EB11 ‘EasyBatch’ Batch Controller

Instruction Manual



Version 12.21

General Information

This manual provides the necessary information for installation and operation of your flow instrument; for detailed information on any flowmeters or accessories supplied with your instrument please consult the relevant flowmeter product manual. This instrument should only be installed and maintained by persons familiar with local regulations, particularly those for workplace Health and Safety.
For best results, please make yourself familiar with the contents of all relevant product manuals prior to installation and commissioning. If further assistance is required please consult the distributor from whom you purchased your device.



DISPOSAL WITHIN THE EUROPEAN UNION - WEEE

- The WEEE Directive requires that this product be recycled when disposed of within the European Union
- The crossed out wheelie bin symbol shown in this manual signifies that this product should not be disposed of in general waste or landfill.
- Please contact the local dealer or national distributor from whom this product was purchased for information on recycling electronic equipment within your region.

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1. Introduction

1.1 Product Overview

The FLOMEC EB11 “Easy Batch” is a dual stage batch controller designed to create an efficient and accurate dispensing experience. Mountable either directly onto a FLOMEC flow meter or remotely, and compatible with multiple types of industry signals, the EB11 allows the user to control the volume of fluid dispensed into their process. The large 7-digit display with backlight enables easy reading of the batch status is either light or dark conditions. Housed in an IP66/67-NEMA4X Glass Reinforced Nylon enclosure for increased impact and corrosion resistance particularly in wet washdown environments. The EB11 contains 2 digital NPN outputs with a current rating of up to 300mA for direct control of solenoid valves, or to connect to relays to allow for the control of large valves and pumps.

Environments

The Easybatch is designed to suit harsh indoor and outdoor industrial environments and conforms to EMC directives. The instrument housing is made from UV resistant, glass reinforced nylon (GRN) and is weatherproof to IP66/67 (Nema Type 4) standards. The Easybatch is suitable for use in temperatures ranging between -20^{0}C and 60^{0}C and can handle up to 90% relative humidity. However, condensation in the instrument should be avoided at all times.

Features

- Easy to use 2 button controller
- Dual stage operation
- Weather resistant and durable IP66/67 - NEMA4X Enclosure
- Easy to read backlit 7-digit display
- Settings retained after power loss meaning no reprogramming

Installation

Specifically engineered to be directly mounted on a variety of flowmeters, wall or surface mounted, pipe or panel mounted. Various mounting kits are available. The instrument can be self-powered or powered by an external DC supply.

1.2 Specifications

Physical	High impact glass reinforced nylon and nitrile O-Ring providing an IP rating of IP66/67 Operating Temperature Range is -20°C ~ 60°C (-4°F ~ 140°F)
LCD Display:	Dimensions: 54 x 29mm (2.13" x 1.14") 7 digit primary alpha-numeric LCD display with 12mm characters 7-digit secondary alpha-numeric LCD display with 7mm characters White LED backlight available with external DC power 8 times/sec refresh rate during operation which reduces to 1time/sec after 30 seconds
Units	Total units are selectable for litres, cubic metres, kilograms, pounds, gallons, US gallons, barrels or NONE.
Signal Input:	Options for signal input include: Reed switch (120Hz), NPN (6kHz), PNP (6kHz), coil ($30mV_{pp}$) and NAMUR (4kHz).
Sensor Power	8.2V regulated sensor supply (terminal 4) is available when external DC power is applied. 1.2V for coil pick-up (terminal 3) and 3V for low power pulse signals Max current out = 63µA
Battery Power	AA 3.6V Lithium Battery Expected battery life under ideal conditions is 2 years. However, this is dependent on settings and configuration
External DC Power	Regulated 10V ~ 30V DC Maximum consumption is 625mW
Digital Outputs	Passive NPN digital output, not isolated. Max Voltage: 30VDC Max Current: 300mA
Directives and standards	EMC directive (2014/30/EU; FCC 47 CFR part 15), Low voltage directive (2014/35/EU), restriction of hazardous substances directive (2011/65/EU)

2. Operation

2.1 Key Functions

The following keys are available:

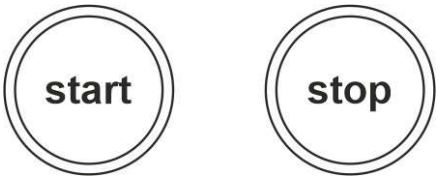


Fig. 2: Control panel

Functions of the keys



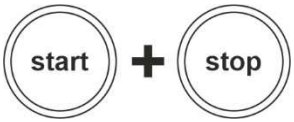
START-key
This key is used to:

- START the batch process.
- to enter the preset value during programming.
- to reset the total value.
- gain access to SETUP-level; please read chapter 5.



STOP-key
This key is used to:

- STOP / interrupt the batch process.
- during the “READY”-status to select total and accumulated total.
- during programming to select the digit.



START + STOP-key
Press both keys simultaneously to program and save the PRESET value or settings.

2.2 Operator Functions

By default, the EB11 will act at Operator level. For the Operator, the following functions are available:

- **To enter a batch quantity**

To change the PRESET-value, following procedure must be followed:

1) press **START** + **STOP** quickly and simultaneously: the word "PROG" will be flashing, If the buttons are held too long there will be no response
2) use **STOP** to select the digit position and **START** to increase that value,
3) set the new PRESET-value by pressing **START** + **STOP** quickly and simultaneously.

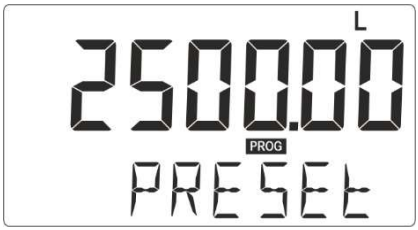


Fig. 3: Example display information during programming preset value.

When data is altered but START + STOP has not been pressed yet, then the alteration can still be cancelled by waiting for 20 seconds: the former value will be reinstated.
The PRESET-value can be used time after time till a new value is programmed.

- **Starting up the batch process**

The batch process can only be started up when "READY" is displayed. The batch process is started-up by pressing the START-key.



Fig. 4: Example display information during the process.

- # Interrupting and ending the batch process

When STOP is pressed once, the batch process will be temporarily interrupted; the actual values are not lost. At the display, the word "RUN" will be flashing. From this stage, the batch process can be resumed with the START-key.
The process can be ended entirely at all times by pressing STOP twice in which case the actual values are "lost" and the system returns to steady state: the batch cannot be resumed.

When the batched quantity approaches the preset quantity, it might be that one of the two outputs will be switched-off due a pre-close quantity.
Once the preset quantity is fully batched, the second or both outputs will be switched off. This is the end of the batch process.

After batching, following functions are available:

Display information	Function
MAIN SCREEN	**Actual and Preset value**
SCREEN 1	**Total and reset Total**
SCREEN 2	**Accumulated Total**

Display total and accumulated total
A resettable Total and non-resettable Accumulated Total are available. Both, Total value and Accumulated total can count up to 9.999.999 before rolling over to zero.
The unit and number of decimals are displayed according to the configuration settings for Total.

Clear total
The value for Total can be cleared and reset to zero. This action does not influence the value of Accumulated Total.
To clear Total, press the START-key when Total is shown on the display and the display will show the flashing text “CLEAR NO YES”. When the START-key is pressed a second time, Total is set to zero. To avoid clearing Total at this point, press the STOP-key or wait for 20 seconds.

3. Mechanical Installation

3.1 General Requirements

Installation of this product should only be carried out by suitably qualified/trained personnel with an understanding of local regulations regarding electrical installations. It is recommended that the instrument is installed in a location where it is shielded from extreme varying weather conditions, and from chances of physical impact. Never install the instrument in an area which will expose it to temperatures outside its specified operating temperature range.

3.2 Conduit Entries

Each instrument is equipped with three conduit entries which are factory sealed to maintain the IP rating of the enclosure. To gain access to a conduit entry the integral moulded plug must be broken out of the electrical entry. Inserting a suitably sized screw-driver or Allen-key into the centre of the conduit entry plug and bend the plug back and forth until it breaks away from the enclosure.

Always use IP rated cable glands when fitting cable to the instrument. If any electrical entries are opened using the method above and are later not used, these must be sealed using a threaded conduit plug with an appropriate IP rating (IP66 or IP67 is recommended)

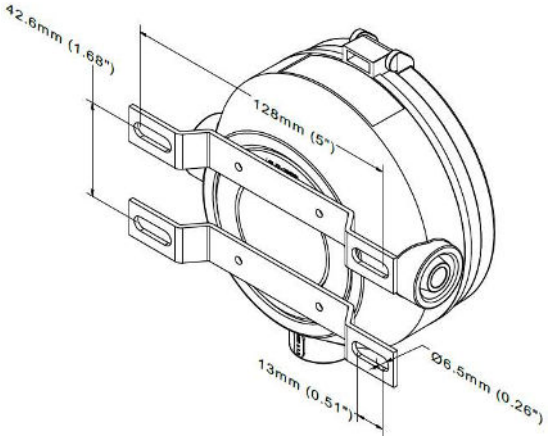
3.3 Integral Meter Mounting

This instrument may be purchased as a meter mount display which will mount on the top of any Flomec flow meter. For any instruments purchased as field mount, these may be converted to a meter mount instrument by purchasing a new rear enclosure.

For mounting this instrument on a Flomec flowmeter with a process temperature of over $80^{o}C/176^{0}F$ there is a 'Cooling Fin Kit' available from the manufacturer which will allow this; these may be retro-fitted in the field with minimal effort.

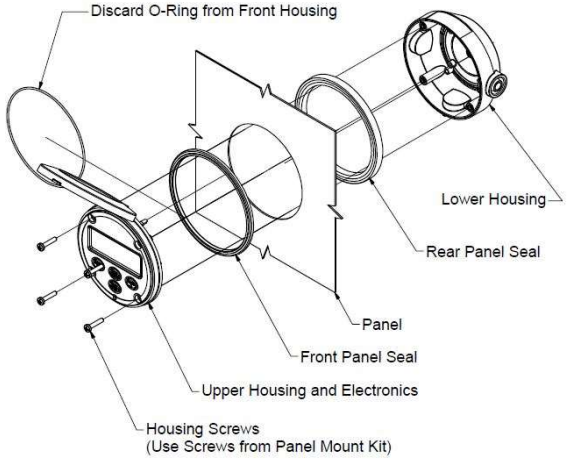
3.4 Wall and Pipe Mounting

Mounting of the instrument on a pipe or flat surface (such as a wall) can be accomplished using the Wall Mount Kit ***(part no. 1522001)*** or Pipe Mount Kit ***(part no. 1522002)*** – see next page for diagram.



3.5 Panel Mounting

Mounting of the instrument in a panel requires a 106mm (±2mm) / 4.10" - 4.25" round hole to be cut in the panel – maximum panel thickness 6mm (1/4"). The Panel Mount Seal Kit (part no. 1504003) must be used to maintain weather protection when panel mounted. IP65 is possible with the seal kit used. If the instrument is installed indoors the instrument may be panel mounted without the seal kit.



The rear enclosure of the instrument should be mounted behind the panel *(as per diagram above)* to protect the electronics module from damage and provide separation from any conductive components inside the panel/cabinet.

4. Electrical Installation

All wiring connections should be made with good quality shielded instrument cable; wiring between terminals which are inside the instrument enclosure, or between a flowmeter and an integrally mounted instrument may use non-shielded wire. Cable shields or drain wires should be connected to the instrument ground (GND) at the instrument end only – isolate the shield/drain wire at the flowmeter end of the cable.

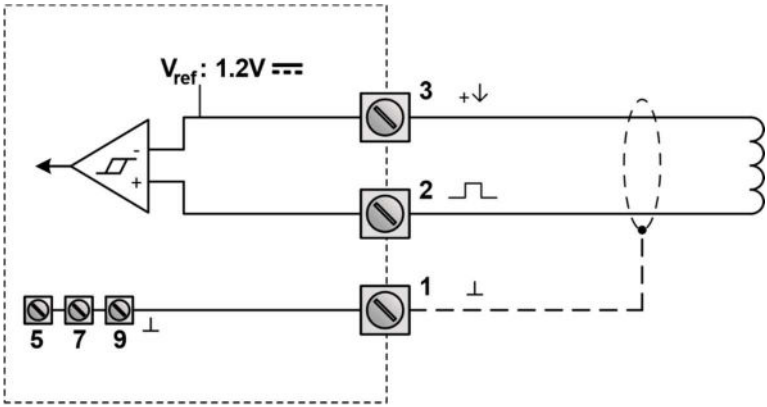
The terminal connections on the instrument will allow for usage of wiring up to 1.5mm^2 cross section (16AWG) – if two wiring connections into the same terminal are required the maximum cross section of each wire is 0.75mm^2. Wire insulation should be stripped to a length of 6.5mm and conductors should be fitted to the terminals so that there is minimal exposed conductor. Terminals can be tightened with a 2.5mm or 3/32" flat blade screw-driver.

4.1 Input Connections

The EB11 can take a variety of common industrial inputs, including coil, NPN and reed. A 8.2V DC power supply terminal with current capacity of 10mA is available for powering low-power flowmeter electronics. This is available at terminal 4.

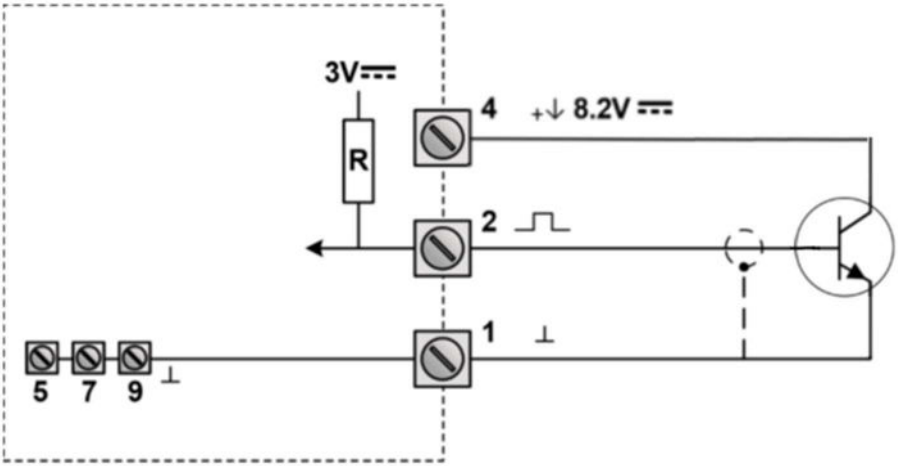
4.1.1 Sine-wave signal (coil input)

The EB11 is suitable for use with flowmeters with a coil output, such as the FLOMEC TP series turbines, or the Weigand sensor on the FLOMEC DP Insertion meters. The minimum sensitivity level is 30mVpp. Note, 2 wire coil sensors are not polarity sensitive.



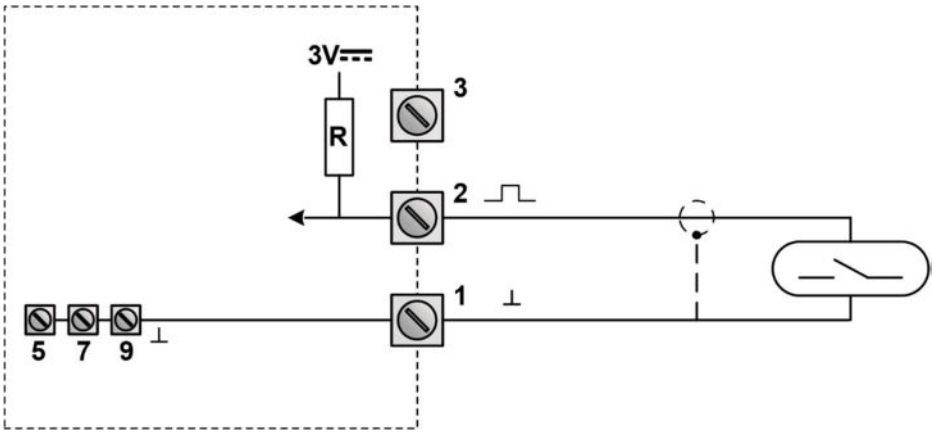
4.1.2 NPN Signal Input

The EB11 is suitable for use with flowmeters which have a NPN output signal such as the hall effect output on the OM series flowmeter. The sensor supply (terminal 4) can power the electronics on OM series flowmeter PCBs. If the EB11 is ordered as the integral option for an OM series flowmeter, it will come in this configuration.



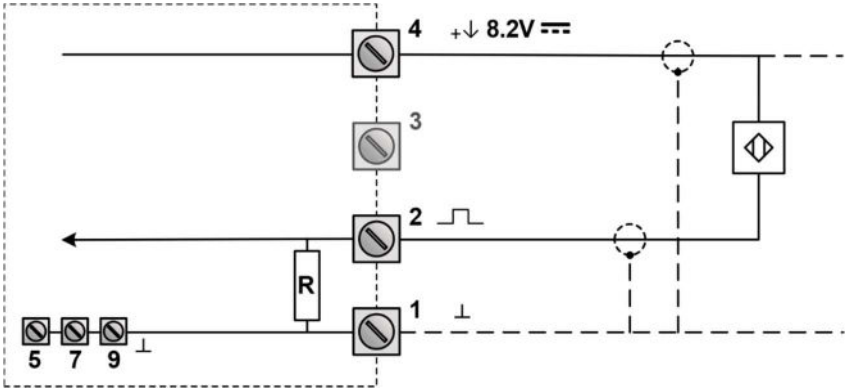
4.1.3 Reed-switch Signal Input

The EB11 is suitable for use with flowmeters which have a reed-switch. For non-Flomec meters make sure the contact resistance of the reed switch is less than 10k Ohm.



4.1.4 NAMUR Signal Input

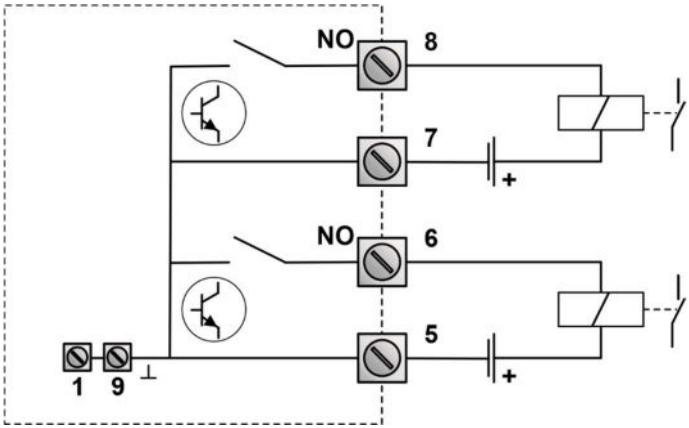
The EB11 is suitable for flowmeters with a NAMUR signal. The EB11 is able to power the NAMUR sensor via the 8.2V sensor supply (terminal 4).



4.2 Digital Outputs

4.2.1 NPN Transistor Outputs

The functionality of the digital outputs is to control a valve, pump or other device. Two passive transistor outputs are available that switch either simultaneously or sequentially depending on the valve programmed for preclose. Maximum current of 300mA and maximum voltage of 30V. Outputs can be connected to external relays to allow switching of high current/voltage devices and AC devices.



5. Programming Parameters

To enter programming mode, hold the **START** key down for 7 seconds until the **SETUP** indicator stops flashing. Once programming mode has been entered the **STOP** key can be used to cycle through the four sub-menu options and the **START** key can be used to view the screens within each sub-menu. When you wish to enter a screen to update a setting press both the **START** and **STOP** buttons simultaneously and rapidly. When you have successfully entered a screen, the **PROG** signal will flash to indicate that you are now able to edit the setting.

5.1 Preset Menu

Explanation of SETUP-menu 1 – Preset

1	**PRESET**	
1.1	UNIT	This setting determines the measurement unit for Preset and (Accumulated) Total. The following can be selected: L– m3 – kg – LB – GAL – USGAL – bbl – (no unit).
1.2	DECIMALS	The decimal point determines Preset and (Accumulated) Total the number of digits following the decimal point. The following can be selected: 0 – 0.1 – 0.02 – 0.003
1.3	K-FACTOR	With the Total K-Factor, the flowmeter pulse signals are converted to a total unit. The Total K-Factor is based on the number of pulses generated by the flowmeter per selected measurement unit (SETUP 1.1). Use SETUP 1.4 to set the decimal point. The more accurate the Total K-Factor, the more accurate the functioning of the system will be.
1.4	K-FACTOR DECIMALS	This decimal point determines for K-Factor (SETUP 1.3) the number of digits following the decimal point. The following can be selected: 0 – 0.1 – 0.02 – 0.003 – 0.003 – 0.0004 – 0.00005 – 0.000006

5.2 Overrun Menu

Explanation of SETUP-menu 2 – Overrun

Overrun can occur at the end of the batch process, as a result of a slow acting valve or pump. Consequently, the accuracy is reduced. With this function, the Easybatch analyses the actual overrun characteristic after every batch and corrects the overrun automatically.

2	**OVERRUN**	
2.1	TIME	Enter the expected time in the range of 0 – 99 seconds, needed by the system to stop a batch. With value 0, the overrun function is disabled. It is advised to provide extra time in order to avoid an incorrect overrun correction.
2.2	Preclose	In case two-stage batch control is desired, output 2 can be used to be switched-off before output 1. This switch moment is based on the remaining quantity before the end of batch. If pre-close is set to zero, output 2 will switch simultaneously with output 1.

5.3 Meter Menu

5.3.1 Signal Type

The input type can be selected from the following; coil, reed switch, NPN, PNP or NAMUR. The following table should be referenced when selecting the correct software setting for your flowmeter. ***Instruments delivered integrally mounted to a flowmeter will have this parameter factory set and do not require user adjustment.***

Sensor Type	***Used in:***	***Software Setting***	***Maximum Frequency***
Reed Switch	***OM Meters*** ***DP Meters***	REED	
NPN Sensor	***OM Meters*** – Hall Effect ***DP Meters*** – Hall Effect ***EGM Meters*** – Hall Effect	NPN	
PNP Sensor	Other manufacturer's Flow Meters	PNP	
Variable Reluctance Coil	Turbine Flowmeters	Coil	
Wiegand Sensor	***DP Meters*** - Voltage Pulse	Coil	

5.3.2 Explanation of SETUP-menu 4 – Other

4	OTHER	
4.1	MODEL	For support and maintenance it is important to have information about the characteristics of the Easybatch. Your supplier will ask for this information in the case of a serious breakdown or to assess the suitability of your model for upgrade considerations.
4.2	SOFTWARE VERSION	
4.3	SERIAL NO.	
4.4	PIN	All SETUP values can be password protected. This protection is disabled with value 0000 (zero). A 4 digit PIN can be programmed, for example 1234.
4.5	BL BACKLIGHT	This submenu is used to switch the backlight on or off. Due to a lack of sufficient power, the backlight does not come on at battery power only.

5.4 Setup Menu Parameters

1. PRESET			
1.1	unit	Unit	-----(no unit); L; m^3; kg; lb; GAL; USGAL; bbl
1.2	decs	Decimals	0; 0.1; 0.02; 0.003
1.3	k-f	K-Factor	0.000010 - 9999999
1.4	kf-d	K-Factor Decimals	0; 0.1; 0.02; 0.003; 0.0004; 0.00005; 0.000006;

2. OVERUN			
2.1	time	Time	0 99 sec
2.2		Preclose	0000.000-9999999

3. METER			
3.1	sign	Signal	Coil; Reed; NPN; PNP; NAMUR

4 OTHERS			
4.1	modl	Model	BASIC61
4.2	v-no	Software version	nn.nn.nn
4.3	s-no	Serial number	nnnnnnn
4.4	pin	Pin code	nnnn
4.5	bl	Backlight	on; off

6. Problem Solving

In this appendix, several problems are included that can occur when the Easybatch is going to be installed or while it is in operation.

Flowmeter does not generate pulses

Check:

- Signal selection SETUP 3.1.
- Pulse amplitude (paragraph 4.6.1).
- Flowmeter, wiring and connection of terminal connectors (paragraph 4.6.1).
- Power supply of flowmeter (paragraph 4.4.2).

Flowmeter generates "too many pulses"

Check:

- Settings for Total and Flowrate.
- Type of signal selected with actual signal generated (paragraph 3.3.4),
- Sensitivity of coil input.
- Proper grounding of the Easybatch, avoid ground loops.
- Use screened wire for flowmeter signals and connect screen to the ground input terminal of the flowmeter input.

The password is unknown

If the PIN cannot be retrieved, there is only one possibility left: call your supplier.

ALARM

When the alarm flag starts to blink an internal alarm condition has occurred. Press the STOP key several times to display the error code. The codes are:

0001 = display error
0002 = data-storage error
0004 = initialization error

When multiple alarms occur, the error code shown is the sum of the error codes as given above.
E.g. 0005 is a combination of error code 0001 and 0004.
If the alarm occurs more often or stays active for a long time, please contact your supplier.

7. Spare Parts

Spare parts for your instrument are available from the local dealer or national distributor from whom you purchased the instrument; see spare parts list below to determine which parts numbers you require.

Description:	Includes:	Part No:
Bezel Cover	1 x Bezel Cover	1306014
Front Housing Kit	Complete replacement front housing with facia.	1502058
Meter Mount Rear Housing Kit (M20)	Rear housing for meter mounted instrument (M20 electrical entries). Includes the required fasteners and seals for meter mounting	1502001
Meter Mount Rear Housing Kit (NPT)	Rear housing for meter mounted instrument (NPT electrical entries). Includes the required fasteners and seals for meter mounting	1502002
Field Mount Rear Housing Kit (M20)	Rear housing for field mounted instrument (M20 electrical entries)	1502003
Field Mount Rear Housing Kit (NPT)	Rear housing for field mounted instrument (NPT electrical entries)	1502004
Fastener Kit	All internal and external fasteners, including meter mount screws.	1508128
Housing Seal	BS046 Buna-N (Nitrile) O-Ring	BS046B
Safe Area Battery	3.6V AA Lithium Battery	1312035
Alternative Replacement Battery for Safe Area Units Only		Tekcell SB-AA11 Tadiran TL5903/S

Note: Use of a battery which is not a 3.6V Lithium Thionyl Chloride type will void the instrument warranty.

Notes:

Notes:

8. Manufacturer's Declaration

We, Trimec Industries Pty Ltd, of Sydney Australia, trading as Great Plains Industries Australia

Declare under our sole responsibility that the EB11 Batch Controller is in conformance with the following European directives:

2014/30/EU EMC Directive

Conformity is declared under the following standards

EN61000-6-2:2005

Electromagnetic compatibility (EMC). Generic standards. Immunity for industrial environments

EN61000-6-3:2007 /A1:2011

Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments

EN61326-1:2013

Electrical equipment for measurement, control and laboratory use. EMC requirements. General requirements

2011/65/EU RoHS Directive

Conformity is declared under the following standards

EN50581:2012

Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances



Matthew Wyres,
General Manager
Trimec Industries Pty. Ltd.

Sydney, Australia
6/07/2020

Service & Warranty

For Technical Assistance, warranty replacement or repair in North or South America contact your Flomec Distributor or contact

Great Plains Industries, Inc.
5252 East 36th St. North Wichita, KS, USA 67220-3205

888-996-3837

www.flomecmeters.com
(North America)

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