

## MX-U Processors Vision System

### QUICK REFERENCE GUIDE

#### SYSTEM SPECIFICATIONS

##### Processors

MX-U20: Intel Celeron 1.4 GHz; MX-U40: Intel Celeron 2.2 GHz ; MX-U80: Intel Core i7 2.3 GHz

##### Storage

MX-U20 and MX-U40: 4 GB RAM - 60 GB SSD; MX-U80: 8 GB RAM - 128 GB SSD

##### USB 3.0 camera ports

MX-U20: 2; MX-U40 and MX-U80: 4

All MX-U processors have the following specifications:

- HD graphics (1920x1200)
- 2 x 10/100/1000 Mbps Base-T Network Interface
- Ethernet/IP, Modbus TCP, OPC communications are supported
- 1 x RS232 port
- 16 x Optically Isolated Digital In + 16 x Optically Isolated Digital Out
- Microsoft Windows OEM Embedded Standard 7 64-bit

#### DESCRIPTION

The MX-U machine vision processors offer the most powerful and flexible way to solve even complex machine vision applications.



- Rugged IP20 housing
- Low Maintenance
- Industrial Application Design
- 16 Inputs and Outputs
- Up to 4 USB cameras
- Gigabit Ethernet
- USB 3.0 camera communication
- Easily Accessed connectors

#### SUPPLY VOLTAGE CONNECTION

|  |  |
|--|--|
| <p><b>Power Connector</b><br/>+ 24VDC Supply Plus<br/>GND Functional Ground*<br/>- 24VDC Supply Minus<br/>*Connect to ground using a conductor with minimum 2.5 mm<sup>2</sup> cross-section</p> | <p>Power 24 VDC</p> <p>Supplied Power Plug</p> |
|--|--|

#### STATUS LEDs AND BUTTONS

|   |   |
|---|---|
| <ol style="list-style-type: none"> <li>1. Power, green</li> <li>2. HDD, Yellow</li> <li>3. Link, Yellow</li> <li>4. Run, Green</li> <li>5. Power Button</li> <li>6. Reset Button</li> </ol> | <p>Behind Front Cover</p> <p>Power Button: Press and release to turn on the unit or shut down the OS and switch off the unit. Press and hold to switch off without OS shutdown.<br/>Reset Button: Triggers a hardware and PCI reset. The unit is restarted.</p> |
|---|---|

#### HASP KEY USB PORT

|   |                           |
|---|---------------------------|
| <ol style="list-style-type: none"> <li>1. Reset Button</li> <li>2. USB Port for Hasp Key</li> </ol> <p>To enable cameras and licenses, insert the provided Hasp key in the USB port (labeled USB5), located behind the Front Cover.</p> | <p>Behind Front Cover</p> |
|---|---------------------------|

#### CONNECTORS

|  |                 |
|--|-----------------|
| <ol style="list-style-type: none"> <li>1. USB 3.0 Cameras 1 through 4 (MX-U20 Cameras 1 and 2 only)</li> <li>2. Ethernet 2</li> <li>3. Ethernet 1</li> <li>4. RS232 (COM 1)</li> <li>5. Display Port</li> <li>6. DVI for Monitor</li> <li>7. Supply Voltage</li> <li>8. 37 pin D-Sub Digital I/O</li> <li>9. USB 2.0 – Keyboard/Mouse</li> </ol> | <p>Top View</p> |
|--|-----------------|

#### COMMUNICATIONS

Camera communication and power are provided by the USB 3.0 camera ports. Maximum cable length is 5 meters. Use only Datalogic provided cables. Camera trigger and strobe output are provided by an external 6-pin I/O cable with no connection to the processor. Use cable 606-0672-xx (unterminated) or cable 606-0674-xx (with terminal block 661-0399 or 248-0140). Refer to the U-Series Hardware Guide.

#### DIGITAL I/O CONNECTIONS

##### 37 pin D-Sub Digital I/O connector

Use cable 431-0592-xx (unterminated) or cable 606-0675-xx (with terminal block 248-0110). Cable and terminal numbers are listed in the following table. Use shielded cable for all connections. **Note:** Do not disconnect the cable at the connector while power is on.

| Pin/Terminal Number | Color Code         | Signal Name           |
|---------------------|--------------------|-----------------------|
| 1                   | Black              | Output Minus (Note 1) |
| 2                   | White              | Input 1- and Event 1- |
| 3                   | Red                | Input 2- and Event 2- |
| 4                   | Green              | Input 3-              |
| 5                   | Orange             | Input 4-              |
| 6                   | Blue               | Input 5-              |
| 7                   | White/Black        | Input 6-              |
| 8                   | Red/Black          | Input 7-              |
| 9                   | Green/Black        | Input 8-              |
| 10                  | Orange/Black       | Input 9-              |
| 11                  | Blue/Black         | Input 10-             |
| 12                  | Black/White        | Input 11-             |
| 13                  | Red/White          | Input 12-             |
| 14                  | Green/White        | Input 13-             |
| 15                  | Blue/White         | Input 14-             |
| 16                  | Black/Red          | Input 15-             |
| 17                  | White/Red          | Input 16-             |
| 18                  | Orange/Red         | Input Plus (Note 2)   |
| 19                  | Blue/Red           | No Connection         |
| 20                  | Red/Green          | Output Minus (Note 1) |
| 21                  | Orange/Green       | Output 1              |
| 22                  | Black/White/Red    | Output 2              |
| 23                  | White/Black/Red    | Output 3              |
| 24                  | Red/Black/White    | Output 4              |
| 25                  | Green/Black/White  | Output 5              |
| 26                  | Orange/Black/White | Output 6              |
| 27                  | Blue/Black/White   | Output 7              |
| 28                  | Black/Red/Green    | Output 8              |
| 29                  | White/Red/Green    | Output 9              |
| 30                  | Red/Black/Green    | Output 10             |
| 31                  | Green/Black/Orange | Output 11             |
| 32                  | Orange/Black/Green | Output 12             |
| 33                  | Blue/White/Orange  | Output 13             |
| 34                  | Black/White/Orange | Output 14             |
| 35                  | White/Red/Orange   | Output 15             |
| 36                  | Orange/White/Blue  | Output 16             |
| 37                  | White/Red/Blue     | Output Plus (Note 3)  |

Pin 1 → Male Connector Solder Side

NOTES:  
1: Common Minus for output ports (External 12 to 24VDC Minus)  
2: Common Plus for input ports (External 12 to 24VDC Plus)  
3: Common Plus for output ports (Not an output voltage source. External 12 to 24VDC Plus is required)

#### DIGITAL I/O SPECIFICATIONS

| Inputs        | Specification   |
|---------------|---|
| Format        | Opto-coupler isolated input (current sink compatible) |
| Resistance    | 4.7kΩ   |
| On current    | 2.0 mA or more  |
| Off current   | 0.16 mA or less                                       |
| Response Time | Within 200 μsec                                       |

| Outputs          | Specification   |
|------------------|---|
| Format           | Opto-coupler isolated open collector output (current sink type)         |
| Output voltage   | 35 VDC (max)  |
| Output current   | 100mA (per channel max)   |
| Residual voltage | 0.5V or less (Output current≤50mA), 1.0V or less (Output current≤100mA) |
| Response Time    | Within 200 μsec   |

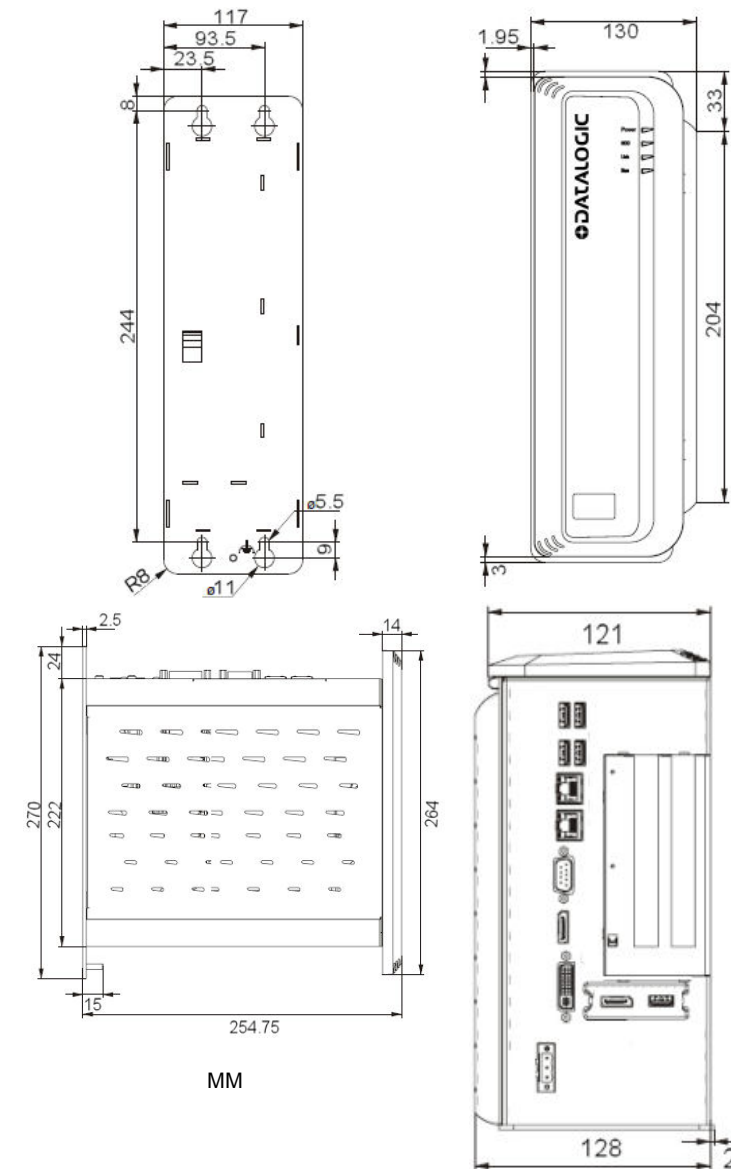
#### DIGITAL I/O CABLES AND TERMINALS

| Cable   | Part Number |
|---|-------------|
| Digital I/O 37-pin to Terminal Block 248-0110 | 606-0675-xx |
| Digital I/O 37-pin to pigtail                 | 431-0592-xx |

#### I/O CONFIGURATION

Vision Program Manager (VPM) software installed on the processor is used to create vision programs and configure input and output response. Refer to the Impact Reference Guide for programming details.

#### MECHANICAL DIMENSIONS

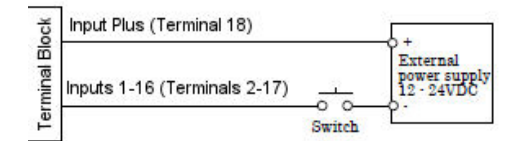


#### CAMERA CABLES, TERMINALS, AND CONFIGURATION

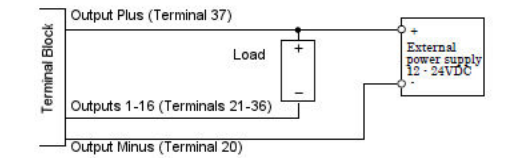
Camera trigger and strobe output are provided by an external 6-pin I/O cable with no connection to the processor. Use cable 606-0672-xx (unterminated) or cable 606-0674-xx (with terminal block 661-0399 or 248-0140). Refer to the U-Series Hardware Guide.

| Cable   | Part Number |
|---|-------------|
| Camera Trigger and Strobe: 6-pin to Terminal Block 248-0140 or 661-0399 | 606-0674-xx |
| Camera Trigger and Strobe: 6-pin to pigtail                             | 606-0672-xx |

#### EXAMPLE I/O CIRCUIT DIAGRAMS



I/O Input Connection (Sinking)



I/O Output Connection (Sinking)

#### TECHNICAL DATA

|                                  |  |
|----------------------------------|--|
| Supply voltage (Vs)              | 24 VDC ± 25%   |
| Nominal Current Draw             | 5.5 A at 24 VDC                                      |
| Inputs                           | 16 opto-isolated                                     |
| Input current                    | ON: 2.0 mA or more<br>Off: 0.16 mA or less           |
| Outputs                          | 16 opto-isolated current sinking                     |
| Output Voltage                   | 35 VDC (max)   |
| Output current                   | 100 mA max per output                                |
| Output saturation voltage        | < 1 V  |
| Network interface                | 10/100/1000 Mbps Ethernet x 2                        |
| Camera interface USB 3.0         | 5 Gigabit/s max<br>1 A Max per connection            |
| Dimensions                       | 130 × 270 × 254.75 mm                                |
| Data retention                   | Non-volatile SSD memory                              |
| Temperature                      | Operating: 0 °C to 55 °C<br>Storage: -20 °C to 60 °C |
| Relative Humidity (30 °C)        | Operating: 10 to 90%<br>Storage: 5 to 95%            |
| Vibrations (EN60068-2-6)         | 2 to 8 Hz: 1.75 mm amplitude /<br>9 to 200 Hz: 0.5 g |
| Shock resistance (EN60068-2-27)  | 11 MS (15 G)   |
| Housing material                 | Galvanized plate, plastic                            |
| Mechanical protection (EN 60529) | IP20   |
| Weight                           | 2050 g   |

#### COMPLIANCE

Only connect Ethernet and dataport connections to a network which has routing only within the plant or building and no routing outside the plant or building.

#### CE COMPLIANCE

**Warning:** This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

#### FCC COMPLIANCE

Modifications or changes to this equipment without the expressed written approval of Datalogic could void the authority to use the equipment.

This device complies with PART 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference which may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

#### DECLARATION OF CONFORMITY

We DATALOGIC AUTOMATION declare under our sole responsibility that these products are conform to the 2004/108/CE and successive amendments.

#### WARRANTY

DATALOGIC AUTOMATION warrants its products to be free from defects. DATALOGIC AUTOMATION will repair or replace, free of charge, any product found to be defective during the warranty period of 24 months from the manufacturing date. This warranty does not cover damage or liability deriving from the improper application of DATALOGIC AUTOMATION products.

#### DATALOGIC AUTOMATION

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