

EU-Type Examination Certificate



SCHEDULE

EU-TYPE EXAMINATION CERTIFICATE NUMBER ITS11ATEX27254X Issue 4

13. Description of Equipment or Protective System

The 4 and 5 Digit Panel Mounting Indicators and Rate Totaliser are panel mounted loop powered equipment designed to display a measured variable in meaningful engineering units within the hazardous area. The zero and span of the display are independently adjustable allowing the instruments to be calibrated to display a linear variable represented by the 4/20 mA signal.

A root extractor and an adjustable sixteen segment lineariser enable the indicator to display flow and non-linear variables such as tank level in engineering units.

The 4 and 5 Digit Panel Mounting Indicators and Rate Totaliser may be one of the following;

BA307E and BA308E 4 Digit Indicators
BA327E and BA328E 5 Digit Indicators
BA358E Rate Totaliser

The 4 and 5 Digit Panel Mounting Indicators and Rate Totaliser may optionally be fitted with Alarm board and may additionally be fitted with an optional Backlight board.

The 4 and 5 Digit Panel Mounting Indicator and Rate Totaliser comprise a main board, a display module, an optional Alarm board and an optional Backlight board, all housed within a plastic enclosure. The enclosure provides a degree of protection of at least IP20.

Intrinsic safety is assured by limitation of voltage, current and power, limitation of capacitance and inductance, and infallible segregation.

The maximum intrinsically safe input and output parameters at the external connections are as follows:

TB1 Terminals 1 and 3 (Loop Input); TB2 Terminal 12 and TB1 Terminal 3 (TB2 -13 and TB1 – 1 connected in series):

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$
 $C_i = 13nF$
 $L_i = 0.008mH (0.01mH)$

TB2 Terminals 12, 13 and 14 (Backlight Input):

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$
 $C_i = 13nF$
 $L_i = 0.008 mH (0.01 mH)$

TB3 Terminals RS1 and RS2:

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$
 $C_i = 13nF$
 $L_i = 0.008mH (0.01mH)$
 $C_o = 53nF$
 $L_o = 0.79mH$

$U_o = 6 V$
 $I_o = 2.5 mA$
 $P_o = 3.75 mW$

TB4 Terminals 8 and 9; Terminals 10 and 11 (Alarm 1 and Alarm 2)

$U_i = 30V$
 $I_i = 200mA$
 $P_i = 0.84W$
 $C_i = 24nF$
 $L_i = 0.008mH (0.01mH)$

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For intrinsic safety considerations, under faults conditions, the voltage, current and power at the output terminals TB1 - 1 & 3, terminals TB2 – 12 & TB1 – 3, and terminals TB4 - 8 & 9 and 10 & 11 do not exceed those specified in clause 5.7 of EN 60079-11. The equivalent capacitance and inductance are the result of r.f. suppression components directly connected across the apparatus input terminals.

14. Report Number

Intertek Report Ref: 102970263LHD-001 Issue 0 dated September 2017.

15. Special Conditions of Certification

(a). Specific Conditions of Safe Use

- For use in Group IIIC conductive dust atmospheres, the Indicator or Totaliser shall be mounted such that the instrument terminals have at least IP6X protection.

(b). Conditions of Manufacture - Routine Tests

- The voltages applied to infallible transformers shall conform to the values given in Table 10 as per the requirements of EN 60079-11:2011 clause 11.2, Routine tests for infallible transformers.

16. Essential Health and Safety Requirements (EHSRs)

The relevant Essential Health and Safety Requirements (EHSRs) have been identified and assessed in Intertek Report Ref: 102970263LHD-001 Issue 0 dated September 2017.

17. Drawings and Documents

Title:	Drawing No.:	Rev. Level:	Date:
ATEX & IECEx Certification Information for BA304E, BA307E & 308E 4 Digit Indicators BA324E, 327E & BA328E 5 Digit Indicators BA354E & BA358E Rate Totalisers	CI300-61, sheets 1, 2, 4 – 8, 16, 17, 26, 27, 30, 31, 33 – 36 of 36	2	Oct' 13

18. Details of Certificate changes

Issue 2: Deletion of output parameters at terminals TB1, TB2 and TB4

Issue 3 (Intertek Project No. G101515756):

The modification which is the subject of this report comprises the following:

- Addition of alternative track layout for Alarm Board (PC167) and for BA3x7E & BA3x8E Panel Unit Main Board (PC162).
- Power rating of safety related components R2, R112 and R119 was changed from 0.5W to 0.25W at 70°C. This change does not compromise intrinsic safety of the equipment.
- Alternative metallic enclosure for the equipment
- Non-safety related changes to the circuit as follow:
 - Addition of rectifying diode D110
 - 4 pin header connector changed to 3 pin header for communication purposes
 - Track links LK102 and LK103 replaced with zero 0Ω resistors R120 and R121
 - Zener diodes D1, D4 – D8 replaced with bi-directional TVS diodes on input terminals
 - Addition of C102, C106 and IC101 power connections, all omitted in error
 - Zener diodes D4 and D5 changed from 6V max, 0.84W @ 70°C to 39.2V max, 2.6W @70°C and If = 1A max



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