Instructions

Type IQ Valve Position Monitors are designed to provide high accuracy feedback of valve position to plant control systems.
These instructions outline the requirements for ensuring a long and trouble free service life from the monitors.

Installation - Mounting

Attach mounting plate (1) to the actuator using fasteners (2) and lockwashers (2a) provided with mounting kit (if supplied by Imtex).

Loosen indicator cover set screw (3) and rotate indicator cover (4) to desired viewing angle. Retighten set screw (3).

Rotate coupling spacer (5) and indicator drum (6) to desired position (OPEN or CLOSED appearing through indicator window).

Fit torque coupler (7) or NAMUR drive block (7a) using screw (8) supplied in kit.

Fit monitor assembly to actuator ensuring that the torque coupler/NAMUR drive block (7/7a) engages the pinion of the actuator (9). Secure the assembly using the bolts (10) and lockwashers (11) provided with the mounting kit. Fine tune the indicator cover (4) by loosening set screw (3). Retighten set screw when completed.

Operate the actuator to ensure proper alignment between monitor and actuator. Eccentricity of the shaft must not exceed 0.25mm. If it should be necessary, re-align monitor by loosening mount bolts (10). Retighten bolts when satisfied with alignment.

Installation - Wiring & Switch Setting

Once the monitor is fitted to the actuator, remove cover (12). NOTE: On flameproof enclosures, the cover lock screw (13) must be loosened prior to cover removal.

Bring field wiring into the enclosure via the conduit entries (14) fitted with a suitable cable gland. Use blanking plugs to block off any un-used cable entries. NOTE: Suitable IP6x rated cable glands, blanking plugs and thread adaptors must be used to maintain monitor IP rating.
On flameproof enclosures, only ATEX/IECEx certified Exd cable gland, blanking plugs and thread adaptors can be used.
Blanking plugs must not be used with a gland adaptor.

Connect field wiring to the terminals (15) within the enclosure according to the wiring diagram and terminal labelling. Connect earth conductor (which forms part of the supply cable and MUST be at least equal to the size of the phase conductors) to the internal earth point (18). Connect the external earth/equipotential bonding conductor to the monitor using the external earth clamp assembly (19). Conductor should be 4mm2 (min)

For monitors fitted with standard cam/spline activated switches/sensors, drive the actuator to the first required indication position and set the bottom switch by lifting and rotating the bottom cam (16). Secure the cam by allowing it to fully re-engage with the spline (17).Repeat the process for each switch in-turn by lifting/pushing down the appropriate cam, rotating and re-engaging as desired position is reached.

For monitors with barrel or slotted sensors, or with a transmitter, consult page 2 of these instructions for 'Further Setting Instructions'.

Once completed, verify that indication is required by fully stroking the actuator. Then refit cover (12). NOTE: On flameproof enclosures, the cover lock screw (13) must be retightened.

SPECIAL CONDITIONS FOR FLAMEPROOF ENCLOSURES - ATEX / IECEx

Installation should be carried out by suitably trained personnel to an applicable Code of Practice (eg IEC/EN60079-14).

Only suitably certified and temperature rated cable glands and blanking plugs are permitted for use with ATEX/IECEx flameproof enclosures.

WARNING - The cable entry temperature rise is deg C above ambient - ensure use of suitably temperature rated cable & gland.

⚠ WARNING - Electrostatic Hazard: Clean Only with a Damp Cloth.

WARNING - Do not install on an external source of heating or cooling e.g. by hot/cold air blowing temperature units

WARNING - Locate monitor to prevent propagating brush discharges

WARNING - Monitor should not be opened when energised or an explosive atmosphere may be present.
The cover screw (13) must be loosened before opening and re-tightened before the monitor re-enters service.

The maximum constructional gap (i_C) is less than that required by Table 2 of IEC 60079-1:2007 clause 5.2.2 as detailed below:

Flamepath - Push Rod and Main Body
Max Gap (mm) - 0.1
Comment - Cylindrical Spigot Joint

Maintenance

The Type IQ requires no servicing during normal working life, if installed correctly. However, it is advisable to check mounting screws/bolts, o-rings and terminal wiring for signs of loosening or corrosion as part of the routine plant maintenance to ensure continued operation. Ensure safety warnings are observed during maintenance. Inspection & maintenance to ATEX/IECEx flameproof enclosures to be carried out by suitably trained personnel with applicable code of practice (eg IEC/EN60079-17). Repairs to Type IQ ATEX/IECEx flameproof enclosures are not permitted. Please consult factory.

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A	PT	14.2.17		17-2618
B	PT	27.1.18		18-2691

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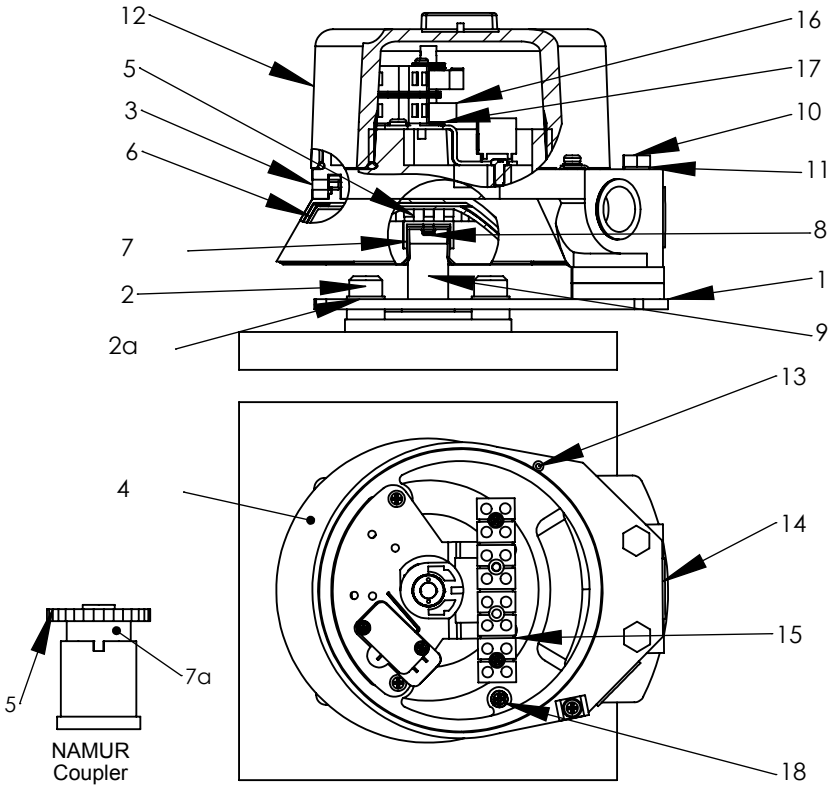
Website: www.imtex-controls.com

Reference Diagram



Additional Instructions for Safe Use

The certification for this monitor relies upon the following materials used in its construction:

- Stainless Steel
- EDPM 70 or Viton V700-75 Seals (depending on operating temperatures)

If the equipment is likely to come into contact with aggressive substances, then it is the responsibility of the user to take suitable precautions that prevent it from being adversely affected, thus ensuring that the type of protection provided by the equipment is not compromised. Aggressive substances might be: acidic liquids or gases that attack Stainless Steel, or direct and prolonged contact with some Hydrocarbons that could affect the seals. Regular checks/inspections should be carried out if aggressive substances are present.

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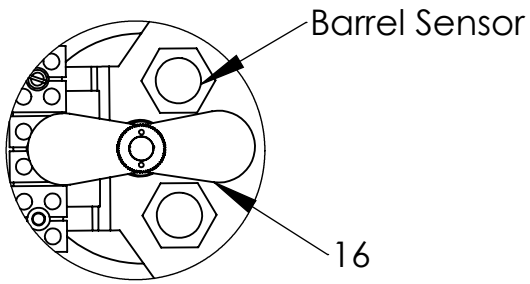
Further Setting Instructions

Barrel/Slot Sensor Setting

Drive the actuator to the first required indication position and set the first switch by pushing round the lower metal shim on the shaft (16) to cover the sensor.

Repeat the process for each sensor in-turn by driving the actuator to the indication position and adjusting the appropriate shim to cover the corresponding sensor.



Transmitter Setting

NOTE: The Type IQ Transmitter is factory set to provide position information over a 90 Degree span.

To reset the zero and span:

Drive the actuator to the position intended to indicate the 'low' signal. Set the zero point for the transmitter either locally (when available) or using suitable configuration software. Drive the actuator to the position intended to indicate the 'high' signal. Set the span point either locally (where applicable) or using suitable configuration software.

To set the switches/sensors supplied in the enclosure with the transmitter, if supplied, refer to page one of these instructions.

Referenced Standards

The following standards have been referred to in these instructions and are applicable to the use of this product when used in an environment where an explosive atmosphere may be present:

IEC 60079-0:2017 7th Ed
IEC60079-1:2014 7th Ed
IEC 60079-31:2013 2nd Ed
EN60079-0:2012
EN60079-1:2014
EN60079-31:2014

Cable Entries

The number and type of cable entry on the Monitor can be determined by reference to the 6th digit of the monitor part number. For example, in part number -

IQ16S5SR

the sixth digit is a '5' which corresponds to the monitor having 2 off M20 x 1.5 cable entry. Refer to table below for details.

CABLE ENTRY GUIDE	
DIGIT	ENTRIES SUPPLIED
5	(2) M20 x 1.5
6	(3) M20 x 1.5
8	(1) 3/4" NPT (central entry) (1) 1/2" NPT (offset entry)
9	(1) 3/4" NPT (central entry) (2) 1/2" NPT (offset entry)
B	(2) 1/2" NPT
C	(3) 1/2" NPT

NPT Threads conform to ANSI/ASME B1.20.1 and shall be made up wrench tight

Metric Thread tolerance to ISO 965-1 and ISO 965-3

Certification

Classification:

Exd IIC T6 Tamb = -40°C to +40°C Gb and
Ex tb IIIC T85°C Db - IP6X

or

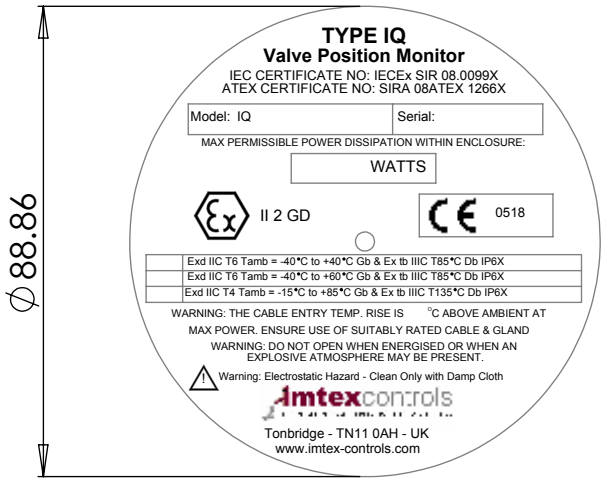
Exd IIC T6 Tamb = -40°C to +60°C Gb and
Ex tb IIIC T85°C Db - IP6X

or

Exd IIC T4 Tamb = -15°C to +80°C Gb and
Ex tb IIIC T135°C Db - IP6X

Product Markings

The label on the monitor should be as below:



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ELECTRICAL CHARACTERIISTICS ('X' Indicates the applicable Rating(s))

☐ IQ16 & 55 - Mechanical w/ Silver Contacts

Electrical Ratings: 10.0A @ 125/250VAC
0.5A @ 125 VDC
Temp Range: -40 to +60 °C
Operating Life: 400,000 Cycles

Not recommended for circuits operating less than 20mA @24VDC

☐ IQ17 & 56 - Mechanical w/ Gold Contacts

Electrical Ratings: 1.0A @ 125VAC
0.5A @ 30 VDC
Temp Range: -40 to +60 °C
Operating Life: 100,000 Cycles

Recommended for use in 24VDC computer input circuits

☐ IQ40 & 59 (A140077-SU) - SPST(Hermetically Sealed Reed - w/ Choke)

Electrical Ratings: 0.15A @ 125VAC / 30VDC
Inductance: 680 µH
Resistance: 10 Ohms
Temp. Range: -40 to +60°C (T6) or +85 °C (T4)
Operating Life: 5,000,000 Cycles

☐ IQ25 & 58 (A140088) - High Power SPDT(Hermetically Sealed Reed - Tungsten)

Electrical Ratings: Max Current: 3 Amps
Max Power: 100 Watts/VA
Min Power: 2 Watts
Temp. Range: -40 to +60°C (T6) or +85 °C (T4)
Operating Life: 5,000,000 Cycles
Not recommended for use in 24VDC operating at <20mA

☐ IQ25 & 58 (A140077-SU) - SPDT(Hermetically Sealed Reed)- w/ Choke

Electrical Ratings: 0.15A @ 125VAC / 30VDC
Inductance: 680 µH
Resistance: 10 Ohms
Temp. Range: -40 to +60°C (T6) or +85 °C (T4)
Operating Life: 5,000,000 Cycles

☐ IQ25 & 58 (A140077) - SPDT (Rhodium) Reed Switch

Electrical Ratings: 0.5A (Switching Current)
1.0A (Steady State Current)
120V Max (Voltage)
10W/VA Max (Power)
Temp. Range: -50 to +60°C (T6) or +85 °C (T4)
Operating Life: 5,000,000 Cycles

☐ IQ42 & 52 - NAMUR Proximity Sensor

Current Ratings: Target Present - Current < 1.0mA
Target Absent - Current > 3.0mA
Voltage Range: 5 to 25VDC (nominal 8VDC)
Temp. Range: -25 to +60°C (T6) or +72 °C (T4)
Operating Life: Unlimited Cycles

Use with intrinsically safe repeater barrier. Namur sensors fully conform to EN60947-5-6 (VDE0660 Part 212) standard.

☐ IQ43 & 53 - NAMUR Proximity Sensor

Current Ratings: Target Present - Current < 1.0mA
Target Absent - Current > 3.0mA
Voltage Range: 5 to 25VDC (nominal 8VDC)
Temp. Range: -50 to +60°C (T6) or +85 °C (T4)
Operating Life: Unlimited Cycles

Use with intrinsically safe repeater barrier. Namur sensors fully conform to EN60947-5-6 (VDE0660 Part 212) standard.

☐ IQ70 - Analogue Transmitter - PCB Style

Supply Voltage: 10 to 40VDC
Max Loading: 700 Ohms @ 24VDC
Linearity Error: ±0.85° (max) - Standard
±0.35° (max) - High Performance
Op Temp Range: -40 to +82 Deg C

☐ IQ70 - Analogue Transmitter - Non-Contact Style

Supply Voltage: 12 to 24VDC
Load Impedance: R< (U - 9) / 0.02
Linearity: < 1% of FS
Repeatability: < 0.36°
Op Temp Range: -40 to +85 Deg C

☐ IQ70 - Analogue/Digital Transmitter - Programmable

Supply Voltage: 8 to 30VDC
Internal Consumption: 25mW to 0.8W
Voltage Drop: 8VDC
Warm Up Time: 5 min
Comms Link: Loop
Signal / Noise Ratio: min 60 dB
Min Response Time: 0.33 s
Calibration Temp: +20 to +28 Deg C
Op Temp Range: -40 to +60 Deg C

☐ Other Details (see Individual Specification Sheet)

SPECIAL NOTE:

Installation of Reed Switches (without Choke): Where reed switches (particularly low power, Rhodium contact versions) are installed at the end of long cable runs, it is the responsibility of the installer to ensure suitable precautions are taken to ensure cable capacitance does not induce premature switch failure. Consult Imtex for further information

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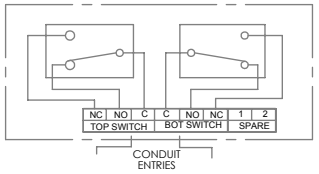
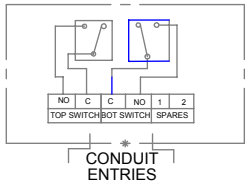
WIRING DIAGRAMS ('X' Indicates the applicable Diagram)

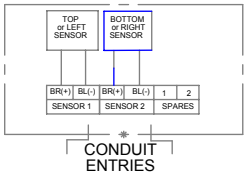
MONITOR - 2 x SPDT Switch - IQ16, 17 & 25



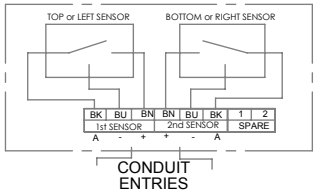
MONITOR - 2 x SPST Switch - IQ40



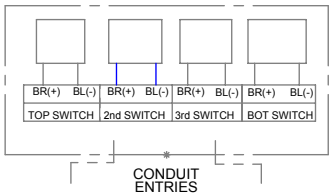
MONITOR - 2 x 2-Wire Sensor - IQ42, 43



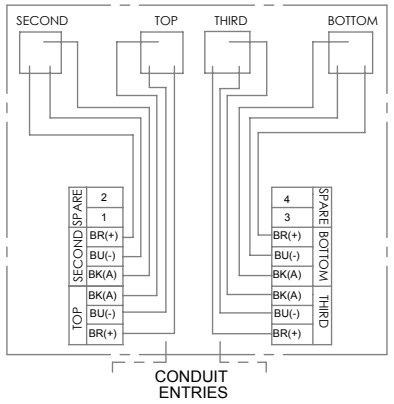
MONITOR - 2 x 3-Wire Sensor - IQ42, 43



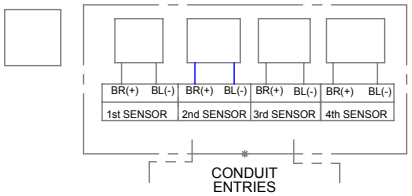
MONITOR - 4 x 2-Wire SENSOR - IQ52



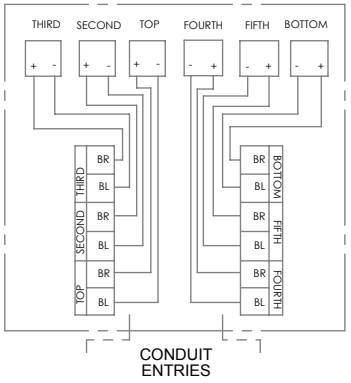
MONITOR - 4 x 3-Wire Sensor - IQ52



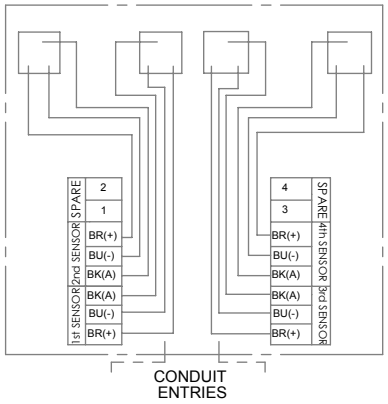
MONITOR - 4 x 2-Wire SENSOR - IQ53



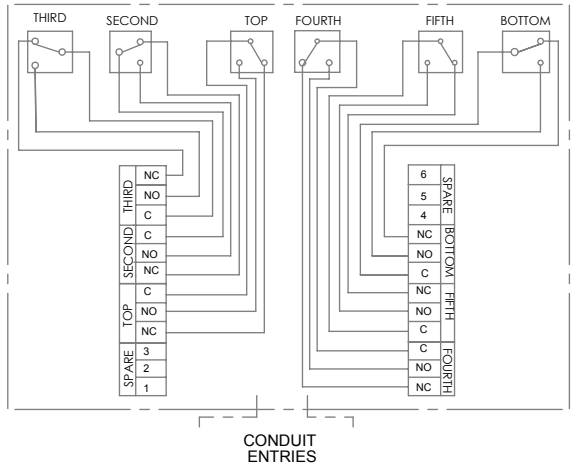
MONITOR - 6 x 2-Wire SENSOR - IQ52



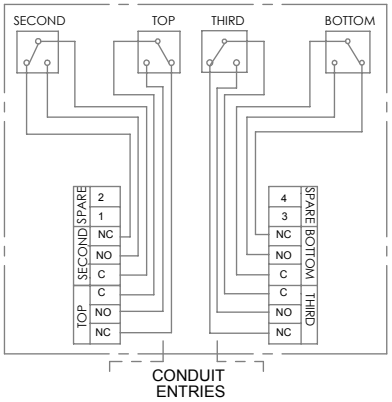
MONITOR - 4 x 3-Wire Sensor - IQ53



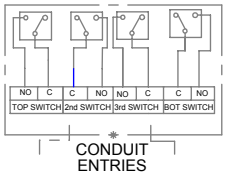
MONITOR - 6 x SPDT Switch - IQ55, 56 & 58



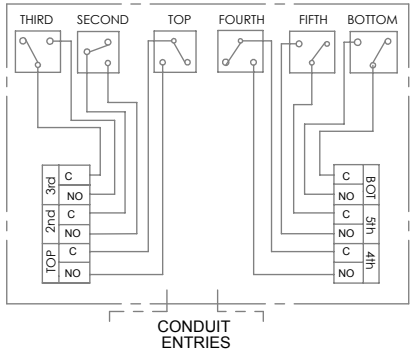
MONITOR - 4 x SPDT Switch - IQ55, 56, 58



MONITOR - 4 x SPST Switch - IQ59



MONITOR - 6 x SPST Switch - IQ59



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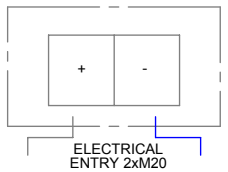
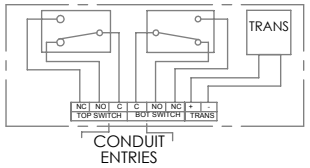
WIRING DIAGRAMS ('X' indicates the applicable diagram)

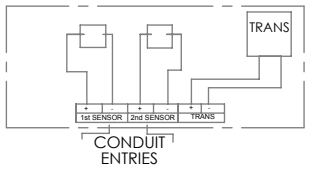
MONITOR - TRANSMITTER - IQ70



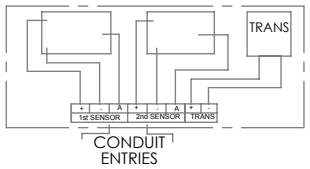
MONITOR - 2 x SPDT & Transmitter - IQ70



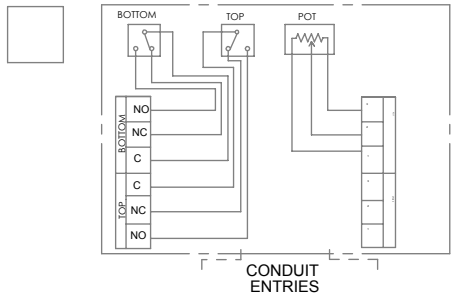
MONITOR - 2 x Prox (2-wire) & Transmitter - IQ70



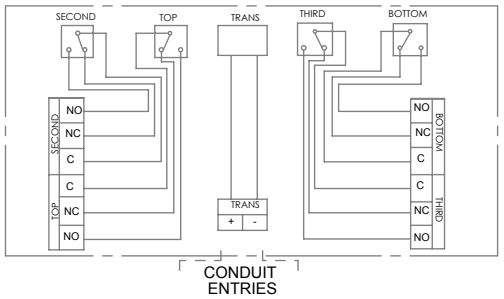
MONITOR - 2 x Prox (3-wire) & Transmitter - IQ70



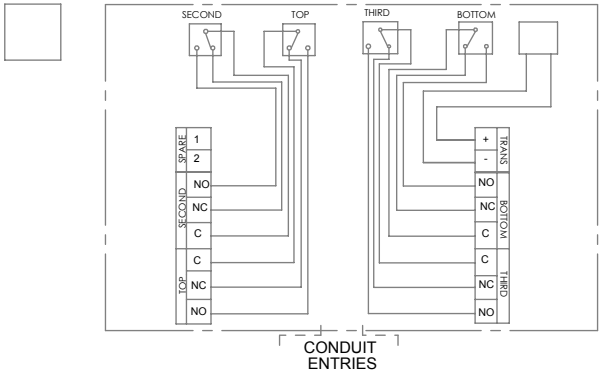
MONITOR - 2 x SPDT & 10k Pot - IQ70



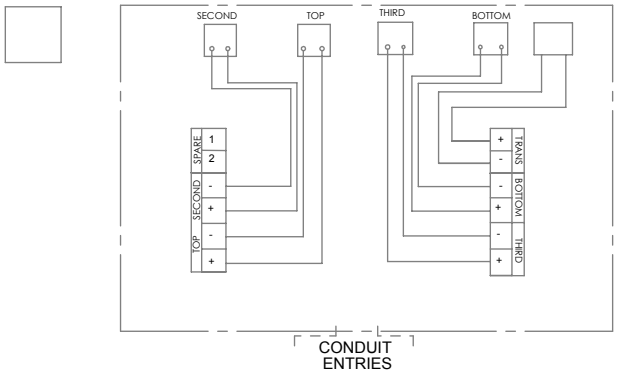
MONITOR - 4 x SPDT & Transmitter - Non-Contact - IQ70



MONITOR - 4 x SPDT & Transmitter - Programmable - IQ70

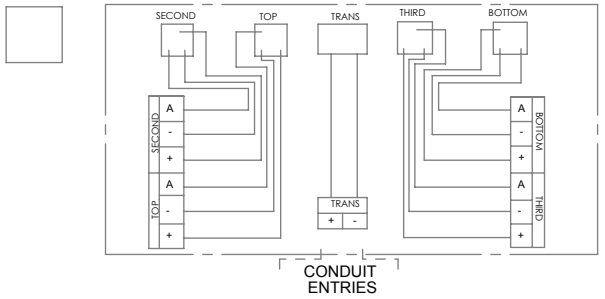


MONITOR - 4 x V3 Prox (2-Wire) & Transmitter - IQ70

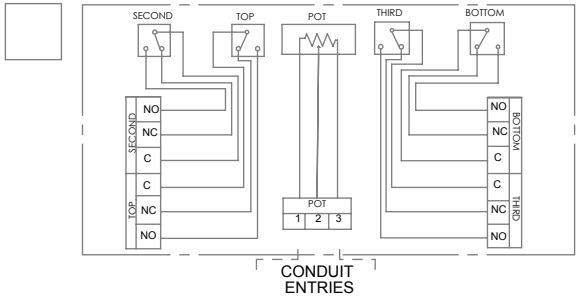


SPECIAL NOTES:

MONITOR - 4 x V3 Prox (3-wire) & Transmitter - IQ70



MONITOR - 4 x SPDT & Pot - IQ70



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