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BLDA-1 & 2 Water Leak Detection Manual



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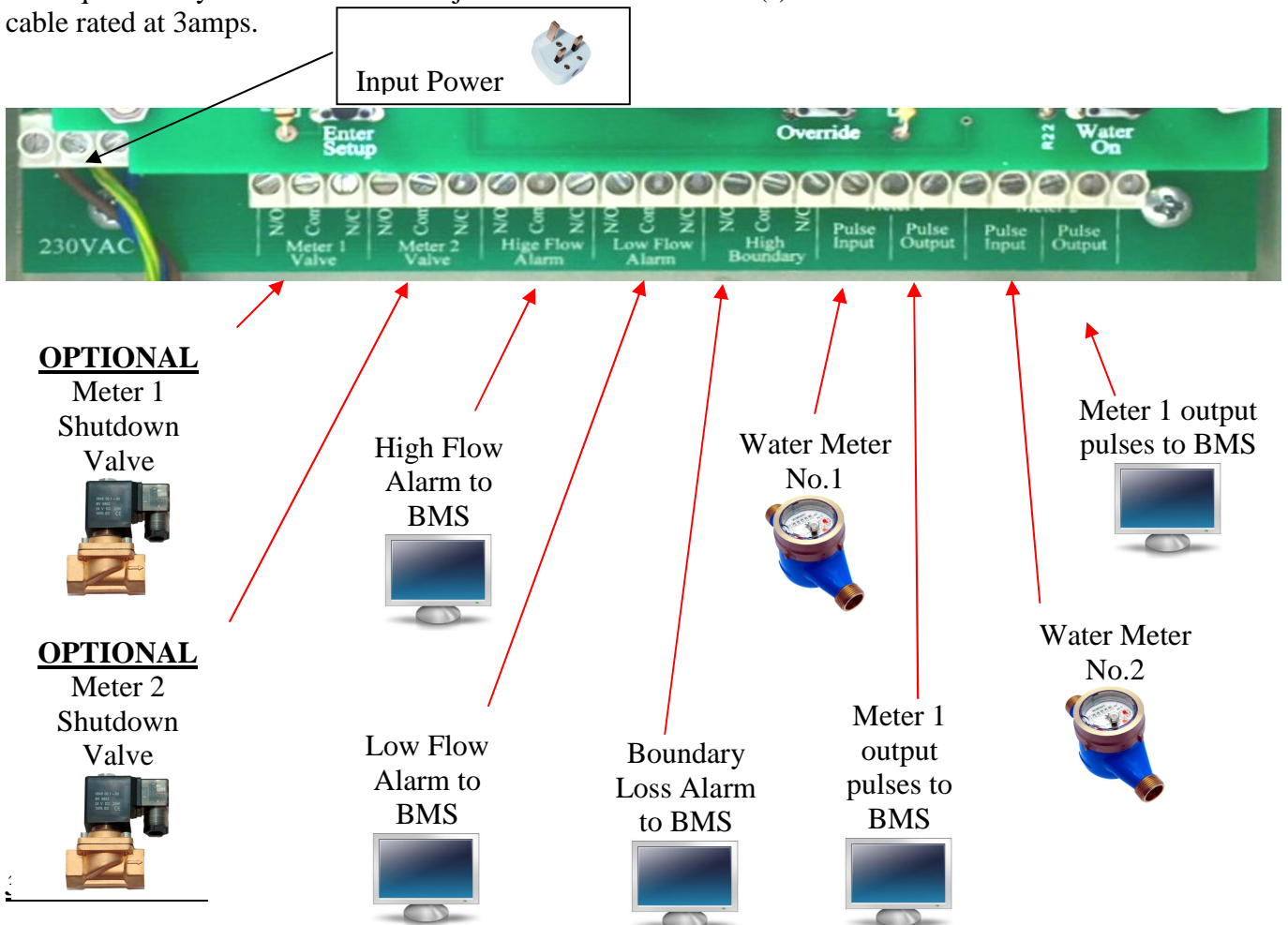
1) System Overview

Being fully programmable to suite users requirements, both units are connected to water meters installed to the main incoming water supply pipework and optional shut off valves. The meters can be existing but must be fitted with a devise that will give a pulse output proportional to the flow rate and can be either 1, 10 or 100 litres per pulse. The BLDA-1 system uses only an internal meter whereas the BLDA-2 system uses meters both internally and externally to the building. Both systems monitor the flow of water through the buildings internal meter and on the BLDA-2 system the additional external meter. This monitoring raises an alarm and can if required shut of the water supply when a continuous flow of water passes through the internal meter that exceeds a preset maximum amount of allowable water for a preset period of time. The BLDA-2 system has the addition of monitoring both the internal and external (boundary) water flows, again for a continuous flow that exceeds both volume and time period. By setting realistic flows and time periods any increase above the user defined settings will be detected and can be dealt with thereby saving water and limiting damage caused by a major leak.

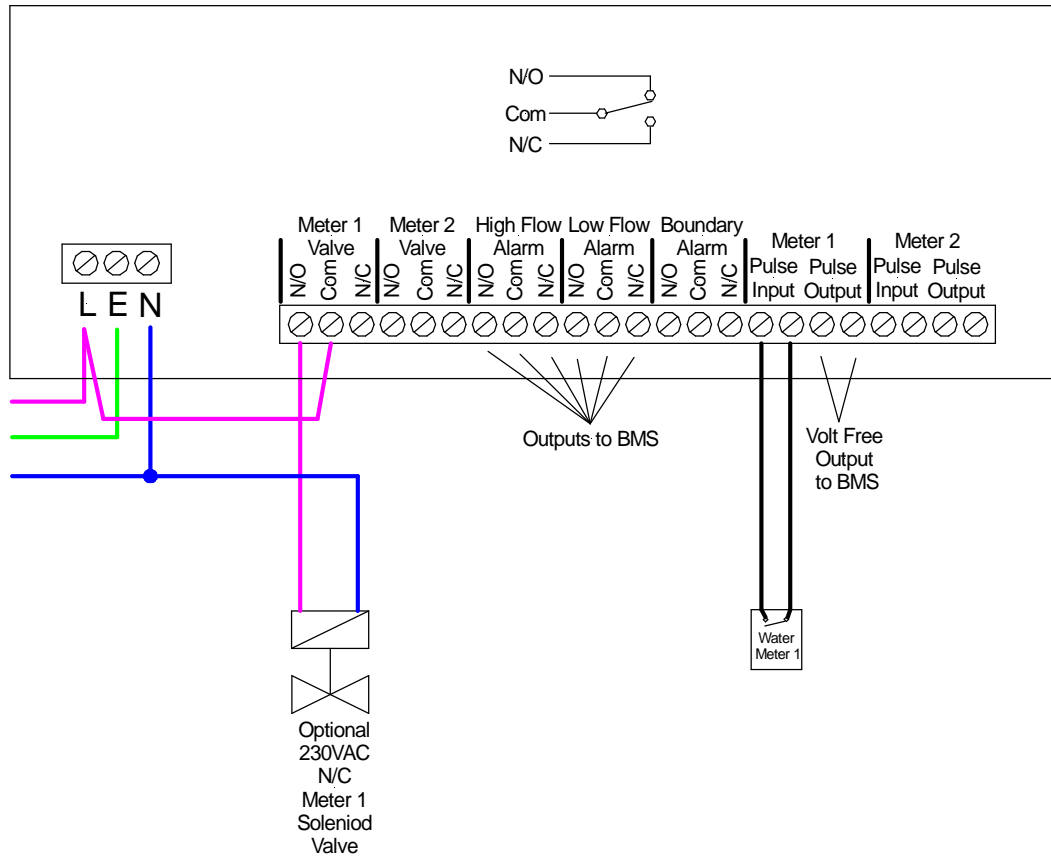
2) Installation

THIS EQUIPMENT SHOULD ONLY BE CONNECTED AND WORKED ON BY A QUALIFIED ELECTRICIAN.

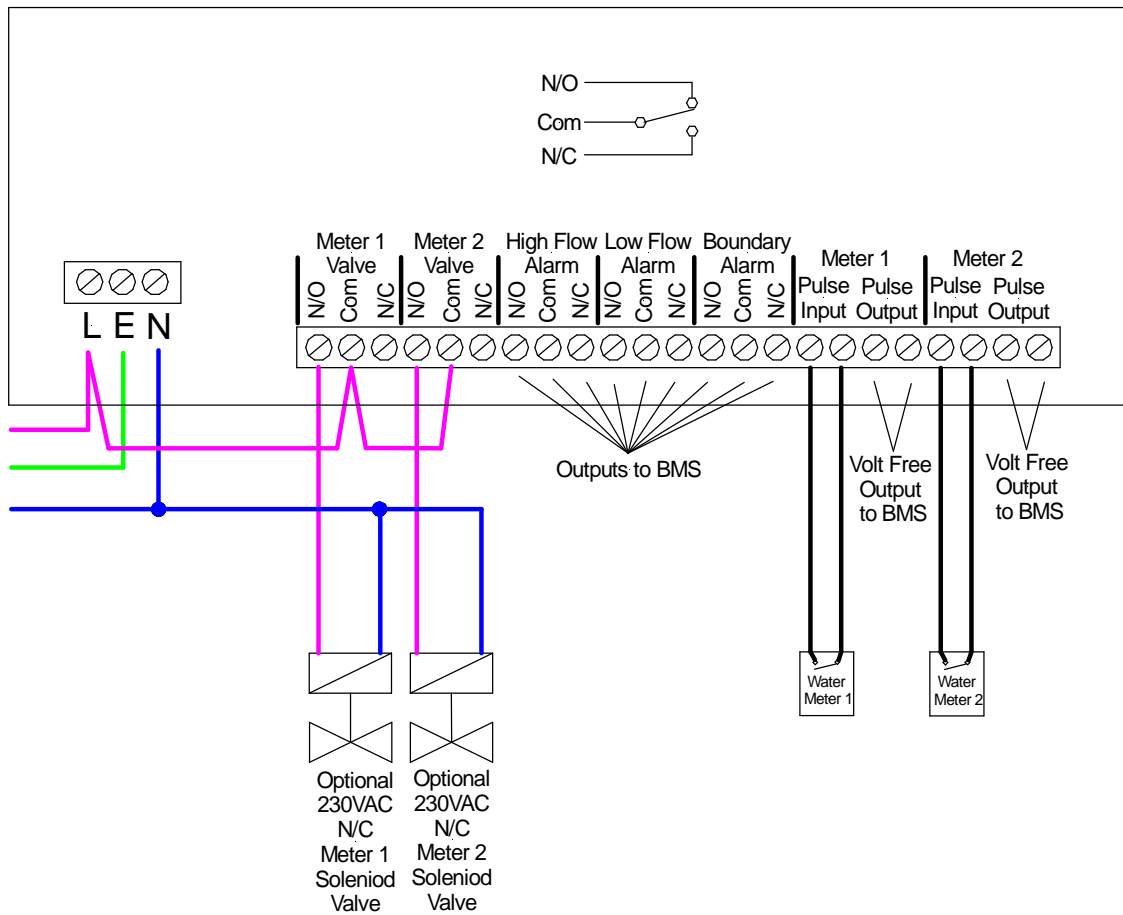
To mount the unit to a wall, first open the front door to expose the internal equipment. In the bottom and top corners of the housing is a fixing point. Cable access into the box should be via cable glands which can be positioned anywhere around the enclosure or on the inside for back entry. Care should be taken not to damage the internal equipment when drilling the enclosure. A 230VAC power supply should be run from a fused spur to the units internal terminal block marked “L”, “E” & “N”. The fuse within the fused spur should be rated at 5 Amps. The BLDA units are linked to the pulsed water meters by a 1mm² conductor 2 core screened cable up to a maximum 400 meters away. Pulsed water meters usually have BSP thread connections up to 50mm, above 50mm PN16 flanged connections are used. If shutoff valves are required they should be installed just after the water meter(s) and cabled in a flexible 3 core 230VAC cable rated at 3amps.



System BLDA-1



System BLDA-2



4) Water Solenoid Valves

If required, appropriate sized water solenoid valves can be provided to stop the water flow at the intake to the building or outside the building at the utilities source. If Valves are required, they will need adding in the setup routine as outlined below. See below to override a valve shutdown.

Specification

Manufacture SHAKO
Type Servo-Assisted
Coil Voltage 230VAC
Buren 18VA
Operation Powered Open, Slam Shut
Controlled fluid temperature -10 to 90°C

Maximum pressure

1/2"	3/4"	1"	1 1/2"	2"	
10 bar	10 bar	10 bar	10 bar	10 bar	

Please Note;

The water valves MUST be installed with the arrow on the valve pointing in the direction of the flow.

5) Relay outputs

Volt free contacts have been provided for the following and can be found within the unit on the main PCB.

- a) High Flow alarm, contacts rated at 30VDC 1A
- b) Low Flow alarm, contacts rated at 30VDC 1A
- c) High Boundary alarm, contacts rated at 30VDC 1A
- d) Meter 1 output proportional pulses for onward indication
- e) Meter 2 output proportional pulses for onward indication

6) Remote Repeat Alarm

To connect this item to the system, using a low voltage 3 core cable, connect in the following way.

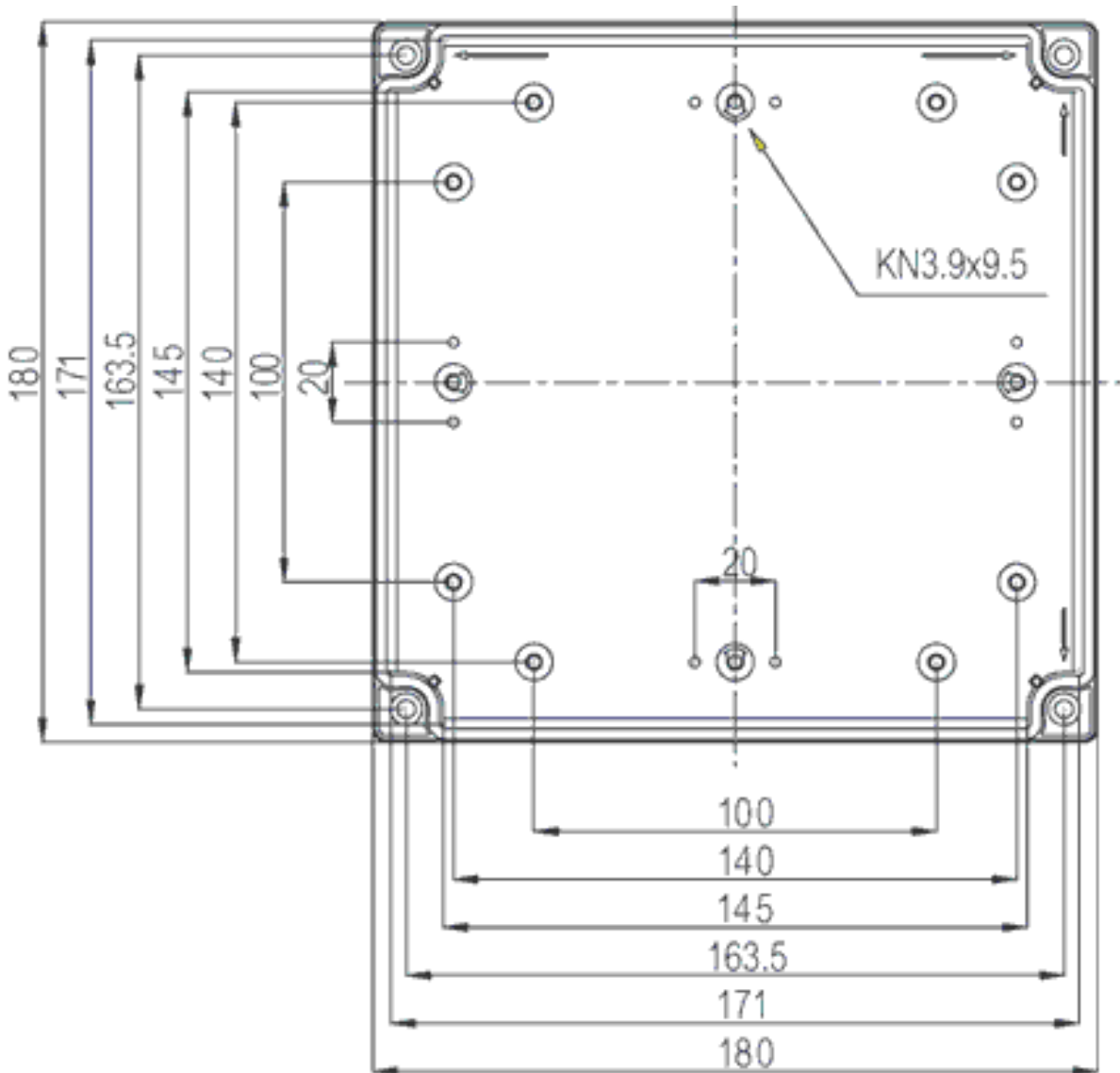


Wire this terminal block to all Outstations in Belden 9502 cable			
<u>BLDA Unit</u>		<u>Remote alarm</u>	
+V	to	+V	(wire 1)
0V	to	0V	(wire 2)
Sig	to	Sig	(wire 3)

This item has an audible warning device and “Mute” push button. Once muted, the alarm will self reset once the alarm has been removed. Please note, this unit will NOT activate for system faults.

7) Housing Size

BLDA-1 & 2



8) Push Button Description

“Change Value”
Used ONLY in
“Setup” Mode to
change the
current displayed
value

“View Screens”
Use to change
the current
displayed screen

“Move Curser”
Used ONLY in
“Setup” Mode to
move the curser
to the next digit

“Mute” Use to
silence the
audible warning

“Next Screen”
Used ONLY in
“Setup” mode to
move to the next
setup screen if
NO change is
required

“OK”
Press the OK
button First
followed at the
same time by the
“Mute” button to
reset an alarm

“Setup”
Press for 5
seconds to enter
the setup mode

“Override”
Use to stop the
system alarming
and turning off
the water for a
period of time as
set in the “Setup”
routine

“Water On”
Press the “OK”
button first then
“water On” at the
same time to
override a valve
shutdown

“OK”
Use to accept
changed
parameters

Water Leak Alarm

21/06/16 Time 17:00
Flow Watch : LOW
High Flow : NORMAL
Low Flow : NORMAL

Change Value
View Screens
Mute
Next Screen
OK
Move Curser
OK
Setup
Override
Water On

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Mute to silence the alarm
OK and Mute to cancel an alarm
View Screen to display information
Override to start a no alarm period
Water On to override a shutdown

9) Display Screens

Main screen, unless in “setup” mode, the system will revert back to this screen after two and a half minutes.



Day Date and Time

Current Flow Watch Type Low or High

High Flow “Normal” or in “Alarm”

High Flow “Normal” or in “Alarm”

Press the “View Screen”. Button once, the following window will appear.



Total Meter 1 (internal) Reading

Max/Min recorded High Flow reading

Max/Min recorded Low Flow reading

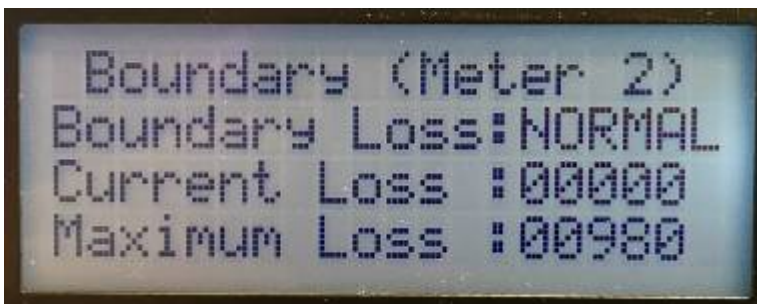
Press the “View Screen”. Button once, the following window will appear.



Last Hours Reading

Maximum recorded flow per Hour

Press the “View Screen”. Button once, the following window will appear on the BLDA-2 system only.

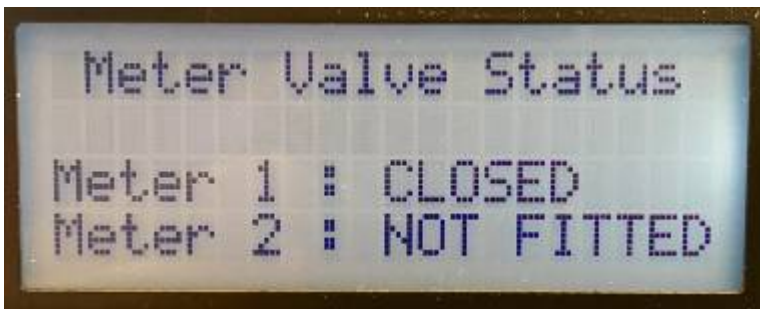


Boundary Loss “Normal” or in “Alarm”

Current Boundary Loss if any

Maximum recorded boundary Loss

Press the “View Screen”. Button once, the following window will appear.



Shutdown Valve “open”, “Closed” or “Not Fitted”

Press the “View Screen”. Button once, the following window will appear.



High Flow; Remaining alarm timeout period time. Blank if not the current flow type

Low Flow; Remaining alarm timeout period time. Blank if not the current flow type

Boundary; Remaining alarm timeout period time. BLDA-2 system only

Override; Remaining NO alarm timeout period time. Blank if Override not operated

Press the “View Screen”. Button once, the following window will appear.



High flow times for today are 10:00 to 10:30 so Low flow will be from 10:31 to 09:59

Press the “View Screen”. Button once more to go back to the beginning.

10) Right hand side push button functions

Push Button	Function
View	Change the display window as outlined above
Mute	Cancel the audible warning
Override	Start a No alarm No shutdown period as set in Setups
OK	Used at the same time as other push buttons for various functions
Water On	Used at the same time as other push buttons for various functions
OK and Mute	Will reset all existing alarms but NOT open the shutoff valve
OK and Water On	Will open the shutdown valves if fitted

11) Setting up the system Overview

IMPORTANT

The Leak Detection System will not work correctly until it has setup and commissioned as detailed below. You will need to nominate a person responsible for the operation and understanding of the system. This must include how to setup the system, keeping records and being aware what the alarms mean and their implications. Water consumption is unique for each installation, therefore it is important to establish Low and High flow periods i.e. when the building is occupied or unoccupied. An initial investigation will be required to establish the weekly / daily patterns of water consumption. Further investigation should be undertaken at regular intervals to understand the overall usage including fluctuations such as filling water tanks.

Setting up the system will require;

- 1) Set or confirm the Pulse/L ratio for Meter 1 & Meter 2 for BLDA-2 system
- 2) Set or confirm the approximate high and low water usage and timeout period.
- 3) On BLDA-2 systems only, Set or confirm the approximate boundary loss and timeout period.
- 4) Confirm or set the Time and Date
- 5) Set or confirm the alarm/shutdown override period
- 6) Set or confirm if any water shutoff valves are fitted
- 7) Set the High Flow times between Monday to Sunday this is the occupied (day time) period

Setup procedure 1

If the setup parameters as detailed above are known, enter them using the following procedures. Once the system has been initially setup, let the system run for at least a week ignoring any generated alarms. At the end of this period, re-enter setups and adjust the maximum High & Low flow water volume and time periods based on the readings from the maximum Litres displayed on screen two and three.

Setup procedure 2

If setup parameters are not known, enter setups and set both the high and low flow timers (see 13 below) to 00:00. This will stop the unit from alarming and shutting off the water supply. Run for at least a week, at the end of this period, re-enter setups and adjust the maximum High & Low flow water volume and time periods based on the readings from the maximum Litres displayed on screen two and three.

To Start setting up the system or changing a pre-set parameter, press the “Setup” push button for 5 seconds, the display will change to the pulse rate setup page. Three buttons are associated with setting up the system being;

How to enter the Setup Routine

When you press the “setup” push button the internal sounder will rapidly pulse. This is to help stop persons from inadvertently altering the setup parameters. You MUST keep the “Setup” button pressed ignoring the pulsing horn until the display changes to the screen shown in (12) below at which time the pulsing horn will stop.

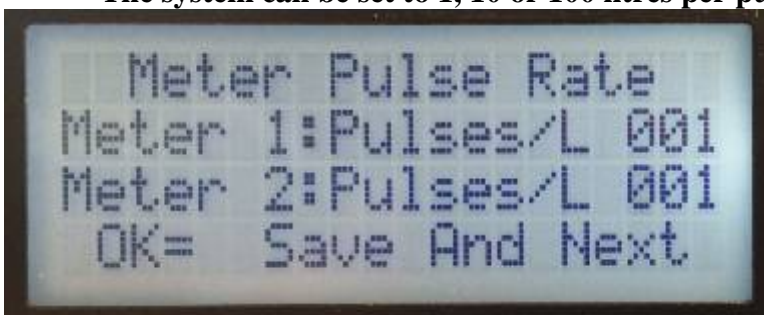
Please note;

YOU WILL ONLY HAVE 5 MINUTES TO CHANGE THE SETTINGS BEFORE THE SYSTEM WILL EXIT SETUPS WITHOUT SAVING ANY CHANGES.

Push Button	Function
Next Screen	Each press of this button will move to the next parameter setup screen without any changes to the current screen. To exit Setups Keep pressing this button until one of the screens in section 9 appears.
Change Value	With the cursor flashing over a parameter or digit, press this button to change the parameter or digit to the next value. If you make a mistake, keep pressing the button until the correct value is displayed.
Move Cursor	Use this button to move the cursor to the next digit in a parameter. If you keep pressing this button it will rotate the flashing cursor through all the digits back to the most significant digit.
OK	If you want to move to a specific parameter on a page you will need to keep pressing this button until the cursor is flashing over your selection. Then use the “Change Value” and “Move Cursor” buttons. You MUST press this button to save the changes made.

12) Setting up Meter 1 and Meter 2 Pulses per Litre

**Note; If the “OK” button is not pressed the new setting will NOT be saved.
The system can be set to 1, 10 or 100 litres per pulse**



Set to 1, 10 or 100 Litres per pulse

Set to 1, 10 or 100 Litre per pulse

NOTE; On the BLDA-1 unit only Meter 1 will be displayed, on the BLDA-2, Meter 2 refers to the outside the boundary meter.

Actions required;

- To move on to the High & Low flow screen below, without making any changes to the pulse rate press the “Next Screen” button.
- Press the “OK” button to accept Meter 1’s litre per pulse or;
- Press the “Change Value” button, each press will change Meter 1 litres per pulse to 001, or 010 or 100 then back to 001 on the next press. When the correct Meter 1 litre per pulse is displayed press the “OK” button to accept, this will save the change and move the cursor to the most significant Meter 2 pulses per litre digit.
- Repeat steps a, b and c above to move on or adjust Meter 2 pulse rate.

13) Setting up High and Low maximum allowable litres and time period

Note; If the “OK” button is not pressed the new setting will NOT be saved.

The maximum litres can be set to between 00000 and 99999 litres, the time setting can be set between 00:00 to 24:00 hours



High Flow set for 2000L for 30 Mins

The above screen show that the High Flow alarm is set for 2000 litres for a period of 30 minutes and the Low Flow alarm is for 50 litres for a period of 10 minutes.

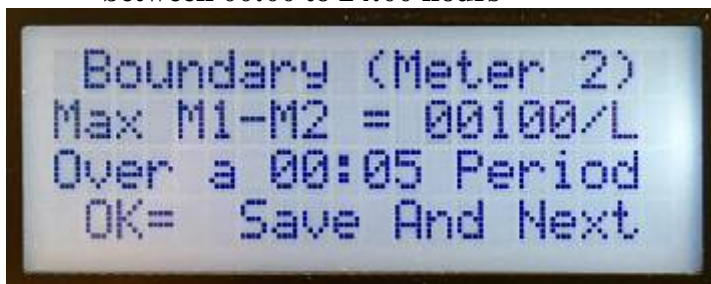
Actions required;

- To move on to the Boundary screen (BLDA-2) or Clock setup screen (BLDA-1) below, without making any changes to the High or Low Flow maximum litres or alarm timer press the “ Next Screen” button.
- Press the “OK” button to accept High Flow litres and move onto the High Flow alarm timer or;
- Press the “Change Value” button, each press will change the most the significant digits between 0 and 9 and back again to 0. When the correct number is displayed press the “Move Cursor” to move to the next digit or the “OK” button to save the new setting and move on to the High Flow timeout period timer. By repeated presses of the “Move Cursor” button, the cursor will rotate through the number back to the most significant digit of the number.
- With the cursor flashing on the most significant hours digit, repeat steps a, b and c above to move to the next screen, adjust the High Flow timer of move on to the Low Flow maximum litres.
- With the cursor flashing on the most significant Low Flow maximum litres digit, repeat steps a, b and c above to move to the next screen, adjust the Low Flow maximum litres or move on to the Low Flow timer.
- With the cursor flashing on the most significant hours digit, repeat steps a, b and c above to move to the next screen or adjust the Low Flow timer.

14) BLDA-2 Only; Setting up the Boundary Loss

Note; If the “OK” button is not pressed the new setting will NOT be saved.

The maximum litres can be set to between 00000 and 99999 litres, the time setting can be set between 00:00 to 24:00 hours



Max flow difference is 100 litres

For a 5 minute period

The above screen shows that the maximum boundary loss alarm is set to 100 litres for a period of 5 minutes.

Actions required;

- a) To move on to the Clock setup screen below, without making any changes to the Boundary alarm set points press the “Next Screen” button.
- b) Press the “OK” button to accept Max M1-M2 litres and move onto the alarm timer or;
- c) Press the “Change Value” button, each press will change the most significant digits between 0 and 9 and back to 0 again. When the correct number is displayed press the “Move Cursor” to move to the next digit or the “OK” button to save the new setting and move on to the alarm timeout period timer. By repeated presses of the “Move Cursor” button, the cursor will rotate through the number back to the most significant digit of the number.
- d) With the cursor flashing on the most significant hours digit, repeat steps a, b and c above to move to the next screen or adjust the alarm timer.

15) Setup the Clock

**NOTE; The time format only allows for a maximum 23.59 hours and NOT 24:00
If the “OK” button is not pressed the new setting will NOT be saved.**



Day, Month, Year and 24 hour time
Day of the week

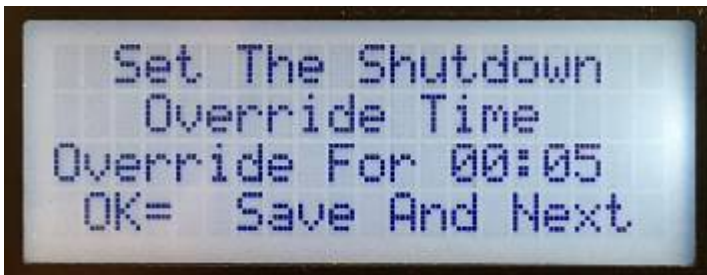
You will only be allowed to enter a valid day, date and times. If you try to exceed the normal clock format the display will automatically display the minimum for that parameter i.e. if the display shows the time as 23:00 with the cursor flashing over the “2”, one more press on the “Change Value” button will result in the display showing 20:00.

Actions required;

- a) To move on to the Shutdown Override Timer screen below, without making any changes to the clock press the “Next Screen” button.
- b) Press the “OK” button to accept the displayed Day, Month, Year, Time and move to the day of the week setting.
- c) Press the “Change Value” button, each press will change the digits between 0 and its maximum and back to 0 again. When the correct number is displayed press the “Move Cursor” to move to the next digit or the “OK” button to save the new setting and move on to the Day of the week setting. By repeated presses of the “Move Cursor” button, the cursor will rotate through all of the day, month, year and time digits until its back to the most significant day digit. If a mistake is made, keep pressing the “Move Cursor” button until over the required digit again.
- d) With the cursor flashing on the day of the week, press the “Change Value” button until the correct day is displayed. Once correct, press the “OK” button to move to the next setup screen.

16) Set the Alarm and Shutdown Override timer

Note; If the “OK” button is not pressed the new setting will NOT be saved. The time setting can be set between 00:00 to 24:00 hours



Override Time period

This is used to set the period of time that the system will ignore what the water flow is. It can be invoked by pressing the “Override” button then the “OK” button.

Actions required;

- a) To move on to the Set Valve Presence screen below, without making any changes press the “ Next Screen” button.
- b) Press the “Change Value” button, each press will change the digits between 0 and its maximum and back to 0 again. When the correct number is displayed press the “Move Cursor” to move to the next digit or the “OK” button to save the new setting and move to the Set Valve Presence screen below . By repeated presses of the “Move Cursor” button, the cursor will rotate through all of the time digits until its back to the most significant hour digit. If a mistake is made, keep pressing the “Move Cursor” button until over the required digit again.

17) Set if a shutdown valve is fitted or not

Note; If the “OK” button is not pressed the new setting will NOT be saved.



Valve FITTED, NOT FITTED

Valve FITTED, NOT FITTED

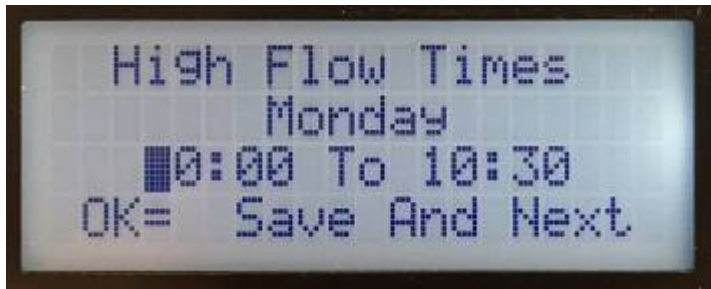
Use this setup page if 1 or both (BLDA-2 only) water shutdown valves are fitted. If a valve is fitted it will not open until set to “FITTED”

Actions required;

- a) To move on to the High Flow times screen for Monday below, without making any changes press the “ Next Screen” button.
- b) Press the “OK” button to accept Meter 1’s Fitted or Not fitted statement or;
- c) Press the “Change Value” button, each press will change Meter 1 to “Fitted” then back to “Not Fitted” on the next press. When the correct Meter 1 valve presence statement is displayed press the “OK” button to accept, this will save the change and move the cursor to Meter 2 statement.
- d) Repeat steps a and c above to move to the next screen on or adjust Meter 2 (Boundary) Presence.

18) Set the High Flow time periods for the day of the week

Note; If the “OK” button is not pressed the new setting will NOT be saved. The time setting can be set between 00:00 to 24:00 hours



Start to Stop Times

You will need to set the high flow period for each day of the week starting at Monday. This time period would normally be when the building is occupied i.e. an office block could be 07:00 to 18:30. Monday to Friday, 07:00 to 12:00 Saturday and 00:00 to 00:00 for Sunday, unoccupied on Sunday.

Actions required;

- a) To move on to the next High Flow screen, without making any changes press the “Next Screen” button.
- b) Press the “OK” button to accept and save the displayed start time and move to the off time or;
- c) Press the “Change Value” button, each press will change the digits between 0 and its maximum and back to 0 again. When the correct number is displayed press the “Move Cursor” to move to the next digit or the “OK” button to save the new start time and move on to the stop time. By repeated presses of the “Move Cursor” button, the cursor will rotate through both hour digits until its back to the most significant digit. If a mistake is made, keep pressing the “Move Cursor” button until over the required digit again.
- d) Repeat steps a and c above to adjust the stop time.

With the next High Low Times screen on display, repeat steps a) through d) for all the days of the week. You MUST press “OK” or “Next Screen” after setting up Sundays High Flow period to finish setting up the system and displaying the main screen.

19) Useful Information

- a) The system will NOT alarm or turn off a shutdown valve if the high, low flow time period are set to 00:00 i.e. High Flow set to 00245 for 00:00 time. This also applies to the Boundary alarm on the BLDA-2 system.
- b) The display will automatically change to the first screen shown in item 9 above after 5 minutes.
- c) The system will automatically exit setups after 5 minutes.

MJ- SDC

Multi-jet water meter with dry dial

CE EN 14154

WRAS
APPROVED
PRODUCT

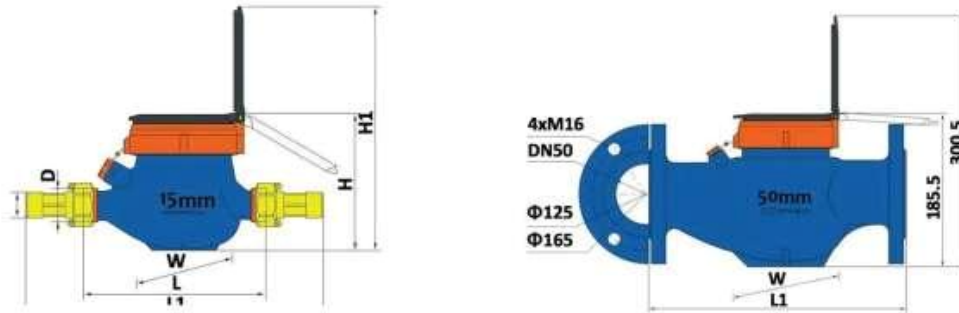


The **VuAqua MJ-SDC** is a multi-jet mechanical water meter with dry type dial counter suitable for a variety of metering applications including general purpose, tenant billing and commercial metering tasks available in sizes DN15 (1/2") to DN50 (2").

Key Features

- Multi-jet impellar meter type
- Compact design for most metering applications
- Approved: EN14154+A1+A2, OIML R-49: 2006(E)
- Dry dial (frost resistant)
- Meter body material is epoxy coated brass
- Drinking water approved : WRAS
- Shielded from Magnetic interference
- BSP fittings supplied (nuts, tails & washers)
- Maximum pressure of 16 bar
- Maximum temperature of 30°C (T30)
- Pulse Output option: Vmax=24AC/DC, I_{max}=0.01A
- Tamper evident wire lock & seal, Inlet NRV option

Dimensions



Size	DN15	DN20	DN25	DN32	DN40	DN50	DN50-flange
L	165	190	260	260	300	300	300
L1*	259	294	380	384	431	448	
D	G3/4B	G1B	G1-1/4B	G1-1/2B	G2B	G2-1/2B	
d	R1/2	R3/4	R1	R1-1/4	R1-1/2	R2	
H	107.5	107.5	117.5	117.5	141.5	177	185.5
H1	191	191	206.5	206.5	256.5	292	300.5
W	94	94	98	98	122	145	165

*L1= the total length with connection and the gasket without compression.

Additional length options available:

Size	DN15	DN20	DN25	DN32	DN40	DN50	DN50 Flange
L	110	160	160	160	200	280	280
	120		220	230	245		
	130		225				
	145						
	170						
	190						

Technical Data

Size	DN	DN15	DN20	DN25	DN32	DN40	DN50
R	Q3/Q1	R80 for Horizontal Installation					
Q4	m ³ /h	3.125	5	7.875	12.5	20	31.25
Q3	m ³ /h	2.5	4	6.3	10	16	25
Q2	l/h	50	80	126	200	320	500
Q1	l/h	31.25	50	78.75	125	200	312.5
Max. Reading	m ³	99999.9999					
Min. Reading	Litre	0.05					
Pressure Loss	ΔP	ΔP <63 at Q3					
Max. Pressure	Bar	16					
Max. Temperature	°C	30 (Max 50 Degrees is possible)					



20) Water meter Installation

Before installing the water meter, make sure that the meter has been chosen correctly. Check that the nominal diameter, flow rate, working temperature and pressure are compatible with actual installation conditions.

1. It is recommended that a straight length of pipe the same diameter as the meter and equivalent in length to 10 times the meter diameter is fitted immediately prior to the meter inlet and 5 times the meter diameter after the meter.
2. Before installing the meter make sure that the two sections of cut pipe are positioned correctly and supported where necessary, clean them carefully (especially if the pipes are empty) and allow water to flow for some time using a section of pipe instead of the meter, to remove any scale/debris leftover from the disturbance to the pipe.
3. Install the meter in a place protected from frost if possible (insulate with lagging materials during the winter months) and locate in the lowest part of the pipe work in order to avoid accumulation of air within the measuring chamber.
4. Install the meter in a position where it can be easily read, but is not accessible for tampering. Locate the meter where it will be safe from disturbance and damage from passing objects.
5. Install the meter so that the water is flowing in the same direction as the arrow shown on the body and in the position recommended by the manufacturer, following any indications on the dial. For guaranteed performance according to ISO 4064, meters should be installed in a perfectly horizontal plain. Accuracy may be reduced if installed in a vertical orientation.
6. It is advisable to install isolation valves upstream and down stream of the meter, in order to make the maintenance or verification of the meter possible. The installation of an internal or external non-return valve is also recommended.
7. There should be no restriction of the pipe at the meter inlet, and flange joints where used, should not obstruct the flow of water into the meter body. Any regulation of the flow should be carried out on the outlet side of the meter.

IMPORTANT:

Before putting in to operation, it is necessary to purge the pipe and meter of air (for this operation it may be necessary to rotate the meter) Valves must be opened slowly so as not to allow any air present within the pipe work to damage the meter by over running it's internal measuring mechanism.