Euromag MC608 Output Guide

This document explains the various outputs that are available for both the MC608 powered by internal battery pack and the MC608B powered by an external 12-24V source.

It outlines how each of the outputs can be configured, wired and tested along with link to accompanying technical data and information videos.
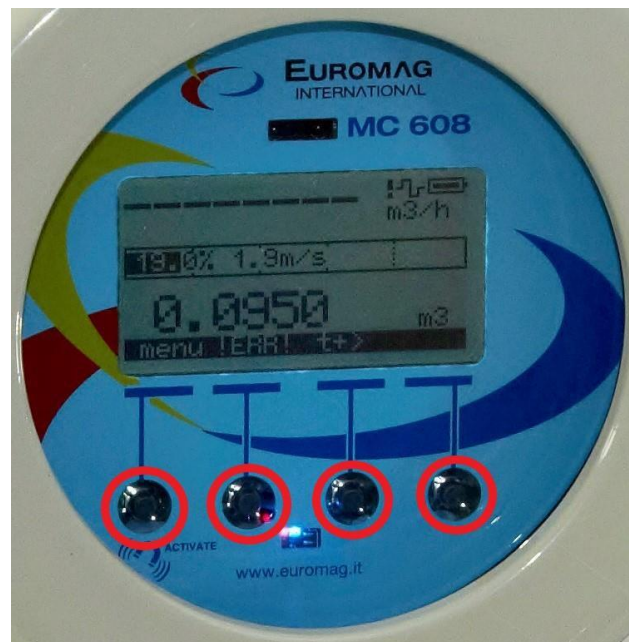
Contents

1. Programming of the MC608

1.1 Programming Overview

The programming of all the outputs can be done via the four front push buttons of the MC608. Above each button lists the action that can be performed. Pressing the far-left button 'menu' will bring up the main menu.

In the menu you can navigate up and down using the up and down arrows and 'OK' to enter the highlighted parameter. Pressing the '<<' will take you back to the previous screen.

The programming guide on section 1.2 (pages 4 and 5) illustrates all parameters and sub parameters available. The default LEVEL 3 password of **231042** allows access to LEVEL 3, LEVEL 2 and LEVEL 1 protected parameters.

1.2 How to Read and Configure the MC608 - Video

Click on the below image to watch the information video on how to read and configure the main display of the MC608 (e.g. how to change the totaliser from m3 (kilolitres) to ML (megalitres))
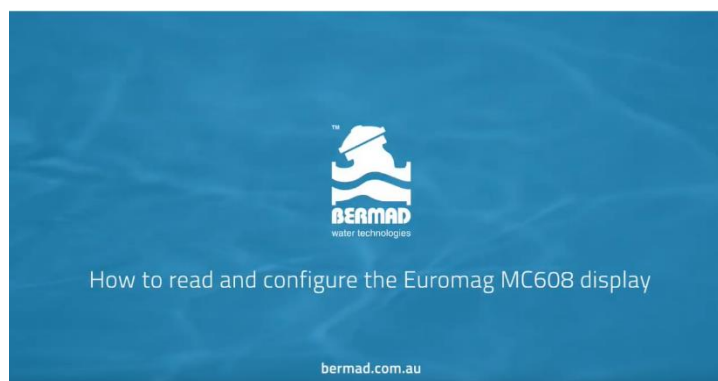
1.3   Euromag MC608 Programming Guide

Euromag MC608 Programming Guide – Firmware 3.42

Press 'menu' to enter the MAIN MENU, 'OK' to advance and '<<' to go back

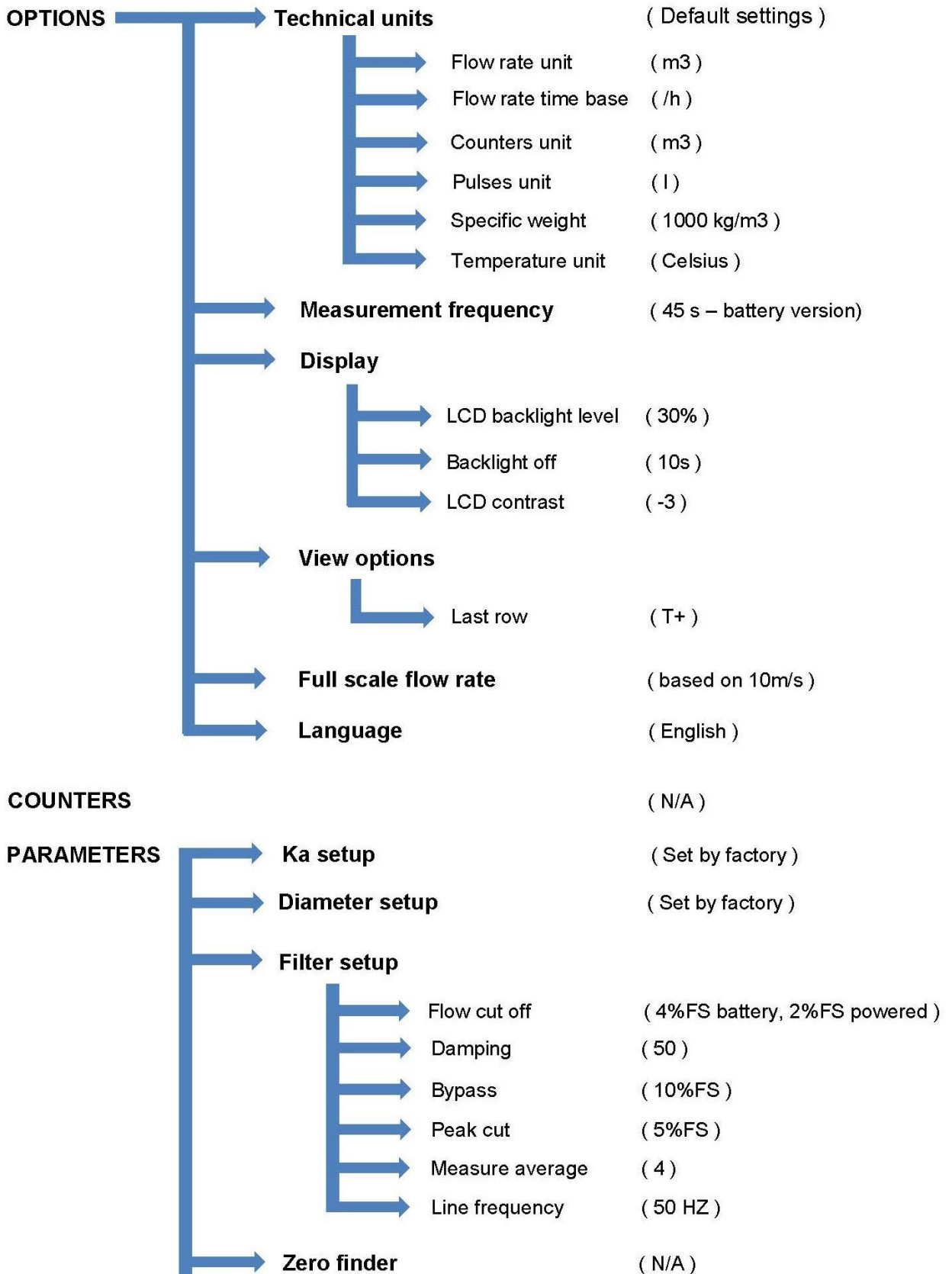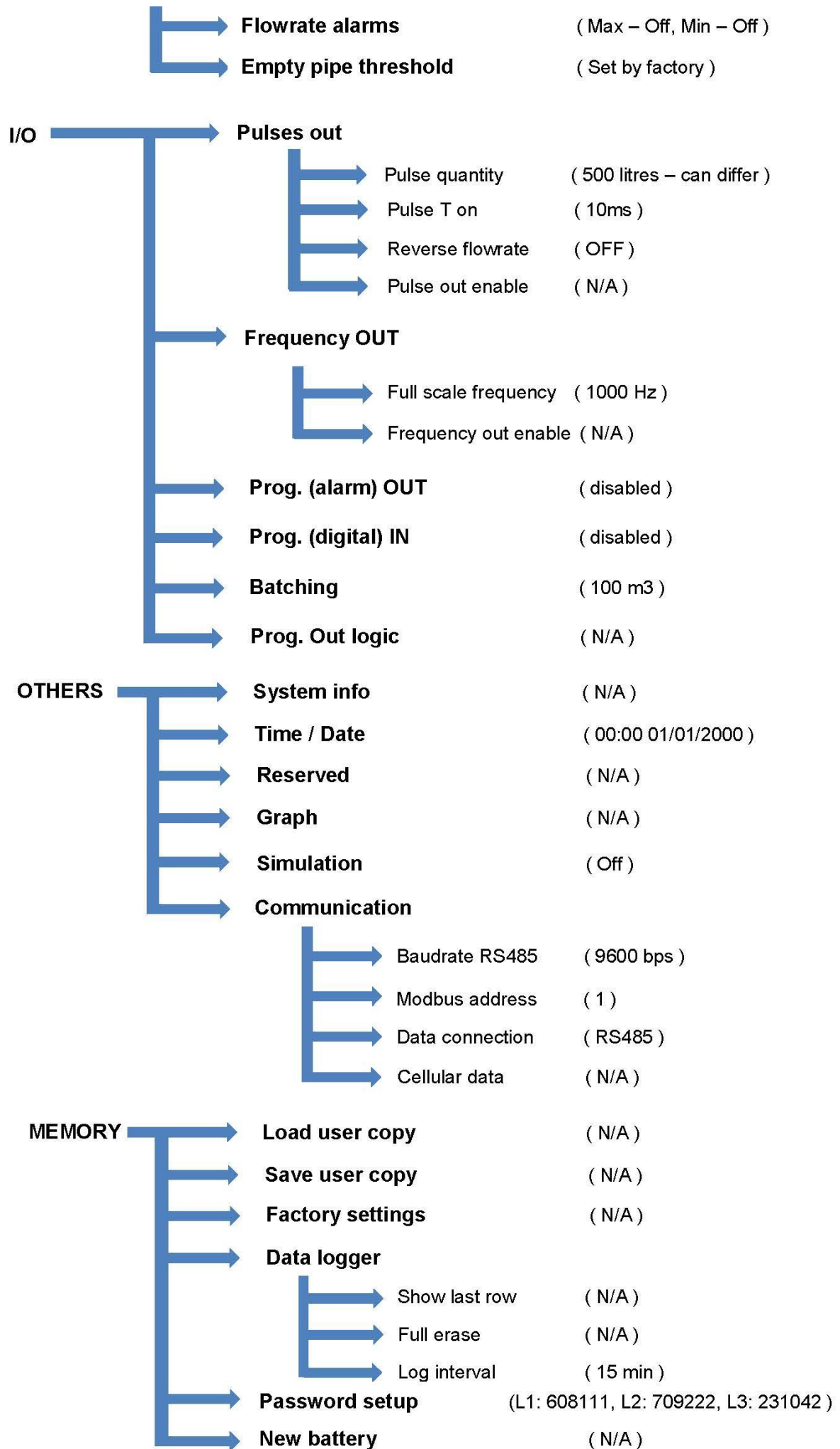MAIN MENU *(use password: 231042 when prompted)*

OPTIONS ➝ **Technical units**   (Default settings)

         Flow rate unit   (m3)
         Flow rate time base   (/h)
         Counters unit   (m3)
         Pulses unit   (l)
         Specific weight   (1000 kg/m3)
         Temperature unit   (Celsius)

Measurement frequency   (45 s – battery version)

Display

         LCD backlight level   (30%)
         Backlight off   (10s)
         LCD contrast   (-3)

View options

         Last row   (T+)

Full scale flow rate   (based on 10m/s)

Language   (English)

COUNTERS   (N/A)

PARAMETERS ➝ **Ka setup**   (Set by factory)

Diameter setup   (Set by factory)

Filter setup

         Flow cut off   (4%FS battery, 2%FS powered)
         Damping   (50)
         Bypass   (10%FS)
         Peak cut   (5%FS)
         Measure average   (4)
         Line frequency   (50 HZ)

Zero finder   (N/A)

Flowrate alarms (Max – Off, Min – Off)

Empty pipe threshold (Set by factory)

I/O → **Pulses out**

Pulse quantity (500 litres – can differ)

Pulse T on (10ms)

Reverse flowrate (OFF)

Pulse out enable (N/A)

Frequency OUT

Full scale frequency (1000 Hz)

Frequency out enable (N/A)

Prog. (alarm) OUT (disabled)

Prog. (digital) IN (disabled)

Batching (100 m3)

Prog. Out logic (N/A)

OTHERS → **System info** (N/A)

Time / Date (00:00 01/01/2000)

Reserved (N/A)

Graph (N/A)

Simulation (Off)

Communication

Baudrate RS485 (9600 bps)

Modbus address (1)

Data connection (RS485)

Cellular data (N/A)

MEMORY → **Load user copy** (N/A)

Save user copy (N/A)

Factory settings (N/A)

Data logger

Show last row (N/A)

Full erase (N/A)

Log interval (15 min)

Password setup (L1: 608111, L2: 709222, L3: 231042)

New battery (N/A)

2. Pulse output

Available with both the MC608 battery and externally powered meters.

2.1 Configuring the Pulse output

The two parameters that are used for configuring the pulse output is the PULSE QUANTITY (volume of water per pulse) and PULSE T ON (pulse width).
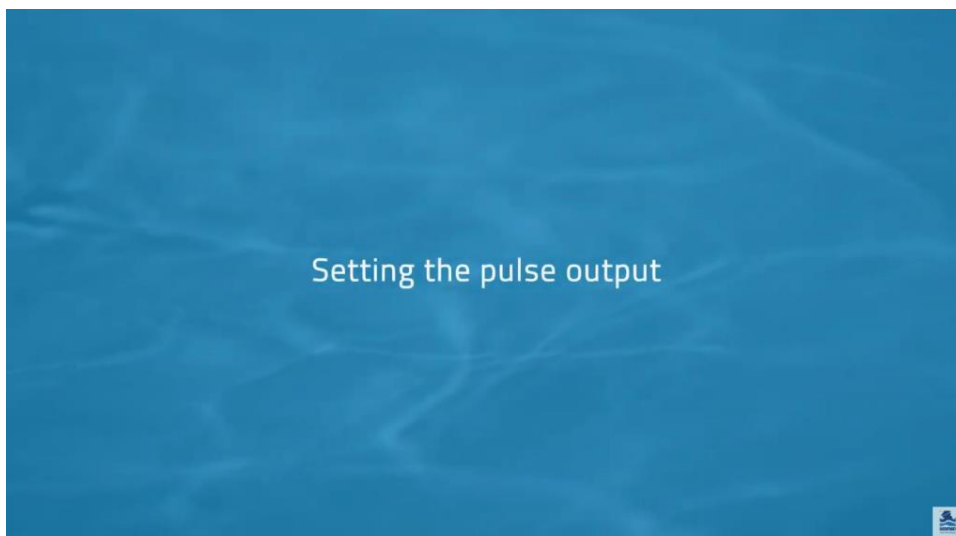
As per the aforementioned programming guide these parameters can be accessed via the front push buttons:

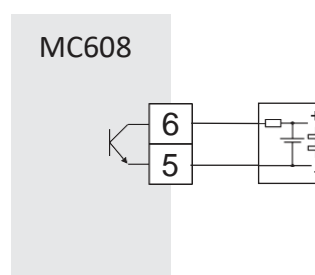MENU > I/O > PULSES OUT > PULSE QUANTITY

MENU > I/O > PULSES OUT > PULSE T ON

2.2 Information Video

Click on the below image to watch the information video on how to set

the pulse output:

2.3 Wiring the Pulse Output

The pulse output is driven through terminals 6 (positive) and 5 (negative/common)

2.4   Testing the Pulse Output

The pulse output can be simulated for testing purposes. This can be performed on the bench or after being installed.

First check the FULL SCALE FLOW RATE value. By default, this is set to 10m/s. So, for a 250mm flow meter the FULL SCALE FLOW RATE is set to 490 l/s.

Click on the below image to download the Euromag flow calculator software:
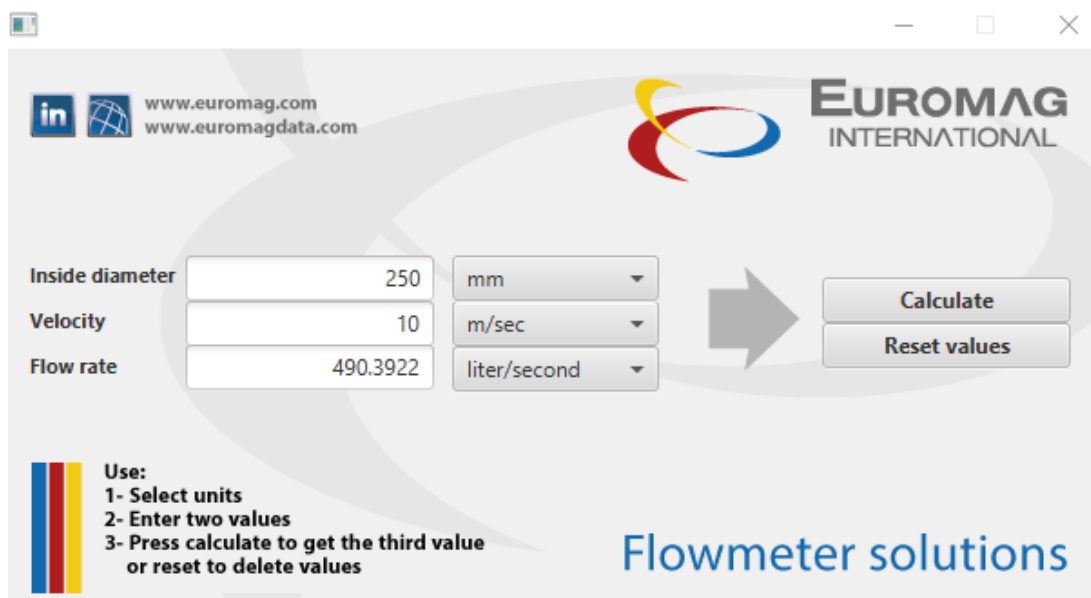
You can also check the FULL SCALE FLOW RATE value through the front push buttons:

MENU > OPTIONS > FULL SCALE FLOW RATE

You can simulate a flow rate which will also active the appropriate output signals. The simulation page can be found by navigating to:

MENU > OTHERS > SIMULATE

In the SIMULATE screen you can set the percentage output. Push the + or – buttons to increase or decrease the value. The percentage output value based on the FULL SCALE FLOW RATE value and can be adjusted from 0% to 100%.

For example, a 250mm meter has a FULL SCALE FLOW RATE value of 490 l/s by default. We then change the value to 20% as we want to simulate 98 l/s. Above the far-left button, it shows the word 'OFF' this means that the simulation is currently off. We then press that button to change it to 'ON' and then finally 'OK'. We are now simulating a flow of 98 l/s.

If we had configured the PULSE QUANTITY to 100 l/s you will then see a pulse roughly every second. If not then check the polarity and make sure the pulse width (PULSE T ON) is not too short for the equipment you are using to measure.

**3. 4-20mA output**: Only available with the MC608 12-24V powered meters.

3.1 Configuring the 4-20mA output

The 4mA setting if fixed on 0 l/s (no flow) and the 20mA setting can be adjusted by changing the FULL SCALE FLOW RATE value through the front push buttons:

MENU > OPTIONS > FULL SCALE FLOW RATE

As mentioned previously in Section 1.3 the FULL SCALE FLOW RATE (20mA) value is set to 10m/s by default.

Click on the below image to watch the information video on how to

configure the 4-20mA output:

Configuring a 20mA setting
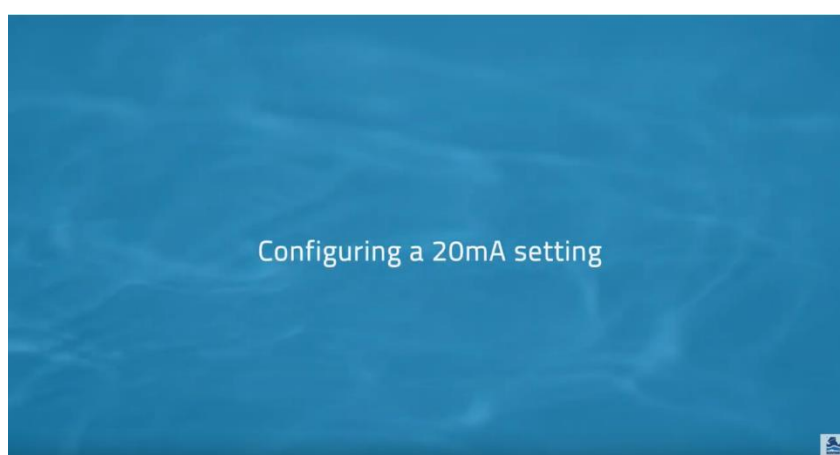
3.2 Wiring the 4-20mA output

By wiring in a link across terminals we can measure the 4-20mA output from terminals 1 (positive) and 8 (common)
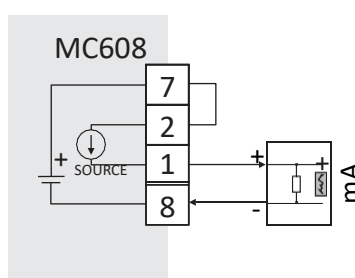
3.3 Testing the 4-20mA output

As per the pulse output the 4-20mA can also be simulated on the bench or after installation and is performed exactly the same way as described on page 5.

The simulation value can be adjusted from 0% to 100% which represents 4mA to 20mA respectively.

For example, to simulate 20mA adjust the simulation value to 100%, turn simulation 'ON' then press 'OK'.

4. ModBus RS485 communication: Only available with the MC608 12-24V powered meters.

4.1 Configuring the ModBus communications

If using ModBus communications we first need to make sure the DATA CONNECTION is set to RS485 by navigating to:

MENU > OTHERS > COMMUNICATION > DATA CONNECTION

then select 'RS485' then 'OK'

The default ModBus port settings are:
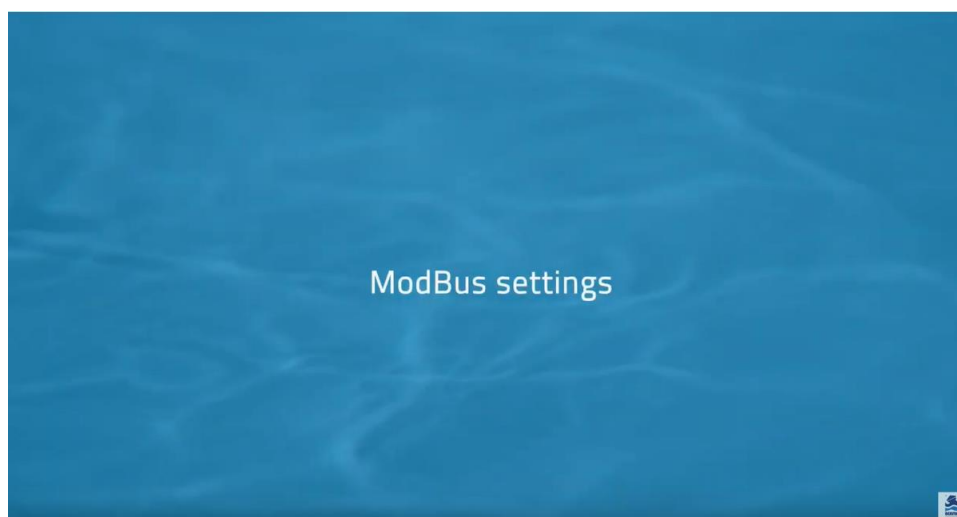
Baud rate: 9600

Data bits: Eight

Stop bits: One

Parity: None

Drop number: 1

Click on the below image to watch the information video on how to configure the ModBus settings:

The following links are to download the holding registers for the Euromag MC608:

https://www.bermad.com.au/wp-content/uploads/2017/09/MC-608-ModBus-registers-CMD03-e-CMD16.pdf

https://www.bermad.com.au/wp-content/uploads/2017/09/MC-608-ModBus-registers-CMD04.pdf

Euromag have added an additional register for the individual alarms that is not stated yet in the current holding registers:

MODBUS REGISTER: 3:0070

MODBUS ADDRESS: 0069

Num.bytes: 2

Data type: unsigned int 16

Access: Read only

The alarm information is coded as follow:

BIT 0: excitation failure
BIT 1: empty pipe
BIT 2: flow hi alarm
BIT 3: flow low alarm
BIT 4: pulses overlap
BIT 5: measurement read error
BIT 6: low voltage
BIT 7: not used

4.2   Wiring the ModBus communications

The ModBus RS485 communication is wired as follows:

Terminal 13: Ground

Terminal 14: A

Terminal 15: B

See fig_914_1 on page 34 of the following instruction manual:

https://www.bermad.com.au/wp-content/uploads/2016/11/MC608-Manual-Highres.pdf

4.3   Testing the ModBus communications

All the ModBus registers can be polled at any time once the meter is powered up.

Contact Bermad Water Technologies if you require any additional assistance:

Phone: 03 9464 2374

Email: damian@bermad.com.au

5. **Programmable alarm output**: Available with both the MC608 battery powered and MC608 12-24V powered meters.

5.1   Configuring alarm output

The alarm (PROG. OUT) is default set to 'DISABLED' though can be configured to a number of different parameters:

- Reverse flow: On detection of flow flowing in the reverse direction.
- Max flow th.: Triggered when the flow rate has exceeded the adjustable maximum flow threshold.
- Min flow th.: Triggered when the flow rate drops below the adjustable minimum flow threshold.
- Max/Min f.th: Triggered when the flow rate has exceeded the maximum flow threshold or drops below the minimum flow threshold.
- Batching: Used when using batching function.
- Excitation failure: Triggered on a critical fault.
- Empty pipe: Detection of an air pocket in the sensor.
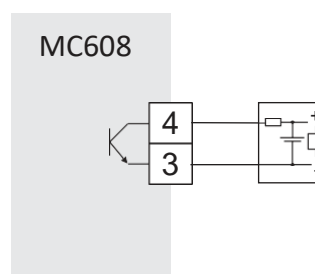- All alarms: Triggered when any of the above alarms are triggered.

MENU > I/O > PROG. OUT

Click on the below image to watch the information video on how to configure the alarm output:

Configuring the alarm output
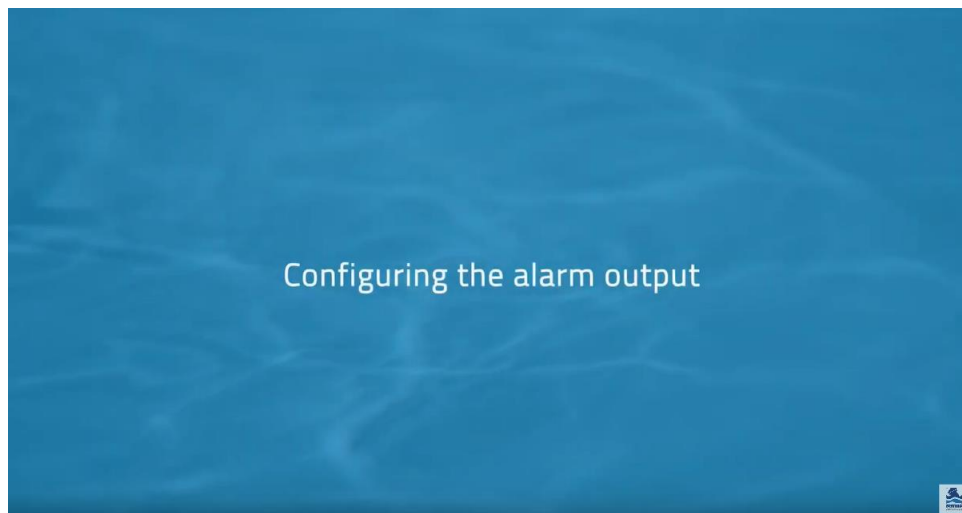
5.2   Wiring alarm output

The alarm output is driven through terminals 4 (positive) and 3 (negative/common)

5.3   Testing alarm output

The alarm is only triggered when the condition it is programmed for occurs or when set to 'All alarms' any of the alarms occur. You can test the max and min threshold alarms by simulating the flow outside of the programmed threshold – see page 7 (Section 2.4) on how to simulate flow.

The simplest and quickest way to check the alarm output is to set the alarm output to 'Excitation failure' or 'All alarms' and remove the two white plugs from the sensor. They are located adjacent to the wiring terminal strip. See fig_914_1 on page 34 of the following instruction manual:

https://www.bermad.com.au/wp-content/uploads/2016/11/MC608-Manual-Highres.pdf

The following video demonstrates what happens when the 'Excitation failure' alarm is triggered:

https://youtu.be/5Pn-7KlVsLk?t=288

Contact Bermad Water Technologies if you require any additional assistance:

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