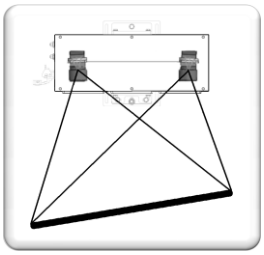
*Stereoscopic Width Gauge*

# DigiScan

# XD500

**Width – Centerline – Edges Position**



**Built in Ethernet with OPC UA and Modbus**

**Optional Industrial Network Protocol**

**Easy installation and maintenance**

Lt 4500

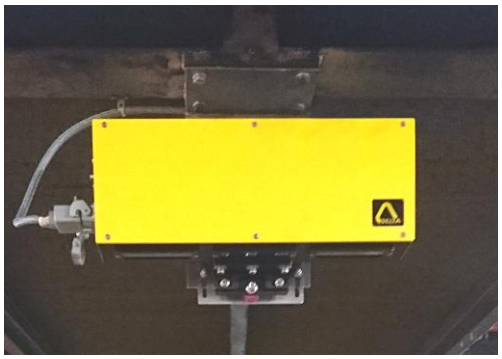
**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

The Stereoscopic Width Gauge **DigiScan XD500**, designed for installation above the strip in cold rolling mills and processing lines, is state-of-the-art technology for measuring the width and centerline of strip or plate.

The stereoscopic arrangement permits high on-line accuracy despite material hop, tilt, lateral movement, and thickness variation.

## Main features

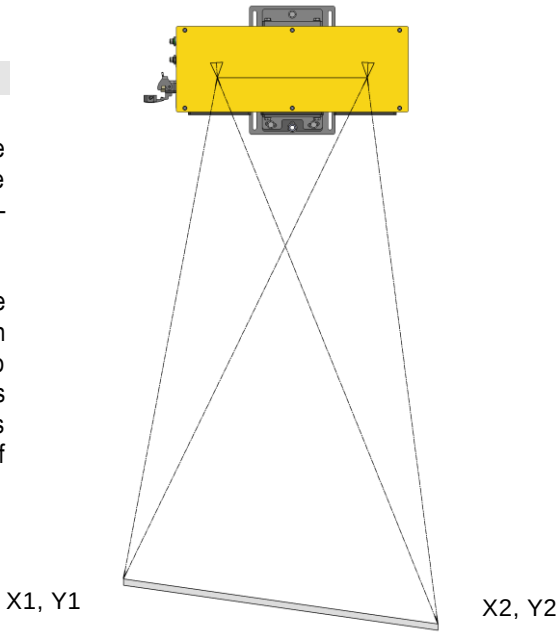
- Advanced edge detection software and data capture processor to perform edge sensing in real-time,
- Advanced stereo calibration taking into account lens distortion, with subpixel accuracy,
- On line verification and standardization to maintain high measurement accuracy,
- Setup and diagnostic of the gauge with web browser,
- Extended communication features including built in Ethernet with Modbus TCP and OPC UA protocols,
- Optional industrial network protocol: Profibus DP, Profinet,
- Recording of measures, and advanced log features,
- Modular architecture allowing easy extension and implementation of effective solutions with end users,
- Simplicity of installation and maintenance,
- Very quick replacement of the gauge,
- Compact, robust, sealed aluminum housing,
- Laser line pointer for easy commissioning and verification of accuracy.



## Operating principle

**DELTA** Stereoscopic Width Gauge employs an advanced digital edge detection process that captures the digitized camera data. Software routines running on the high-speed embedded processor perform sub-pixel edge determination in two-dimensional space.

The camera data are filtered using a high-speed Infinite Impulse Response (IIR) digital filter. Sub-pixel edge locations are then determined based on the second derivative of the pixel data. With two sub-pixel edges from each camera, the true width of the material is calculated using geometric triangulation. These trigonometric functions allow very accurate width measurement in spite of the influences of material pass line variations, thickness variations and flutter.

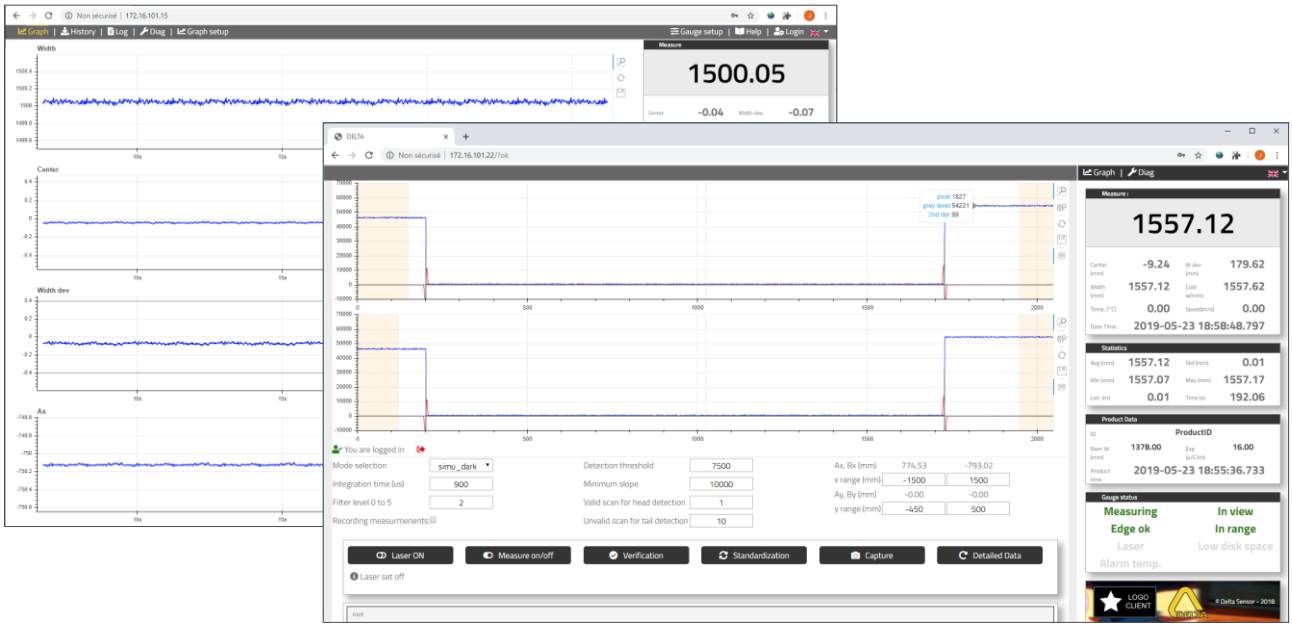





**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

## Web server

The gauge has an integrated Web server and the connection to the gauge with any Web browser, from a PC or a tablet, gives an access to gauge measurement data and configuration parameters. Remote access is possible for diagnostic assistance.

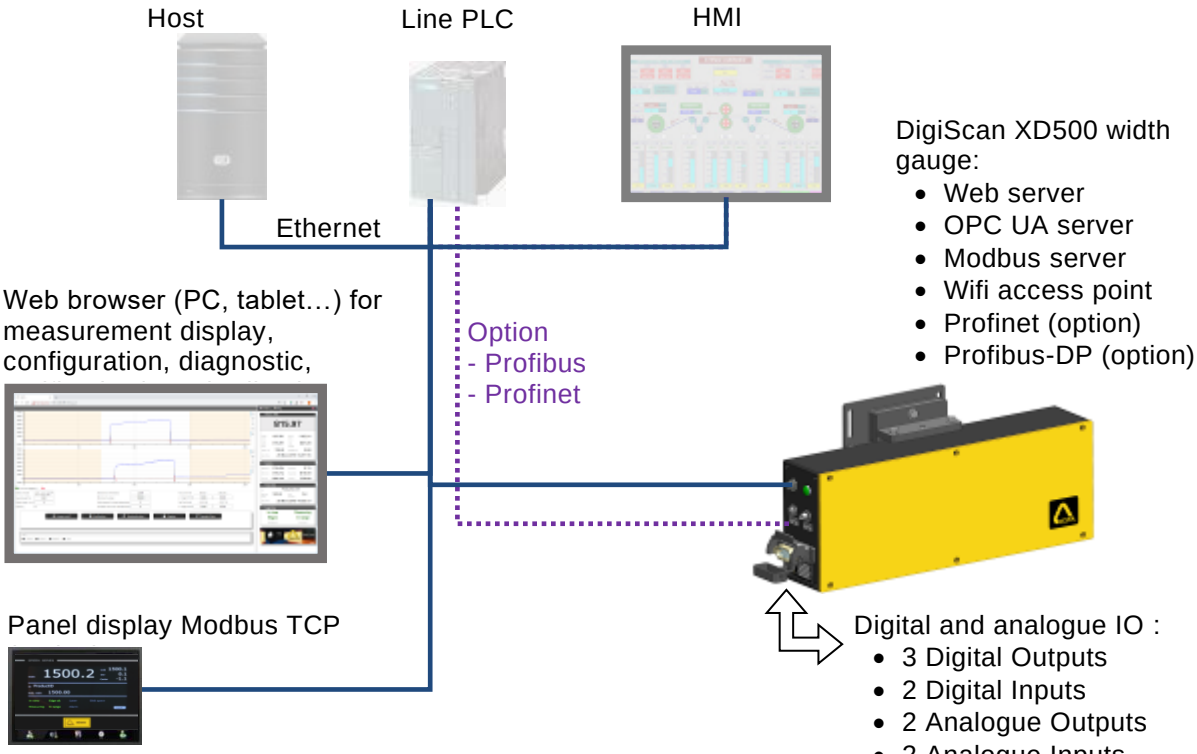



*Measurement graphs and diagnostic*

## Connectivity

The **DigiScan XD500** with built in Ethernet connection, integrated digital inputs / outputs and analogue outputs has a very flexible communication architecture and can easily be connected into any automation system.

- Integrated Modbus TCP protocol,
- Integrated OPC UA protocol,
- Optional Profinet and Profibus-DP protocol.





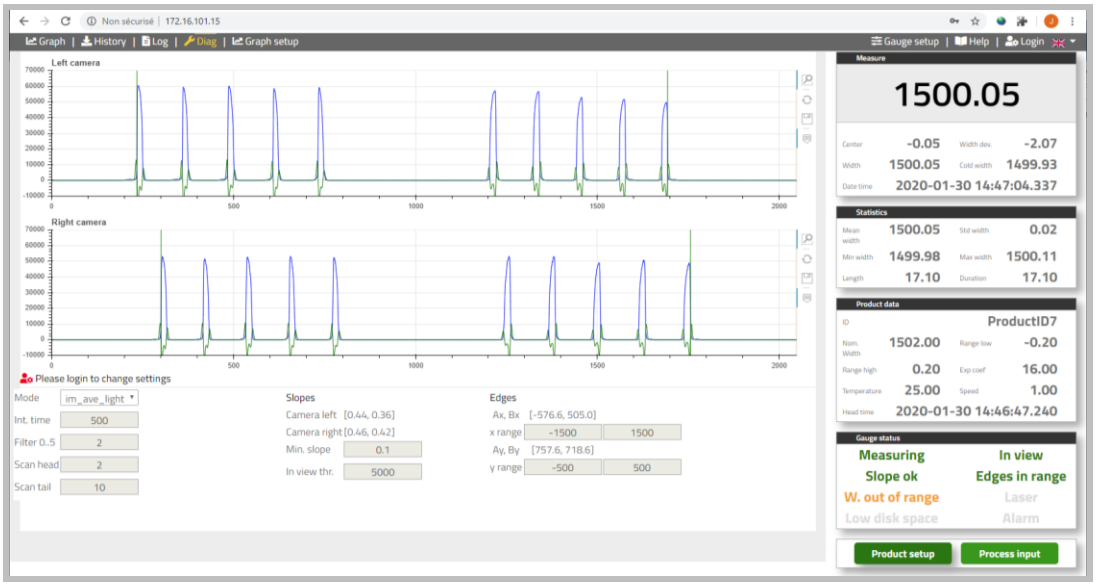

**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

## Calibration

Two-dimensional calibration is performed prior to delivery by placing a calibration fixture at several positions. Calibration is accomplished by collecting camera pixel data at these referenced positions and then the stereo optical parameters are estimated.
The width gauge is delivered calibrated in our factory. The installation's position is not critical as the stereoscopic cameras will compensate for any variation in the distance between the strip and the gauge.

## Verification of accuracy and standardization

The **DigiScan XD500** can be supplied with an active verification fixture, including a certified mask with 10 slots plus red LED simulating different strip widths. If the accuracy does not comply with the specification, a standardization can be made and the correction coefficients will be computed based on the measurements of the mask.




Verification of accuracy: gauge setup screen, with button to start a verification and eventually standardize the gauge. The verification is executed in a few seconds. All data are logged and can easily been retrieved from the web browser.

## Gauge configuration

| *Model* | *XD5●●-**SB*** | *XD5●●-**HB*** |
|---|---|---|
| *Accuracy* | 0.025% | 0.013% |
| *Back light* | To be ordered separately | |
| *Verification/standardization* | Option | Option |
| *3 axis mounting support* | Option | Option |
| *Graphs, diagnostics with Web server* | √ | √ |
| *Wifi access point* | √ | √ |
| *OPC UA server* | √ | √ |
| *Modbus TCP server* | √ | √ |
| *Industrial fieldbus (Profibus, Profinet)* | Option | Option |
| *3 digital outputs* | √ | √ |
| *2 digital inputs* | √ | √ |
| *2 analogue outputs* | √ | √ |
| *2 analogue inputs* | √ | √ |
| *Measurements history* | √ | √ |
| *Log, event recording* | √ | √ |

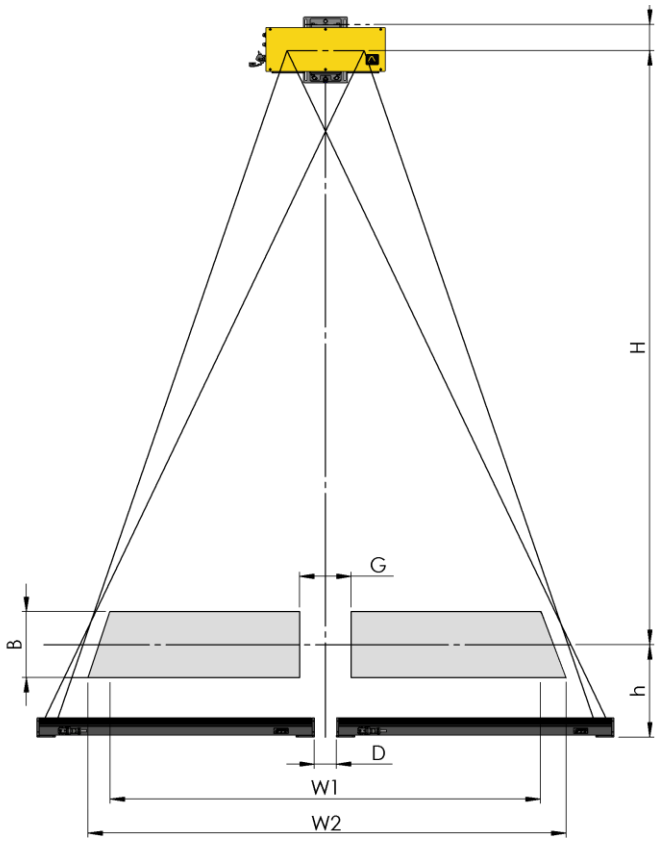
√ = *included* *Option = can be ordered separately*



**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

## XD500 characteristics

### Measuring range and performances




Edges position limits

| *Model* | | *XD52●-●B* | *XD53●-●B* | *XD54●-●B* |
|---|---|---|---|---|
| Measurement field | W1 (mm [”]) | 1500 [59”] | 2000 [78.7”] | 2500 [98”] |
| | W2 (mm [”]) | 1700 [67”] | 2200 [86.6”] | 2700 [106”] |
| | B (mm [”]) | 200 [8”] | 300 [12”] | |
| Mounting height | H (mm [”]) | 2050 [81”] | 2700 [106”] | 3000 [118”] |
| Accuracy XD5●●-S● | mm [”] | 0.40 [0.016”] | 0.50 [0.02”] | 0.70 [0.028”] |
| Accuracy XD5●●-H● | mm [”] | 0.20 [0.008”] | 0.25 [0.01”] | 0.35 [0.014”] |

For special application: strip size, mounting height, installation constraints…: contact us.

**Back light** (Dark mode)

| *Model* *Back Light* | | *XD52●-●B* *2 x EMR-C-800* | | | *XD53●-●B* *2 x EMR-C-1200* | | | *XD54●-●B* *2 x EMR-C-1200* | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | **h: distance EMR to pass line (mm)** | | | | | | | | |
| | | 200 [7.9”] | 300 [11.8”] | 400 [15.7”] | 200 [7.9”] | 300 [11.8”] | 400 [15.7”] | 200 [7.9”] | 300 [11.8”] | 400 [15.7”] |
| Inner gap | G (mm [”]) | 240 [9.5”] | 340 [13.4”] | 440 [17.3”] | 140 [5.5”] | 180 [7.1”] | 250 [9.8”] | 400 [15.7”] | 500 [19.7”] | 600 [23.6”] |
| Distance between back lights | D (mm [”]) | 120 [4.7”] | 220 [8.7”] | 320 [12.6”] | 0 [0”] | 20 [0.8”] | 100 [3.9”] | 300 [11.8”] | 40 [15.7”] | 500 [19.7”] |



**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

### Protocol

| *Model* | *XD5●1-●B* | *XD5●2-●B* | *XD5●3-●B* |
|---|---|---|---|
| Build in protocol (Ethernet) | Modbus TCP and OPC UA | | |
| Wifi | Wifi access point (deactivatable) | | |
| Industrial network | - | Profibus-DP | Profinet |

### Digital Inputs and Outputs

| | |
|---|---|
| 2 Digital Inputs | 24 VDC - 8 mA |
| 3 Digital outputs | Optocoupled Solid State Relay:<br>Impedance: 50 Ω,<br>Switching capacity: +/- 350 V peak +/- 100 mA peak |
| 2 Analogue outputs | 4 – 20 mA (500 Ω max) – Linearity 0.1% - Temperature drift : 50 ppm/°C |
| 2 Analogue inputs | 4 – 20 mA – Linearity 0.1% - Temperature drift: 50 ppm/°C |

### Other Data

CE

| *Model* | *XD5●●-●B* |
|---|---|
| Scan time – cycle time | 2 ms – 16 ms |
| Operating voltage | 110 V (-10%) to 240 V (+10%) - 50/60 Hz |
| Power consumption | 50 VA |
| Laser line for alignment | IEC 60825-1: Class 2M |
| Cables | To be ordered separately.<br>Connector fitted with silicone cable with protective steel braid.<br>Standard length of 5 m, 8 m, 10 m and 15 m |
| Weight | 9 kg |
| Protection rating | IP 66 (aluminium case) |
| Operating temperature | 0 to 50 °C (32 to 122 °F) |

## Emitter EMR-C characteristics

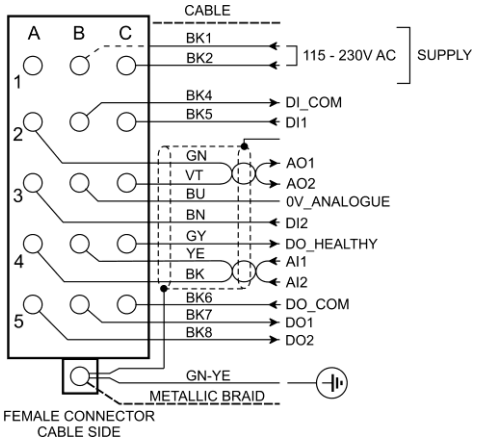
| *Emitter* | ***EMR-C-800*** | ***EMR-C-1200*** |
|---|---|---|
| Emission | Continuous Red LED | |
| Emission length | 800 mm | 1200 mm |
| Emission width | 30 mm | |
| Alarm output | Push-pull output, short circuit protection, 0/24 V - 50 mA max<br>0V if internal failure or internal temperature > 55°C (131 °F) | |
| Operating voltage | 110 V (-15%) to 240 V (+10%) - 50 / 60 Hz | |
| Power consumption | 40 VA | 60 VA |
| Weight | 8 kg | 12 kg |
| Protection Rating | IP66 | |
| Operating ambient T° | -20 to 55 °C (0 to 131 °F) | |



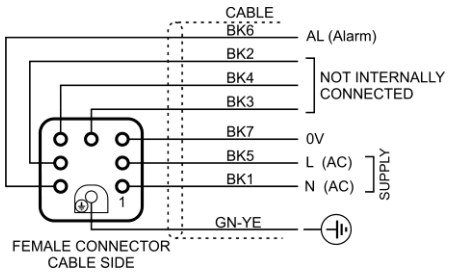
**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

## Connection

**XD500**

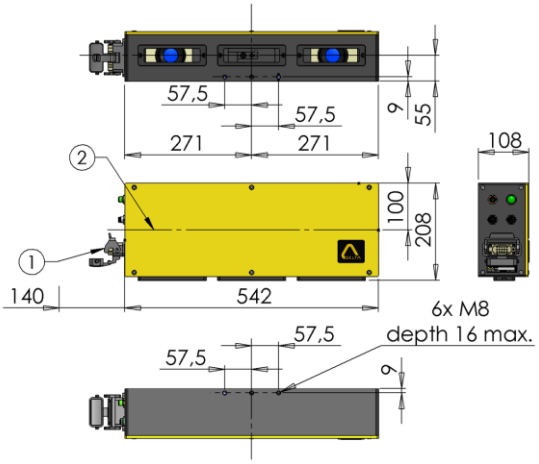



**EMR-C**

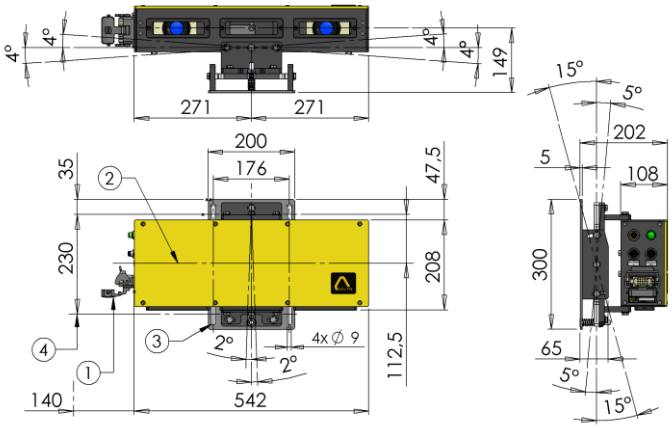



## Dimensions

**XD5••-•B**



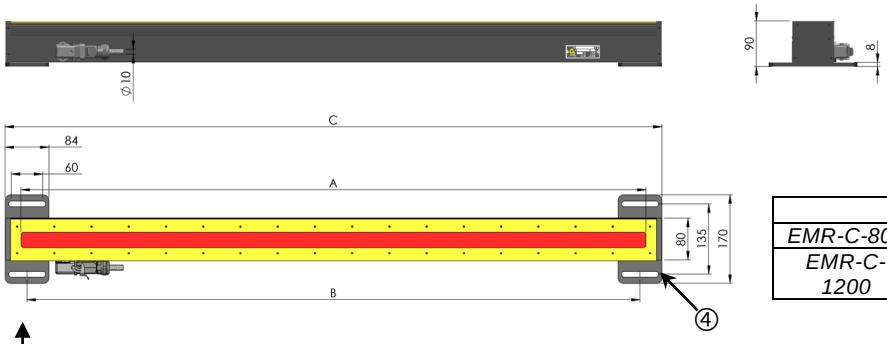

**XD5••-•B alone**




**XD5••-•B with 3 axis mounting stand**

① Connector clearance 140 mm
② Reference for Stand-off distance
③ 4x slots Ø 9 x 40 for mounting with screw Ø 8
④ Slots centre axis position

**EMR-C**




| | A | B | C |
|---|---|---|---|
| *EMR-C-800* | 800 | 775 | 860 |
| *EMR-C-1200* | 1200 | 1175 | 1260 |

***Note:*** *The fixing plate can be mounted in different positions (bottom / side of the emitter)*



**DELTA USA, Inc** – Tel : (412) 429 3574 – Fax : (412) 429 3348 – info@delta-usa.com – **www.delta-usa.com**

## Reference for order

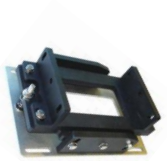
**XD5 ●● - ●B 115-230 VAC**

| *Measuring range (mm)* | *Communication Protocol* | *Accuracy* |
|---|---|---|
| 2: 1500 | 1: Web, OPCUA, Modbus TCP | S: Standard |
| 3: 2000 | 2: 1 + Profibus DP | H: High accuracy |
| 4: 2500 | 3: 1 + Profinet | |

**EMR-C- ●●●● 115-230 VAC**

| *Length (mm)* |
|---|
| 800 |
| 1200 |

## Accessories and Options



- 3 axis adjustment **mounting stand** (ref: 7894240)

- **Junction box**, with Ethernet switch and 7" panel display. Dimensions: 300 x 300 x 190 mm
  For XD5●●-●B, reference: CR500XD-B 115-230VAC

- Active **verification fixture**, battery powered
  Ref: XD-FIX1 (1555 mm), XD-FIX2 (1805 mm), XD-FIX3 (2025 mm)

- Power and I/O cable for **XD500**, with protective metallic braid:
  * 2 connectors: 5 m (ref: 8040015), 8 m (ref: 8040030), 10 m (ref: 8040031), 15 m (ref: 8040032)
  * 1 connector + wires: 5 m (ref:7840277), 8 m (ref:7840278), 10 m (ref:7840279), 15 m (ref:7840280)

- Power and I/O cable for **EMR**, with protective metallic braid:
  * 2 connectors: 5 m (ref: 7440138), 8 m (ref: 7440177), 10 m (ref: 7440171), 15 m (ref: 7440140)
  * 1 connector + wires: 5 m (ref: 7440123), 8 m (ref: 7440149), 10 m (ref: 7440150), 15 m (ref: 7440143)

- Cables for **Ethernet**, 2x Male D-coded M12 connectors, with protective metallic braid:
  5 m (ref: 7540277), 8 m (ref: 7540289), 10 m (ref: 7540278), 15 m (ref: 7540291)

- Cables for **Profibus**-DP, Male / Female B-coded M12 connectors, with protective metallic braid:
  5 m (ref: 7540290), 8 m (ref: 7540248), 10 m (ref: 7540298), 15 m (ref: 7540457)

- Profibus End of Bus Resistor (ref: 2536756)

- Panel display 7" (ref: MXP3310)

- Hood with air purging connector (on request)
- Cooling plate with 2 quick connectors for water (on request)

**DELTA SAS**
Tel : +33 388 78 21 01 - Fax : +33 388 76 02 29
info@deltasensor.eu - www.deltasensor.eu

**DELTA SENSOR (CHANGZHOU) Co., Ltd. (China)**
Tel: +86 519 8188 2500 - Fax: +86 519 8188 2400 -
info@deltasensor.com.cn

**DELTA Vertriebsgesellschaft mbH (Germany)**
Tel: +49 6183 91 94 323 - Fax: +49 6183 91 94 324 -
info.de@deltasensor.eu

**DELTA SENSOR Pvt. Ltd. (India)**
Tel: +91 11 4054 8170 - Fax: +91 11 4054 8172 - info@deltasensor.co.in

**DELTA USA, Inc. (North America)**
Tel: +1 (412) 429 3574 - Fax: +1 (412) 429 3348 - info@delta-usa.com

**DELTA USA INC. (North America)**

CARNEGIE OFFICE PARC - BUILDING 2, SUITE 180
600 NORTH BELL AVENUE, CARNEGIE, PA 15160

Tel: (412) 429 3574 Fax: (412) 429 3348
info@delta-usa.com www.delta-usa.com

Subject to change without prior notice
Non contractual pictures