

The **BA658C** is a second-generation, general-purpose flow batch controller that supersedes the successful BA550P and BA550C. This controller is ideal for accurately dispensing liquids, solids or components and despite its sophisticated control functions, it remains very easy to use and configure.

The **backlit display** is readable in all lighting conditions. The user screen may be selected so that the operator is only presented with essential process information. Variables that may be displayed include dispensed quantity, batch setpoint, rate of dispensing and controller status. Most of the standard display screens also include a bargraph showing batch progress. A record of the total product dispensed is maintained as a grand total, together with a history of the last ten batches.

Up to nine setpoints may be pre-entered for selection by the operator when required. To simplify selection, each setpoint may be identified by a plain language name having up to sixteen alphanumeric characters. The controller can also be configured so that the operator can adjust an existing setpoint or enter a new value.

Single or two-stage control can be performed by the BA658C with a third output available to control an additional valve or pump, or even to provide three-stage control. To ensure maximum accuracy, overrun compensation may be selected to automatically minimise batching errors caused by actuator delays

Pulse and analogue 4/20mA signals are accepted by the batch controller. All inputs are galvanically isolated from the controller power supply and outputs so that earthed signals may be connected. Pulse inputs may be from switch contacts, a 2-wire proximity detector or a wide range of voltage sources. An easily adjustable sixteen point straight line lineariser will accurately correct almost any flowmeter non-linearity. The BA658C also incorporates a root-extractor so 4/20mA analogue inputs may be linear, or have a square law relationship with the rate of flow.

Separate total and rate scaling factors enable the dispensed quantity and the rate of

dispensing to be displayed in the same or in different engineering units.

The **three relay contact outputs** may be individually configured as control or status outputs. If more are required, a factory fitted option provides three additional galvanically isolated solid state outputs.

Front panel push buttons allow the operator to start and stop the batch and to reset the controller at the end of each cycle. For applications where large or remote push buttons are required, control may be transferred to external switches with or without inhibiting the front panel controls.

Counting may be inhibited during a batch by closing an external contact. Thus product may be re-cycled whilst being heated, or the batching system may be purged without affecting the quantity dispensed.

Selectable automatic restart causes the BA658C batch controller to execute the batching operation a pre-set number of times. The delay between batches may be set between 1 second and 24 hours, thus enabling the controller to perform regular dosing and sampling operations.

Controller configuration is performed via the front panel push buttons or optional external switches. Carefully designed configuration menus lead the installer intuitively through the available functions. Configuration menus and user screens may be displayed in English, French or German.

A security link and an optional user definable four digit security code prevent accidental or unauthorised access to the configuration menus.

For field mounting applications the BA654D provides the same batching facilities as the BA658C but is housed in a robust IP66 GRP enclosure suitable for external mounting. A complementary range of field and panel mounting intrinsically safe models is also available for use in potentially flammable atmospheres.

BA658C

Flow batch controller

General purpose

- ◆ Easy to use
- ◆ High contrast display with backlight
- ◆ Pulse or 4/20mA current source input
- ◆ 3 or 6 outputs
- ◆ 9 selectable batch setpoints
- ◆ IP66 front panel
- ◆ 3 year guarantee

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SPECIFICATION

Power supply

| | |
|---------|---------------|
| Voltage | 20 to 36V dc. |
| Current | 95mA max |

Pulse Inputs

| | |
|----------------|-----------------------------------|
| Switch contact | Linear or via 16 point lineariser |
| Closed | Less than 100Ω |
| Open | Greater than 1kΩ |

Proximity detector 2-wire NAMUR

Magnetic pick-off 40mV peak to peak min

Voltage pulse (low)

| | |
|------|---------------------------|
| Low | Less than 1V |
| High | Greater than 3V; 30V max. |

Voltage pulse (high)

| | |
|------|----------------------------|
| Low | Less than 3V |
| High | Greater than 10V; 30V max. |

Open collector

| | |
|--------|-------------------|
| Closed | Less than 2kΩ |
| Open | Greater than 10kΩ |

Frequency

| | |
|---------------------|---------------|
| Switch contact | 100Hz maximum |
| All other pulse I/P | 5kHz maximum |

4/20mA input

| | |
|--------------------|--------------------------------|
| Function | From current source |
| Linear | Linear or root extracting |
| Voltage drop | 0.6V at 20mA |
| Accuracy at 20°C | |
| Linear | 0.3 % of span |
| Root extracting | ±16 µA at input ±0.3 % of span |
| Temperature effect | Less than 0.025%/°C |
| Frequency | 2Hz maximum |

Inhibit

Linking terminals 18 & 20 prevents input signal being counted.

Display

| | |
|--|---|
| Size | 86.5 mm x 45 mm LCD |
| Backlight | Green |
| 6 selectable operator screens showing combinations of: | Digital & bargraph display of quantity dispensed. |
| | Batch setpoint |
| | Rate of dispensing |
| | Status of control outputs |
| | Batch controller status |

Outputs

| | |
|--------|---|
| Rating | Three single pole relay contacts. 250V; 5A; 1.25kVA ac 30V; 5A; 150W dc Reactive loads must be suppressed. |
|--------|---|

Switching time 0.2s max

Control 1 Closes when start button is operated and opens when batched quantity equals the batch setpoint.

Outputs 2 & 3 may be configured as:

Control 2 or Control 3 (parameters for each are individually adjustable)
Closes a programmable time after Control 1 closes and open a programmable dispensed quantity before the dispensed quantity equals the batch setpoint.

Flow alarm

Closes when the rate of dispensing falls below a pre-entered value. Also causes batch controller to pause.

Reset status

Closes when controller is reset and opens when batch is started.

Batch status

Opens when batch is started and closes when batch is complete.

Pulse output

Scaled output proportional to total volume dispensed.
Frequency 4 Hz max.

Front panel push buttons

| | |
|-------|--|
| Start | Energises Control 1 |
| Stop | During a batch de-energises Control 1, 2 & 3 causing the batch to pause. |
| Reset | Resets the batch display to zero or to the batch setpoint if the controller is counting down. |
| Menu | Provides access to four functions if they are enabled: Select pre-entered batch setpoint Adjust batch setpoint View size of last 10 batches Configuration menu |

Security

| | |
|---------------------|--|
| Operator menus | May be protected by an optional four digit code. |
| Configuration menus | Protected by external link or switch, plus optional four digit code. |

Environmental

| | |
|----------------|--|
| Operating temp | -20 to +60°C |
| Storage temp | -40 to 85°C |
| Humidity | To 95% @ 40°C |
| Enclosure | Front IP66, rear IP20 |
| EMC | Complies with EMC Directive 2014/30/EU. |
| Immunity | No error for 10V/m field strength between 150kHz and 1GHz. |
| Emissions | Complies with the requirements for Class B equipment. |

Mechanical

| | |
|-----------|---|
| Terminals | See page 148 for enclosure & terminal details Removable with screw clamp for 0.5 to 1.5 mm ² cable. |
| Weight | 0.7 kg |

Accessories

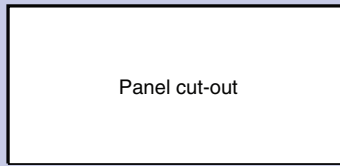
| | |
|--------------------|---|
| Additional outputs | Three configurable galvanically isolated, single pole solid state dc switch outputs. Rating: 30V; 100mA dc |
| Tag number | Thermally printed strip on rear of instrument. |

HOW TO ORDER

| | |
|---|--|
| Model number | Please specify BA658C |
| Accessories Outputs 4, 5 & 6 Tag Strip | Please specify if required Additional 3 solid state dc outputs Legend |

DIMENSIONS (mm)

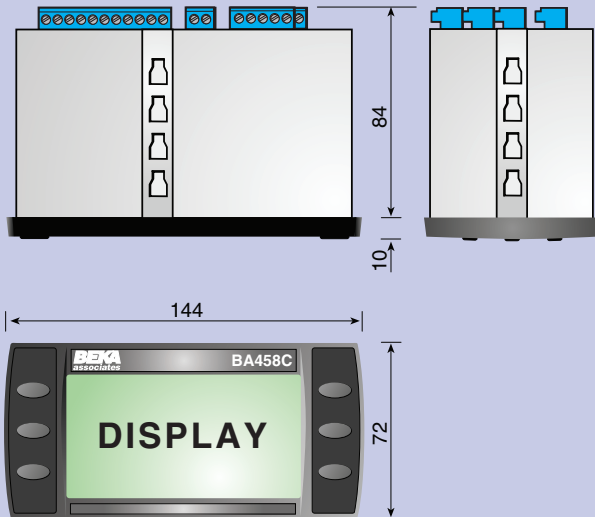
BA458C & BA658C Case and terminal information



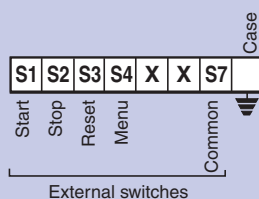
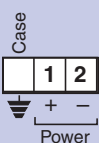
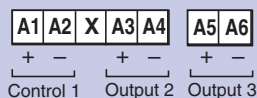
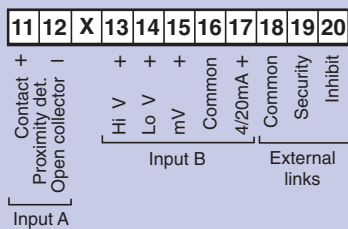
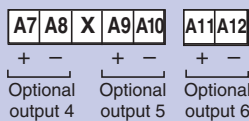
Recommended panel cut-out

To achieve an IP65 seal between the instrument and the panel 136.0 +0.5/-0.0 x 66.2 +0.5/-0.0
Four panel mounting clips must be used

DIN 43 700
138.0 +1.0/-0.0 x 68.0 +0.7/-0.0



TERMINAL CONNECTIONS



'X' Do not use

TERMINAL DESCRIPTIONS

| Case | | For earthing the enclosure | | |
|------|---|---|--|--|
| 1 | + | Power supply | | |
| 2 | - | | | |
| 11 | + | Proximity detector, switch contact or open collector | Input A | |
| 12 | - | | | |
| 13 | + | High voltage Low voltage mV (Magnetic pick-off) Common for input B | Input B | |
| 14 | + | | | |
| 15 | + | | | |
| 16 | - | | | |
| 17 | + | 4/20mA | | |
| 18 | | Common for links Configure security link Inhibit input link | Externals Links | |
| 19 | | | | |
| 20 | | | | |
| S1 | | Start Stop Reset Menu Do not use Do not use Common for switches | External Switches | |
| S2 | | | | |
| S3 | | | | |
| S4 | | | | |
| S5 | | | | |
| S6 | | | | |
| S7 | | | | |
| Case | | For earthing the enclosure | | |
| A1 | + | Control 1 | | |
| A2 | - | | | |
| A3 | + | Output 2 | Outputs 2 and 3 may each be configured to have one of six functions | |
| A4 | - | | | |
| A5 | + | Output 3 | | |
| A6 | - | | | |
| A7 | + | Output 4 | | |
| A8 | - | | | |
| A9 | + | Output 5 | If fitted optional outputs 4, 5 and 6 may each be configured to have one of six functions. | |
| A10 | - | | | |
| A11 | + | Output 6 | | |
| A12 | - | | | |

only one input may be used