# MX-E SERIES

The MX-E Series of Industrial Vision Processors provides the highest performance in image processing with unmatched flexibility through GigE multi-camera connectivity support.

The MX-E Series allows users to choose the level of system performance and complexity based on their application needs. Four different MX-E models are available, each featuring the latest processors and high speed PoE (Power over Ethernet) camera ports.

MX-E vision processors are equipped with NPN or PNP digital I/Os and power up to 8 Gigabit PoE cameras.

The MX-E20 is an entry-level, affordable processor capable of connecting to 2 cameras. The MX-E20 offers a cost effective means to migrate from smart camera applications to an industrial vision system.

The MX-E40 is a rugged and compact industrial vision processor that features multi-core processors and up to 4 cameras. The MX-E40's long-life embedded components provide a robust and reliable vision system for critical inspection applications.

The MX-E80 extends the power and performance of the MX-E Series to applications that demand faster, more advanced algorithms and higher resolution cameras. With its quad-core processor it can dedicate a full processing core to each of the 4 cameras.

The MX-E90 is the newest introduction to the MX-E Series. With the capability to connect to 8 cameras and the highest processing power in this series, it allows users to extend their capability. Users can inspect faster and process more pixels to fully optimize their operation.

Powered by IMPACT, the MX-E Series is the ideal solution for the deployment of industrial vision systems with multiple independent inspection points.

GiGE®
VISION

## HIGHLIGHTS

- Rugged, industrial, high-powered vision processors
- State-of-the-art processors and the highest-quality, industry leading hardware components
- Four models for different performance levels
- Compatible with a wide range of cameras from VGA up to very high resolution
    - Grayscale and Color, Area Scan and Line Scan cameras
- Ethernet (GigE Vision) connectivity and multi-camera support
- Up to eight Power over Ethernet (PoE) camera ports – PoE compliant cameras need no power cables and support up to 100 meter cable lengths
- Universal dongle for easier SW license management
- Complete IMPACT software suite included for ultimate programming flexibility – addresses any inspection and user interface needs
- Long-term product availability

## BENEFITS

- The ultimate processors guarantee extraordinary computing power and maximize multi-camera inspection speed
- The highest quality hardware components in a rugged and compact processor chassis guarantee robustness and long- life service even in the harshest industrial environments
- Multi-camera capability - allows data collection and analysis from multiple points and reduces integration costs
- Four different models allow the user to select the correct level of performance based on the application needs
- Simplifies cabling by eliminating the need for camera power cables
- Universal dongles enable IMPACT software license and add-on license functionalities on all the vision processor models. Users can move licenses from one vision processor to another.
- Multiple configuration options deliver **unmatched application flexibility**
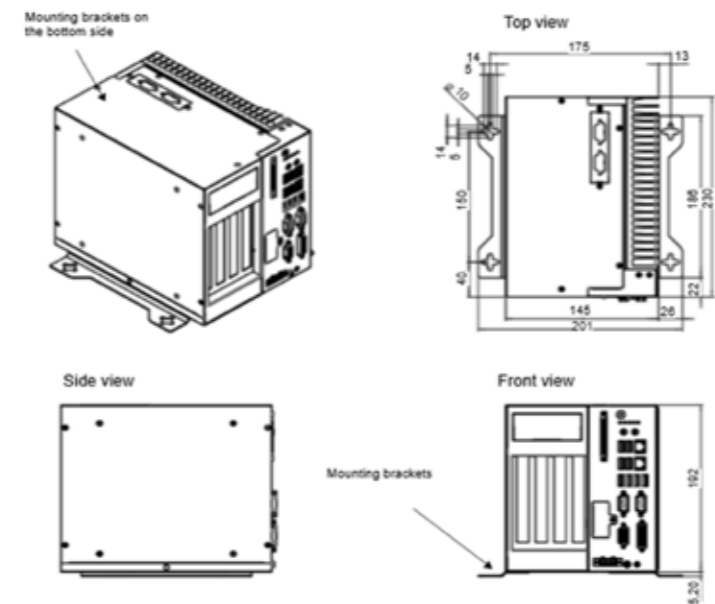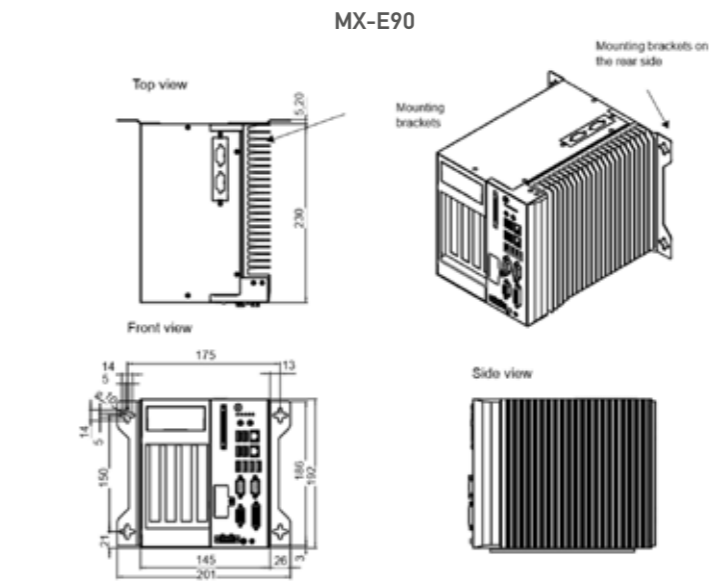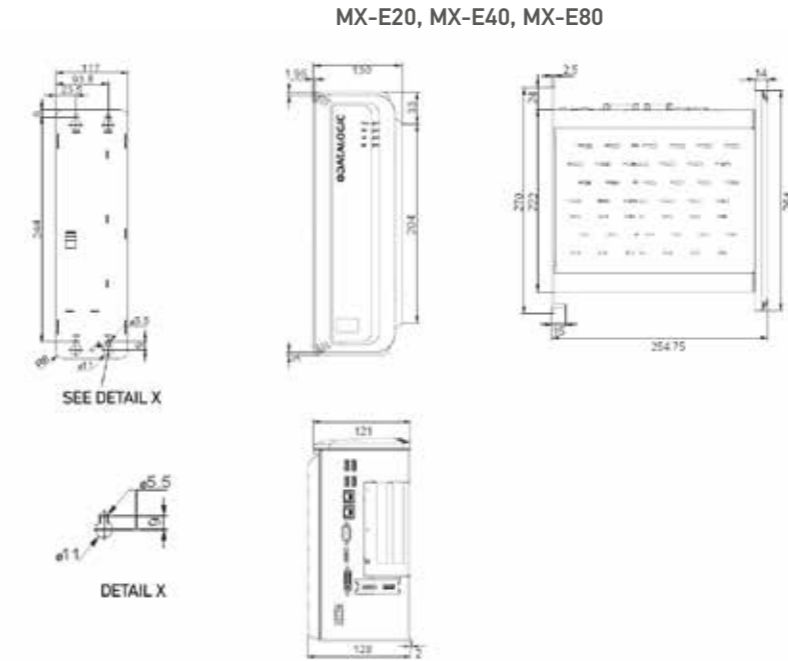
# TECHNICAL DATA

| | MX-E20 | MX-E40 | MX-E80 | MX-E90 |
|---|---|---|---|---|
| **CPU** | Intel Celeron 1047UE 1.4 Ghz – dual core | Intel Celeron 1020E 2.2 Ghz – dual core | Intel Core i7 3615QE 2.3 Ghz – quad core | Intel Core i7-3.8 GHz Quad Core +HT |
| **System Memory** | 4 GB DDR3 RAM | 8 GB DDR3 RAM | 16 GB DDR3 RAM | 32 GB DDR4 RAM |
| **Storage** | 60 GB SATA SSD (MLC) | | 128 GB SATA SSD (MLC) | |
| **Graphics** | Intel HD 3000 (1920x1200 resolution) - DVI | | | Intel® HD Graphics 630 (1920 x 1200 resolution) - VGA, DVI |
| **Camera Interface** | See table below | | | |
| **Camera Imager Limit** | 2Mpix or lower | None | | |
| **Network Interface** | 2x LAN ports - 10/100/1000 Mbps Base-T | | | |
| **Serial Communications** | 1x RS-232 serial port | | | 2x RS-232 serial port |
| **Keyboard/Mouse** | 4x USB 3.0 ports | | | 8x USB 3.0 ports |
| **Comm Connectivity** | Supports Ethernet/IP, Profinet, Modbus TCP and OPC | | | |
| **I/O** | 16in-16out, PNP card or NPN card, 200µs response time | | | 16 in-16out - single I/O card configurable PNP/NPN, 100µs response time |
| **Operating System** | Windows Embedded Standard 7 | | | Windows 10 IoT Enterprise |
| **Supply Voltage** | 24 VDC +/- 25% | | | |
| **Nominal Current Draw** | 5.5 A @ 24 VDC | | | |
| **Dimensions** | 270 (H) x 130 (W) x 255 (D) mm - 10.6 (H) x 5.1 (W) x 10 (D) in | | | 145 (H) x 192 (W) x 230 (D) mm - 5.7 (H) x 7.56 (W) x 9.05 (D) in |
| **Weight** | 2.05 Kg | | | 4.45 Kg |
| **Housing** | Galvanized plate - plastic | | | Metal |
| **Operating Temperature** | 0 to 55 °C / 32 to 131 °F | | | 0 to 50 °C / 32 to 122 °F |
| **Operating Humidity** | 10 to 90% (non-condensing) | | | 5 to 95% (non-condensing) |
| **Mechanical Protection** | IP20 | | | IP20 |
| **Certification (Safety Compliance)** | CE, c-UL-us | | | CE/FCC, c-UL-us, KCC |

# PART NUMBER KEY

| MODEL | PROCESSING POWER | NUMBER OF PORTS | I/O TYPE | OPERATING SYSTEM |
|---|---|---|---|---|
| **MX-E** | XX | X | X | X |
| | **20** = Celeron - 1.4 GHz dual Core<br>**40** = Celeron - 2.2 GHz dual Core<br>**80** = i7 - 2.3 GHz Quad Core<br>**90** = i7 - 3.8 GHz Quad Core+HT | **2** = 2x - 1000 Mbps Base-T, PoE camera ports<br>**4** = 4x - 1000 Mbps Base-T, PoE camera ports<br>**8** = 8x - 1000 Mbps Base-T, PoE camera ports | **P** = 16 IN - 16 OUT PNP<br>**N** = 16 IN - 16 OUT NPN<br>**B** = 16 IN - 16 OUT PNP/NPN | **1** = WES7<br>**2** = WIN10 |
| **Examples** | MX-E20-2-P-1 = MX-E20 with 2 camera ports, PNP I/Os, WES7 OS<br>MX-E80-4-N-1 = MX-E80 with 4 camera ports, NPN I/Os, WES7 OS<br>NOTE: For all possible combinations, see the MX-E Series Part Number list. | | | |

# MECHANICAL DRAWINGS

All dimensions in mm

## MX-E20, MX-E40, MX-E80



SEE DETAIL X

DETAIL X

## MX-E90



Top view

Mounting brackets on the rear side

Mounting brackets

Front view

Side view

Mounting brackets on the bottom side

Top view

Side view

Front view

Mounting brackets

# MX-E SERIES

## AREA SCAN CAMERAS

The MX-E Series supports a series of cameras that are grayscale or color and supports standard vision GigE connectivity. Thanks to their small housing, cameras allow for easy installation in locations where space is constrained.

The cameras are the ideal solution for fast embedded vision system integration and ensures an outstanding price/performance ratio. High resolution and frame rate guarantee superior image acquisition for tackling most complex machine vision applications.

### HIGHLIGHTS

- GigE compatible to MX-E Series vision processors
- VGA to 5MP resolution, in both grayscale and color
- CMOS image sensors for high speed performance
- Power over Ethernet (PoE) guarantees minimum wiring and easy installation
- Compact housing (as small as 29 x 29 x 60 mm) enables mounting in space-constrained locations
- High frame rate ensures image capture at rates up to 300 frames per second (fps)
- Trigger and strobe I/O provide outstanding integration flexibility

### BENEFITS

- Reduced size for minimum space requirements
- GigE vision camera interface
- High frame rate for superior image acquisition
- and processing
- State-of-art grayscale and color image sensors
- C-mount lens support
- IP30 rated housing
- CE, FCC and RoHS compliant

## TECHNICAL DATA

| GRAYSCALE MODEL | COLOR MODEL | RESOLUTION | IMAGER | SHUTTER | FRAME RATE (FPS) | PoE |
|---|---|---|---|---|---|---|
| E101 | E101C | 640 x 480 | 1/4" CMOS | Global | 376 | • |
| E151 | E151C | 1280 x 1024 | 1/2" CMOS | Global | 88 | • |
| E181 | E181C | 1920 x 1200 | 2/3" CMOS | Global | 50 | • |
| M197 | M197C | 2592 x 1944 | 1/2.5" CMOS | Rolling | 14 | • |
| E198 | E198C | 2448 x 2048 | 2/3" CMOS | Global | 23 | • |

## MECHANICAL DRAWINGS

All dimensions in mm



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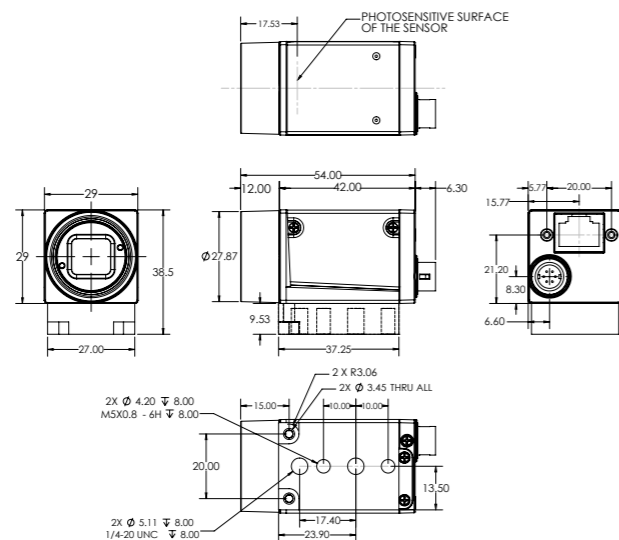
# MX-E SERIES

## LINE SCAN CAMERAS

The MX-E Series supports a series of line scan cameras that are grayscale supports standard vision GigE connectivity. These cameras are for applications that need high resolution and the object is very long or an endless web of material.

The cameras are the ideal solution for printing machines to inspect printed images such as a continuous web or the printing around a circular object.

### HIGHLIGHTS

- GigE compatible to MX-E40, MX-E80 and MX-#90 vision processors
- 2K to 8K resolution in grayscale
- High quality images sensors for speed performance
- Compact housing enables mounting in space-constrained locations
- High line rate ensures images capture at rates for high speed applications

### BENEFITS

- Reduced size for minimum space requirements
- GigE vision camera interface
- Great for high-speed or high-resolution applications
- Different lens mount options to support applications needs
- IP30 rated housing
- CE, FCC and RoHS compliant

## TECHNICAL DATA

| | LINE SCAN | | | | | |
|---|---|---|---|---|---|---|
| MODEL | RESOLUTION | MAX. LINE RATE | PIXEL SIZE | C-MOUNT | F-MOUNT | M42-MOUNT |
| M565 | 2048 | 51 KHz | 7 µm x 7 µm | • | • | • |
| M570 | 4096 | 26 KHz | 7 µm x 7 µm | | • | • |
| M575 | 6144 | 17 KHz | 7 µm x 7 µm | | • | • |
| M580 | 8192 | 12 KHz | 3.5 µm x 3.5 µm | | • | • |

## MECHANICAL DRAWINGS

All dimensions in mm
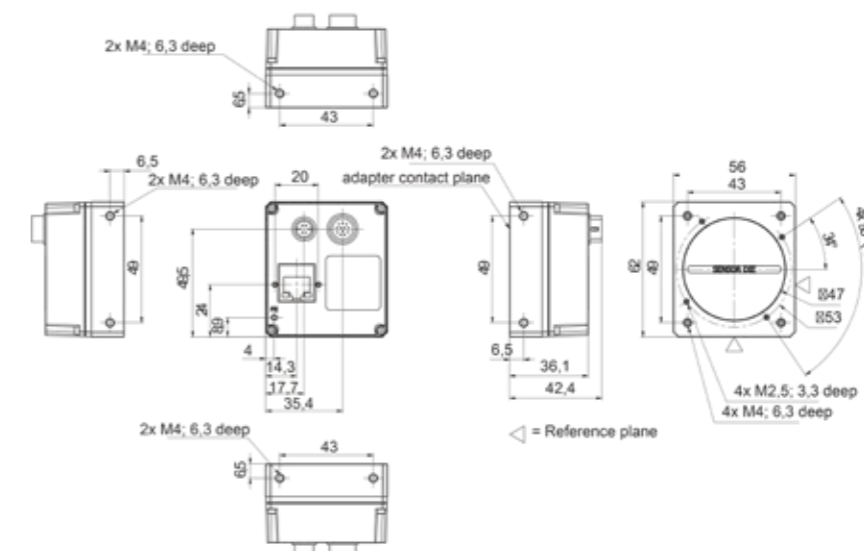
# MX-E SERIES

| DESCRIPTION | PART NUMBER |
|---|---|
| **Vision Processors** | |
| MX-E20-2-P-1, Vision Processor, 2 ports, PNP, WES7 | 959912103 |
| MX-E20-2-N-1, Vision Processor, 2 ports, NPN, WES7 | 959912104 |
| MX-E40-2-P-1, Vision Processor, 2 ports, PNP, WES7 | 959914107 |
| MX-E40-2-N-1, Vision Processor, 2 ports, NPN, WES7 | 959914108 |
| MX-E40-4-P-1, Vision Processor, 4 ports, PNP, WES7 | 959914109 |
| MX-E40-4-N-1, Vision Processor, 4 ports, NPN, WES7 | 959914110 |
| MX-E80-2-P-1, Vision Processor, 2 ports, PNP, WES7 | 959918105 |
| MX-E80-2-N-1, Vision Processor, 2 ports, NPN, WES7 | 959918106 |
| MX-E80-4-P-1, Vision Processor, 4 ports, PNP, WES7 | 959918107 |
| MX-E80-4-N-1, Vision Processor, 4 ports, NPN, WES7 | 959918108 |
| MX-E90-4-B-2, Vision Processor, 4 ports, PNP/NPN, WIN10 | 959918112 |
| MX-E90-8-B-2, Vision Processor, 8 ports, PNP/NPN, WIN10 | 959918113 |
| **Dongles** | |
| DONGLE, IMPACT | 93ACC0185 |
| DONGLE, IMPACT, Enhanced | 93ACC0236 |
| DONGLE, IMPACT, PST | 93ACC0187 |
| DONGLE, IMPACT, Enhanced, PST | 93ACC0237 |
| **Licenses, MX-E Series Processors** | |
| LICENSE, ENHANCED, PROCESSOR | 95A907109 |
| LICENSE, PATTERN SORTING TOOL, PROCESSOR | 95A906545 |
| **GigE Area Scan Cameras** | |
| Camera, E101, Gig-E, 659 x 480, 300 FPS, Grayscale, 1/4" CMOS | 959933022 |
| Camera, E101C, Gig-E, 659 x 480, 300 FPS, Color, 1/4" CMOS | 959933023 |
| Camera, E151, Gig-E, 1280 x 1024, 75 FPS, Grayscale, 1/2" CMOS | 959933024 |
| Camera, E151C, Gig-E, 1280 x 1024, 75 FPS, Color, 1/2" CMOS | 959933025 |
| Camera, E181, Gig-E, 1920 x 1200, 48 FPS, Grayscale, 2/3" CMOS | 959933026 |
| Camera, E181C, Gig-E, 1920 x 1200, 48 FPS, Color, 2/3" CMOS | 959933027 |
| Camera, M197, Gig-E, 2592 x 1944, 14 FPS, Grayscale, 1/2.5" CMOS | 959931010 |
| Camera, M197C, Gig-E, 2592x1944, 14 FPS, Color, 1/2.5" CMOS | 959931011 |
| Camera, E198, Gig-E, 2448 x 2048, 20 FPS, Grayscale, 2/3" CMOS | 959933044 |
| Camera, E198C, Gig-E, 2448 x 2048, 20 FPS, Color, 2/3" CMOS | 959933045 |
| **GigE Line Scan Cameras** | |
| Camera, M565, Gig-E, 2048 Linescan, 51KHz, Grayscale | 959931002 |
| Camera, M570, Gig-E, 4096 Linescan, 26KHz, Grayscale | 959931003 |
| Camera, M575, Gig-E, 6144 Linescan, 17KHz, Grayscale | 959933020 |
| Camera, M580, Gig-E, 8192 Linescan, 12KHz, Grayscale | 959933021 |

# ACCESSORIES

| DESCRIPTION | PART NUMBER |
|---|---|
| **I/O Cables, MX Series Processors** | |
| Cable, I/O, MX Series, Processor to Terminal Block, .75 Meter | 606-0675-.75 |
| Cable, I/O, MX Series, Processor to Terminal Block, 3 Meter | 606-0675-3 |
| Cable, I/O, MX Series, Processor to Terminal Block, 4.5 Meter | 606-0675-4.5 |
| Cable, I/O, MX Series, Processor to Terminal Block, 7.5 Meter | 606-0675-7.5 |
| **I/O Boards, MX Series Processors** | |
| I/O Board, MX-Series Processors, Female DB37, DIN Rail Mountable, no isolation | 248-0110 |
| **Power and I/O Cables to Terminal Block, M and E Series Cameras** | |
| Cable, Camera I/O, M1xx, E1xx, M5xx, 6 pin, 3 Meter, Camera to Terminal Block | 606-0674-03 |
| Cable, Camera I/O, M1xx, E1xx, M5xx, 6 pin, 5 Meter, Camera to Terminal Block | 606-0674-05 |
| Cable, Camera I/O, M1xx, E1xx, M5xx, 6 pin, 10 Meter, Camera to Terminal Block | 606-0674-10 |
| Cable, M5xx, 12 pin, 3 Meter, Camera to Terminal Block | 606-0673-03 |
| Cable, M5xx, 12 pin, 5 Meter, Camera to Terminal Block | 606-0673-05 |
| Cable, M5xx, 12 pin, 10 Meter, Camera to Terminal Block | 606-0673-10 |
| **Power and I/O Cables Unterminated, M and E Series Cameras** | |
| M1xx, E1xx Cameras I/O Cable, 6 pin, 3 Meter, Unterminated | 606-0672-03 |
| M1xx, E1xx Cameras I/O Cable, 6 pin, 5 Meter, Unterminated | 606-0672-05 |
| M1xx, E1xx Cameras I/O Cable, 6 pin, 10 Meter, Unterminated | 606-0672-10 |
| Cable, I/O, M5xx, 12 pin, 3 Meter, Camera to Unterminated | 606-0671-03 |
| Cable, I/O, M5xx, 12 pin, 5 Meter, Camera to Unterminated | 606-0671-05 |
| Cable, I/O, M5xx, 12 pin, 10 Meter, Camera to Unterminated | 606-0671-10 |
| **I/O Boards, M and E Series Cameras** | |
| I/O Board, M1xx, E1xx Cameras, w / isolation | 661-0399 |
| I/O Board, M5xx Camera, w / isolation | 661-0401 |
| **Brackets, M and E Series Cameras** | |
| Camera Mount, M1xx, E1xx Cameras | 95A903029 |
| **Ethernet Cables, M and E Series Cameras** | |
| Cable, Gig-E, CAT6, STP with thumb screws, 3 Meter | 606-0677-M1-03 |
| Cable, Gig-E, CAT6, STP with thumb screws, 5 Meter | 606-0677-M1-05 |
| Cable, Gig-E, CAT6, STP with thumb screws, 10 Meter | 606-0677-M1-10 |

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