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 backlight

BA674D

Indicating temperature transmitter

General purpose

- ◆ **Large display with bargraph.**

- ◆ **4/20mA loop powered**

- ◆ **HART® communication & sensor diagnostics.**

- ◆ **RTD, THC, voltage or resistance input.**

- ◆ **Galvanically isolated sensor input.**

- ◆ **IP66 GRP enclosure with separate terminal compartment.**

- ◆ **Optional:**
  Loop powered backlight
  External push buttons
  Dual alarm.

- ◆ **3 year guarantee**

www.beka.co.uk/ba674d

The new BA674D is a second generation, loop powered indicating temperature transmitter which replaces the BA574C. 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 and a robust GRP enclosure with a separate terminal compartment, the BA674D remains electrically compatible with the earlier model.

The main application of the BA674D is to display temperature in a process area and to transmit a linearised 4/20mA current to other instruments. The digital display may be in °C or °F with the units of measurement shown on the display. A separately configurable 31 segment bargraph provides an easy to read analogue indication of the process value and trend.

Calibration and conditioning may be performed via HART® communication or four push buttons protected from damage and tampering behind a sealed cover. For applications requiring frequent adjustment the transmitter can be supplied with external push buttons. All instrument functions and calibration, including the type of input, are configurable on-site thus reducing the instrument inventory. The transmitter will operate with three or four wire resistance thermometers and with most common types of thermocouple. Differential and average measurements can also be made. The BA674D 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.

Input galvanic isolation eliminates errors caused by common mode voltages up to 250V, allowing accurate measurement from earthed thermocouples in electrically noisy environments. Isolation also allows the transmitter to accurately display the output from earthed bridges.

HART® digital communication provides the primary temperature measurement in a digital format plus diagnostic information indicating the health of the sensor and the transmitter.

HART® communication also enables the BA674D to be configured and calibrated from a portable calibrator or from the system host. If HART® digital communication is not required, the BA674D will function as a traditional 4/20mA analogue loop powered indicating temperature transmitter.

Sensor diagnostics are continuously performed by the BA674D transmitter generally as recommended by NAMUR standard NE 107 and the results transmitted via the HART® communication link. Faults may also be indicated by outputting an under or over range current and flashing the transmitter display.

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 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. When the transmitter is conditioned for a resistance thermometer or thermocouple input, degrees Centigrade or degrees Fahrenheit can be shown on the liquid crystal display.

If explosive atmospheres are present either the intrinsically safe BA474D or the Type nL BA474ND should be used. Both have the same features as the BA674D but have been certified for use in gas and dust hazardous areas.

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
Galvanic isolation	500V
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.

Environmental
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

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

Accessories
Loop powered backlight	Green background illumination, increases operating voltage to 15.5V min.
Dual alarm	Isolated, solid state single pole
Ron	< 8Ω + 1.2V
Roff	>180k
Rating	30V dc; 100mA
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.

DIMENSIONS (mm)

Removable cover provides access to controls

Separate terminal compartment

Two M6 clearance holes for surface mounting

Three M20 x 1.5 tapped cable entries. Fitted 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

| 5 | 6 | Case
+ —
4/20mA
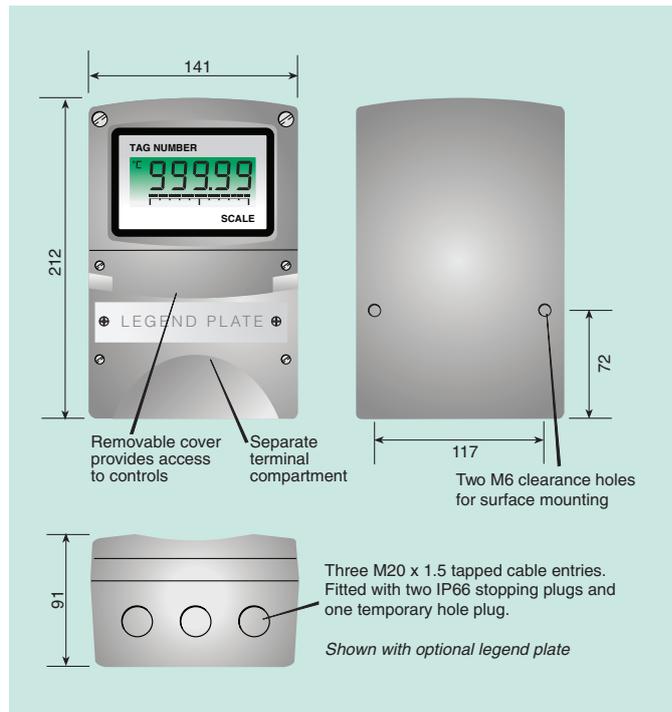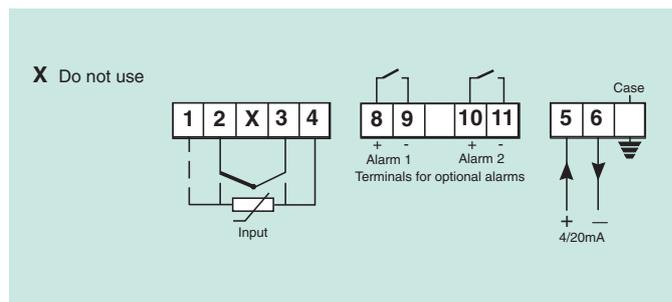
Stainless legend plate.	Etched with tag number on front of instrument. ~
Pipe mounting kit	BA392D or BA393. ~

~ *See accessory datasheet for details*

HOW TO ORDER

	Please specify
Model number	BA674D
Input	RTD, THC & type; V or R*
CJ compensation	On or Off [THC input only]*
Display units	°C or °F* [RTD or THC inputs]
Display at which bargraph:	
Starts	XXXXX
Finishes	XXXXX
Display at which output is:	
4mA	XXXXX
20mA	XXXXX
Fault indication	Off; underrange or overrange

Accessories	**Please specify if required**
Display backlight	Backlight
Dual alarms	Alarms
External push buttons	External push buttons
Scale legend	Legend
Stainless legend plate	Legend
Pipe mounting kit	BA392D or BA393

* *If calibration information is not supplied, instrument will be conditioned for 3 wire Pt100 RTD input with a 4 to 20mA output corresponding to a display of 0.0 to 100.0°C.*