

The **BA354ND** is a loop-powered, Type nL certified, field mounting rate totaliser with separate rate and total displays. When connected in series with a 4/20mA flow transmitter, the BA354ND will display the rate of flow in engineering units and total flow in the same or different units. The BA354ND only introduces a 1V drop which allows it to be installed in almost any 4/20mA loop. If the 4/20mA loop is disconnected or the power supply fails, all programme parameters and the displayed total are stored in permanent memory and are automatically recovered when the 4/20mA current is restored.

**Main application** of the BA354ND is to integrate the 4/20mA output from a flow transmitter and to display the total flow in engineering units. The flow rate is shown on a second smaller display. A selectable root extractor enables the output from a differential flow transmitter to be displayed in linear units. When fitted with optional alarms, the BA354ND can detect high and low flow rates and can perform simple flow batching operations.

**A Declaration of Conformity** confirms that the BA354ND complies with the requirements for Group II, Category 3G equipment defined in the ATEX Explosive Atmospheres Directive 94/9/EC. This allows the instrument to be installed in Zone 2 hazardous areas without Zener barriers or galvanic isolators, and provides a less expensive alternative to intrinsic safety or flameproof instrumentation.

**Control and programming** of the BA354ND is performed via four push-buttons which are protected from tampering behind a sealed cover. For applications requiring frequent adjustment, the instrument can be supplied with an external membrane

keypad. All the programme functions are contained in easy to understand menus which may be protected by a user definable security code. Display scaling factors employ floating decimal points to simplify calibration.

**An internal calibrator** simulates 4 and 20mA input currents so that the instrument may be quickly calibrated without the need for test equipment or disconnection from the 4/20mA loop.

**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. Almost any low voltage certified Type nL load such as a solenoid valve or sounder may be controlled by these outputs.

**Backlighting** is available as an option to improve readability when the BA354ND is installed in a poorly illuminated area. High efficiency amber LEDs provide an even glow to enhance display contrast. The backlight is a separate Type nL circuit and may be powered from the safe area without a Zener barrier or galvanic isolator.

**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 BA354ND 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. Additional terminals are provided which may be used to link the return 4/20mA conductor and cable screens.

# BA354ND

## 2-wire 4/20mA rate totaliser

*Type nL certified for use with 4/20mA flowmeters in Zone 2 hazardous areas*

◆ **Loop powered only 1V drop**

◆ **Separate rate and total displays**

◆ **Group II, Category 3G ATEX certification**

◆ **IP66 enclosure for surface or pipe mounting**

◆ **Root extractor**

◆ **Optional:  
Alarms  
Backlight  
External keypad**

◆ **3 year guarantee**



# BEKA associates

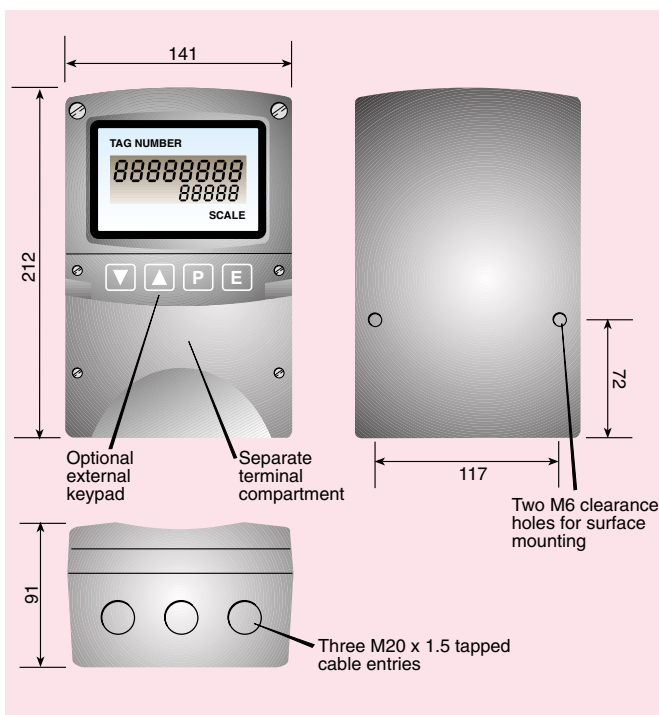
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## SPECIFICATION

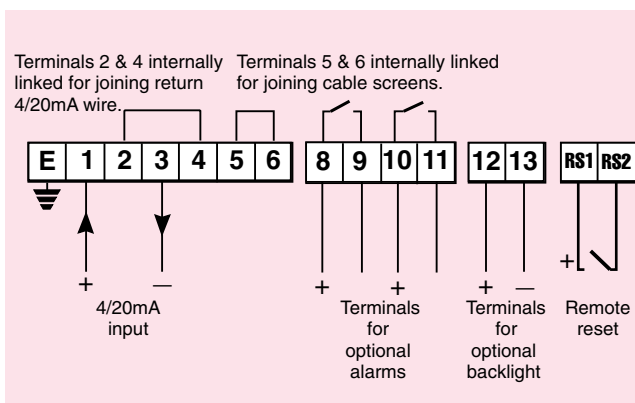
<b>Input</b>	
Current	4 to 20mA
Voltage	Less than 1V at 20°C
Overrange	±200mA will not cause damage.
<b>Display</b>	
Type	Liquid crystal
Rate~	5 digits 9.5mm high
Span	Adjustable between 0 & 20000 for a 4 to 20mA input.
Zero	Adjustable between 0 & 20000 with 4mA input.
Decimal point	1 of 4 positions or absent
Timebase	Per second, minute or hour
Overrange	4 least significant digits are blanked.
Total~	8 digits 14mm high
Scaling factor	Adjustable between 0.0001 & 65535
Decimal point	1 of 7 positions or absent
Grand total	Max count 10 <sup>16</sup>
-Rate and total can be shown on either display	
<b>Accuracy</b>	
Rate display at 20°C	
Linear	±0.02% of span ±1 digit
Root extracting	±16µA at input ±1 digit
Temperature effect	
Zero	Less than 25ppm/°C
Span	Less than 50ppm/°C
Series mode	Less than 0.05% of span error for 1mA pk to pk 50Hz or 60Hz signal.
Total display	Updated every second
<b>Remote total reset</b>	Contact closure with resistance less than 1kΩ
<b>Type nL certification</b>	
<b>ATEX Declaration of Conformity</b>	
Code	Group II, Category 3G, Ex nL IIC T5
Tamb	-20 to +60°C
Location	Zone 2
Cert. No.	BEKA01ATEX0011
Installation	The BA354ND may be connected in series with any 4/20mA circuit providing maximum current in normal operation is less than 30mA.
<b>Environmental</b>	
Operating temperature	-20 to 60°C
Storage temp	-40° to 85°C
Enclosure	IP66 see ITS test report C87IV0383A
<b>EMC</b>	
Immunity	In accordance with EU Directive 2004/108/EC.
Emissions	Less than 1% of rate span error for 10V/m. Undetectable above background noise. Class B equipment
<b>Mechanical</b>	
Terminals	Screw clamp for 0.5 to 2.5mm <sup>2</sup> cables.
Weight	1.6kg
<b>Accessories</b>	
Separately powered backlight	LED backlight
Vin	18 to 30V dc. May be dimmed by reducing voltage below 18V.
Iin	40mA typical
Alarms	Two independent alarms each of which may be programmed for high or low operation on either the rate or total display with a NC or NO output.
Outputs	Isolated solid state switch
On	Less than 5Ω +0.6V
Off	Greater than 180kΩ
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 on display escutcheon. *
Stainless legend plate	Stainless steel plate secured to front of instrument, etched with tagging or applicational information. *
Pipe mounting kit	2 kits are available BA392D and BA393. *

\* See accessory datasheet for details

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



## HOW TO ORDER

Model number	BA354ND
Rate display at 4mA	XXXXX Include position
Rate display at 20mA	XXXXX of decimal point #
Rate timebase	Seconds, minutes or hours
Total scale factor	(Units of rate display)÷(Units of total display)#
<b>Accessories</b>	
Display backlight	Separately powered backlight
Alarms	Alarms
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 to display rate of 0.00 to 100.00 with a timebase of seconds and a total scale factor of 1