

The new BA474D is a second generation, intrinsically safe, loop powered indicating temperature transmitter which replaces the BA374C. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. Incorporating new facilities such as HART<sup>®</sup> digital communication, associated apparatus certification and a robust GRP enclosure with a separate terminal compartment, the BA474D remains electrically compatible with the earlier model.

The main application of the BA474D is to display temperature in a hazardous process area and to transmit a linearised 4/20mA current to the safe area. Associated apparatus certification also allows the BA474D to be installed in a safe area with the sensor in Zone 0, 1, 2, 20, 21 or 22 without the need for a Zener barrier or galvanic isolator greatly reducing the loop cost. The digital display may be in °C or °F with the units of measurement shown on the display. A separately programmable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and configuration, including input type, may be performed via HART<sup>®</sup> communication or push buttons located behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. The BA474D also accepts voltage and resistance inputs so that pressure, weight or position transducer outputs may be displayed in engineering units and transmitted as a 4/20mA current.

HART<sup>®</sup> digital communication provides the primary temperature measurement in

a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

Sensor diagnostics are continuously performed by the BA474D transmitter, generally as specified by NAMUR standard NE107 and transmitted via the HART<sup>®</sup> communications link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

International intrinsic safety certification allows the BA474D to be installed worldwide in most hazardous areas and to be used with most flammables gases and combustible dusts. Associated apparatus certification also permits a hazardous area RTD/THC to be connected to a safe area BA474D transmitter without the need for Zener barriers or galvanic isolators.

An optional loop powered backlight produces green background illumination enabling the display to be read at night and in poor lighting conditions. It does not require additional field wiring or a power supply, but the transmitter minimum operating voltage is increased.

Dual Alarms are available as an option. Each has a galvanically isolated, solid state, single pole output that may be independently conditioned as a high or low alarm with a normally open or closed output. Annunciators on the instrument display show the status of both alarms.

Tag number and application can be marked onto the display escutcheon prior to despatch or after installation. Alternatively the instrument can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

# BA474D

## Indicating temperature transmitter

Intrinsically safe for use in gas & dust hazardous areas

AND

Associated apparatus for safe area mounting with RTD/THC in hazardous area without a Zener barrier or galvanic isolator

- ◆ Large display
- ◆ 4/20mA loop powered
- ◆ HART<sup>®</sup> communication
- ◆ Intrinsically safe ATEX gas or ATEX gas & dust or FM, cFM & ATEX gas
- ◆ Certified galvanic isolation.
- ◆ RTD, THC, voltage or resistance input.
- ◆ IP66 GRP enclosure with separate terminal compartment.
- ◆ Optional:
  - Loop powered backlight
  - External push buttons
  - Dual alarms
- ◆ 3 year guarantee

[www.beka.co.uk/ba474d](http://www.beka.co.uk/ba474d)



# BEKA

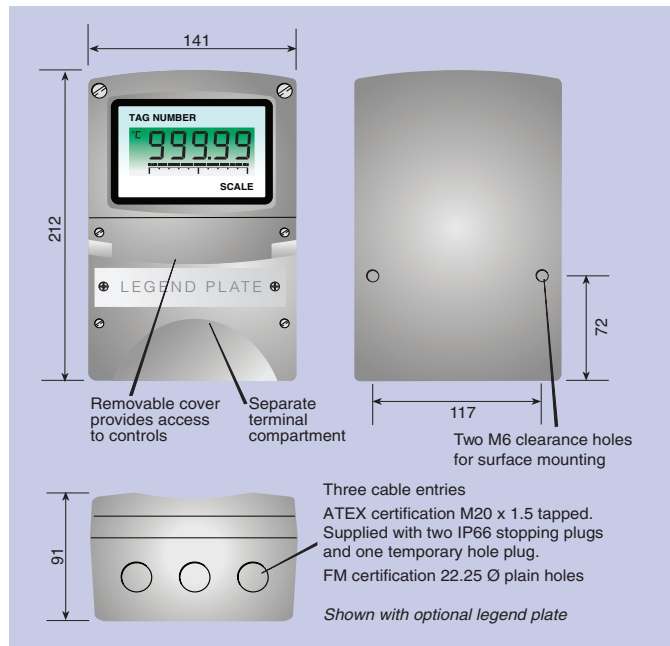
## associates

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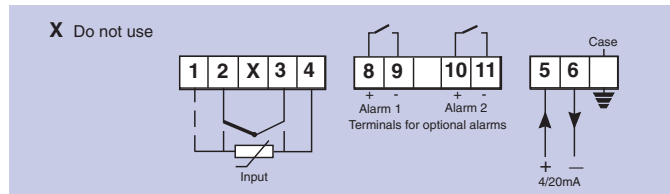
## SPECIFICATION

<b>Supply voltage</b>			
Without backlight		9 to 28V	
With backlight		15.5 to 28V	
<b>Output</b>			
Operating range		3.8 to 20.5mA	
Resistance		5M $\Omega$ min	
<b>Display</b>			
Type		Liquid crystal 20mm high -99999 to 99999	
Reading rate		31 segment bargraph	
Resolution		2 per second	
RTD & THC input		Selectable 0.1° or 1°	
Voltage & resistance input		Fully selectable	
<b>Input</b>			
Resistance thermometer			
Pt100 or Pt1000		-200 to 850°C	
Connection		3 or 4 wires, or differential	
Excitation current		175 $\mu$ A	
Resistance		Adjustable between 0 & 5k $\Omega$	
Min span		10 $\Omega$	
Thermocouple			
Type		Range °C	
B		200 to 1820	
E		-200 to 1000	
J		-210 to 1200	
K		-200 to 1372	
N		-200 to 1300	
R		-50 to 1768	
S		-50 to 1768	
T		-200 to 400	
Voltage		Adjustable between $\pm$ 1.9V	
Minimum span		2mV	
<b>HART® communication</b>		HART Registered, compliant with HART protocol standard revision 7.	
<b>Diagnostics</b>		Generally as NAMUR NE 107. Output via HART® and under or over range output current	
<b>Performance</b>			
Accuracy	RTD input	$\pm$ 0.1°C	
	THC input	$\pm$ 10 $\mu$ V	
Effect of temperature on display			
Zero drift	Voltage	<1 $\mu$ V/°C	THC
Span drift		<30ppm/°C	<1 $\mu$ V/°C+0.02°C/°C
			<30ppm/°C
Effect of temperature on 4/20mA output			RTD
Zero drift		<20ppm/°C	<20ppm/°C
Span drift		<50ppm/°C	<80ppm/°C
Series mode ac rejection		<0.1% error for 150mV rms 50 or 60Hz.	
Common mode ac rejection		<0.1% error for 250V 50 or 60Hz.	
<b>Intrinsic safety</b>			
<b>Europe ATEX</b>			
Code	for gas	II 1G, Ga Ex ia IIC T5 II (1)G, (Ga) [Ex ia] IIC (associated apparatus) Ta = -40 to 70°C (-20°C operating temperature)	
	or for dust	II 1D, Ex iaD 20 T80°C IP66 (associated apparatus) II (1) D, [Ex iaD] Ta = -20 to 60°C	
Certificate No.		ITS09ATEX26155	
<b>USA FM</b>			
Standard Code		3610 Entity CL I, II, III; Div 1; GP A, B, C, D, E, F & G T4 @ 70°C AEx ia IIC T4	
Associated apparatus		Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G 3035396	
File			
Standard Code		3611 Nonincendive CL I; Div 2; GP A, B, C, D, E, F & G T4 @ 70°C	
Intrinsically safe input		Input may be directly connected to sensor in: CL I, II, III; Div 1; GP A, B, C, D, E, F & G 3035396	
File			
<b>Canada cFM</b>			
File		3035396C	
<b>International IECEx</b>			
Code	for gas	Ga Ex ia IIC T5 [Ex ia Ga] IIC (associated apparatus) Ta = -40 to 70°C (-20°C operating temperature)	
	or for dust	Ex ia IIC T80°C Da IP66 (associated apparatus) [Ex ia Da] IIC Ta = -20 to 60°C	
Certificate No.		IECExITS 09.0005 Option see How to Order	
<b>Environmental</b>			
Operating temp		-20 to 70°C	
Storage temp		-40 to 85°C	
Humidity		To 95%	
Enclosure		IP66 (see ITS report C871V0383)	
EMC		In accordance with EU Directive 2004/108/EC.	

## DIMENSIONS (mm)



## TERMINAL CONNECTIONS



<b>Mechanical</b>		
Terminals		Screw clamp for 0.5 to 1.5mm <sup>2</sup> cable
Weight		1.6kg
<b>Accessories</b>		
Loop powered backlight		Operating voltage increased to 15.5V min
Dual alarm		Isolated, solid state single pole
Ron		< 8 $\Omega$ + 1.2V
Roff		> 180k
External push buttons		Membrane keypad-
Scale legend		Units marked onto display escutcheon. -
		Note: For RTD & THC inputs, °C or °F is shown on the instrument display.
Stainless legend plate		Etched with tag number on front of instrument. -
Pipe mounting kit		BA392D or BA393. -
		- See accessory datasheet for details

## HOW TO ORDER

Model number		<b>Please specify</b> BA474D
Certification		ATEX & IECEx gas or ATEX & IECEx gas & dust or FM, cFM & ATEX gas
Input		RTD; THC & type; V or R*
CJ compensation		On or Off. [THC input only]*
Display units		°C or °F [RTD/THC only]*
Display at which output is:		XXXXX
4mA		
20mA		XXXXXX
Display at which bargraph:		
Starts		XXXXXX
Finishes		XXXXX
Fault indication		Off; under range or over range
<b>Accessories</b>		<b>Please specify if required</b>
Backlight		Backlight
Dual alarm		Alarms
External push buttons		External push buttons
Scale legend		Legend
Stainless legend plate		Legend
Pipe mounting kit		BA392D or BA393

\* If calibration is not requested, BA474D will be set for 3 wire Pt100 RTD input with 4/20mA output and bargraph corresponding to a display of 0.0 to 100.0°C, with no fault indication.