

Shown with optional backlight and external keypad

The BA334D is an externally powered, intrinsically safe rate totaliser with separate rate and total displays which will operate from a switch contact, voltage pulse, magnetic pick-off, open collector or a proximity detector input. A novel adaptive measuring technique plus an adjustable digital filter ensure that optimum rate display stability and step response can be achieved over a wide input frequency range.

Main application of the BA334D is to process the pulse output from a hazardous area flowmeter and to display the rate of flow and the total flow in the same or different engineering units. Either rate or flow may be shown on the large display. The instrument may be used with any flowmeter having a pulse output proportional to flow rate, such as a turbine flow meter. When fitted with optional alarms, the instrument can perform simple flow batching applications. Optional pulse and 4/20mA outputs enable the rate totaliser to operate remote counters and analogue instruments.

Control and programming of the BA334D is performed via four push-buttons which are protected from damage and tampering behind a sealed cover. For applications requiring frequent adjustment, the instrument can be supplied with a robust external membrane keypad. All the programme functions are contained in easy to understand menus which may be protected by a user definable security code. To simplify calibration the rate and total scaling factors employ floating decimal points.

Intrinsic safety certification allows installation in most hazardous areas, separate versions are available with ATEX gas and ATEX gas plus dust certi-

fication allowing installation throughout Europe. For applications in the USA, a new version having FM intrinsic safety and nonincendive approvals has recently been introduced.

The enclosure, which is moulded in glass reinforced polyester (GRP), has stainless steel fittings, silicone gaskets and an armoured glass window. Its robust construction provides IP66 protection. A separate terminal compartment allows the BA334D to be installed and terminated without exposing the display electronics. To further simplify field wiring and subsequent inspection, the terminal cable entries and clamping screws are forward facing.

Backlighting is available as an option to improve readability when the BA334D is installed in a poorly illuminated area. High efficiency amber LEDs provide an even glow to enhance display contrast.

Optional alarms provide two galvanically isolated solid state outputs which may be independently programmed for high or low operation on either the rate or total displays. Each output is certified as a separate intrinsically safe circuit and complies with the requirements for *simple apparatus*. Almost any hazardous area certified load such as a solenoid valve or sounder may be controlled by these outputs.

The optional 4/20mA output is isolated and complies with the requirements for intrinsic safety simple apparatus allowing connection to a wide range of Zener barriers and galvanic isolators. It may be programmed to produce an analogue output proportional to any part of the rate display, thus making the BA334D an effective hazardous area pulse to 4/20mA converter.

BA334D

Externally powered pulse input rate totaliser

Intrinsically safe for use with pulse output flowmeters in gas and dust hazardous areas

- ◆ Magnetic pick-off, switch contact, proximity detector, open collector or voltage pulse input
- ◆ Separate rate and total displays
- ◆ Intrinsically safe ATEX gas or ATEX gas & dust or FM & ATEX gas
- ◆ IP66 enclosure for surface or pipe mounting
- ◆ Optional: Display backlight Alarms Pulse and 4/20mA outputs External keypad
- ◆ 3 year guarantee



BEKA associates

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SPECIFICATION

Power supply
Voltage The BA334D must be powered via a Zener barrier or galvanic isolator. 10V min between terminals 1 and 2.
Current 12mA max., plus proximity detector current when used.

Input
Switch contact
Closed Less than 100Ω
Open Greater than 1kΩ
Proximity detector 2-wire NAMUR
Magnetic pick-off 40mV peak to peak typical
Voltage pulse
Low Less than 1V
High Greater than 3V; 30V max
Open collector
Closed Less than 2kΩ
Open Greater than 10kΩ
Frequency
Switch contact 0.01Hz to 100Hz
Other inputs 0.01Hz to 5kHz max

Display
Type Liquid crystal
Rate~
Decimal point 6 digits 9.5mm high
1 of 5 positions or absent
Total~
8 digits 14mm high
Decimal point 1 of 7 positions or absent
Grand total Max count 10¹⁶
~ Rate or total can be shown on either display

Remote reset Contact closure with resistance less than 1kΩ

Programmable functions
Total dividing scale factor Adjustable between 0.001 & 99999999
Rate dividing scale factor Adjustable between 0.001 & 99999999
Rate timebase Rate may be displayed per second, minute or hour.
Rate display filter Adjustable digital filter

Intrinsic safety
Europe ATEX
Code Group II Category 1G,
Ex ia IIC T5
(Tamb = -40 to 60°C)
or Group II Category 1GD, T80°C IP66
Ex ia IIC T5 (Tamb = -20 to 60°C) *Dust option, see How to order*
Certificate number ITS01ATEX2001
Location Gas Zone 0, 1 or 2: Dust Zone 20, 21 or 22

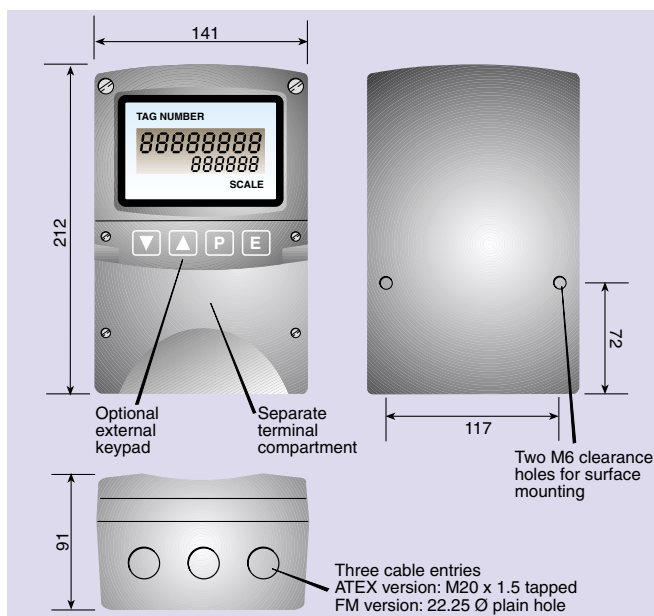
USA FM *Option, see How to order*
Standard 3610 Entity
Code CL I, II, III: Div 1: GP A, B, C, D, E, F & G
T4 @ 60°C
File 3022309
Standard 3611 Nonincendive
Code CL I: Div 2: GP A, B, C & D, T4 @ 60°C
CL II, III: Div 2: GP E F & G, T4 @ 60°C
File 3022309

Environmental
Operating temperature -20 to 60°C (Certified for use at -40°C)
Storage temp -40° to 85°C
Enclosure IP66 ITS test report C87IV0383A available
EMC In accordance with EU Directive 2004/108/EC.
Immunity Less than 1% of rate span error at 10V/m
Emissions Undetectable above background noise.
Class B equipment

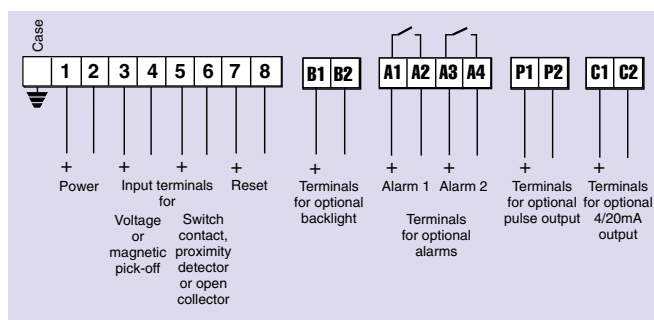
Mechanical
Terminals Screw clamp for 0.5 to 2.5mm² cables.
Weight 1.6kg

Accessories
Display backlighting LED backlight powered from 28V, 93mA
Zener barrier or galvanic isolator.
Alarms Two independent alarms each of which may be programmed for high or low operation with NC or NO output.
Outputs Isolated solid state switch
On Less than 5Ω +0.6V
Off Greater than 180kΩ
Certified as *simple apparatus*
Re-transmitted pulse Isolated, certified as *simple apparatus*.
4/20mA output Isolated current sink, certified as *simple apparatus*
Voltage drop 5V max.

DIMENSIONS (mm)



TERMINAL CONNECTIONS



External keypad Membrane keypad enables instrument to be adjusted without removing the control cover.
Scale legend Units of measurement marked onto display escutcheon. *
Tag legend Tag number or applicational information marked onto display escutcheon. *
Stainless legend plate Stainless steel plate secured to front of the instrument, etched with tagging or applicational information. *
Pipe mounting kit 2 kits are available BA392D and BA393. *

* See accessory datasheet for details

HOW TO ORDER

Model number BA334D
Certification ATEX gas
ATEX gas & dust
FM & ATEX gas *Note: Cable entries differ for FM & ATEX models*
Input Type
Rate scaling factor XXXXXXX #
Total scaling factor XXXXXXX #
Rate timebase Seconds, minutes or hours #
Accessories **please specify**
Display backlight Backlight
Alarms Alarms
Re-transmitted pulse output Pulse output
4/20mA output 4/20mA output
External keypad External keypad
Escutcheon marking
Scale Scale legend required
Tag Tag legend required
Stainless legend plate Legend required
Pipe mounting kit BA392D or BA393

If calibration information is not supplied, instrument will be set for open collector input with rate timebase of seconds, rate scaling factor of 1 and total scaling factor of 1.