

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.

An EC Declaration of Conformity demonstrates 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



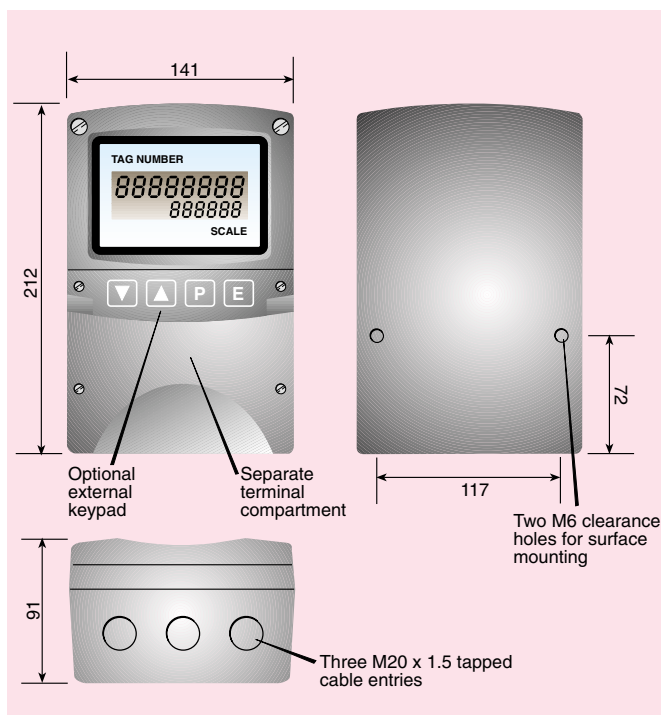
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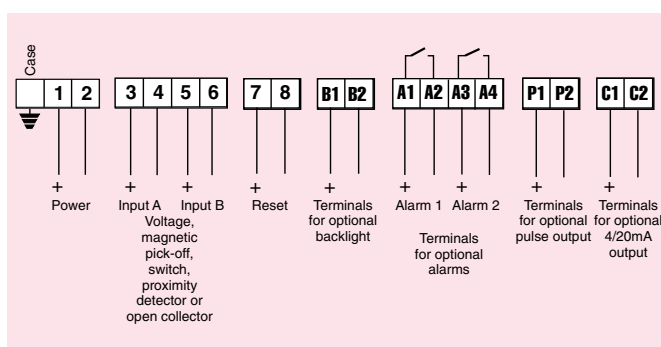
SPECIFICATION

| | |
|-------------------------------|--|
| Power supply | |
| Voltage | 10 to 30V dc |
| Current | 12mA max., plus proximity detector current when used. |
| Inputs A and 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 |
| Display | |
| 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 |
| Remote reset | Contact closure with resistance less than 1kΩ |
| Programmable functions | |
| Counter | 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 ¹⁶ max count |
| Rate scale factor | Adjustable between 0.001 & 99999999 |
| Timer | |
| | Elapsed time displayed as hh:mm:ss or hh:mm |
| Maximum duration | 99 hours:59 minutes: 59 seconds |
| Direction | Up or down |
| Tachometer | |
| | Revolutions displayed per sec, per min or per hour. |
| Rate scale factor | Adjustable between 0.001 & 99999999 |
| Run time display | Resolution 1/10 hour |
| Clock | |
| | Set time displayed in 24 or 12 hour format. |
| External synchronisation | Once per 12 or 24 hours |
| Type nL certification | |
| ATEX | |
| EC-Declaration of Conformity | |
| Code | Group II, Category 3G |
| Location | Zone 2 |
| Certificate number | N0013 |
| Certificate of Conformity | |
| Standard | EN50021 |
| Code | EEX nL IIC T5 |
| Certificate number | ITS No.01Y4015 |
| Environmental | |
| Operating temperature | -20 to 60°C (Certified for use at -40°C) |
| Storage temperature | -40 to 85°C |
| Enclosure | IP66 see ITS test report C87IV0383A |
| EMC | |
| Immunity | In accordance with EU Directive 89/336/EEC. |
| Emissions | Less than 1% error at 10V/m Undetectable above background noise. Class B equipment |
| Mechanical | |
| Terminals | Screw clamp for 0.5 to 2.5mm ² cables. |
| Weight | 1.6kg |
| Accessories | |
| 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. |

DIMENSIONS (mm)



TERMINAL CONNECTIONS



| | |
|------------------------|---|
| 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 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 | please specify BA364ND |
| Configuration | Counter; timer; tachometer or clock. |
| Inputs | Proximity detector; switch contact; magnetic pick-off, open collector or voltage pulse. |
| Calibration information | Settings required # |
| Accessories | please specify |
| 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.