Hazardous area / Safe area

THC, mV or V — Input

RTD or R

4/20mA

Zener barriers or galvanic isolators

Optional alarm outputs

4/20mA circuit

Contains HART® communications protocol

THC, mV or V — Input

RTD or R

Optional alarm outputs

4/20mA circuit

4/20mA

Shown with optional loop powered display backlight

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**

◆ **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

The BA474D is a second generation, intrinsically safe, loop powered indicating temperature transmitter. It provides an accurate local digital temperature display, plus a 4/20mA output, which may be scaled to represent any temperature range. The BA474D incorporates HART® digital communication, associated apparatus certification and a robust GRP enclosure with a separate terminal compartment.

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 tranducer 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. Associates 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.

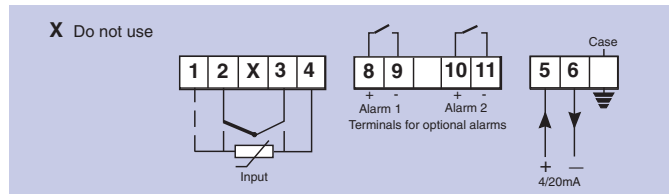**IECEx** ⟨Ex⟩ CE UKCA

BEKA associates

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	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 50 or 60Hz.

Intrinsic safety
International IECEx
Code — for gas — Ex ia IIC T5 Ga
[Ex ia Ga] IIC *(associated apparatus)*
Ta = -40 to 70°C *(-20°C operating temperature)*
or for dust — Ex ia IIIC T80°C Db
[Ex ia Da]IIIC *(associated apparatus)*
Ta = -20 to 60°C
Certificate No. — IECExITS 09.0005
Option see How to Order

Europe ATEX & UKEX
Code — for gas — II 1G Ex ia IIC T5 Ga
II (1)G [Ex ia Ga] IIC *(associated apparatus)*
Ta = -40 to 70°C *(-20°C operating temperature)*
or for dust — II 2D Ex ia IIIC T80°C Db
II (1) D [Ex ia Da] IIIC *(associated apparatus)*
Ta = -20 to 60°C
Certificate No.d — ITS09ATEX26155X
ITS21UKEX0308X

Environmental
Operating temp — -20 to 70°C
Storage temp — -40 to 85°C
Humidity — To 95%
Enclosure — IP66 (see ITS report C871V0383)
EMC — Complies with EU & UK EMC Directives

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

DIMENSIONS (mm)

Removable cover provides access to controls
Separate terminal compartment
Two M6 clearance holes for surface mounting

Three cable entries
ATEX certification M20 x 1.5 tapped. Supplied with two IP66 stopping plugs and one temporary hole plug.

Shown with optional legend plate

TERMINAL CONNECTIONS

X Do not use

| 1 | 2 | X | 3 | 4 |
Input

| 8 | 9 | | 10 | 11 |
+ - + -
Alarm 1 Alarm 2
Terminals for optional alarms

Case
| 5 | 6 |
+ —
4/20mA
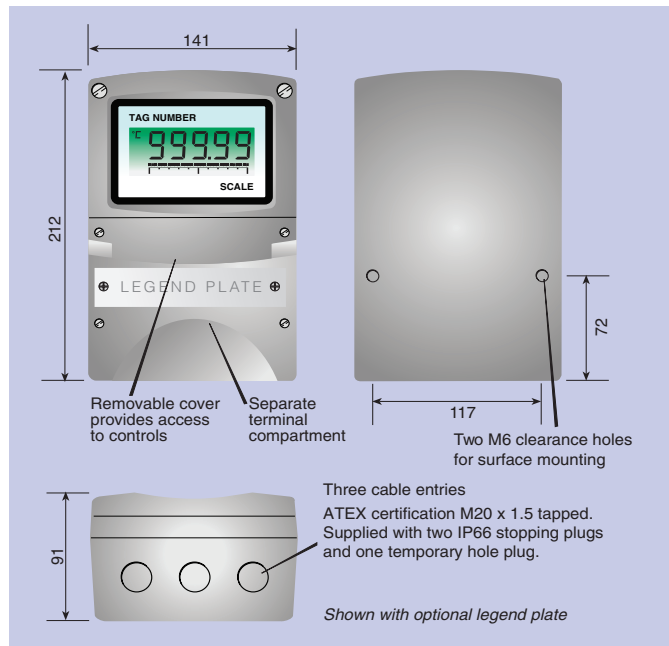
Accessories
Loop powered backlight — Operating voltage increased to 15.5V min
Dual alarm — Isolated, solid state single pole
Ron — < 8Ω + 1.2V
Roff — > 180k
External push buttons — Membrane keypad~
Scale legend — Units marked onto display escutcheon. ~
Note: For RTD & THC inputs, °C or °F is shown on 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

Please specify
Model number — BA474D

Certification — IECEx , ATEX & UKEX gas
or — IECEx, ATEX & UKEX gas & dust

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.