keep your device in good working order

- Remove any dust/debris from the outer enclosures regularly using a slightly damp cloth.
- Never use detergents or solvents to clean your device(s).
- Never spray air fresheners, hair spray, paint or other aerosols near the device.
- Never paint the device(s). Paint may seal any vents and interfere with the equipment.

ACCESSORIES	PART NUMBER	DESCRIPTION
	T3327	Detection Rope 4 Core 5 Metres
	T3328	Detection Rope 4 Core 10 Metres
	T3329	Detection Rope 4 Core 20 Metres
	T3809	Water Leak Cable Jumper 5 Metre
	T3810	Water Leak Cable Jumper 10 Metre
 	T3599	Lead Wire Cable (Including 4-pin end termination)

Modbus Functionality

This document provides details on Modbus functionality of the WLMX.

Modbus RTU WLMX

DATA	
Function code (f)	03 (Read Holding Register)
Start address	19 (40020)
Number of register (coil)	19-26, 30, 33, 36, 39, 42, 50-52, 70-73
Data format	16-bit Unsigned Integer number

	Explanation	Modbus value	address	f
Read Modbus holding registers	**Length error flag**	**0 = OFF, 1 = ON**	19 (40020)	03
	Days left to valve test	**0 – 90 (days)**	20 (40021)	03
	BMS relay	**0 = OFF, 1 = ON**	21 (40022)	03
	Setting dip switch	**0 = OFF, 1 = ON**	22 (40023)	03
	Water relay	**0 = OFF, 1 = ON**	23 (40024)	03
	Buzzer	**0 = OFF, 1 = ON**	25 (40026)	03
	Mute flag	**0 = OFF, 1 = ON**	26 (40027)	03
	Leak	**0 = OFF, 1 = ON**	30 (40031)	03
	Fault	**0 = OFF, 1 = ON**	33 (40034)	03
	Actual rope length	**0.1 – 305 (meters) scaled to divide by 10 50 = 5.0**	36 (40037)	03
	Leak position	**0.1 – 305 (meters) scaled to divide by 10 50 = 5.0**	39 (40040)	03
	Calibrated rope length	**5 – 305 (meters) scaled to divide by 10 50 = 5.0**	42 (40043)	03
	Modbus ID	**1 – 247** *(default 1)*	50 (40051)	03
	Modbus baud rate	**4800 / 9600 / 19200 / 38400 / 57600 / 115200** *(default 19200)*	51 (40052)	03
	Parity	**8N1 / 8E1 / 8O1** *(default 8N1)*	52 (40053)	03
	12 digit Serial Number 64 bit unsigned Big-endian	**102512520001**	70 (40071)	03
	used	-	71 (40072)	03
	used	-	72 (40073)	03
	used	-	73 (40074)	03

DATA	
Function code (f)	03 (Read Holding Register) 06 (Write Single Holding Register)
Start address	30-32, 97-99
Data format	16-bit Unsigned Integer number

Settings Options Explained

	FUNCTION	OPTION	Explanation	Modbus value	address	f
Menu	**Valve test days**	**- 0 - 1**	*Valve self test 0 - 90 days (+- 1) default 30*	0 - 90	30 (40031)	03/06
	Buzzer mode	**- 0 - 1**	*0 = Continual sound (default) 1= 3 beeps every 30s*	0 or 1	31 (40032)	03/06
	Water detection sensitivity	**- 0-15**	*Rope leak sensitivity from 10 - 90% (+- 10) default 90%*	10 - 90	32 (40033)	03/06

Save the Modbus Settings, Reset alarm / fault, Restart.

Save	**Save The Changes**	**- 99**	*Confirmation to save the changes to the memory for Registers from* 30 (40031) to 32 (40033)	99 = Save	97 (40098)	06
Reset	**Reset alarm / fault**	**- 99**	*Reset from alarm / leak status.*	99 = Reset	98 (40099)	06
Restart	**Restart**	**- 99**	*Unit will restart*	99 = Restart	99 (40100)	06

Technical Specification

General	
Model:	WLMX – Water Leak Monitor
Size: (H x W x D)	151 x 111 x 50mm (5.95 x 4.37 x 1.97”)
Mounting:	Wall/Surface Mounted. Indoor use only
Weight:	320g (11.2 oz)
Max Length: Leak detection rope sensor	300M
User Interface	
Visual Indicators:	Display - Water On / Leak / Leak Position
Audible Buzzer:	>60dB @1m (3.28ft). Quiet conditions.
Buttons:	Mute / Reset / Arrow adjustment / OK
Power Supply	
Power Consumption:	2W Max
Power Input #1:	100-240V~ 50-60Hz
Internal Fuse:	Resettable Fuse 2.5A @ 250Vac
Equipment	
Overvoltage Category:	II
Pollution Degree:	3 (Unit Only)
Environmental	
Operating temperature	0 ~ 50°C / 32 ~ 122°F 20 ~ 95% RH (non-condensing)
Approvals	
CE / UKCA	BS EN 61010-1 / BS EN 61326

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