

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® 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® 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® 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® 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® 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



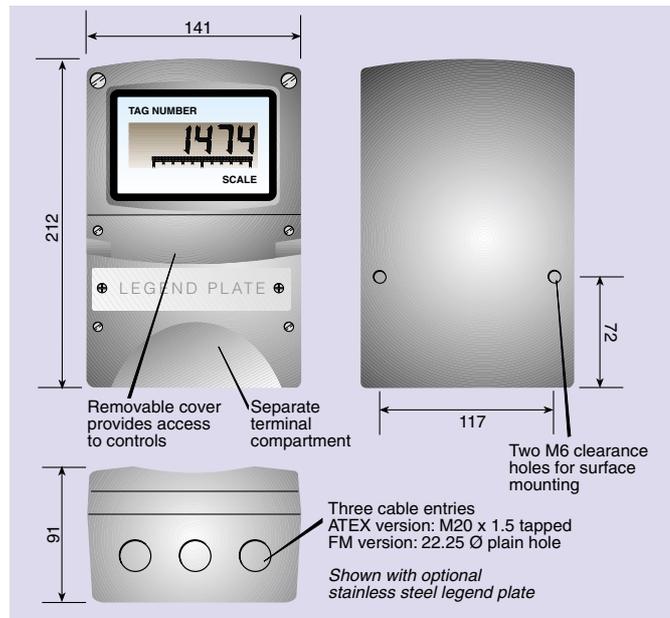
BEKA associates

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SPECIFICATION

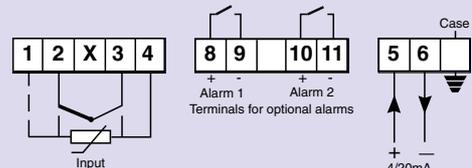
Supply voltage		
Without backlight	9 to 28V	
With backlight	15.5 to 28V	
Output		
Operating range	3.8 to 20.5mA	
Resistance	5MΩ min	
Display		
Type	Liquid crystal 20mm high -99999 to 99999	
	31 segment bargraph	
Reading rate	2 per second	
Resolution		
RTD & THC input	Selectable 0.1° or 1°	
Voltage & resistance input	Fully selectable	
Input		
Resistance thermometer		
Pt100 or Pt1000	-200 to +850°C	
Connection	3 or 4 wires, or differential	
Excitation current	175μA	
Resistance	Adjustable between 0 & 5kΩ	
Min span	10Ω	
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 ±1.9V	
Minimum span	2mV	
HART® communication	HART Registered, compliant with HART protocol standard revision 7.	
Diagnostics	Generally as NAMUR NE 107. Output via HART® and under or over range output current	
Performance		
Accuracy RTD input	±0.1°C	
THC input	±10μV	
Effect of temperature on display	Voltage	THC
Zero drift	<1μV/°C	<1μV/°C+0.02°C/°C
Span drift	<30ppm/°C	<30ppm/°C
Effect of temperature on 4/20mA output	RTD	
Zero drift	<20ppm/°C	<20ppm/°C
Span drift	<50ppm/°C	<50ppm/°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.	
Intrinsic safety		
Europe ATEX		
Code	for gas	II 1G, Ga Ex ia IIC T5 II (1)G, (Ga) [Ex ia] IIC (<i>associated apparatus</i>) Ta = -40 to +70°C
	or	for dust
		II 1D, Ex iaD 20 T80°C IP66 II (1) D, [Ex iaD] (<i>associated apparatus</i>) Ta = -20 to +60°C
Certificate No.		ITS09ATEX26155
USA FM		
Standard		3610 Entity
Code		CL I, II, III; Div 1; GP A, B, C, D, E, F & G T4 @ 70°C
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		3611 Nonincendive
Code		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		
Canada cFM		
File		3035396C
International IECEx		
Code	for gas	Ga Ex ia IIC T5 [Ex ia Ga] IIC (<i>associated apparatus</i>) Ta = -40 to +70°C
	or	for dust
		Ex ia IIC T80°C Da IP66 [Ex ia Da] IIC (<i>associated apparatus</i>) Ta = -20 to +60°C
Certificate No.		IECEXITS 09.0005 ◇ Option see <i>How to Order</i>
Environmental		
Operating temp		-40 to +70°C
Storage temp		-40 to +85°C

DIMENSIONS (mm)



TERMINAL CONNECTIONS

X Do not use



Humidity
Enclosure
EMC

To 95%
IP66 (see ITS report C871V0383)
In accordance with EU Directive
2004/108/EC.

Mechanical

Terminals
Weight

Screw clamp for 0.5 to 1.5mm² cable
1.6kg

Accessories

Loop powered backlight
Dual alarm
Ron
Roff
External push buttons
Scale legend

Operating voltage increased to 15.5V min
Isolated, solid state single pole
< 8Ω + 1.2V
> 180k
Membrane keypad~
Units marked onto display escutcheon. ~
Note: For RTD & THC inputs, °C or °F is shown on the instrument display.
Etched with tag number on front of instrument. ~
BA392D or BA393. ~

Stainless legend plate
Pipe mounting kit

~ See accessory datasheet for details

HOW TO ORDER

Model number	Please specify 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:	
4mA	XXXXX
20mA	XXXXX
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Fault indication	Off; under range or over range
Accessories	Please specify if required
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.