## 1. DESCRIPTION

The BA314G is a field mounting intrinsically safe Tachometer which will function with a wide variety of sensors. The instrument displays speed plus the run-time of the machinery being monitored.

This abbreviated instruction sheet is intended to assist with installation, a comprehensive instruction manual describing safety certification, system design and configuration may be downloaded from the BEKA website or may be requested from the BEKA sales office.

The BA314G Tachometer has IECEx, ATEX, UKEX, ETL and cETL intrinsic safety certification for use in flammable gas and dust atmospheres. The certification information label, which is located on the top of the instrument assembly, shows the certification numbers and codes. Other certifications may be shown. Copies of certificates may be downloaded from the BEKA website.
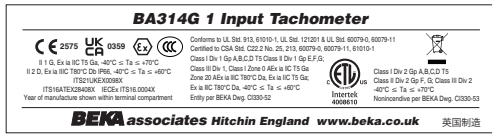
Typical certification information label

2. INSTALLATION

The BA314G Tachometer has a robust IP66 glass reinforced polyester (GRP) carbon loaded enclosure incorporating an armoured glass window & stainless steel fittings. It is suitable for exterior surface mounting in most industrial environments, or pipe mounting using an accessory kit.

If the enclosure is not bolted to an earthed post or structure, the earth terminal on the cable entry bonding plate, which may be assembled on the inside or outside of the enclosure, should be connected to local earthed metalwork or to the plant's potential equalising conductor.

Terminals A1, A2, A3 and A4 are only fitted when the Tachometer includes optional alarms. Similarly terminals C1, C2, C3 and C4 are only fitted when the instrument has an optional 4/20mA output. See full manual for details.
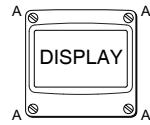

Step A
Unscrew the four captive 'A' screws and separate the indicator assembly and the back-box.
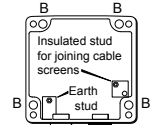
Step B
Secure the enclosure back-box to a flat surface with M6 screws through the four 'B' holes. Alternatively use a pipe mounting kit.
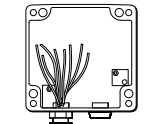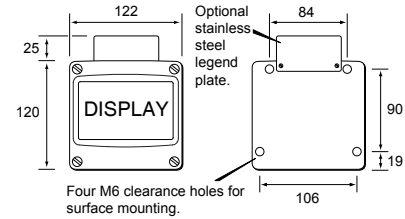
Step C
Remove the temporary hole plug and install an appropriate IP rated cable gland or conduit fitting. Feed the field wiring through the cable entry.
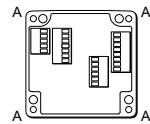
Step D
Terminate field wiring on the instrument assembly. Replace the assembly on the enclosure back-box and tighten the four 'A' screws.

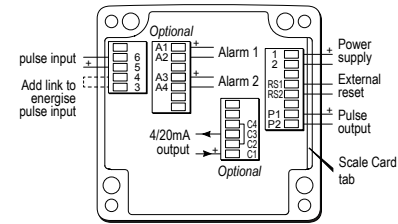Fig 1 BA314G installation procedure

Fig 2 Dimensions and terminal connections

EMC
For specified immunity all wiring should be in screened twisted pairs with screens earthed at one point within the safe area.

Fig 3 Typical speed measurement loop

Scale card
The instrument's units of measurement and tag information are shown above the display on a slide-in scale card. New instruments are fitted with a scale card showing the information specified when the instrument was ordered, if this was not provided a blank scale card will be fitted which can easily be marked on-site. Custom printed scale cards are available from BEKA associates.

To remove the scale card carefully pull the tab perpendicularly away from the instrument assembly. See Fig 2 for the location of the scale card tab.

Fig 4 Inserting scale card into instrument assembly

To replace the scale card carefully insert it into the slot shown in Fig 2. Force should be applied evenly to both sides of the scale card to prevent it twisting. The card should be inserted until about 2mm of the transparent tab remains protruding.

3. OPERATION

The BA314G is controlled and configured via four front panel push buttons. In the display mode i.e. when the instrument is displaying speed the push button functions are:

▼ + ▲ Resets run-time display to zero. This is a configurable function.

E + ▲ Run-time grand total. If buttons are pressed for ten seconds or longer grand total run-time is reset to zero. This is a configurable function.

P + ▼ Shows in succession, firmware version number, instrument function tACHo and any output accessories that are fitted:
- -A   Dual alarm outputs
- -P   Pulse output (Always fitted)
- -C   4/20mA output

P + ▲ Provides direct access to the optional alarm setpoints when the Tachometer is fitted with optional alarms and the ACSP setpoints function has been enabled.

P + E Access to configuration menu

4. CONFIGURATION

Tachometers are supplied configured as requested at time of ordering, if not specified default configuration will be supplied but can easily be changed on-site. Fig 5 shows the location of each function within the configuration menu with a brief summary of the function. Please refer to the full instruction manual for detailed configuration information and for description of optional outputs. Access to the configuration menu is obtained by pressing the P and E buttons simultaneously. If the Tachometer's security code is set to default 0000 the first parameter ınPut will be displayed. If the instrument is protected by a security code, CodE will be displayed. The four digit code must be entered to gain access to the menu.

Display mode
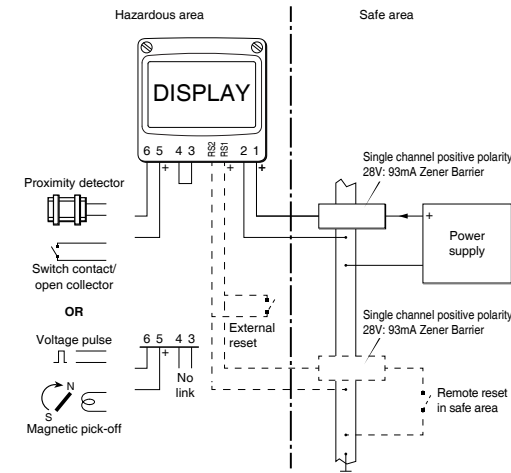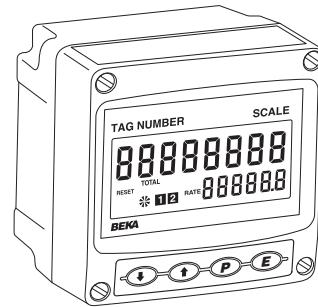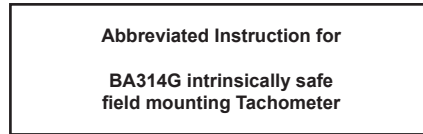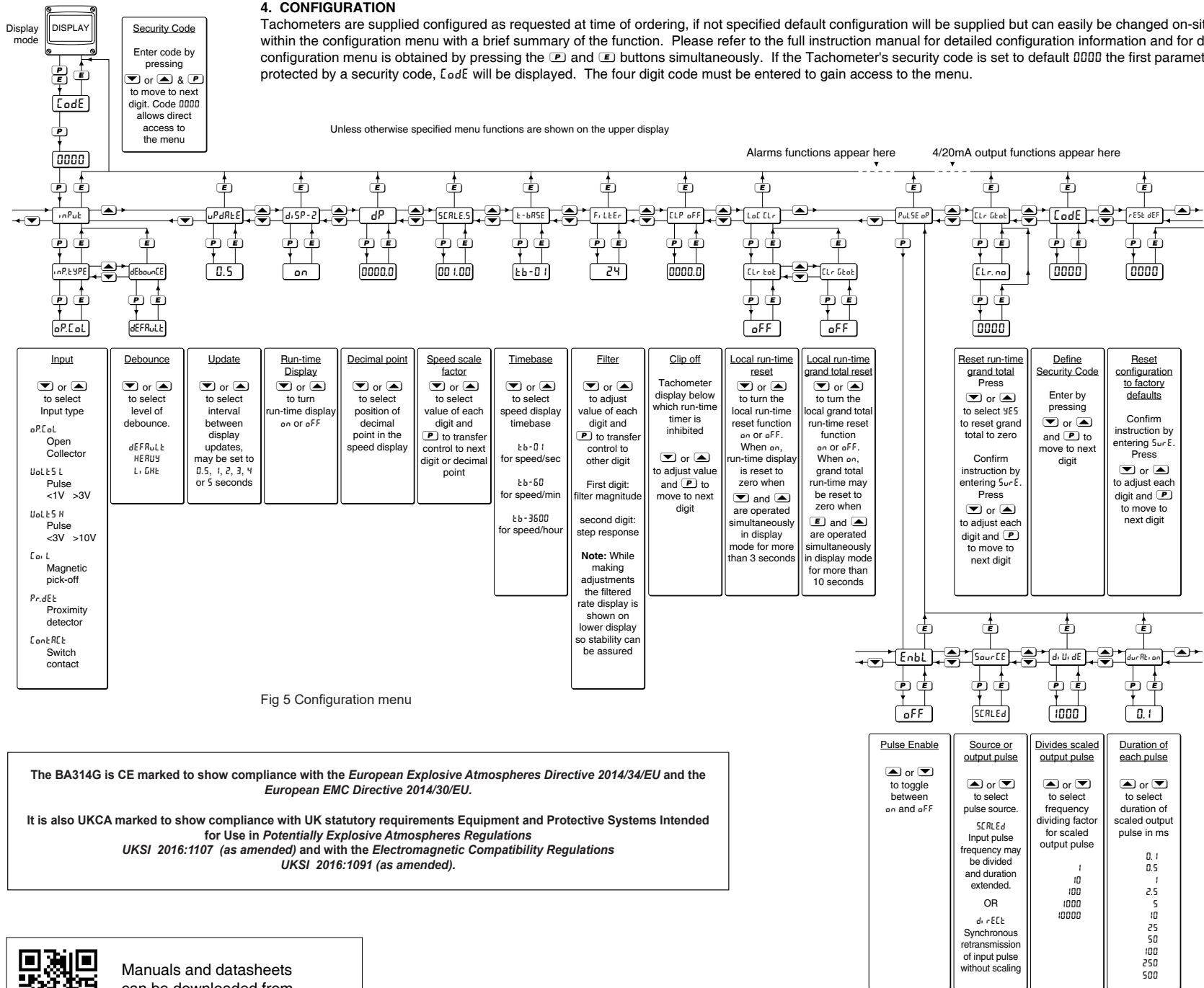
DISPLAY

Security Code
Enter code by pressing
▼ or ▲ & P
to move to next digit. Code 0000 allows direct access to the menu

CodE

0000

Unless otherwise specified menu functions are shown on the upper display

Alarms functions appear here   4/20mA output functions appear here

ınPut — uPdALE — dıSP-2 — dP — SCALE.S — t-bASE — FıLtEr — CLP oFF — LoC CLr — PuLSE oP — CLr Gtot — CodE — rESt dEF

ınP.tYPE — dEbounCE

oP.CoL — dEFAuLt

0.5 | on | 0000.0 | 00 1.00 | tb-01 | 24 | 0000.0 | CLr tot / CLr Gtot | CLr.no | 0000 | 0000

oFF | oFF | 0000

Fig 5 Configuration menu

Input	Debounce	Update	Run-time Display	Decimal point	Speed scale factor	Timebase	Filter	Clip off	Local run-time reset	Local run-time grand total reset	Reset run-time grand total	Define Security Code	Reset configuration to factory defaults
▼ or ▲ to select Input type	▼ or ▲ to select level of debounce.	▼ or ▲ to select interval between display updates, may be set to 0.5, 1, 2, 3, 4 or 5 seconds	▼ or ▲ to turn run-time display on or oFF	▼ or ▲ to select position of decimal point in the speed display	▼ or ▲ to select value of each digit and P to transfer control to next digit or decimal point	▼ or ▲ to select speed display timebase	▼ or ▲ to adjust value of each digit and P to transfer control to other digit	Tachometer display below which run-time timer is inhibited	▼ or ▲ to turn the local run-time reset function on or oFF.	▼ or ▲ to turn the local grand total run-time reset function on or oFF.	Press ▼ or ▲ to select YES to reset grand total to zero	Enter by pressing ▼ or ▲ and P to move to next digit	Confirm instruction by entering SurE. Press P or ▲ to adjust each digit and P to move to next digit

Input: oP.CoL Open Collector; VoLtS L Pulse <1V >3V; VoLtS H Pulse <3V >10V; CoıL Magnetic pick-off; Pr.dEt Proximity detector; ContACt Switch contact

Debounce: dEFAuLt / HEAVY / LıGHt

Timebase: tb-01 for speed/sec; tb-60 for speed/min; tb-3600 for speed/hour

Filter: First digit: filter magnitude; second digit: step response. **Note:** While making adjustments the filtered rate display is shown on lower display so stability can be assured

Clip off: ▼ or ▲ to adjust value and P to move to next digit

Local run-time reset: When on, run-time display is reset to zero when ▼ and ▲ are operated simultaneously in display mode for more than 3 seconds

Local run-time grand total reset: When on, grand total run-time may be reset to zero when E and ▲ are operated simultaneously in display mode for more than 10 seconds

Reset run-time grand total: Confirm instruction by entering SurE. Press ▼ or ▲ to adjust each digit and P to move to next digit

EnbL — SourCE — dıVıdE — durAtıon

oFF | SCALEd | 1000 | 0.1

Pulse Enable	Source or output pulse	Divides scaled output pulse	Duration of each pulse
▲ or ▼ to toggle between on and oFF	▲ or ▼ to select pulse source.	▲ or ▼ to select frequency dividing factor for scaled output pulse	▲ or ▼ to select duration of scaled output pulse in ms
	SCALEd Input pulse frequency may be divided and duration extended. OR dırECt Synchronous retransmission of input pulse without scaling	1 / 10 / 100 / 1000 / 10000	0.1 / 0.5 / 1 / 2.5 / 5 / 10 / 25 / 50 / 100 / 250 / 500

These functions only appear in sub-menu when pulse SourCE is configured as SCALEd

The BA314G is CE marked to show compliance with the *European Explosive Atmospheres Directive 2014/34/EU* and the *European EMC Directive 2014/30/EU.*

It is also UKCA marked to show compliance with UK statutory requirements Equipment and Protective Systems Intended for Use in *Potentially Explosive Atmospheres Regulations UKSI 2016:1107 (as amended)* and with the *Electromagnetic Compatibility Regulations UKSI 2016:1091 (as amended).*

Manuals and datasheets can be downloaded from
http://www.beka.co.uk/ba314g