

HTM electronics

PROFESSIONAL SERIES INDUCTIVE PROXIMITY SENSORS

LONG RANGE

Reliable

HARSH CONDITIONS

3 X Range

Long-lasting

WELD FIELD IMMUNE

METALHEAD DURABLE

RUGGED

HTM
PCS1-010P-AR

HTM
WCM1-3010U-AZ

HTM
LCM1-022P-AR

WWW.HTM-SENSORS.COM

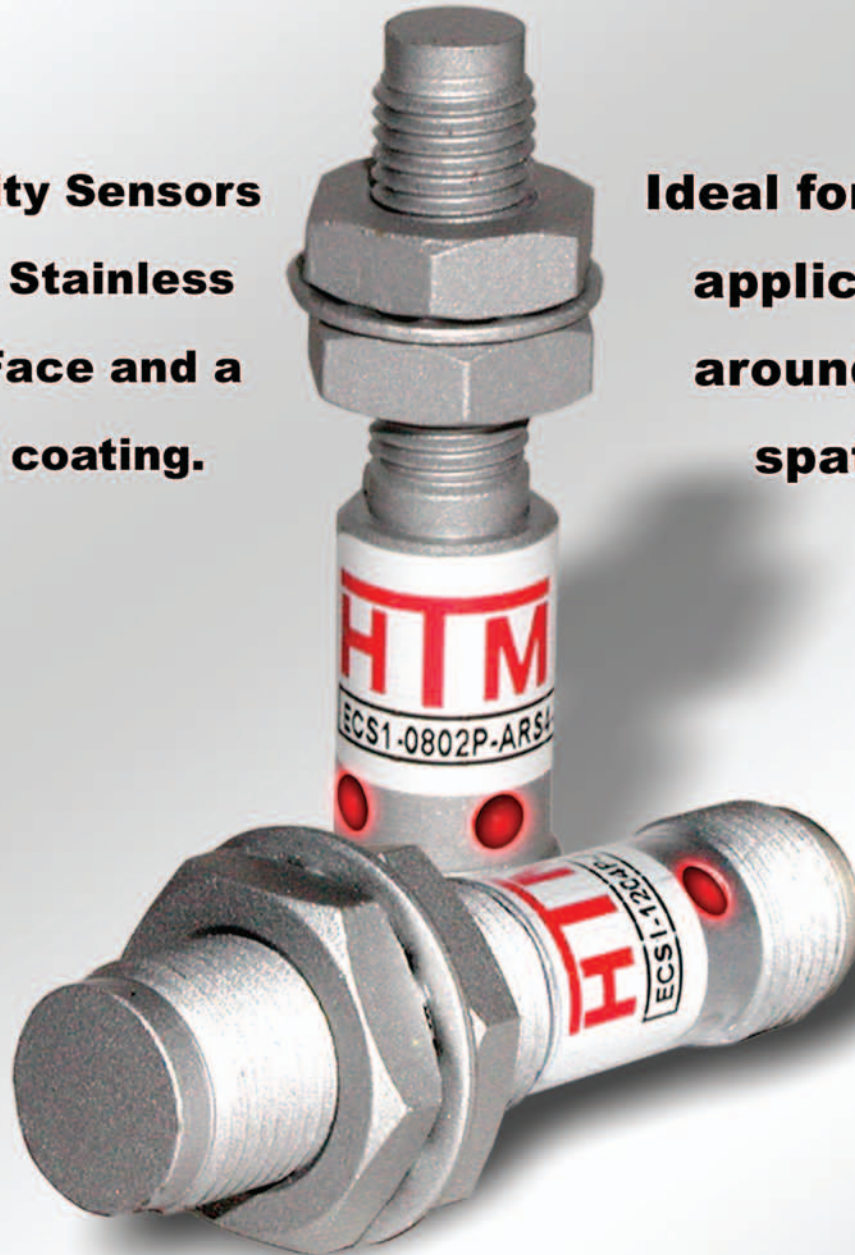
HTM electronics

MetalHead

with SpatterGuard

**Proximity Sensors
with a Stainless
Steel Face and a
PTFE coating.**

**Ideal for rugged
applications
around weld
spatter.**



www.htm-sensors.com

SPATTERGUARD PROXIMITY SENSORS

Weld Slag Build-up



Our MetalHead Proximity Sensors stand up to the harshest industrial environments

Weld Slag Resistant



Our MetalHead Proximity Sensors with SpatterGuard are just as tough, but resist slag build-up near welding applications.

SELECTION & ORDERING INFORMATION

| Barrel | M8 | M12 | M18 | M30 |
|---------------------------|-----------------------------|----------------------|----------------------|----------------------|
| | | | | |
| Long Sensing Distance | | 6 mm | 10 mm | |
| Part Numbers | | | | |
| DC 3 wire 10-30V PNP N.O. | | LCS1-1206P-ARU4-PTFE | LCS1-1810P-ARU4-PTFE | |
| DC 3 wire 10-30V NPN N.O. | | LCS1-1206N-ARU4-PTFE | LCS1-1810N-ARU4-PTFE | |
| Sensing Distance | 2 mm | 4 mm | 8 mm | 15 mm |
| Part Numbers | | | | |
| DC 3 wire 10-30V PNP N.O. | ECS1-0802P-ACS3-PTFE | ECS1-1204P-ARU4-PTFE | ECS1-1808P-ARU4-PTFE | ECS1-3015P-ARU4-PTFE |
| DC 3 wire 10-30V NPN N.O. | ECS1-0802N-ACS3-PTFE | ECS1-1204N-ARU4-PTFE | ECS1-1808N-ARU4-PTFE | ECS1-3015N-ARU4-PTFE |
| Housing Material | PTFE Coated Stainless Steel | | | |
| Diagrams (units in mm) | | | | |

MODEL SELECTION GUIDE

| | | | | | | | | | | | |
|-----------|---|---|---|---|----|----|---|---|---|----|----|
| FEATURE # | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| Model # | L | C | M | 1 | 12 | 06 | P | A | R | U | 4 |

1. TYPE:

F: Inductive L: Long Range W: Weld Field Immune E: Extended Range

2. HOUSING:

C: Cylindrical Q: Square

3. HOUSING MATERIAL:

M: Chrome-Plated Brass S: Stainless Steel Tube & Face U: Stainless Steel Tube

4. MOUNTING:

1: Shielded 2: Non-shielded

5. HOUSING STYLE:

Threaded Body Diameter (eg. 18 = 18mm diameter tube)

6. SENSING DISTANCE:

Range in millimeters (eg. 02 = 2mm range)

7. OUTPUT FUNCTION:

N: NPN P: PNP A: AC C: DC 2-wire U: AC/DC

8. OUTPUT:

A: Normally Open B: Normally Closed S: NO/NC Selectable

9. CONNECTION:

2: 2 wire 3: 3 wire 4: 4 wire 5: 5 wire C: Connector (M8 Pico Series)
R: Connector (M12 Micro Series) U: Connector (1/2-20 Micro AC Series)
Z: Mini Series

10. PROTECTION:

S: Short body with short circuit protection U: With short circuit protection
L: Without short circuit protection

11. CABLE LENGTH OR NUMBER OF CONNECTOR PINS:

Cable Type: 2 = 2 meters, 5 = 5 meters, 10 = 10 meters
Connector Type: 2 = 2 pin, 3 = 3 pin, 4 = 4 pin, 5 = 5 pin

12. SENSOR PLACEMENT OR SPECIAL FUNCTION:

FE: Ferrous only sensing Y: Sensor body & output wire is 90°
NFE: Non-ferrous sensing PTFE: PTFE coated to resist weld slag build-up

OUR SENSORS DON'T JUST WORK, THEY WORK HARDER



LONG RANGE INDUCTIVE PROXIMITY SENSORS

HTM LONG RANGE inductive proximity sensors can achieve sensing ranges up to three times greater than ordinary inductive proximity sensors with a maximum range of 40mm.

Our most popular 12mm sensor has a 6mm shielded range! This allows you to mount the sensor further away from the target to be sensed, thus reducing the likelihood of damage due to impact and abrasion.

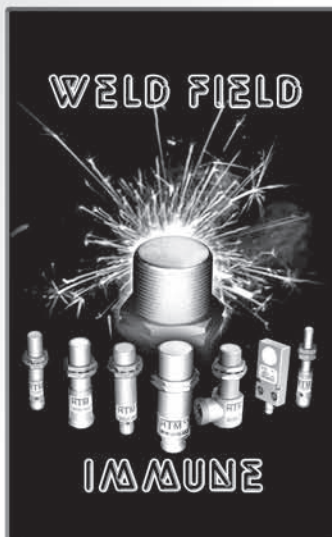
The **HTM** LONG RANGE sensors are available in sizes from 6mm to 30mm, and are available either pre-wired or quick disconnect..



METALHEAD™ INDUCTIVE PROXIMITY SENSORS

The **HTM** MetalHead series are manufactured from a solid piece of stainless steel. This ultra-rugged series provides extreme protection against abuse due to contact, abrasion, chips, wash-down, corrosion, and shock. Double range versions further extend the life of these reliable, long-lasting sensors.

HTM MetalHead sensors are available in PNP, NPN, DC 2-wire, AC, and AC/DC configurations. M8, M12, M18 and M30 sizes are available with quick-disconnect, pre-wired cable, or custom length pigtail connections.



WELD FIELD IMMUNE PROXIMITY SENSORS

HTM Weld Field Immune Sensors are designed for use in welding facilities or where strong DC and AC magnetic fields are present.

The sensors have a PTFE coating to prevent slag build-up and an ETFE face to prevent flash burn-in. The sensors are highly reliable in high current applications due to a special circuit and core configuration.





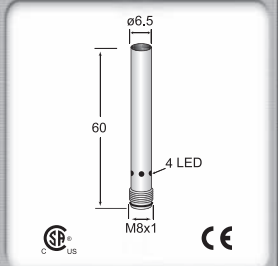
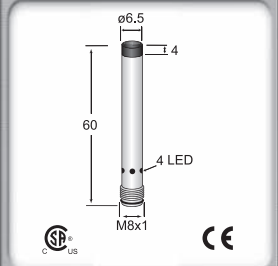
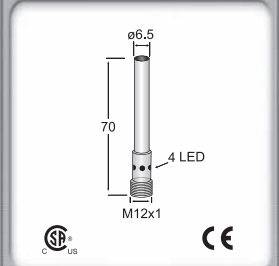
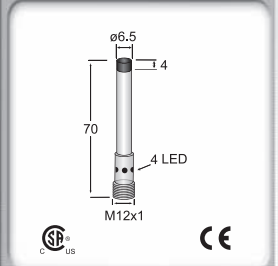
The **HTM** Weld Field Immune series are available in standard 8mm, 12mm, 18mm and 30mm diameters, as well as several square type sizes for every application. PNP, NPN, and AC/DC models are available in either pre-wired or quick disconnect.

Long Range - ø6.5





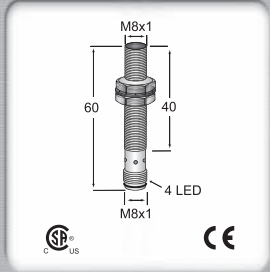
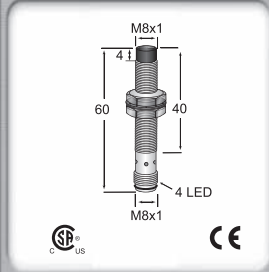
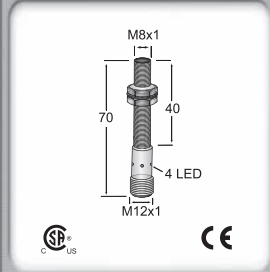
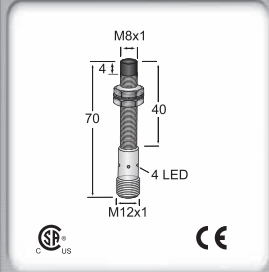
LONG RANGE

METALHEAD™

WELD FIELD IMMUNE

| | ø6.5 | | ø6.5 | |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 3 mm | 6 mm | 3 mm | 6 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2 V | | <2 V | |
| Switching Frequency | 1 KHz | | 1 KHz | |
| Response Time | 0.1ms/0.1ms | | 0.1ms/0.1ms | |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | POM | | POM | |
| Housing Material | Stainless Steel | | Stainless Steel | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCU1-D0603N-ACU3 | LCU2-D0606N-ACU3 | LCU1-D0603N-ARU4 | LCU2-D0606N-ARU4 |
| DC 3 wire 10-30V NPN N.C. | LCU1-D0603N-BCU3 | LCU2-D0606N-BCU3 | LCU1-D0603N-BRU4 | LCU2-D0606N-BRU4 |
| DC 3 wire 10-30V PNP N.O. | LCU1-D0603P-ACU3 | LCU2-D0606P-ACU3 | LCU1-D0603P-ARU4 | LCU2-D0606P-ARU4 |
| DC 3 wire 10-30V PNP N.C. | LCU1-D0603P-BCU3 | LCU2-D0606P-BCU3 | LCU1-D0603P-BRU4 | LCU2-D0606P-BRU4 |
| Diagrams (units in mm) | | | | |
| |  |  |  |  |

Long Range - M8

| | M8 | | M8 | |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 3 mm | 6 mm | 3 mm | 6 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2V | | <2V | |
| Switching Frequency | 1 KHz | 1 KHz | 1 KHz | 1 KHz |
| Response Time | 0.1ms/0.1ms | 0.1ms/0.1ms | 0.1ms/0.1ms | 0.1ms/0.1ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | POM | | POM | |
| Housing Material | Stainless Steel | | Chrome-plated Brass | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCU1-0803N-ACU3 | LCU2-0806N-ACU3 | LCM1-0803N-ARU4 | LCM2-0806N-ARU4 |
| DC 3 wire 10-30V NPN N.C. | LCU1-0803N-BCU3 | LCU2-0806N-BCU3 | LCM1-0803N-BRU4 | LCM2-0806N-BRU4 |
| DC 3 wire 10-30V PNP N.O. | LCU1-0803P-ACU3 | LCU2-0806P-ACU3 | LCM1-0803P-ARU4 | LCM2-0806P-ARU4 |
| DC 3 wire 10-30V PNP N.C. | LCU1-0803P-BCU3 | LCU2-0806P-BCU3 | LCM1-0803P-BRU4 | LCM2-0806P-BRU4 |
| Diagrams (units in mm) |  |  |  |  |

LONG RANGE

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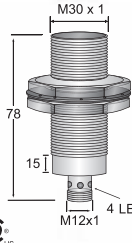
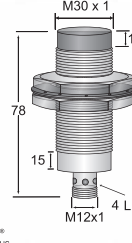
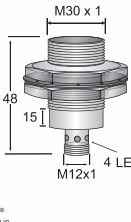
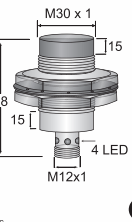
WELD FIELD IMMUNE

Long Range - M30

LONG RANGE

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WELD FIELD IMMUNE





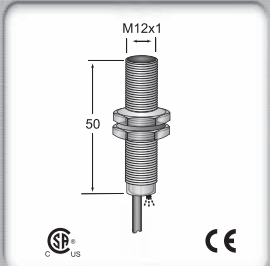
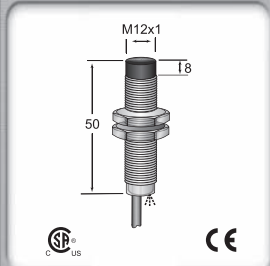
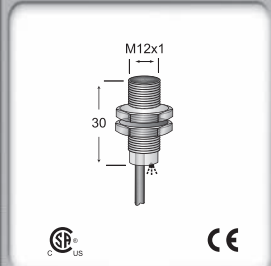
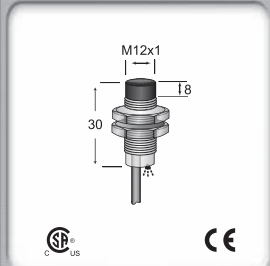
| | M30 | M30 | M30 | M30 |
|--------------------------------|---|---|---|---|
| |  |  |  |  |
| Sensing Distance | 22 mm | 40 mm | 22 mm | 40 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.05mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2V | | <2V | |
| Switching Frequency | 300 Hz | 100 Hz | 300 Hz | 100 Hz |
| Response Time | 0.5ms/0.5ms | 1ms/1ms | 0.5ms/0.5ms | 1ms/1ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | PBT | | PBT | |
| Housing Material | Chrome-plated Brass | | Chrome-plated Brass | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCM1-3022N-ARU4 | LCM2-3040N-ARU4 | LCM1-3022N-ARS4 | LCM2-3040N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | LCM1-3022N-BRU4 | LCM2-3040N-BRU4 | LCM1-3022N-BRS4 | LCM2-3040N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | LCM1-3022P-ARU4 | LCM2-3040P-ARU4 | LCM1-3022P-ARS4 | LCM2-3040P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | LCM1-3022P-BRU4 | LCM2-3040P-BRU4 | LCM1-3022P-BRS4 | LCM2-3040P-BRS4 |
| Diagrams (units in mm) | Standard Body | | Short Body | |
| |  |  |  |  |

Long Range - M12





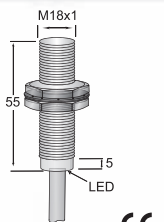
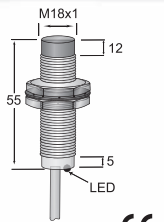
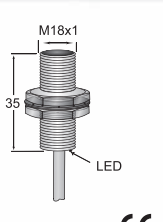
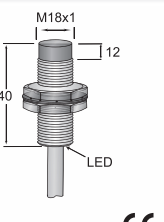
LONG RANGE

METALHEAD™

WELD FIELD IMMUNE

| | M12 | | M12 | |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 6 mm | 10 mm | 6 mm | 10 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2.0V | | <2.0V | |
| Switching Frequency | 1 KHz | 500 Hz | 1 KHz | 1 Hz |
| Response Time | 0.1ms/0.1ms | 0.2ms/0.2ms | 0.1ms/0.1ms | 0.1ms/0.1ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | POM | PBT | POM | PBT |
| Housing Material | Chrome-plated Brass | | Chrome-plated Brass | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCM1-1206N-A3U2 | LCM2-1210N-A3U2 | LCM1-1206N-A3S2 | LCM2-1210N-A3S2 |
| DC 3 wire 10-30V NPN N.C. | LCM1-1206N-B3U2 | LCM2-1210N-B3U2 | LCM1-1206N-B3S2 | LCM2-1210N-B3S2 |
| DC 3 wire 10-30V PNP N.O. | LCM1-1206P-A3U2 | LCM2-1210P-A3U2 | LCM1-1206P-A3S2 | LCM2-1210P-A3S2 |
| DC 3 wire 10-30V PNP N.C. | LCM1-1206P-B3U2 | LCM2-1210P-B3U2 | LCM1-1206P-B3S2 | LCM2-1210P-B3S2 |
| Diagrams (units in mm) | Short Body | | Short Body | |
| |  |  |  |  |

Long Range - M18

| | M18 | | M18 | |
|--------------------------------|---|---|---|---|
| |  |  |  |  |
| Sensing Distance | 12 mm | 20 mm | 12 mm | 20 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2.0V | | <2.0V | |
| Switching Frequency | 300 Hz | 100 Hz | 1 KHz | 1 KHz |
| Response Time | 0.5ms/0.5ms | 1.0ms/1.0ms | 0.1ms/0.1ms | 0.1ms/0.1ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | PBT | | PBT | |
| Housing Material | Chrome-plated Brass | | | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCM1-1812N-A3U2 | LCM2-1820N-A3U2 | LCM1-1812N-A3S2 | LCM2-1820N-A3S2 |
| DC 3 wire 10-30V NPN N.C. | LCM1-1812N-B3U2 | LCM2-1820N-B3U2 | LCM1-1812N-B3S2 | LCM2-1820N-B3S2 |
| DC 3 wire 10-30V PNP N.O. | LCM1-1812P-A3U2 | LCM2-1820P-A3U2 | LCM1-1812P-A3S2 | LCM2-1820P-A3S2 |
| DC 3 wire 10-30V PNP N.C. | LCM1-1812P-B3U2 | LCM2-1820P-B3U2 | LCM1-1812P-B3S2 | LCM2-1820P-B3S2 |
| Diagrams (units in mm) |  | |  | |
| |  | |  | |

LONG RANGE

METALHEAD™





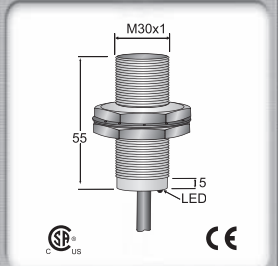
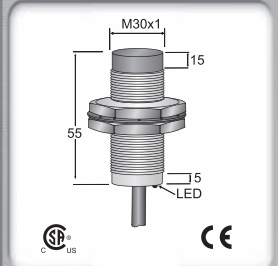
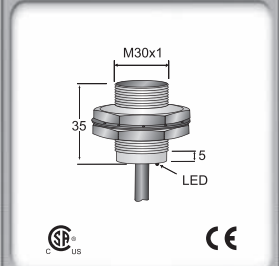
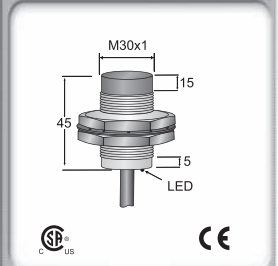
WELD FIELD IMMUNE

Long Range - M30







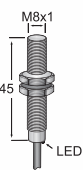
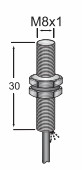
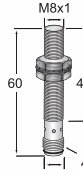
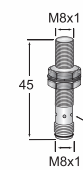
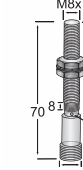
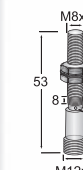
LONG RANGE

METALHEAD™

WELD FIELD IMMUNE

| | M30 | | M30 | |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 22 mm | 40 mm | 22 mm | 40 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <2.0V | | <2.0V | |
| Switching Frequency | 300 Hz | 100 Hz | 1 KHz | 1 KHz |
| Response Time | 0.2ms/0.2ms | 0.5ms/0.5ms | 0.1ms/0.1ms | 0.1ms/0.1ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | PBT | | PBT | |
| Housing Material | Chrome-plated Brass | | Chrome-plated Brass | |
| Part Numbers | Shielded | Unshielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | LCM1-3022N-A3U2 | LCM2-3040N-A3U2 | LCM1-3022N-A3S2 | LCM2-3040N-A3S2 |
| DC 3 wire 10-30V NPN N.C. | LCM1-3022N-B3U2 | LCM2-3040N-B3U2 | LCM1-3022N-B3S2 | LCM2-3040N-B3S2 |
| DC 3 wire 10-30V PNP N.O. | LCM1-3022P-A3U2 | LCM2-3040P-A3U2 | LCM1-3022P-A3S2 | LCM2-3040P-A3S2 |
| DC 3 wire 10-30V PNP N.C. | LCM1-3022P-B3U2 | LCM2-3040P-B3U2 | LCM1-3022P-B3S2 | LCM2-3040P-B3S2 |
| Diagrams (units in mm) | | | Short Body | Short Body |
| |  |  |  |  |

Metal Head™ - M8

| | M8 | | M8 | | M8 | |
|----------------------------------|---|---|---|--|---|---|
| |  |  |  |  |  |  |
| Standard Sensing Distance | 1mm | | 1mm | | 1mm | |
| Extended Sensing Distance | 2mm | | 2mm | | 2mm | |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | | - | |
| Min. Load Current | - | | - | | - | |
| Voltage Drop | <1.5V | | <1.5V | | <1.5V | |
| Switching Frequency | 2 KHz | | 2 KHz | | 2 KHz | |
| Response Time | 0.1ms | | 0.1ms | | 0.1ms | |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | Stainless Steel (0.5mm) | | Stainless Steel (0.5mm) | | Stainless Steel (0.5mm) | |
| Housing Material | Stainless Steel | | Stainless Steel | | Stainless Steel | |
| Part Numbers | Shielded | Shielded | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | FCS1-0801N-A3U2 | FCS1-0801N-A3S2 | FCS1-0801N-ACU3 | FCS1-0801N-ACS3 | FCS1-0801N-ARU4 | FCS1-0801N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | FCS1-0801N-B3U2 | FCS1-0801N-B3S2 | FCS1-0801N-BCU3 | FCS1-0801N-BCS3 | FCS1-0801N-BRU4 | FCS1-0801N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | FCS1-0801P-A3U2 | FCS1-0801P-A3S2 | FCS1-0801P-ACU3 | FCS1-0801P-ACS3 | FCS1-0801P-ARU4 | FCS1-0801P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | FCS1-0801P-B3U2 | FCS1-0801P-B3S2 | FCS1-0801P-BCU3 | FCS1-0801P-BCS3 | FCS1-0801P-BRU4 | FCS1-0801P-BRS4 |
| DC 2 wire 10-60V N.O. | FCS1-0801C-A3U2 | FCS1-0801C-A3S2 | FCS1-0801C-ACU3 | FCS1-0801C-ACS3 | FCS1-0801C-ARU4 | FCS1-0801C-ARS4 |
| DC 2 wire 10-60V N.C. | FCS1-0801C-B3U2 | FCS1-0801C-B3S2 | FCS1-0801C-BCU3 | FCS1-0801C-BCS3 | FCS1-0801C-BRU4 | FCS1-0801C-BRS4 |
| Extended Range | | | | | | |
| DC 3 wire 10-30V NPN N.O. | ECS1-0802N-A3U2 | ECS1-0802N-A3S2 | ECS1-0802N-ACU3 | ECS1-0802N-ACS3 | ECS1-0802N-ARU4 | ECS1-0802N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | ECS1-0802N-B3U2 | ECS1-0802N-B3S2 | ECS1-0802N-BCU3 | ECS1-0802N-BCS3 | ECS1-0802N-BRU4 | ECS1-0802N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | ECS1-0802P-A3U2 | ECS1-0802P-A3S2 | ECS1-0802P-ACU3 | ECS1-0802P-ACS3 | ECS1-0802P-ARU4 | ECS1-0802P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | ECS1-0802P-B3U2 | ECS1-0802P-B3S2 | ECS1-0802P-BCU3 | ECS1-0802P-BCS3 | ECS1-0802P-BRU4 | ECS1-0802P-BRS4 |
| DC 2 wire 10-60V N.O. | ECS1-0802C-A3U2 | ECS1-0802C-A3S2 | ECS1-0802C-ACU3 | ECS1-0802C-ACS3 | ECS1-0802C-ARU4 | ECS1-0802C-ARS4 |
| DC 2 wire 10-60V N.C. | ECS1-0802C-B3U2 | ECS1-0802C-B3S2 | ECS1-0802C-BCU3 | ECS1-0802C-BCS3 | ECS1-0802C-BRU4 | ECS1-0802C-BRS4 |
| Diagrams (units in mm) | Short Body | | Short Body | | Short Body | |
| |  |  |  |  |  |  |

LONG RANGE

METALHEAD™





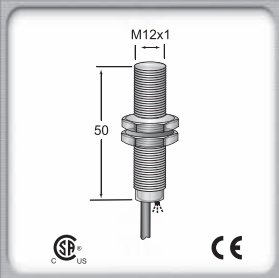
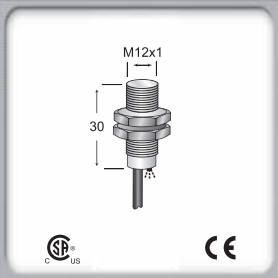
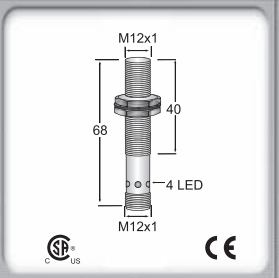
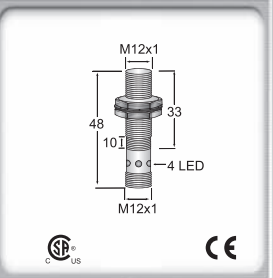
WELD FIELD IMMUNE

Metal Head™ - M12

LONG RANGE

METALHEAD™

WELD FIELD IMMUNE

| | M12 | M12 | M12 | M12 |
|----------------------------------|---|---|--|---|
| |  |  |  |  |
| Standard Sensing Distance | 2mm | 2mm | 2mm | 2mm |
| Extended Sensing Distance | 4mm | 4mm | 4mm | 4mm |
| Operating Voltage | 10-30 VDC | 10-30 VDC | 10-30 VDC | 10-30 VDC |
| Ripple | <10% | <10% | <10% | <10% |
| No Load Current | <10mA | <10mA | <10mA | <10mA |
| Max. Load Current | 200mA | 200mA | 200mA | 200mA |
| Leakage Current | <0.01mA | <0.01mA | <0.01mA | <0.01mA |
| Surge Current | - | - | - | - |
| Min. Load Current | - | - | - | - |
| Voltage Drop | <1.5V | <1.5V | <1.5V | <1.5V |
| Switching Frequency | 2 KHz | 2 KHz | 2 KHz | 2 KHz |
| Response Time | 0.1ms | 0.1ms | 0.1ms | 0.1ms |
| Switching Hysteresis | <15% (Sr) | <15% (Sr) | <15% (Sr) | <15% (Sr) |
| Repeat Accuracy | <1.0% (Sr) | <1.0% (Sr) | <1.0% (Sr) | <1.0% (Sr) |
| Protection Category | IP67 | IP67 | IP67 | IP67 |
| Operating Temperature | -25°C - +70°C | -25°C - +70°C | -25°C - +70°C | -25°C - +70°C |
| Temperature Drift | <10% (Sr) | <10% (Sr) | <10% (Sr) | <10% (Sr) |
| Short Circuit Protection | Yes | Yes | Yes | Yes |
| Overload Trip Point | 220mA | 220mA | 220mA | 220mA |
| Time Delay Before Availability | <10ms | <10ms | <10ms | <10ms |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | Stainless Steel (0.5mm) | Stainless Steel (0.5mm) | Stainless Steel (0.5mm) | Stainless Steel (0.5mm) |
| Housing Material | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| Part Numbers | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | FCS1-1202N-A3U2 | FCS1-1202N-A3S2 | FCS1-1202N-ARU4 | FCS1-1202N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | FCS1-1202N-B3U2 | FCS1-1202N-B3S2 | FCS1-1202N-BRU4 | FCS1-1202N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | FCS1-1202P-A3U2 | FCS1-1202P-A3S2 | FCS1-1202P-ARU4 | FCS1-1202P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | FCS1-1202P-B3U2 | FCS1-1202P-B3S2 | FCS1-1202P-BRU4 | FCS1-1202P-BRS4 |
| DC 2 wire 10-60V N.O. | FCS1-1202C-A3U2 | FCS1-1202C-A3S2 | FCS1-1202C-ARU4 | FCS1-1202C-ARS4 |
| DC 2 wire 10-60V N.C. | FCS1-1202C-B3U2 | FCS1-1202C-B3S2 | FCS1-1202C-BRU4 | FCS1-1202C-BRS4 |
| Extended Range | | | | |
| DC 3 wire 10-30V NPN N.O. | ECS1-1204N-A3U2 | ECS1-1204N-A3S2 | ECS1-1204N-ARU4 | ECS1-1204N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | ECS1-1204N-B3U2 | ECS1-1204N-B3S2 | ECS1-1204N-BRU4 | ECS1-1204N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | ECS1-1204P-A3U2 | ECS1-1204P-A3S2 | ECS1-1204P-ARU4 | ECS1-1204P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | ECS1-1204P-B3U2 | ECS1-1204P-B3S2 | ECS1-1204P-BRU4 | ECS1-1204P-BRS4 |
| DC 2 wire 10-60V N.O. | ECS1-1204C-A3U2 | ECS1-1204C-A3S2 | ECS1-1204C-ARU4 | ECS1-1204C-ARS4 |
| DC 2 wire 10-60V N.C. | ECS1-1204C-B3U2 | ECS1-1204C-B3S2 | ECS1-1204C-BRU4 | ECS1-1204C-BRS4 |
| Diagrams (units in mm) | Short Body | | Short Body | |
| |  |  |  |  |

Metal Head™ - M18

| | M18 | | M18 | | M18 |
|----------------------------------|-----------------------------------|-----------------|-----------------------------------|-----------------|-----------------------------------|
| | | | | | |
| Sensing Distance | 5mm | | 5mm | | 5mm |
| Extended Sensing Distance | 8mm | | 8mm | | 8mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | | 10-30 VDC |
| Ripple | <10% | | <10% | | <10% |
| No Load Current | <10mA | | <10mA | | <10mA |
| Max. Load Current | 200mA | | 200mA | | 200mA |
| Leakage Current | <0.01mA | | <0.01mA | | <0.01mA |
| Surge Current | - | | - | | - |
| Min. Load Current | - | | - | | - |
| Voltage Drop | <1.5V | | <1.5V | | <1.5V |
| Switching Frequency | 1 KHz / 500 Hz | | 1 KHz / 500 Hz | | 1 KHz / 500 Hz |
| Response Time | 0.2ms / 0.5ms | | 0.2ms / 0.5ms | | 0.2ms / 0.5ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | | <15% (Sr) |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | | <1.0% (Sr) |
| Protection Category | IP67 | | IP67 | | IP67 |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | | -25°C - +70°C |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | | <10% (Sr) |
| Short Circuit Protection | Yes | | Yes | | Yes |
| Overload Trip Point | 220mA | | 220mA | | 220mA |
| Time Delay Before Availability | <10ms | | <10ms | | <10ms |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | Stainless Steel (0.8mm) | | Stainless Steel (0.8mm) | | Stainless Steel (0.8mm) |
| Housing Material | Stainless Steel | | Stainless Steel | | Stainless Steel |
| Part Numbers | Shielded | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | FCS1-1805N-A3U2 | FCS1-1805N-A3S2 | FCS1-1805N-ARU4 | FCS1-1805N-ARS4 | FCS1-1805N-AZU4 |
| DC 3 wire 10-30V NPN N.C. | FCS1-1805N-B3U2 | FCS1-1805N-B3S2 | FCS1-1805N-BRU4 | FCS1-1805N-BRS4 | FCS1-1805N-BZU4 |
| DC 3 wire 10-30V PNP N.O. | FCS1-1805P-A3U2 | FCS1-1805P-A3S2 | FCS1-1805P-ARU4 | FCS1-1805P-ARS4 | FCS1-1805P-AZU4 |
| DC 3 wire 10-30V PNP N.C. | FCS1-1805P-B3U2 | FCS1-1805P-B3S2 | FCS1-1805P-BRU4 | FCS1-1805P-BRS4 | FCS1-1805P-BZU4 |
| DC 2 wire 10-60V N.O. | FCS1-1805C-A3U2 | FCS1-1805C-A3S2 | FCS1-1805C-ARU4 | FCS1-1805C-ARS4 | FCS1-1805C-AZU4 |
| DC 2 wire 10-60V N.C. | FCS1-1805C-B3U2 | FCS1-1805C-B3S2 | FCS1-1805C-BRU4 | FCS1-1805C-BRS4 | FCS1-1805C-BZU4 |
| Extended Range | | | | | |
| DC 3 wire 10-30V NPN N.O. | ECS1-1808N-A3U2 | ECS1-1808N-A3S2 | ECS1-1808N-ARU4 | ECS1-1808N-ARS4 | ECS1-1808N-AZU4 |
| DC 3 wire 10-30V NPN N.C. | ECS1-1808N-B3U2 | ECS1-1808N-B3S2 | ECS1-1808N-BRU4 | ECS1-1808N-BRS4 | ECS1-1808N-BZU4 |
| DC 3 wire 10-30V PNP N.O. | ECS1-1808P-A3U2 | ECS1-1808P-A3S2 | ECS1-1808P-ARU4 | ECS1-1808P-ARS4 | ECS1-1808P-AZU4 |
| DC 3 wire 10-30V PNP N.C. | ECS1-1808P-B3U2 | ECS1-1808P-B3S2 | ECS1-1808P-BRU4 | ECS1-1808P-BRS4 | ECS1-1808P-BZU4 |
| DC 2 wire 10-60V N.O. | ECS1-1808C-A3U2 | ECS1-1808C-A3S2 | ECS1-1808C-ARU4 | ECS1-1808C-ARS4 | ECS1-1808C-AZU4 |
| DC 2 wire 10-60V N.C. | ECS1-1808C-B3U2 | ECS1-1808C-B3S2 | ECS1-1808C-BRU4 | ECS1-1808C-BRS4 | ECS1-1808C-BZU4 |
| Diagrams (units in mm) | Short Body | | Short Body | | |
| | | | | | |

LONG RANGE

METALHEAD™





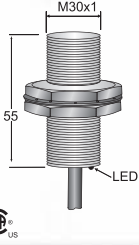
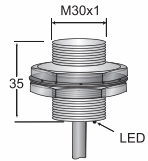
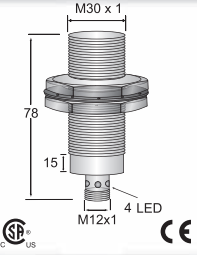
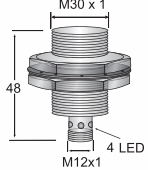
WELD FIELD IMMUNE

Metal Head™ - M30

LONG RANGE

METALHEAD™

WELD FIELD IMMUNE






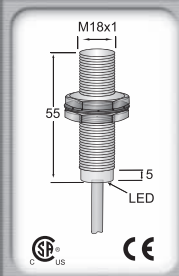
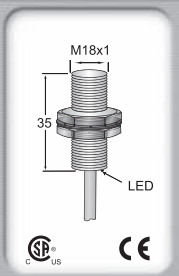
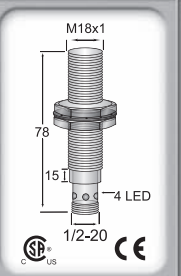
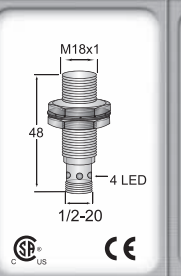
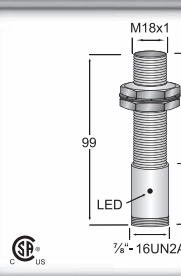
| | M30 | M30 | M30 | M30 |
|----------------------------------|---|---|---|---|
| |  |  |  |  |
| Sensing Distance | 10mm | 10mm | 10mm | 10mm |
| Extended Sensing Distance | 15mm | 15mm | 15mm | 15mm |
| Operating Voltage | 10-30 VDC | 10-30 VDC | 10-30 VDC | 10-30 VDC |
| Ripple | <10% | <10% | <10% | <10% |
| No Load Current | <10mA | <10mA | <10mA | <10mA |
| Max. Load Current | 200mA | 200mA | 200mA | 200mA |
| Leakage Current | <0.01mA | <0.01mA | <0.01mA | <0.01mA |
| Surge Current | - | - | - | - |
| Min. Load Current | - | - | - | - |
| Voltage Drop | <1.5V | <1.5V | <1.5V | <1.5V |
| Switching Frequency | 1 KHz / 150 Hz | 1 KHz / 150 Hz | 1 KHz / 150 Hz | 1 KHz / 150 Hz |
| Response Time | 0.2ms / 1ms | 0.2ms / 1ms | 0.2ms / 1ms | 0.2ms / 1ms |
| Switching Hysteresis | <15% (Sr) | <15% (Sr) | <15% (Sr) | <15% (Sr) |
| Repeat Accuracy | <1.0% (Sr) | <1.0% (Sr) | <1.0% (Sr) | <1.0% (Sr) |
| Protection Category | IP67 | IP67 | IP67 | IP67 |
| Operating Temperature | -25°C - +70°C | -25°C - +70°C | -25°C - +70°C | -25°C - +70°C |
| Temperature Drift | <10% (Sr) | <10% (Sr) | <10% (Sr) | <10% (Sr) |
| Short Circuit Protection | Yes | Yes | Yes | Yes |
| Overload Trip Point | 220mA | 220mA | 220mA | 220mA |
| Time Delay Before Availability | <10ms | <10ms | <10ms | <10ms |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | Stainless Steel (0.8mm) | Stainless Steel (0.8mm) | Stainless Steel (0.8mm) | Stainless Steel (0.8mm) |
| Housing Material | Stainless Steel | Stainless Steel | Stainless Steel | Stainless Steel |
| Part Numbers | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | FCS1-3010N-A3U2 | FCS1-3010N-A3S2 | FCS1-3010N-ARU4 | FCS1-3010N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | FCS1-3010N-B3U2 | FCS1-3010N-B3S2 | FCS1-3010N-BRU4 | FCS1-3010N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | FCS1-3010P-A3U2 | FCS1-3010P-A3S2 | FCS1-3010P-ARU4 | FCS1-3010P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | FCS1-3010P-B3U2 | FCS1-3010P-B3S2 | FCS1-3010P-BRU4 | FCS1-3010P-BRS4 |
| DC 2 wire 10-60V N.O. | FCS1-3010C-A3U2 | FCS1-3010C-A3S2 | FCS1-3010C-ARU4 | FCS1-3010C-ARS4 |
| DC 2 wire 10-60V N.C. | FCS1-3010C-B3U2 | FCS1-3010C-B3S2 | FCS1-3010C-BRU4 | FCS1-3010C-BRS4 |
| Extended Range | | | | |
| DC 3 wire 10-30V NPN N.O. | ECS1-3015N-A3U2 | ECS1-3015N-A3S2 | ECS1-3015N-ARU4 | ECS1-3015N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | ECS1-3015N-B3U2 | ECS1-3015N-B3S2 | ECS1-3015N-BRU4 | ECS1-3015N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | ECS1-3015P-A3U2 | ECS1-3015P-A3S2 | ECS1-3015P-ARU4 | ECS1-3015P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | ECS1-3015P-B3U2 | ECS1-3015P-B3S2 | ECS1-3015P-BRU4 | ECS1-3015P-BRS4 |
| DC 2 wire 10-60V N.O. | ECS1-3015C-A3U2 | ECS1-3015C-A3S2 | ECS1-3015C-ARU4 | ECS1-3015C-ARS4 |
| DC 2 wire 10-60V N.C. | ECS1-3015C-B3U2 | ECS1-3015C-B3S2 | ECS1-3015C-BRU4 | ECS1-3015C-BRS4 |
| Diagrams (units in mm) | | Short Body | | Short Body |
| |  |  |  |  |

Metal Head™ - M18

LONG RANGE





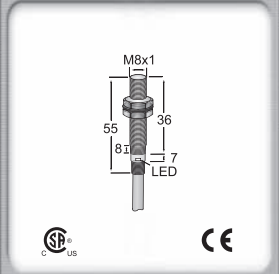
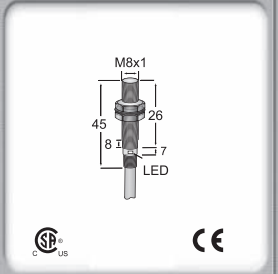
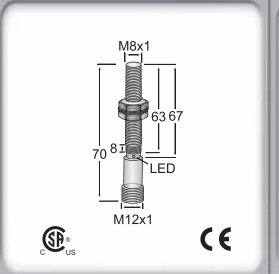
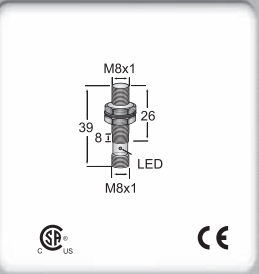
METALHEAD™

WELD FIELD IMMUNE

| | M18 | M18 | M18 | M18 | M18 |
|----------------------------------|---|---|---|--|---|
| |  |  |  |  |  |
| Sensing Distance | 5mm | | 5mm | | 5mm |
| Extended Sensing Distance | 8mm | | 8mm | | 8mm |
| Operating Voltage | 20-250 VAC, 50-60 Hz; 10-30 VDC | | 20-250 VAC, 50-60 Hz; 10-30 VDC | | 20-250 VAC, 50-60 Hz; 10-30 VDC |
| Ripple | DC Ripple <10% | | DC Ripple <10% | | DC Ripple <10% |
| No Load Current | <2.5mA | | <2.5mA | | <2.5mA |
| Max. Load Current | 200mA | | 200mA | | 100mA |
| Leakage Current | <2.5mA | | <2.5mA | | <2.5mA |
| Surge Current | 2.2A for 20ms | | 2.2A for 20ms | | 2.2A for 20ms |
| Min. Load Current | 5mA | | 5mA | | 5mA |
| Voltage Drop | <=10 VAC; <=8 VDC | | <=10 VAC; <=8 VDC | | <=10 VAC; <=8 VDC |
| Switching Frequency | 25 Hz AC; 40 Hz DC | | 25 Hz AC; 40 Hz DC | | 25 Hz AC; 40 Hz DC |
| Response Time | 10ms/10ms | | 10ms/10ms | | 10ms/10ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | | <15% (Sr) |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | | <1.0% (Sr) |
| Protection Category | IP67 | | IP67 | | IP67 |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | | -25°C - +70°C |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | | <10% (Sr) |
| Short Circuit Protection | Yes | | Yes | | Yes |
| Overload Trip Point | - | | - | | - |
| Time Delay Before Availability | - | | - | | - |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | Stainless Steel (0.5mm) | | Stainless Steel (0.5mm) | | Stainless Steel (0.5mm) |
| Housing Material | Stainless Steel | | Stainless Steel | | Stainless Steel |
| Part Numbers | Shielded | Shielded | Shielded | Shielded | Shielded |
| AC/DC 2 wire 20-250V, N.O. | FCS1-1805U-A3U2 | FCS1-1805U-A3S2 | FCS1-1805U-AUU3 | FCS1-1805U-AUS3 | FCS1-1805U-AZU3 |
| AC/DC 2 wire 20-250V, N.C. | FCS1-1805U-B3U2 | FCS1-1805U-B3S2 | FCS1-1805U-BUU3 | FCS1-1805U-BUS3 | FCS1-1805U-BZU3 |
| Extended Range | | | | | |
| AC/DC 2 wire 20-250V, N.O. | ECS1-1808U-A3U2 | ECS1-1808U-A3S2 | ECS1-1808U-AUU3 | ECS1-1808U-AUS3 | ECS1-1808U-AZU3 |
| AC/DC 2 wire 20-250V, N.C. | ECS1-1808U-B3U2 | ECS1-1808U-B3S2 | ECS1-1808U-BUU3 | ECS1-1808U-BUS3 | ECS1-1808U-BZU3 |
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| | | | | | |
| Diagrams (units in mm) | Short Body | | Short Body | | |
| |  |  |  |  |  |





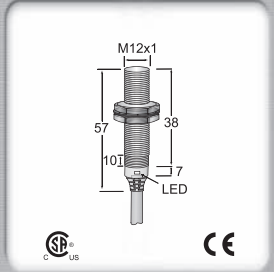
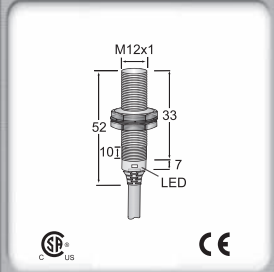
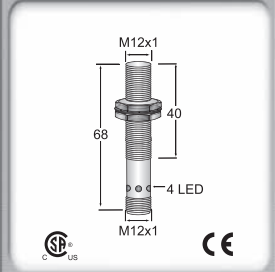
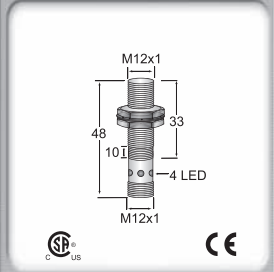
WELD FIELD IMMUNE - M8

LONG RANGE METALHEAD™

| | M8 | M8 | M8 | M8 |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 1 mm | 1 mm | 1 mm | 1 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <1.5V | | <1.5V | |
| Switching Frequency | 2 KHz | | 2 KHz | |
| Response Time | 0.1ms/0.1ms | | 0.1ms/0.1ms | |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | ETFE | | ETFE | |
| Housing Material | PTFE Coated Brass | | PTFE Coated Brass | |
| Part Numbers | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | WCM1-0801N-A3U2 | WCM1-0801N-A3S2 | WCM1-0801N-ARU4 | WCM1-0801N-ACS3 |
| DC 3 wire 10-30V NPN N.C. | WCM1-0801N-B3U2 | WCM1-0801N-B3S2 | WCM1-0801N-BRU4 | WCM1-0801N-BCS3 |
| DC 3 wire 10-30V PNP N.O. | WCM1-0801P-A3U2 | WCM1-0801P-B3S2 | WCM1-0801P-ARU4 | WCM1-0801P-ACS3 |
| DC 3 wire 10-30V PNP N.C. | WCM1-0801P-B3U2 | WCM1-0801P-B3S2 | WCM1-0801P-BRU4 | WCM1-0801P-BCS3 |
| Diagrams (units in mm) | Short Body | | Short Body | |
| |  |  |  |  |

WELD FIELD IMMUNE

WELD FIELD IMMUNE - M12

| | M12 | | M12 | |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 2 mm | | 2 mm | |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | |
| Min. Load Current | - | | - | |
| Voltage Drop | <1.5V | | <1.5V | |
| Switching Frequency | 2 KHz | | 2 KHz | |
| Response Time | 0.1ms/0.1ms | | 0.1ms/0.1ms | |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | ETFE | | ETFE | |
| Housing Material | PTFE Coated Brass | | PTFE Coated Brass | |
| Part Numbers | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | WCM1-1202N-A3U2 | WCM1-1202N-A3S2 | WCM1-1202N-ARU4 | WCM1-1202N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | WCM1-1202N-B3U2 | WCM1-1202N-B3S2 | WCM1-1202N-BRU4 | WCM1-1202N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | WCM1-1202P-A3U2 | WCM1-1202P-B3S2 | WCM1-1202P-ARU4 | WCM1-1202P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | WCM1-1202P-B3U2 | WCM1-1202P-B3S2 | WCM1-1202P-BRU4 | WCM1-1202P-BRS4 |
| Diagrams (units in mm) | Short Body | | Short Body | |
| |  |  |  |  |

LONG RANGE

METALHEAD™





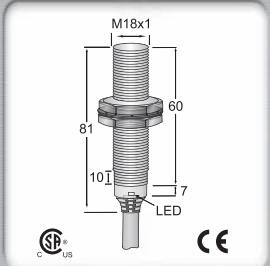
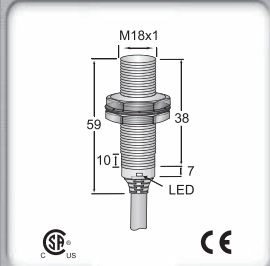
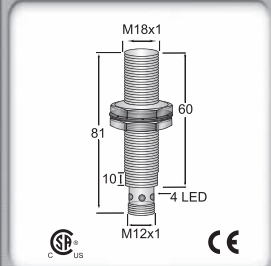
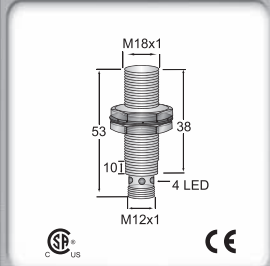
WELD FIELD IMMUNE

WELD FIELD IMMUNE - M18

LONG RANGE

METALHEAD™






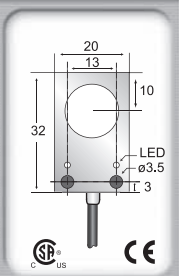
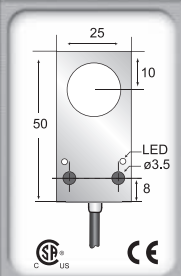
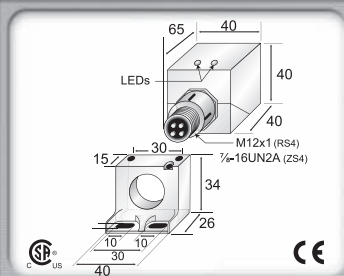
WELD FIELD IMMUNE

| | M18 | M18 | M18 | M18 |
|--------------------------------|---|---|--|---|
| |  |  |  |  |
| Sensing Distance | 5 mm | 5 mm | 5 mm | 5 mm |
| Operating Voltage | | 10-30 VDC | | 10-30 VDC |
| Ripple | | <10% | | <10% |
| No Load Current | | <10mA | | <10mA |
| Max. Load Current | | 200mA | | 200mA |
| Leakage Current | | <0.01mA | | <0.01mA |
| Surge Current | | - | | - |
| Min. Load Current | | - | | - |
| Voltage Drop | | <1.5V | | <1.5V |
| Switching Frequency | | 1 KHz | | 1 KHz |
| Response Time | | 0.2ms/0.2ms | | 0.2ms/0.2ms |
| Switching Hysteresis | | <15% (Sr) | | <15% (Sr) |
| Repeat Accuracy | | <1.0% (Sr) | | <1.0% (Sr) |
| Protection Category | | IP67 | | IP67 |
| Operating Temperature | | -25°C - +70°C | | -25°C - +70°C |
| Temperature Drift | | <10% (Sr) | | <10% (Sr) |
| Short Circuit Protection | | Yes | | Yes |
| Overload Trip Point | | 220mA | | 220mA |
| Time Delay Before Availability | | <10ms | | <10ms |
| Shock / Vibration | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | | ETFE | | ETFE |
| Housing Material | | PTFE Coated Brass | | PTFE Coated Brass |
| Part Numbers | Shielded | Shielded | Shielded | Shielded |
| DC 3 wire 10-30V NPN N.O. | WCM1-1805N-A3U2 | WCM1-1805N-A3S2 | WCM1-1805N-ARU4 | WCM1-1805N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | WCM1-1805N-B3U2 | WCM1-1805N-B3S2 | WCM1-1805N-BRU4 | WCM1-1805N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | WCM1-1805P-A3U2 | WCM1-1805P-A3S2 | WCM1-1805P-ARU4 | WCM1-1805P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | WCM1-1805P-B3U2 | WCM1-1805P-B3S2 | WCM1-1805P-BRU4 | WCM1-1805P-BRS4 |
| Diagrams (units in mm) | | Short Body | | Short Body |
| |  |  |  |  |

WELD FIELD IMMUNE - RECTANGULAR

LONG RANGE METALHEAD™

WELD FIELD IMMUNE






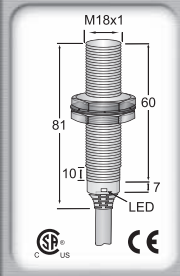
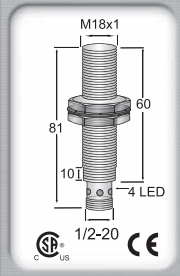
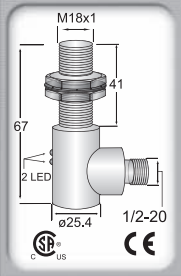
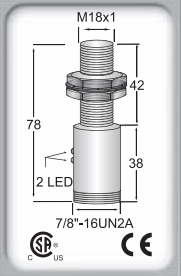
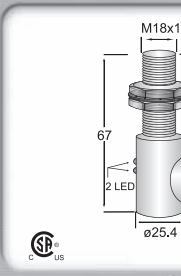
| | Q20x32x10 | | Q25x50x10 | | Q40s | |
|--------------------------------|---|---|---|--|---|-------------------|
| |  |  |  |  |  | |
| Sensing Distance | 5 mm | 5 mm | 5 mm | 5 mm | 15 mm | 25 mm |
| Operating Voltage | 10-30 VDC | | 10-30 VDC | | 10-30 VDC | |
| Ripple | <10% | | <10% | | <10% | |
| No Load Current | <10mA | | <10mA | | <10mA | |
| Max. Load Current | 200mA | | 200mA | | 200mA | |
| Leakage Current | <0.01mA | | <0.01mA | | <0.01mA | |
| Surge Current | - | | - | | - | |
| Min. Load Current | - | | - | | - | |
| Voltage Drop | <1.5V | | <1.5V | | <1.5V | |
| Switching Frequency | 1 KHz | | 1 KHz | | 1 KHz | |
| Response Time | 0.2ms/0.2ms | | 0.2ms/0.2ms | | 0.2ms/0.2ms | |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | | <15% (Sr) | |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | | <1.0% (Sr) | |
| Protection Category | IP67 | | IP67 | | IP67 | |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | | -25°C - +70°C | |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | | <10% (Sr) | |
| Short Circuit Protection | Yes | | Yes | | Yes | |
| Overload Trip Point | 220mA | | 220mA | | 220mA | |
| Time Delay Before Availability | <10ms | | <10ms | | <10ms | |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | |
| Material Active Face | ETFE | | ETFE | | ETFE | |
| Housing Material | PTFE Coated Brass | | PTFE Coated Brass | | PTFE Coated Brass | |
| Part Numbers | Shielded | Shielded | Shielded | Shielded | Shielded | Unshielded |
| DC 3 wire 10-30V NPN N.O. | WQM1-2005N-A3U2T | WQM1-3205N-ACU3 | WQM1-2505N-A3U2T | WQM1-2505N-ACU3 | WQP1-4015N-ARS4 | WQP2-4025N-ARS4 |
| DC 3 wire 10-30V NPN N.C. | WQM1-2005N-B3U2T | WQM1-3205N-BCU3 | WQM1-2505N-B3U2T | WQM1-2505N-BCU3 | WQP1-4015N-BRS4 | WQP2-4025N-BRS4 |
| DC 3 wire 10-30V PNP N.O. | WQM1-2005P-A3U2T | WQM1-3205P-ACU3 | WQM1-2505P-A3U2T | WQM1-2505P-ACU3 | WQP1-4015P-ARS4 | WQP2-4025P-ARS4 |
| DC 3 wire 10-30V PNP N.C. | WQM1-2005P-B3U2T | WQM1-3205P-BCU3 | WQM1-2505P-B3U2T | WQM1-2505P-BCU3 | WQP1-4015P-BRS4 | WQP2-4025P-BRS4 |
| Diagrams (units in mm) |  | |  | |  | |

WELD FIELD IMMUNE - M18

LONG RANGE

METALHEAD™

WELD FIELD IMMUNE

| | M18 | M18 | M18 | M18 | M18 |
|--------------------------------|---|---|---|---|---|
| |  |  |  |  |  |
| Sensing Distance | 5 mm | 5 mm | 5 mm | 5 mm | 5 mm |
| Operating Voltage | 20-250 VAC, 50-60 Hz; 20-250 VDC | | 20-250 VAC, 50-60 Hz; 20-250 VDC | | 20-250 VAC |
| Ripple | DC Ripple <10% | | DC Ripple <10% | | - |
| No Load Current | <2.5mA | | <2.5mA | | <1.8mA |
| Max. Load Current | 100mA | | 100mA | | 400mA |
| Leakage Current | <2.5mA | | <2.5mA | | <1.8mA |
| Surge Current | 2.2A for 20ms | | 2.2A for 20ms | | 5A (20ms) |
| Min. Load Current | 5mA | | 5mA | | 5mA |
| Voltage Drop | <=10 VAC; <=8 VDC | | <=10 VAC; <=8 VDC | | <8 VAC @ 400mA |
| Switching Frequency | 25 Hz AC; 40 Hz DC | | 25 Hz AC; 40 Hz DC | | <25Hz |
| Response Time | 10ms/10ms | | 10ms/10ms | | 10ms/10ms |
| Switching Hysteresis | <15% (Sr) | | <15% (Sr) | | <15% (Sr) |
| Repeat Accuracy | <1.0% (Sr) | | <1.0% (Sr) | | <1.0% (Sr) |
| Protection Category | IP67 | | IP67 | | IP67 |
| Operating Temperature | -25°C - +70°C | | -25°C - +70°C | | -25°C - +70°C |
| Temperature Drift | <10% (Sr) | | <10% (Sr) | | <10% (Sr) |
| Short Circuit Protection | No | | No | | No |
| Overload Trip Point | - | | - | | - |
| Time Delay Before Availability | - | | - | | - |
| Shock / Vibration | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 | | IEC 60947-5-2, Part 7.4.1 & 7.4.2 |
| Material Active Face | ETFE | | ETFE | | ETFE |
| Housing Material | PTFE Coated Brass | | PTFE Coated Brass | | PTFE Coated Brass |
| Part Numbers | Shielded | Shielded | Shielded | Shielded | Shielded |
| AC/DC 2 wire 20-250 VAC N.O. | WCM1-1805U-A3U2 | WCM1-1805U-AU3 | WCM1-1805U-AU3Y/2 | WCM1-1805U-AZL3/2 | WCM1-1805U-AZL3Y/2 |
| AC/DC 2 wire 20-250 VAC N.C. | WCM1-1805U-B3U2 | WCM1-1805U-BU3 | WCM1-1805U-BU3Y/2 | WCM1-1805U-BZL3/2 | WCM1-1805U-BZL3Y/2 |
| Diagrams (units in mm) |  |  |  |  |  |

SENSOR CABLES

Low Cost and Reliable 5 Meter Length Female Cables



3 PIN CONNECTOR TYPES

| PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM |
|---|---|---|---|
| <p>① = brown ② = blue ③ = black</p> | <p>① = yellow/green ② = black ③ = blue</p> | <p>① = brown ② = blue ③ = black</p> | <p>① = brown ② = yellow/green (black for 75 models) ③ = blue</p> |
| <p>STRAIGHT MODEL #: C-FS3TZ-V075</p> <p>90° ANGLED MODEL #: C-FA3TZ-V075</p> | <p>STRAIGHT MODEL #: U-FS3TA-V315</p> <p>90° ANGLED MODEL #: U-FA3TA-V315</p> | <p>STRAIGHT MODEL #: R-FS3TZ-V075</p> <p>90° ANGLED MODEL #: R-FA3TZ-V075</p> | <p>STRAIGHT MODEL #: Z-FS3PA-V025</p> <p>90° ANGLED MODEL #: Z-FA3PA-V025</p> |

4 PIN CONNECTOR TYPES

| PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM |
|---|---|---|---|
| <p>① = brown ② = white ③ = blue ④ = black</p> | <p>① = red/black ② = red/white ③ = red ④ = green</p> | <p>① = brown ② = white ③ = blue ④ = black</p> | <p>① = brown ② = white ③ = blue ④ = black</p> |
| <p>STRAIGHT MODEL #: C-FS4TZ-V075</p> <p>90° ANGLED MODEL #: C-FA4TZ-V075</p> | <p>STRAIGHT MODEL #: U-FS4TA-V315</p> <p>90° ANGLED MODEL #: U-FA4TA-V315</p> | <p>STRAIGHT MODEL #: R-FS4TZ-V075</p> <p>90° ANGLED MODEL #: R-FA4TZ-V075</p> | <p>STRAIGHT MODEL #: Z-FS4PA-V025</p> <p>90° ANGLED MODEL #: Z-FA4PA-V025</p> |

5 PIN CONNECTOR TYPES

| PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM | PIN DIAGRAM |
|---|---|---|---|
| <p>① = brown ② = white ③ = blue ④ = black ⑤ = gray</p> | <p>① = red/white ② = red ③ = green ④ = red/yellow ⑤ = red/black</p> | <p>① = brown ② = white ③ = blue ④ = black ⑤ = green/yellow</p> | <p>① = black ② = blue ③ = green/yellow ④ = brown ⑤ = white</p> |
| <p>STRAIGHT MODEL #: C-FS5TZ-V075</p> <p>90° ANGLED MODEL #: C-FA5TZ-V075</p> | <p>STRAIGHT MODEL #: U-FS5TA-V315</p> <p>90° ANGLED MODEL #: U-FA5TA-V315</p> | <p>STRAIGHT MODEL #: R-FS5TZ-V075</p> <p>90° ANGLED MODEL #: R-FA5TZ-V075</p> | <p>STRAIGHT MODEL #: Z-FS5PA-V025</p> <p>90° ANGLED MODEL #: Z-FA5PA-V025</p> |

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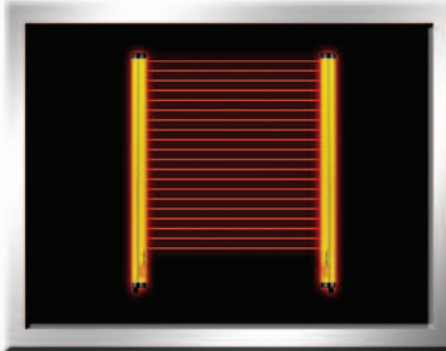
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