

# P2X-SERIES

## Pushing power to the edge



### THE COMPACTNESS OF A SMART CAMERA, THE POWER OF A VISION SYSTEM

The P2x-Series is an industrial smart camera providing exceptional inspection performance and flexibility in a fully-embedded compact housing. Powered by the 100+ inspection tools of IMPACT Machine Vision Software Suite, P2x-Series allows to tackle even the most complex application requirements.

### CRISP IMAGES IN ANY CONDITION

P2x-Series Smart Cameras feature one of the most sophisticated optical designs available on the market. Illuminator LEDs embed TIR lenses to convey the maximum amount of light onto the Field-of-View. Top class lenses and state-of-the-art CMOS imager deliver maximum image quality. Optical filters and covers optimize the image quality by removing glare and unwanted reflections.

### INTUITIVE VISUAL FEEDBACK

P2x-Series Smart Camera are equipped with a stunning configurable 360° multi color visual feedback embedded in the illuminator module. Configurable through IMPACT Software, the color of the frame provides intuitive visual feedback to workers operating nearby even when no HMI is present. The highly visible 360 feedback alerts the user of inspection results even at far distances.

### MAXIMUM INSPECTION ACCURACY AND REPEATABILITY

P2x-Series embedded 2 megapixel resolution imager enables high accuracy applications such as measurement or robot guidance requiring precise part location. In addition, P2x-Series is available with color CMOS imager and features a brand new set of color inspection tools to solve the most demanding applications requiring accurate color analysis.

### FULLY INTEGRATED IN THE DATALOGIC MACHINE VISION ECO-SYSTEM

P2x-Series Smart Camera is a complete vision system packed into an embedded compact housing. Unlike competitive smart cameras, IMPACT Software Suite has no limitations when running on P2x Smart Cameras. IMPACT configuration files are fully portable from one Datalogic hardware to the other, therefore users can create vision programs and select the vision device to use at the very end of the application feasibility analysis.

## HIGHLIGHTS

- qHD (960x540) and 2MP (1920x1080) resolution imager options both available in monochrome and color
- Field interchangeable lenses, illuminators and filters
- Two embedded illuminator sizes: 14-LED compact and 36-LED high power both integrating TIR lenses to deliver maximum brightness onto the field of view available in 3 different colors (white, blue and red)
- High quality micro-video lenses available in four different focal lengths: 6, 8, 12.5 and 17.5mm
- Innovative 360° software configurable visual feedback
- Top industrial grade: -10...50°C (14 to 122° F) operating temperature, IP65/67 rating
- Powered by IMPACT software suite with 100+ inspection tools
- Add-on licenses to run even the most advanced Datalogic algorithms

## APPLICATIONS

### Automotive

- Component assembling verification
- Dashboard inspection
- Electric fuse box inspection
- Robot guidance

### Electronics

- Correct assembling verification
- Component alignment/positioning
- Robot guidance

### Food & Beverage

- Lot number and best before date OCR reading
- Bottle cap inspection
- Packaging artwork verification
- Label position, orientation and color

### Medical and Pharma

- Packaging/sealing verification
- GTIN, serial and batch number OCR reading
- Medical device assembly control
- Vial in tray counting
- Flip-off cap inspection

# TECHNICAL DATA

|                                           | P20M                                                                                                                                                                                                                                                                                              | P20C  | P22M                     | P22C  |
|-------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|--------------------------|-------|
| Imager sensor                             | CMOS with Global Shutter                                                                                                                                                                                                                                                                          |       |                          |       |
| Mono/Color                                | Monochrome                                                                                                                                                                                                                                                                                        | Color | Monochrome               | Color |
| Resolution                                | qHD (960 x 540 pixels)                                                                                                                                                                                                                                                                            |       | 2MP (1920 x 1080 pixels) |       |
| Sensor frame rate                         | 60 frames/s                                                                                                                                                                                                                                                                                       |       |                          |       |
| Pixel size                                | 5.6 μm square                                                                                                                                                                                                                                                                                     |       | 2.8 μm square            |       |
| Digital OUT                               | OUT 1 and 2: NPN or PNP short circuit protected, opto-isolated only when connected to CBX500/800<br>OUT 3: NPN or PNP short circuit protected, Opto-isolated only when connected to CBX800<br>(Strobe signal is shared with Output 3. Output 3 is active only if the External Strobe is disabled) |       |                          |       |
| Digital IN                                | IN 1 (external trigger) and IN 2: opto-isolated and polarity insensitive<br>(Max voltage: 30 Vdc, Max Input current: 10mA)                                                                                                                                                                        |       |                          |       |
| Led indicators                            | Power, Busy/Trigger, Out 1; Out 2; Out 3, Online                                                                                                                                                                                                                                                  |       |                          |       |
| Keypad Button                             | Reset; Camera Button Event (internal software event only); Loader                                                                                                                                                                                                                                 |       |                          |       |
| Ethernet                                  | 1000 Mbit/s<br>(supports application protocols: TCP/IP, EtherNet/IP, Profinet IO, Modbus TCP, MC protocol)                                                                                                                                                                                        |       |                          |       |
| RS232                                     | 2400 to 115200 bit/s                                                                                                                                                                                                                                                                              |       |                          |       |
| RAM                                       | 1 GB                                                                                                                                                                                                                                                                                              |       |                          |       |
| Storage                                   | 380 MB                                                                                                                                                                                                                                                                                            |       |                          |       |
| Lens options                              | Micro-video lens: 6mm / 8mm / 12.5mm / 17.5mm                                                                                                                                                                                                                                                     |       |                          |       |
| Lens focusing                             | Mechanical with focusing screw                                                                                                                                                                                                                                                                    |       |                          |       |
| Illuminators                              | Illuminator colors: Blue, Red, White<br>Illuminator power: High Power 14 LEDs, Very High Power 36 LEDs                                                                                                                                                                                            |       |                          |       |
| LED safety                                | According to EN 62471                                                                                                                                                                                                                                                                             |       |                          |       |
| YAG Laser Protection                      | Yes, with dedicated filter accessory                                                                                                                                                                                                                                                              |       |                          |       |
| Polarizing Filter                         | Yes, with dedicated polarizer front cover accessory                                                                                                                                                                                                                                               |       |                          |       |
| Power supply                              | 24 Vdc ± 10%                                                                                                                                                                                                                                                                                      |       |                          |       |
| Max power consumption                     | 14 LEDs illuminator: 0.42 A, 10 W max<br>36 LEDs illuminator: 0.62 A, 15 W max                                                                                                                                                                                                                    |       |                          |       |
| Operating temperature                     | -10° to 50° (14 to 122° F)                                                                                                                                                                                                                                                                        |       |                          |       |
| Storage temperature                       | -20° to 70°C (-4 to 158°F)                                                                                                                                                                                                                                                                        |       |                          |       |
| Max humidity                              | 90% non condensing                                                                                                                                                                                                                                                                                |       |                          |       |
| Vibration Resistance<br>EN 60068-2-6      | 14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz;<br>2 g @ 70 to 500 Hz; 2 hours on each axis                                                                                                                                                                                                             |       |                          |       |
| Bump Resistance<br>EN 60068-2-29          | 30g; 6 ms;<br>5000 shocks on each axis                                                                                                                                                                                                                                                            |       |                          |       |
| Shock Resistance<br>EN 60068-2-27         | 30g; 11 ms;<br>3 shocks on each axis                                                                                                                                                                                                                                                              |       |                          |       |
| Protection Class<br>EN 60529              | IP65/67                                                                                                                                                                                                                                                                                           |       |                          |       |
| Case Material                             | Aluminium case and plastic protective window cover                                                                                                                                                                                                                                                |       |                          |       |
| Dimensions (H x W x L)<br>with lens cover | 14 LEDs illuminator: 109 x 54 x 56mm (4.3 x 2.1 x 2.2in.)<br>36 LEDs illuminator: 116 x 126 x 70mm (4.6 x 4.9 x 2.8in.)                                                                                                                                                                           |       |                          |       |
| Weight                                    | 14 LEDs illuminator: about 380g (13.4oz.)<br>36 LEDs illuminator: about 640g (22.5oz.)                                                                                                                                                                                                            |       |                          |       |
| Warranty                                  | 2-Year Factory Warranty                                                                                                                                                                                                                                                                           |       |                          |       |

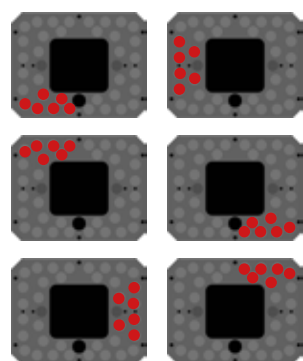
# ILLUMINATORS



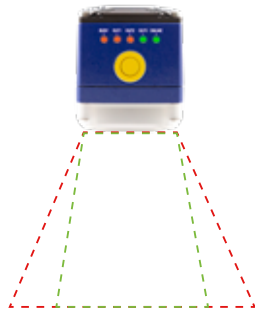
Blue

White

Red



Software configurable lighting segments to optimize image brightness on the Field-of-View



Two different options of Total Internal Reflection (TIR) LED lenses to match smart camera lens aperture

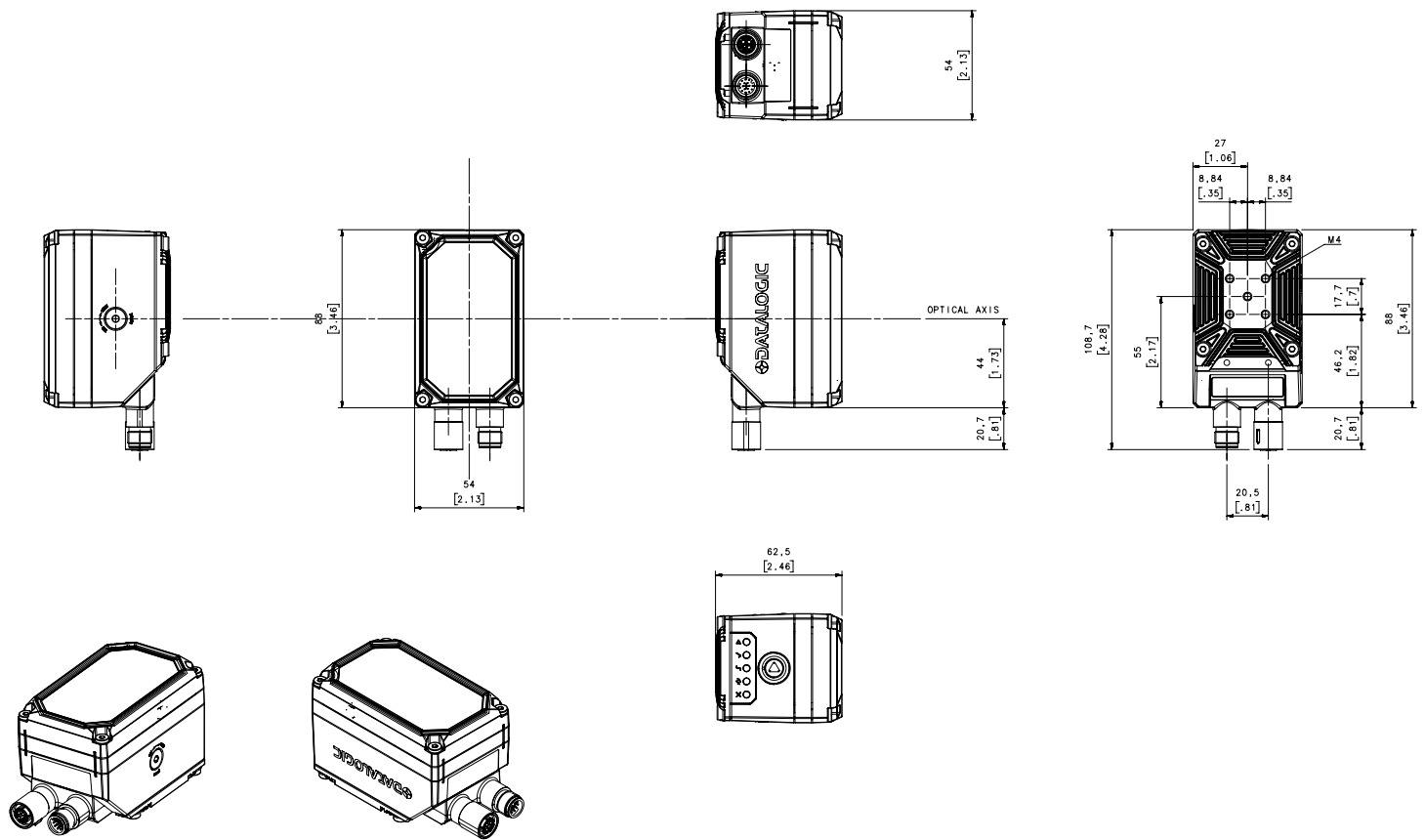
# LENSES

| P2X-SERIES FIELD OF VIEW |            |           |           |           |
|--------------------------|------------|-----------|-----------|-----------|
| OPERATING DISTANCE       | 6 mm       | 8 mm      | 12.5 mm   | 17.5 mm   |
| 50 mm                    | 67 x 37    | 46 x 26   | 24 x 13   |           |
| 100 mm                   | 117 x 66   | 82 x 46   | 46 x 25   | 31 x 17   |
| 200 mm                   | 218 x 122  | 155 x 87  | 90 x 49   | 62 x 35   |
| 300 mm                   | 318 x 179  | 227 x 128 | 133 x 73  | 93 x 52   |
| 400 mm                   | 419 x 236  | 300 x 169 | 177 x 96  | 124 x 70  |
| 500 mm                   | 519 x 292  | 373 x 209 | 220 x 120 | 155 x 87  |
| 600 mm                   | 620 x 349  | 445 x 250 | 263 x 144 | 185 x 104 |
| 700 mm                   | 720 x 405  | 518 x 291 | 307 x 167 | 216 x 121 |
| 800 mm                   | 821 x 462  | 590 x 332 | 350 x 191 | 247 x 139 |
| 900 mm                   | 921 x 518  | 663 x 373 | 394 x 214 | 277 x 156 |
| 1000 mm                  | 1022 x 575 | 735 x 414 | 437 x 238 | 308 x 173 |
| 1100 mm                  |            | 808 x 454 | 480 x 262 | 339 x 190 |
| 1200 mm                  |            | 880 x 495 | 524 x 285 | 369 x 208 |
| 1300 mm                  |            |           | 567 x 309 | 400 x 225 |
| 1400 mm                  |            |           | 611 x 333 | 431 x 242 |
| 1500 mm                  |            |           | 654 x 357 | 461 x 259 |

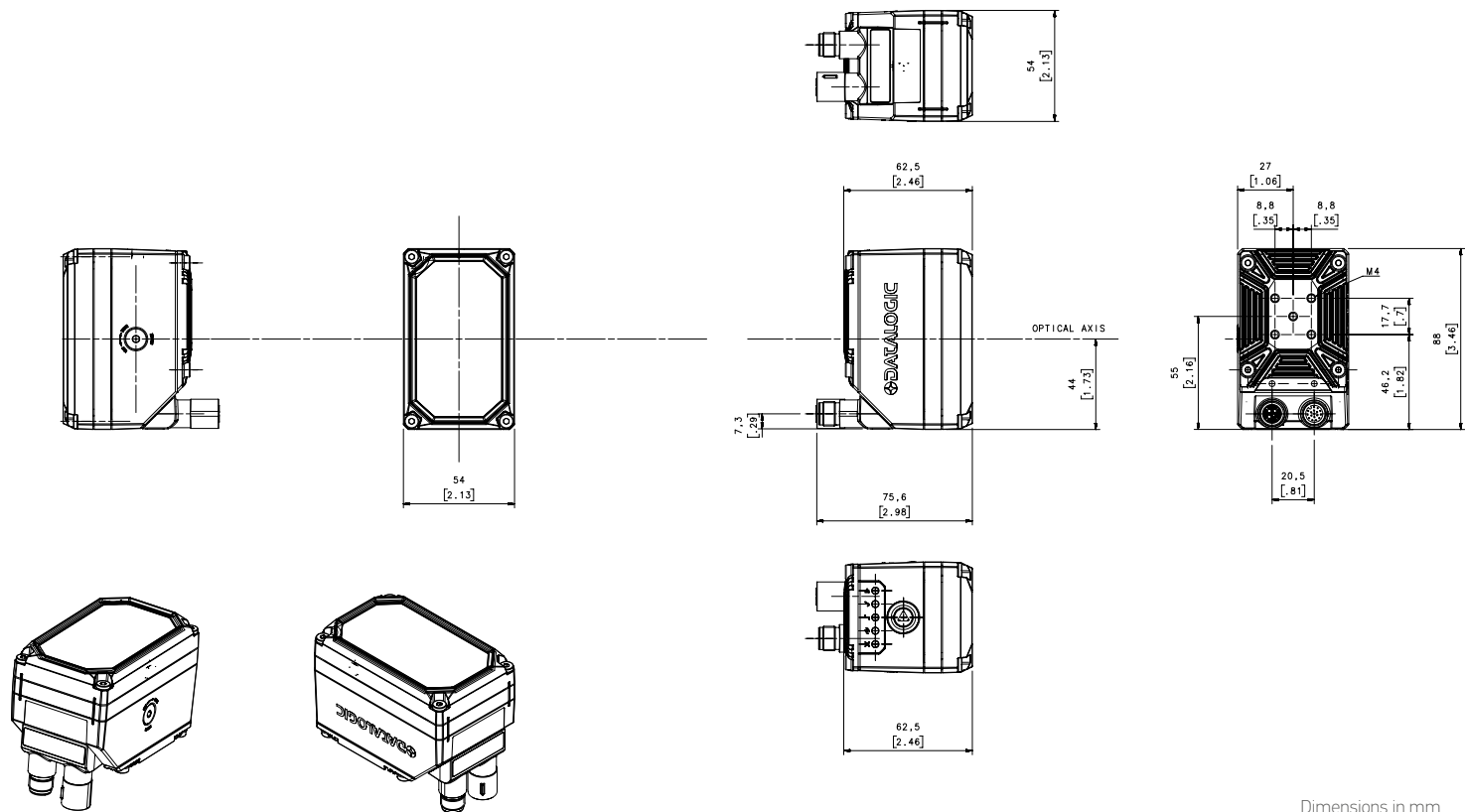


# DIMENSIONS

## P2X-SERIES 14 LED ILLUMINATOR - STRAIGHT 0° CONNECTORS

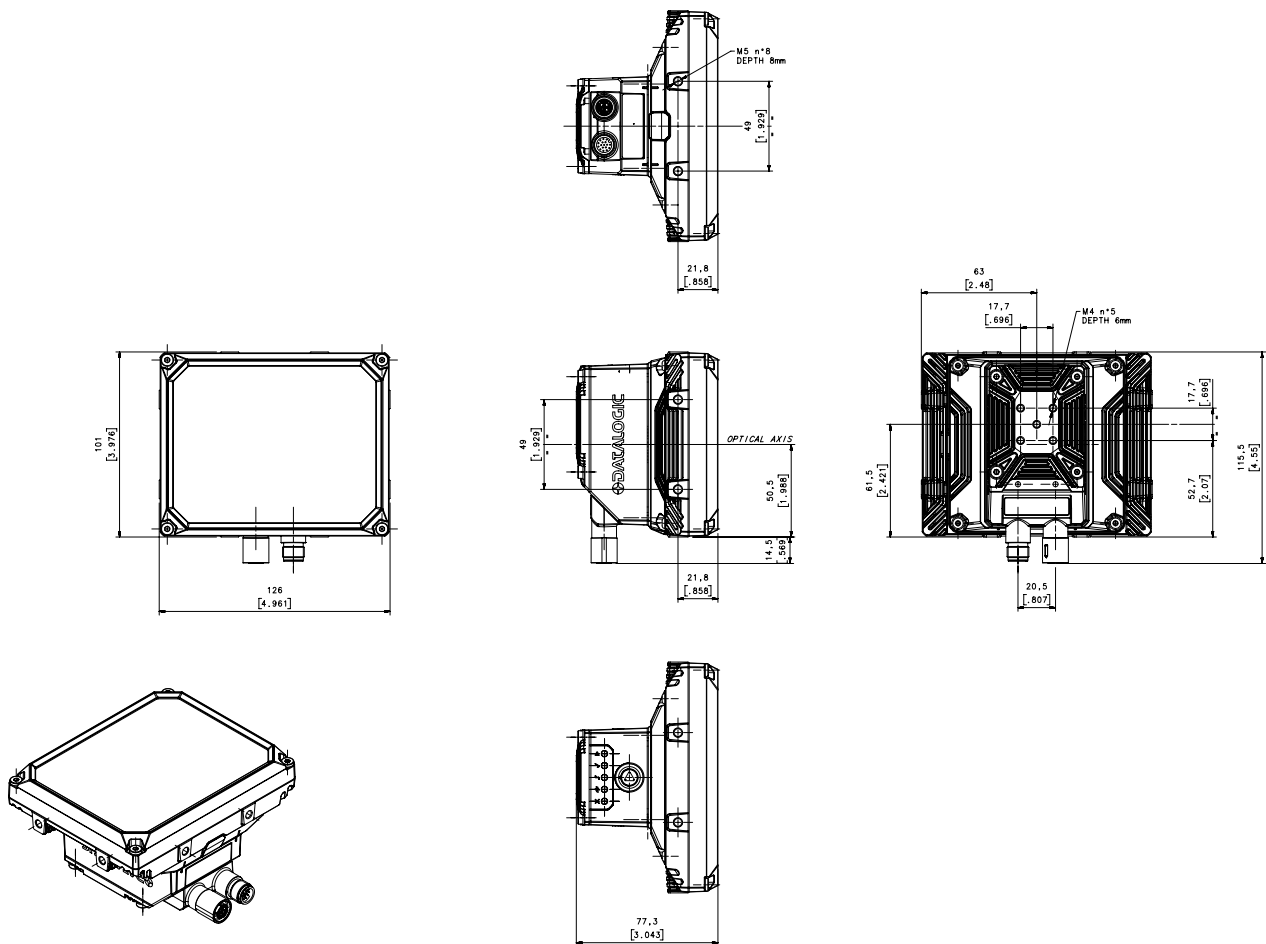


## P2X-SERIES 14 LED ILLUMINATOR - 90° CONNECTORS

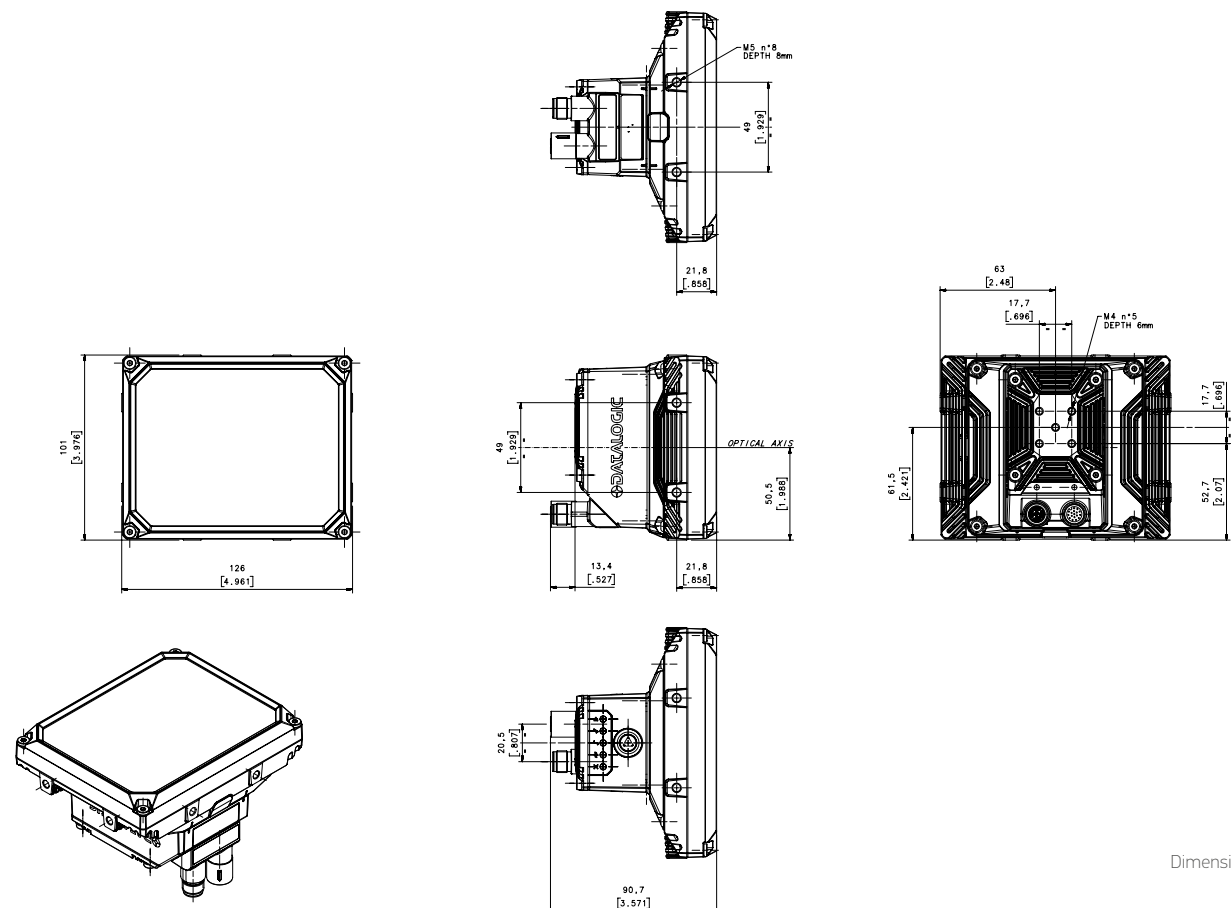


Dimensions in mm

## P2X-SERIES 36 LED ILLUMINATOR - STRAIGHT 0° CONNECTORS



## P2X-SERIES 36 LED ILLUMINATOR - 90° CONNECTORS



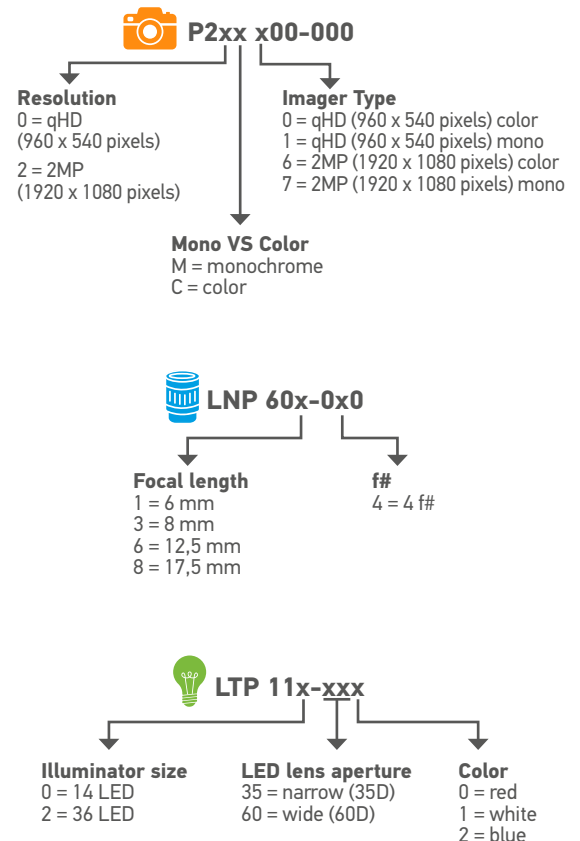
Dimensions in mm

# MODELS AND ACCESSORIES ORDER INFORMATION

| CATEGORY        | ORDER N°    | DESCRIPTION                             |
|-----------------|-------------|-----------------------------------------|
| Cameras         | 937710021   | P20M 100-000 ML                         |
|                 | 937710022   | P20C 000-000 ML                         |
|                 | 937710023   | P22M 700-000 ML                         |
|                 | 937710024   | P22C 600-000 ML                         |
| Lenses          | 95A900010   | LNP 601-040 ML 6MM FF4 1/3"             |
|                 | 95A900011   | LNP 603-040 ML 8MM FF4 1/3"             |
|                 | 95A900012   | LNP 606-040 ML 12.5MM FF4 1/3"          |
|                 | 95A900013   | LNP 608-040 ML 17.5MM FF4 1/3"          |
|                 | 95A900014   | LNP Micro Lens Kit M320/P2              |
| Illuminators    | 95A900023   | LTP 110-600 SN14L 60D RED 625nm         |
|                 | 95A900026   | LTP 110-350 SN14L 35D RED 625nm         |
|                 | 95A900025   | LTP 110-602 SN14L 60D BLU 475nm         |
|                 | 95A900028   | LTP 110-352 SN14L 35D BLU 475nm         |
|                 | 95A900024   | LTP 110-601 SN14L 60D WHT white         |
|                 | 95A900027   | LTP 110-351 SN14L 35D WHT white         |
|                 | 95A900031*  | LTP 112-600 SN36L 60D RED 625nm         |
|                 | 95A900034*  | LTP 112-350 SN36L 35D RED 625nm         |
|                 | 95A900033*  | LTP 112-602 SN36L 60D BLU 475nm         |
|                 | 95A900036*  | LTP 112-352 SN36L 35D BLU 475nm         |
|                 | 95A900032*  | LTP 112-601 SN36L 60D WHT white         |
|                 | 95A900035*  | LTP 112-351 SN36L 35D WHT white         |
|                 | 95A900038   | Adapter LL ML LT 36L M320/P2            |
|                 | 93ACC0271** | Cover STD LT 14L M320/P2                |
| Covers          | 93ACC0273   | Cover Polarizer LT 14L M320/P2          |
|                 | 93ACC0272   | Cover STD LT 36L M320/P2                |
|                 | 93ACC0274   | Cover Polarizer LT 36L M320/P2          |
| Filters         | 95A900018   | Filter YAG Cut LT 14L M320/P2           |
|                 | 95A900022   | Filter YAG Cut LT 36L M320/P2           |
| Add-on Licenses | 95A900008   | LICENSE, ENHANCED, SMART CAMERA         |
|                 | 95A900009   | LICENSE, PRO, SMART CAMERA              |
| Brackets        | 93ACC0283   | BK-32-010 SIDE FIX BRACKET M320/P2 BODY |
|                 | 93ACC0282** | BK-32-000 STD FIX BRACKET M320/P2 BODY  |
| Cables          | 93A050058   | CAB-DS01-S M12-IP67 TO CBX 1M           |
|                 | 93A050059   | CAB-DS03-S M12-IP67 TO CBX 3M           |
|                 | 93A050060   | CAB-DS05-S M12-IP67 TO CBX 5M           |
|                 | 93A051390   | CAB-DS10-S M12-IP67 TO CBX 10M          |
|                 | 93A050122   | CAB-ETH-X-M01 M12-IP67 GETH-X CAB 1M    |
|                 | 93A050123   | CAB-ETH-X-M03 M12-IP67 GETH-X CAB 3M    |
|                 | 93A050124   | CAB-ETH-X-M05 M12-IP67 GETH-X CAB 5M    |
|                 | 93A050140   | CAB-ETH-X-M10 M12-IP67 GETH-X CAB 10M   |
|                 | 93A050128   | CAB-ETH-X-RJ ADAPTER CAB GETH-X to RJ45 |
|                 | 93A050129   | CAB-ETH-X-D ADAPTER CAB GETH-X to ETH-D |

\*Requires Adapter LL ML LT 36L M320/P2 (order no. 95A900038)

\*\*Already included in the smart camera package.



## MAIN ACCESSORIES



\*\*\*Already included in the smart camera package

\*\*\*\*Already included and pre-mounted on 36 LED illuminators

## DATALOGIC PRODUCT OFFERING



DS-P2X-EN Rev A 20210224

The company endeavours to continuously improve and renew its products; for this reason the technical data and contents of this catalogue may undergo variations without prior notice. For correct installation and use, the company can guarantee only the data indicated in the instruction manual supplied with the products.