## Performance Series <br> Performance Vapour Pressure and Gas Filled Temperature Switches <br> Models: 721/2/3, 731/2/3/4, 771/2/3/4 \& 781

## Key Features

- Precision stainless steel mechanism for arduous atmospheres and high humidity.
- Set point adjustable over whole range against calibrated scale with tamperproof adjuster.
- Weatherproof and Flameproof models ATEX and IECEx
- Hermetically sealed microswitch option
- Models for fixed switching differential, adjustable differential and HI-LO operation.
- Ranges available up to 230 to $300^{\circ} \mathrm{C}\left(450\right.$ to $\left.580^{\circ} \mathrm{F}\right)$. Maximum working temperature up to $310^{\circ} \mathrm{C}\left(600^{\circ} \mathrm{F}\right)$.


## Series Overview

- Designed in the mid-1970s and developed over subsequent years, the Performance Series switch range offers users the broadest range of options, the highest levels of set-point repeatability and the confidence of long term performance that a mature product such as this can prove.
- The models 721/2/3, 731/2/3/4, 771/2/3/4, 781 Performance Series temperature switches comprise an armoured capillary or rigid stem thermal system upon which a compression gland slides to enable various depths of thermowell (pocket) to be accommodated. This sensor is coupled to the microswitch via a precision stainless steel mechanism, the combination of which helps deliver the market leading performance customers can expect from the Series.



## Product applications

The $\mathbf{7 0 0}$ Performance Series is suitable for a wide range of applications in:

- Oil \& Gas
- Chemical
- Petrochemical
- Refining
- Power
- Food Industry

The choice of models available ensures that the 700 Performance Series is suitable for use in:

- Corrosive atmospheres
- Resistant to chemical attack

How can we help you?
Delta Mobrey offers fast, efficient and knowledgeable support when and where you need it. Please visit our web site at www.delta-mobrey.com to find your local support centre or call us on:
+44 (0) $1252 \mathbf{7 2 9 1 4 0}$

## How to order

Switches can be configured by selecting codes representing the desired features from the tables that follow. The chart below, describes how the model code is built up. For assistance in configuring a switch that best suits your needs, please contact your local sales office.


NOTE: Options shaded in the following tables are the most common options and are available on the quickest lead-times and at the lowest cost.

NOTE: Only the most common options are shown in this data sheet. Should you require a feature that is not shown, please contact your local sales office for further details.

## Technical Specification

Set point repeatability $\pm 0.5 \%$ of span at $20^{\circ} \mathrm{C} / 68^{\circ} \mathrm{F}$ ambient. Scale accuracy $\pm 2 \%$ of full scale.
For models 721-3, 781 scale accuracy will be effected by relative position of head and sensing bulb i.e., sensing bulb 1 metre above/below head = set point shift $\pm 1 \%$ of full scale approx.
-25 to $+60^{\circ} \mathrm{C} /-13$ to $+140^{\circ} \mathrm{F}$
-25 to $+60^{\circ} \mathrm{C} /-13$ to $+140^{\circ} \mathrm{F}$
Models $771-4$. A $10^{\circ} \mathrm{C}\left(18^{\circ} \mathrm{F}\right)$ rise in ambient temperature will on average result in a $1^{\circ} \mathrm{C}\left(1.8^{\circ} \mathrm{F}\right)$ fall in set point. On models $721-3,781$ it is advisable to avoid the condition where the ambient temperature is within $\pm 5^{\circ} \mathrm{C}\left( \pm 9^{\circ} \mathrm{F}\right)$ of the set point. Under this condition the liquid/vapour phase becomes less well defined and the switching differential increases. Where this condition is unavoidable refer to Models 740/760 Liquid Expansion Temperature Switches or 771-4.

## See Table 2

System sensing probes for both the capillary and rigid stem version are designed to withstand 100 bar ( 1500 psi ) without thermowell.
IP66 / NEMA 4X / Flameproof Ex d
SPDT or DPDT snap action microswitch (standard) Hermetically sealed (optional)
See Table 6
3/8 NPT External Sliding Gland, ½ NPT External Direct mounting.
Enclosures: "W \& N" $2.5 \mathrm{~kg} / 5.5 \mathrm{lb}$ (models $731-42.2 \mathrm{~kg} / 4.8 \mathrm{lb}$ ); "A \& O" $3.5 \mathrm{~kg} / 7.7 \mathrm{lb}$ (models 731-4 3.2kg/7.01b); "H" 4.0kg/8.8lb; "K" $8.7 \mathrm{~kg} / 19.1 \mathrm{lb}$.

## Accuracy:

Storage Temperature:
Ambient Temperature:

## Enclosure

## FINISH

All enclosures except Type A are finished in light grey epoxy resin paint. Special finishes to order.

## INTRINSIC SAFETY

Because of the low voltages and currency of I.S. circuits, we recommend using gold and/or sealed contacts.

NOTE: Enclosure K is not recommended on models $731 / 2 / 3 / 4$, because of weight limitation on stem mounting.

Enclosure code A is recommended for use with System Codes E, F, G, H, T. (See Table 4.)

Temperature in Table 1 refer to limitations for certified enclosures.

See TECHNICAL SPECIFICATION

## Models

For model and range availability see Tables 5A and 5B.
Gas filled models offer range -50 to $+150^{\circ} \mathrm{C}\left(-60\right.$ to $\left.+360^{\circ} \mathrm{F}\right)$ span 200 deg. C (420 deg. F) and a maximum working temperature of $250^{\circ} \mathrm{C}\left(480^{\circ} \mathrm{F}\right)$.

Models 771-4 is only available with armoured capillary systems.

Models 731-4 are not available with ranges above $120^{\circ} \mathrm{C} \quad\left(250^{\circ} \mathrm{F}\right)$. Limitation due to heat conduction, causing an unacceptable rise in temperature at the head.

TABLE 1


| ENCLOSURE TYPES | Code |
| :---: | :---: |
| Weatherproof Enclosures |  |
| General Purpose <br> The basic enclosure is pressure die-cast in zinc alloy, offering weather protection not less than NEMA $4+13 /$ PP66. | W |
| For Aggressive Atmospheres Investment cast enclosure in austenitic stainless steel with weather protection not less than NEMA 4X +13/IP66. | A |
| Flameproof Enclosures Category 2 (Zone 1) |  |
| ATEX Ex db IIC T6 ( -60 to $+40^{\circ} \mathrm{C}$ ), $\mathbf{T 4}\left(-60\right.$ to $\left.+80^{\circ} \mathrm{C}\right)$ II 2 G D Gravity die-cast enclosure in aluminium-silicon alloy. <br> Suitable for outdoor use, IP66 / NEMA 4. <br> Ex II 2 GD | H |
| IECEx Ex db IIC |  |
| ATEX Ex db IIC T6 ( -60 to $+40^{\circ} \mathrm{C}$ ), $\mathbf{T 4}\left(-60\right.$ to $+80^{\circ} \mathrm{C}$ ) II 2 G D As Code H , but sand cast in high quality grey iron. | K |
| IECEx Ex db IIC |  |
| Exn Enclosures Category 3 (Zone 2). |  |
| Type of Protection Exn II T6 (-25 to $+40^{\circ} \mathrm{C}$ ), T4 ( -25 to $+80^{\circ} \mathrm{C}$ ) II 3 G D <br> As code 'W' but Exn. <br> Weatherproof to NEMA 4/IP66. <br> Limited switching facility (see Table 6). <br> Ex) II 3GD | N |
| As ' $N$ ' but with investment cast enclosure in austenitic stainless steel as 'A'. | 0 |
| TABLE 2 <br>  $\square$ $\square$ $\square$ $\square$ $\square$ $\square$ |  |



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## Electrical Entry

Adaptors are available for other popular thread sizes.

## Enclosures 'W' and 'N'

Standard option code $1(22 \mathrm{~mm}$ dia) is provided with a nylon 22/20 reducer and fibre washer suitable for a standard M20 cable gland and back nut. Option code 0 elbow adaptor is factory fitted. Adaptor kits may also be provided retrospectively to fit at site if required. Ask for details. See diagrams for dimensions.

## 'W' and ' $N$ ' SAFETY NOTE

If a metal cable gland is site fitted it must either be earthed locally or an earth/gland plate must be used to connect the body of the gland at the enclosure earthing point. Earth/gland plates can be provided either factory fitted or in kit form for site assembly. Ask for details.

## System Details

The flexible thermal system of Models 721-3, 771-4 \& 781 comprises an armoured capillary attached to the sensing bulb via a semi-rigid extension on which a compression gland slides to enable various depths of thermowell (pocket) to be accommodated. See DIMENSIONS.

All parts of the thermal system are in 300 series stainless steel with the capillary sensing bulb and armour in 316 stainless steel.

The thermal systems of Models 731-4 comprises a rigid stem attached to the sensing bulb by an extension on which a compression gland slides to accommodate various attachments the gland has a $1 / 2-14 N P$ external thread. The rigid stem version has probe materials of 316 stainless steel.

TABLE 3


|  | Code |
| :--- | :---: |
| Enclosures W \& N: Clearance for 20mm (3/4 in) outside dia conduit. | 1 |
| Enclosures H, K, A \& O: M20 x 1.5 ISO thread (direct) | 0 |
| Enclosures H \& K: M20 x 1.5 ISO thread, dual entry. | 5 |
| Enclosures H \& K: 3/4-NPT INT. | 3 |
| Enclosures H \& K: 3/4-NPT INT dual entry. | 6 |
| Enclosure W: M20 x 1.5 elbow adaptor. | 0 |
| Enclosure N: M20 x 1.5 straight adaptor (Approved). | 0 |
| Enclosures H \& K: 1/2-NPT INT. | 2 |

TABLE 4


| Models 721-3, 771-4, 781 |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| Capillary | ngth $\dagger$ | Length Semi- | Stem † | Stainless Steel <br>  <br> Brass Bellows | Stainless Steel System \& Bellows |
| Metres | Feet | mm | inches | Code | Code |
| 3 | 10 | 250 | 10 | A | E |
| 3 | 10 | 500 | 20 | B | F |
| 6 | 20 | 250 | 10 | C | G |
| 6 | 20 | 500 | 20 | D | H |
| $\dagger$ Other lengths are available to order. |  |  |  |  |  |


| Models 731-4 | Code |
| :--- | :---: |
| Rigid stem 250mm (10in) long $\times$ 12mm (0.47in) dia <br> Stainless steel Rigid Stem \& brass bellows | S |
| Rigid stem 250mm (10in) long x 12mm (0.47in) dia <br> Stainless steel Rigid Stem \& bellows | T |

## Setting Ranges

## Table 5A - Deg C

Tmax = maximum working temperature
NOTE: All models have a bulb diameter of 12 mm (0.47in).
Models 721-3, 731-4 and 781 have a bulb length of 80 mm (3.2in).
Models 771-4 have a bulb length of 140 mm (5.5in).

| Availability |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $721-3$ <br> 781 | $731-4$ | $771-4$ |  | Range | Tmax | Code

Table 5B - Deg F

| Availability |  |  | Range | Tmax | Code |
| :---: | :---: | :---: | :---: | :---: | :---: |
| $721-3$ <br> 781 | $731-4$ | $771-4$ |  |  | BF |
| $V$ | $V$ | - | -50 to +40 | 480 | MF |
| - | - | $V$ | -60 to +300 | 170 | HB |
| $V$ | $V$ | - | 20 to 150 | 203 | JF |
| $V$ | $V$ | - | 70 to 200 | 270 | LB |
| $V$ | $V$ | - | 120 to 250 | 360 | QA |
| $V$ | - | - | 210 to 340 | 450 | SF |
| $V$ | - | - | 300 to 430 | 520 | UB |
| $V$ | - | - | 370 to 500 | 600 | VB |
| $V$ | - | - | 450 to 580 |  |  |

## Switch Options

TABLE 6


A much wider variety of switching options can be engineered to customer's requirements for Model 721, 731, 771 temperature switches, including heavy DC, manual latching, pneumatic output etc. Please consult our engineers for further information.

| Model 721, 731, 771 |  |  |  |  |  |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
| CSA Rating (RESISTIVE) §SEE NOTE | IEC 947-5-1/EN 60947-5-1 Rating |  |  |  |  |  |  | Contact | Code |
|  | Designation \& Utilization Category |  | Rated operational current $\mathrm{I}_{\mathrm{e}}(\mathrm{A})$ at rated operational voltage $U_{e}$ | $\mathrm{U}_{\mathrm{i}}$ | $\mathrm{U}_{\text {imp }}$ | VA Rating |  |  |  |
|  |  |  | Make |  |  | Break |  |  |
| 5 Amps @ 110/250V AC Light Duty for AC only | AC14 DC13 | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ |  | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DC} \end{gathered}$ | 250 V | 0.8 kV | $\begin{array}{r} 432 \\ 28 \end{array}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT DPDT | $\begin{aligned} & 00 \\ & 01 \end{aligned}$ |
| 5 Amps @ 110/250V AC \& 2 Amps @ 30V DC General purpose precision | AC14 DC13 | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DC} \end{gathered}$ | 250V | 0.8 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT DPDT | $\begin{aligned} & 02 \\ & 03 \end{aligned}$ |
| 1 Amp @ 125V AC \& §100mA @ 30V DC gold alloy contacts for low voltage switching | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |  |  |  |  |  |  | $\begin{aligned} & \text { SPDT } \\ & \text { DPDT } \end{aligned}$ | $\begin{aligned} & 04 \\ & 05 \end{aligned}$ |
| § 5 Amps @ 110/250V AC \& 5 Amps @ 30V DC Environmentally sealed | AC14 <br> DC13 | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{D} \text { DC } \end{gathered}$ | 250V | 0.5 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | $\begin{aligned} & \text { SPDT* }^{*} \\ & \text { DPDT }^{*} \end{aligned}$ | $\begin{aligned} & 08 \\ & 09 \end{aligned}$ |
| § 1 Amp @ 30V AC \& 30V DC Environmentally sealed with gold contacts | AC14 | E150 | 0.3A @ 120V AC | 125V | 0.5 kV | 216 | 36 | $\begin{aligned} & \text { SPDT* }^{\text {DPDT }} \end{aligned}$ | $\begin{aligned} & \mathrm{OG} \\ & \mathrm{OH} \end{aligned}$ |
| 5 Amps @ 250V AC \& 2 Amps @ 30V DC Hermetically sealed. Gold plated silver contacts | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{D} \text { DC } \end{gathered}$ | 250V | 0.5 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | $\begin{aligned} & \text { SPDT } \\ & \text { DPDT } \end{aligned}$ | $\begin{gathered} \mathrm{H} 2 \\ \mathrm{H} 3+, \mathrm{H} 6 \ddagger \end{gathered}$ |
| $\dagger 2$ Single pole, double throw, simultaneous falling under pressure $\ddagger 2$ Single pole, double throw, simultaneous rising under pressure. |  |  |  |  |  |  |  |  |  |
| Model 722, 732, 772 (Cannot be supplied with enclosure Code N/O) |  |  |  |  |  |  |  |  |  |
| 5 Amps @ 110/250V AC Light Duty for AC only | AC14 | D300 | 0.6/0.3A @ 120/240V AC | 250V | 0.8kV | 432 | 72 | SPDT | OC |
| 5 Amps @ 110/250V AC \& 2 Amps <br> @ 30V DC Adjustable | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DC} \end{gathered}$ | 250V | 0.8kV | $\begin{array}{r} 432 \\ 28 \end{array}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT | 0D |
| Model 723, 733, 773 |  |  |  |  |  |  |  |  |  |
| 5 Amps @ 110/250V AC \& 2 Amps @ 30V DC General purpose precision | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DC} \end{gathered}$ | 250V | 0.8kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | $\begin{aligned} & \text { SPDT } \\ & \text { DPDT } \end{aligned}$ | $\begin{aligned} & 02 \\ & 03 \end{aligned}$ |
| 1 Amp @ 125V AC \& §100mA @ 30V DC gold alloy contacts for low voltage switching | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |  |  |  |  |  |  | SPDT DPDT | $\begin{aligned} & 04 \\ & 05 \end{aligned}$ |
| Model 734, 774, 781 |  |  |  |  |  |  |  |  |  |
| 5 Amps @ 110/250V AC Light Duty for AC only | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{~V} \text { DC } \end{gathered}$ | 250 V | 0.8 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT | 20 |
| 5 Amps @ 110/250V AC \& 2 Amps @ 30V DC General purpose precision | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DCC} \end{gathered}$ | 250V | 0.8 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT | 22 |
|  <br> §100mA @ 30V DC gold alloy contacts for low voltage switching | 1 A @ 125 VAC RESISTIVE (IEC 1058-1/EN 61058-1) |  |  |  |  |  |  | SPDT | 24 |
| § 5 Amps @ 110/250V AC \& 5 Amps @ 30V DC Environmentally sealed | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{D} \text { DC } \end{gathered}$ | 250V | 0.5 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT* | 28 |
| § 1 Amp @ 30V AC \& 30V DC Environmentally sealed with gold contacts | AC14 | E150 | 0.3A @ 120V AC | 125V | 0.5 kV | 216 | 36 | SPDT* | 2G |
| 5 Amps @ 250V AC \& 2 Amps @ 30V DC Hermetically sealed. Gold plated silver contacts | $\begin{aligned} & \text { AC14 } \\ & \text { DC13 } \end{aligned}$ | $\begin{aligned} & \text { D300 } \\ & \text { R300 } \end{aligned}$ | $\begin{gathered} \text { 0.6/0.3A @ 120/240V AC } \\ 0.22 / 0.1 \mathrm{~A} @ 125 / 250 \mathrm{DC} \end{gathered}$ | 250V | 0.5 kV | $\begin{gathered} 432 \\ 28 \end{gathered}$ | $\begin{aligned} & 72 \\ & 28 \end{aligned}$ | SPDT | H4 |

The electrical rating is dependent on the microswitch fitted to the instrument. The electrical ratings defined by each approval that the microswitch complies with and is shown on the product nameplate, ie CSA, or IEC. It should be noted that the instrument must be used within the electrical rating specified from the approval you require. This table lists the actual IEC ratings against the Designation \& Utilization Category marked on the nameplates. In the absence of any verification by CSA the microswitch § manufacturer's rating is stated in italics and bold. If in doubt seek guidance from the factory.

NOTE: For low energy circuits e.g. 30 V and up to 100 mA , we recommend using gold alloy contact switches.
$\mathrm{U}_{1}=$ rated insulation voltage $\quad \mathrm{U}_{\mathrm{imp}}=$ rated impulse to withstand voltage across contacts.
*Suitable for use with Exn Enclosures (See Table 1)

## Process Connection

Other thread specifications and sizes are available without using adaptors. See DIMENSIONS.

Adaptors are available for applications where their use is permitted.

## Options \& Treatments

Combinations available, apply for details.
NOTE: Use stainless steel system codes E, F, G, H, T (Table 4) only with Marine \& Ammonia codes 02, 03 and capillary codes A, B, C, D, E, F, G, H (Table 4) only with pipe mounting bracket code10.

## Special Engineering

Last 4 digits of model code only used when special engineering is required.

## THERMOWELLS

Material 316SS.
Maximum Working Pressure 140bar (2000psi) at $20^{\circ} \mathrm{C}$

Thermowells can also be manufactured to customers own drawing/specification requirements.

TABLE 7


|  | Code |
| :--- | :---: |
| $3 / 8-18$ NPT EXT Sliding Gland (System Code A to H Table 4) | E |
| $1 / 2-14$ NPT EXT Sliding Gland (System Code S, T Table 4) | J |



|  | Code |
| :--- | :---: |
| Tropicalisation High humidity atmospheres | 01 |
| Marine and Offshore Saline atmosphere or salt spray | 02 |
| Ammonia Process (wetted) parts and construction suitable for <br> atmospheric ammonia | 03 |
| Oxygen Service 2: Process (wetted) parts are cleaned for oxygen | 04 |
| Oxygen Service 3: Process and non-process parts are cleaned for use <br> with oxygen | 05 |
| Stainless Steel Pipe Mounting Bracket Permits local 2" pipe work to be <br> utilized for mounting the instrument | 10 |
| Tagging - Variety of tagging methods are available | APPLY <br> FOR |
| Applies when - no option is required and selection is made from special <br> engineering | 00 |




## Performance Data

## Celsius Units $\left({ }^{\circ} \mathrm{C}\right)$

## TABLE 10A

FIXED SWITCHING DIFFERENTIAL
Models 734, 774, 781 the switching differential on each point may be up to 1.5 times that of Table 10A \& 10C. Care must be exercised, therefore, in specifying high differential switches or set point separation less than 3 times switching differential.

TABLE 10B
ADJUSTABLE SWITCHING DIFFERENTIAL

TABLE 10

MODELS 721, 731, (734), 771, (774), (781)
TABLE 10A

| Range Code | Range | SPDT OPTIONS |  |  |  |  | DPDT OPTIONS <br> (721/731 ONLY) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 00 \\ (20) \end{gathered}$ | $\begin{gathered} 02 \\ (22) \end{gathered}$ | $\begin{gathered} 04 \\ (24) \end{gathered}$ | $\begin{aligned} & \text { 08/0G } \\ & (28 / 2 G) \end{aligned}$ | $\begin{gathered} \mathrm{H} 2 \\ (\mathrm{H} 4) \end{gathered}$ | 01 | 03 | 05 | 09/0H | H3/H6 |
| B1 | -50 to +5 | 2 | 4 | 2 | 8 | 11 | 4 | 6 | 4 | 12 | 16 |
| M1 | -50 to 150 | 3 | 5.5 | 3 | 11 | 11 | 5.5 | 28 | 5.5 | 20 | 16 |
| H2 | -5 to +65 | 1 | 2 | 1 | 4 | 5.5 | 2 | 4 | 2 | 6 | 8 |
| J1 | 20 to 90 | 1 | 2 | 1 | 4 | 5.5 | 2 | 4 | 2 | 6 | 8 |
| L4 | 50 to 120 | 1 | 2 | 1 | 4 | 5.5 | 2 | 4 | 2 | 6 | 8 |
| Q4 | 100 to 170 | 1.5 | 3 | 1.5 | 6 | 8 | 3 | 5 | 3 | 9 | 12 |
| S5 | 150 to 220 | 1.5 | 3 | 1.5 | 6 | 8 | 3 | 5 | 3 | 9 | 12 |
| U6 | 190 to 260 | 2 | 4 | 2 | 8 | 10 | 4 | 6 | 4 | 12 | 15 |
| V7 | 230 to 300 | 2 | 4 | 2 | 8 | 10 | 4 | 8 | 4 | 12 | 15 |

MODELS 722, 723, 732, 733, 772, 773
TABLE 10B

| Range Code | Range | 722, 732, 772 |  |  |  | 723, 733, 773 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | SPDT Only |  |  |  | SPDT Options |  | DPDT Options |  |
|  |  | OC |  | OD |  | 02 or 04 |  | 03 or 05 |  |
|  |  | Min | Max | Min | Max | Min | Max | Min | Max |
| B1 | -50 to +5 | 2 | 4 | 3.5 | 8 | 10 | 30 | 15 | 30 |
| M1 | -50 to 150 | 3 | 5.5 | 5 | 11 | 30 | 100 | 40 | 100 |
| H2 | -5 to +65 | 1.5 | 4 | 3 | 7 | 10 | 30 | 15 | 30 |
| J1 | 20 to 90 | 1.5 | 4 | 3 | 7 | 10 | 30 | 15 | 30 |
| L4 | 50 to 120 | 1 | 3.5 | 2.5 | 7 | 10 | 30 | 15 | 30 |
| Q4 | 100 to 170 | 1.5 | 4 | 3 | 7 | 10 | 30 | 15 | 30 |
| S5 | 150 to 220 | 1.5 | 4 | 3 | 7 | 10 | 30 | 15 | 30 |
| U6 | 190 to 260 | 2 | 4 | 3.5 | 8 | 10 | 30 | 15 | 30 |
| V7 | 230 to 300 | 2 | 4 | 3.5 | 8 | 10 | 30 | 15 | 30 |

Fahrenheit Units ( ${ }^{\circ}$ F)

TABLE 10C
FIXED SWITCHING DIFFERENTIAL

MODELS 721, 731, (734), 771, (774), (781)
TABLE 10C

| Range Code | Range | SPDT OPTIONS |  |  |  |  | DPDT OPTIONS <br> (721/731 ONLY) |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | $\begin{gathered} 00 \\ (20) \end{gathered}$ | $\begin{gathered} 02 \\ (22) \end{gathered}$ | $\begin{gathered} 04 \\ (24) \end{gathered}$ | $\begin{gathered} 08 / 0 \mathrm{G} \\ (28 / 2 \mathrm{G}) \end{gathered}$ | $\begin{gathered} \mathrm{H} 2 \\ (\mathrm{H} 4) \end{gathered}$ | 01 | 03 | 05 | 09/0H | H3/H6 |
| BF | -50 to +40 | 3.5 | 7 | 3.5 | 15 | 20 | 7 | 11 | 7 | 22 | 29 |
| MF | -60 to 300 | 5 | 10 | 5 | 20 | 20 | 10 | 20 | 10 | 30 | 29 |
| HB | 20 to 150 | 2 | 3.5 | 2 | 7 | 10 | 3.5 | 7 | 3.5 | 11 | 14 |
| JF | 70 to 200 | 2 | 3.5 | 2 | 7 | 10 | 3.5 | 7 | 3.5 | 11 | 14 |
| LB | 120 to 250 | 2 | 3.5 | 2 | 7 | 10 | 3.5 | 7 | 3.5 | 11 | 14 |
| QA | 210 to 340 | 3 | 5.5 | 3 | 11 | 14 | 5.5 | 9 | 5.5 | 16 | 22 |
| SF | 300 to 430 | 3 | 5.5 | 3 | 11 | 14 | 5.5 | 9 | 5.5 | 16 | 22 |
| UB | 370 to 500 | 3.5 | 7 | 3.5 | 15 | 18 | 7 | 11 | 7 | 22 | 27 |
| VB | 450 to 580 | 3.5 | 7 | 3.5 | 15 | 18 | 7 | 15 | 7 | 22 | 27 |

## TABLE 10D

## ADJUSTABLE SWITCHING

 DIFFERENTIALDue to manufacturing tolerances, the figures quoted in these tables are for guidance only and are typical for weatherproof models. Should the differential be critical for specific applications, our engineers should be consulted prior to ordering.
Flameproof models may be up to 2 times higher depending on the range. Should the differential be critical for specific applications our engineers should be consulted prior to ordering.

MODELS 722, 723, 732, 733, 772, 773
TABLE 10D

| Range Code | Range | 722, 732, 772 |  |  |  | 723, 733, 773 |  |  |  |
| :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: | :---: |
|  |  | SPDT Only |  |  |  | SPDT Options |  | DPDT Options |  |
|  |  | OC |  | OD |  | 02 or 04 |  | 03 or 05 |  |
|  |  | Min | Max | Min | Max | Min | Max | Min | Max |
| BF | -50 to +40 | 3.5 | 7 | 6.5 | 14 | 18 | 54 | 27 | 54 |
| MF | -60 to 300 | 5 | 10 | 10 | 20 | 60 | 180 | 70 | 180 |
| HB | 20 to 150 | 3 | 7 | 5.5 | 12 | 18 | 54 | 27 | 54 |
| JF | 70 to 200 | 3 | 7 | 5.5 | 12 | 18 | 54 | 27 | 54 |
| LB | 120 to 250 | 2 | 6 | 4.5 | 12 | 18 | 54 | 27 | 54 |
| QA | 210 to 340 | 3 | 7 | 5.5 | 12 | 18 | 54 | 27 | 54 |
| SF | 300 to 430 | 3 | 7 | 5.5 | 12 | 18 | 54 | 27 | 54 |
| UB | 370 to 500 | 3.5 | 7 | 6.5 | 14 | 18 | 54 | 27 | 54 |
| VB | 450 to 580 | 3.5 | 7 | 6.5 | 14 | 18 | 54 | 27 | 54 |

## Electrical Connections

## Terminal Block

Cable entry is to a non-pinching terminal block made of a non-hygroscopic thermosetting plastic, suitable for cables up to $2.5 \mathrm{~mm}^{2} / 14 \mathrm{AWG}$.

## Earthing/Grounding

An earthing stud is provided inside all weatherproof enclosures, adjacent to the entry.External earthing is standard on flameproof versions. Safety note see Table 3.

## Dielectric Strength

The electrical assembly is capable of withstanding *2kV between live parts and earth/ground and 500V between open contacts.

* 1.2kV for micro switch Codes H2, H3, H4 and H6. Refer to Table 6.


## Electrical Entry

Standard options are listed in Table 3. Other threads can be accommodated by adaptors. Dual entry available, see Table 3.

## Optional Extras

## Mounting Position/Location/Installation

Vertical as shown, IN DIMENSIONS, taking care to avoid siting in locations that transmit excessive shock or vibration. For further advice contact our engineers.

Pollution degree (EN60947-5-1)
All products are suitable for use in pollution degree 3 . For extreme conditions where condensation may readily form, then sealed contacts should be used. See Table 6 Codes 08/09, 0G/0H, 2G/28, H2/H3/H4/H6.

## Electrical Isolation

These products are not suitable for electrical isolation. Always isolate circuit separately to carry out any electrical work.

## Approvals



Dimension


