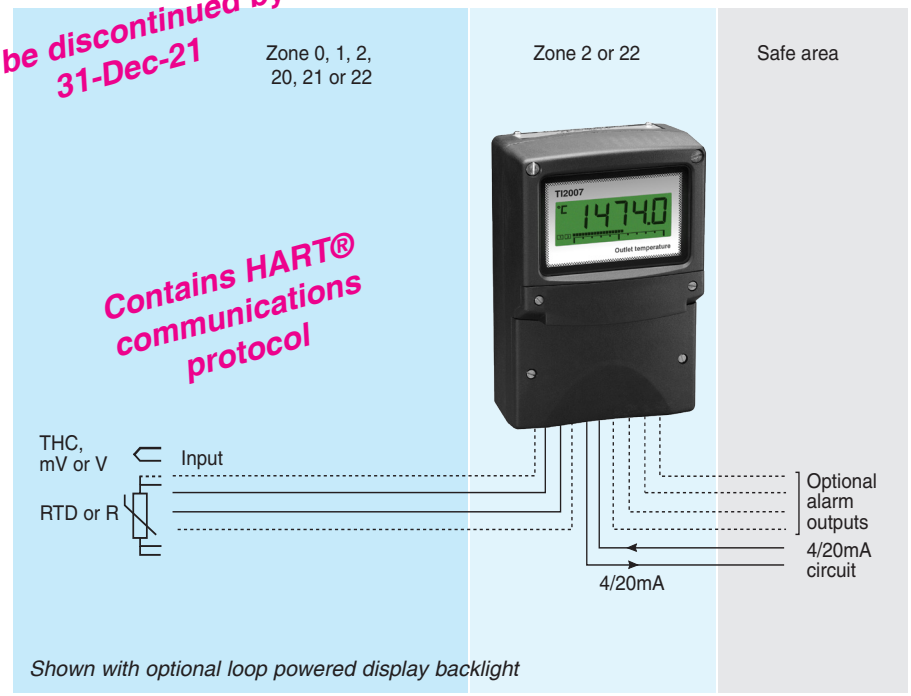
To be discontinued by 31-Dec-21

BA474ND

Indicating temperature transmitter



Shown with optional loop powered display backlight

The new BA474ND is a second generation Type n loop powered indicating temperature transmitter which provides an accurate local digital temperature display plus a 4/20mA output. Incorporating a galvanically isolated intrinsically safe input that permits direct connection to measuring elements in any gas or dust hazardous Zone, this new instrument will cost effectively satisfy many hazardous area temperature measuring and display applications. HART® digital communication and a robust GRP enclosure with a separate terminal compartment further extend the many applications.

The main application of the BA474ND is to display temperature in a Zone 2 hazardous process area and to transmit a linearised 4/20mA current to the safe area. For installations where the operator and instrumentation are located in Zone 2 or 22, but the measuring element is in Zone 0, 20, 1 or 21, the BA474ND certified isolation allows direct connection to the sensor without the need for barriers or isolators, thus significantly simplifying installation and reducing cost. Easy on-site conditioning enables the transmitter to operate with three or four wire resistance thermometers or with most common types of thermocouple. Differential measurements can also be made. Voltage and resistance inputs from pressure, weight or position transducers may be displayed in engineering units and transmitted as a 4/20mA current and HART® digital signal.

Calibration and conditioning may be performed via HART® communication or from the four internal push buttons that are located behind a sealed front cover. For applications requiring frequent adjustments, the instrument can be supplied with optional external membrane push buttons. All instrument functions and calibration, including the type of input, are configurable on-site which reduces the instrument inventory.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the measuring element and the transmitter. HART® communication also enables the BA474ND to be configured and calibrated from a portable HART® communicator or from the system host. If HART® digital communication is not required, the BA474ND will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA474ND 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.

Ex nA and tD certification permits the BA474ND transmitter to be installed in Zone 2 gas and Zone 22 dust hazardous areas. The transmitter has certified internal galvanic isolation and an intrinsically safe Ex ia sensor input allowing direct connection to resistance thermometers and thermocouples installed in Zones 0, 1, 2. 20, 21 & 22.

The liquid crystal display has large digits plus a 31 segment bargraph which are designed to provide maximum contrast and a wide viewing angle. An optional loop powered backlight provides green background illumination making the display readable at night and in poor lighting conditions. The backlight does not require additional field wiring or a power supply, but the minimum operating voltage of the transmitter 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, for customers who prefer an etched stainless steel label, the transmitter can be supplied with a removable blank or custom etched stainless steel legend plate mounted on the front of the enclosure.

Type nA certified for installation in Zone 2 & 22 hazardous areas

Intrinsically safe input allows sensor to be installed in any gas or dust hazardous area

- **Large display**
- **4/20mA loop powered**
- **HART® communication**
- **ATEX & IECEx certification**
  - **Transmitter: Ex nA**
  - **Sensor input: Ex ia & Ex iaD**
- **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/ba474nd

BEKA associates

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SPECIFICATION

Supply voltage

Without backlight	9 to 30V
With backlight	15.5 to 30V

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

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
Min span	2mV

HART® communication HART Registered, compliant with HART protocol standard revision 7.

Diagnostics Generally as NAMUR NE107
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	RTD
Zero drift	<1µV/°C	<1µV/°C + 0.02°C/°C	<20ppm/°C
Span drift	<30ppm/°C	<30ppm/°C	<80ppm/°C

Effect of temperature on 4/20mA output

Zero drift	<20ppm/°C
Span drift	<50ppm/°C
Series mode ac rejection	<0.1% error for 150mV rms 50 or 60Hz
Common mode ac rejection	<0.1% error for 250V rms 50 or 60Hz

Certification
Europe ATEX

Transmitter

Code	II 3 GD, Ex nA nL [ia] IIC T5 Ex tD [iaD] A22 IP66 T80°C Ta = -20 to 60°C

Sensor input

Code	II (1) G [ia] IIC T5 II (1) D [iaD]
Certificate No.	ITS09ATEX46157

International IECEx

Transmitter

Code	Ex nA nL [ia] IIC T5 Ex tD [iaD] A22 IP66 T80°C Ta = -20 to 60°C

Sensor input

Code	[ia] IIC T5 [iaD]
Certificate No.	IECEx ITS 09.0007

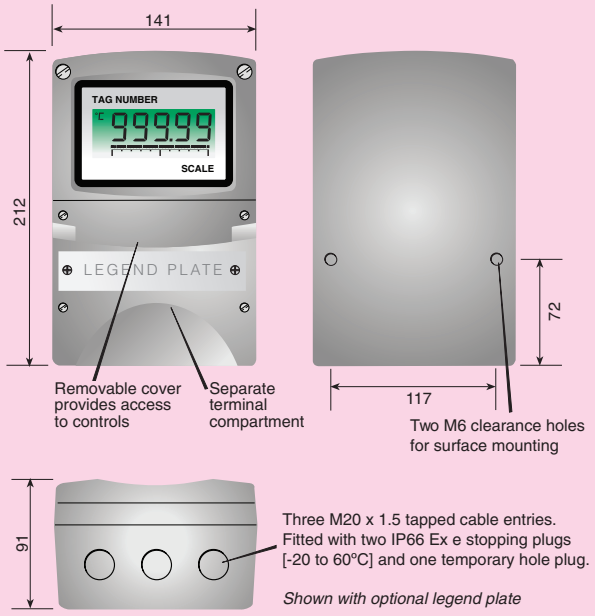
Environmental

Operating temp	-20 to 60°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

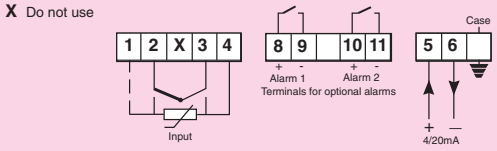
Mechanical

Terminals	Screw clamp for 0.5 to 1.5mm^2 cable
Weight	1.6kg

DIMENSIONS (mm)



TERMINAL CONNECTIONS



Accessories

Loop powered backlight	Transmitter operating voltage increased to 15.5V min
Dual alarm	Isolated, solid state single pole
Ron	< 8Ω + 1.2V
Roff	> 180k
External push buttons	Membrane keypad ~
Scale legend	Units of measurement marked onto display escutcheon. ~ *Note: For RTD & THC inputs, °C or °F is shown on the instrument* display.
Stainless legend	Etched with tag number on front of instrument. ~
Pipe mounting kit	BA392D or BA393.~

~ See accessory datasheet for details

HOW TO ORDER

	Please specify
Model number	BA474ND
Input	RTD; THC & type; V or R*
CJ compensation	On or Off [THC input only]*
Display units	°C or °F* [For RTD or THC input]
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
Application Guide AG310	AG310
Installation of [extra low voltage dc] Ex nA instrumentation	

* *If calibration information is not supplied, the BA474ND will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output and bargraph corresponding to a display of 0.0 to 100.0°C with no fault indication.*