

The **BA364ND** is a Type nL certified multi-function instrument which may be programmed to perform a host of counting and timing functions. Easy to use menus allow the instrument to be configured as a counter, timer, tachometer or as a clock. Both of the inputs will operate from 2-wire proximity detectors, switch contacts, magnetic pick-offs, open collectors or voltage pulses. Optional alarm/control outputs further extend the many applications.

**Counting** may be from one or both inputs. The pulses at each input can be added to, or subtracted from each other, and the result may be scaled to provide a display in engineering units. Alternatively, pulses on one input can increment or decrement the total count depending upon the state of the other input. From two inputs electrically 90° out of phase (quadrature), the BA364ND can display the direction of movement and position of a shaft or a cable. The total display may be reset to zero via the instrument controls or by a remote contact closure.

**As a timer** the BA364ND may be started and stopped by one or both inputs or from the instrument push-buttons. Elapsed or remaining time may be displayed in hours, minutes and seconds, or in just hours and minutes. When fitted with optional control outputs the instrument can control any process which is required to operate for a fixed time.

**Rotational speed** may be measured using the tachometer function which will display revolutions per second, minute or per hour. The instrument contains a run-time counter which can show the total operating time of the monitored machinery on the second display. When fitted with optional alarms, over and under speed warnings can be generated.

**Configuration as a digital clock** enables time to be displayed in twelve or twenty four hour format within a Zone 2 hazardous area. The instrument may operate as a stand-alone clock, or may be synchronised via the reset terminals with an external reference. Two optional control outputs enable hazardous or safe area loads to be turned on and off at pre-set times twice in each twelve or twenty four hour period.

**Control and programming** of the BA364ND 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 scaling factors employ floating decimal points.

**A Declaration of Conformity** confirms that the BA364ND complies with 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 without the need for Zener barriers or galvanic isolators, thus providing a cost effective alternative to intrinsically safe or flameproof equipment.

**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 BA364ND 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 display readability when the BA364ND 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.

**Optional alarms/control outputs** provide two isolated solid state outputs which may be independently programmed. Almost any low voltage Type nL certified load such as a solenoid valve or sounder may be controlled.

**Free of charge programming** and calibration to customers requirements is performed prior to despatch, although the BA364ND can easily be reconfigured on-site without the need for any test equipment or programming aids.

# BA364ND

## Counter, timer, tachometer, clock

Type nL certified for use in Zone 2 areas

- ◆ Separate 8 digit and 6 digit displays
- ◆ Two inputs
- ◆ Group II, Category 3G ATEX certification
- ◆ IP66 enclosure for surface, pipe or stem mounting
- ◆ Optional:
  - Display backlight
  - Alarms
  - Pulse and 4/20mA outputs
  - External keypad
- ◆ 3 year guarantee



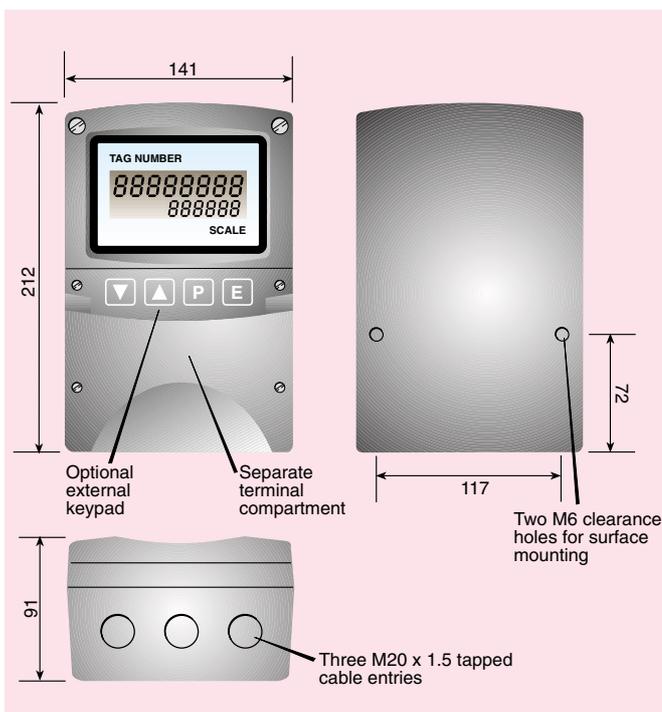
# BEKA associates

BEKA associates Ltd. Old Charlton Rd.  
Hitchin, Hertfordshire, SG5 2DA, U.K.  
Tel. (01462) 438301 Fax (01462) 453971  
e-mail sales@beka.co.uk www.beka.co.uk

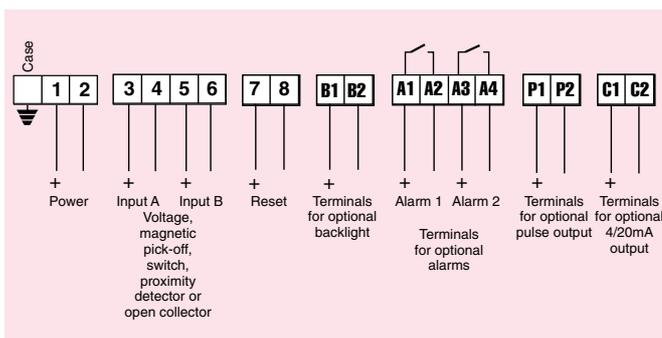
## SPECIFICATION

<b>Power supply</b>	
Voltage	10 to 30V dc
Current	12mA max., plus proximity detector current when used.
<b>Inputs A and B</b>	
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	100Hz max
Other inputs	5kHz max. Reduced to 2kHz for quadrature input
<b>Display</b>	
Type	Liquid crystal
Primary	8 digits 14mm high;
Decimal point	1 of 7 positions or absent; colons for h:m:s
Secondary	6 digits 9.5mm high
Decimal point	1 of 5 positions or absent; colons for hh:mm:ss
<b>Remote reset</b>	Contact closure with resistance less than 1kΩ
<b>Programmable functions</b>	
<b>Counter</b>	A; A+B or A-B
	A direction controlled by B
	A and B Quadrature (90° out of phase)
Total scale factor	Adjustable between 0.001 & 99999999
Grand total	10 <sup>16</sup> max count
Rate scale factor	Adjustable between 0.001 & 99999999
<b>Timer</b>	Elapsed time displayed as hh:mm:ss or hh:mm
Maximum duration	99 hours:59 minutes: 59 seconds
Direction	Up or down
<b>Tachometer</b>	Revolutions displayed per sec, per min or per hour.
Rate scale factor	Adjustable between 0.001 & 99999999
Run time display	Resolution 1/10 hour
<b>Clock</b>	Set time displayed in 24 or 12 hour format.
External synchronisation	Once per 12 or 24 hours
<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.	BEKA01ATEX0013
<b>Environmental</b>	
Operating temperature	-20 to 60°C
Storage temperature	-40 to 85°C
Enclosure	IP66 see ITS test report C87IV0383A
EMC	In accordance with EU Directive 2004/108/EC.
Immunity	Less than 1% error at 10V/m
Emissions	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>	
Alarms/control outputs	Two independent outputs
Outputs	Isolated solid state switch
On	Less than 5Ω +0.6V
Off	Greater than 180kΩ
Display backlighting	LED backlight powered from 18 to 30V dc supply
Re-transmitted pulse	Isolated pulse sink
Width	Adjustable 0.5 to 50ms
On	Less than 60Ω +3V
Off	Greater than 1MΩ
4/20mA output	Isolated current sink
Voltage drop	5V max
External keypad	Membrane keypad enables instrument to be adjusted without removing the control cover.
Scale legend	Units of measurement marked onto display escutcheon. *

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



Tag legend	Tag number or applicational information marked onto 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

## HOW TO ORDER

Model number	<b>please specify</b> BA364ND
Configuration	Counter; timer; tachometer or clock.
Inputs	Proximity detector; switch contact; magnetic pick-off, open collector or voltage pulse.
Calibration information	Settings required #
<b>Accessories</b>	<b>please specify</b>
Display backlight	Backlight
Alarms/control outputs	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 conditioned as a counter; input A + input B; for open collector inputs; rate & total scale factors of 1.