

## MX-E Processor with PNP (sourcing) I/O QUICK REFERENCE GUIDE

### DESCRIPTION

This guide covers MX-E processor models that contain the letter "P." For example MX-E20-2-P-1. These models provide PNP (sourcing) inputs and outputs. The MX-E series machine vision processors offer the most powerful and flexible way to solve even complex machine vision applications.

- Rugged IP20 housing
- Low Maintenance
- 16 Inputs and Outputs
- Up to 4 GigE cameras
- Easily Accessed connectors

### SYSTEM SPECIFICATIONS

#### Processors

MX-E20: Intel Celeron 1.4 GHz; MX-E40: Intel Celeron 2.2 GHz ; MX-E80: Intel Core i7 2.3 GHz

#### Storage

MX-E20 and MX-E40: 4 GB RAM - 60 GB SSD; MX-E80: 8 GB RAM - 128 GB SSD

#### GigE camera ports

MX-E20: 2; MX-E40 and MX-E80: 2 or 4

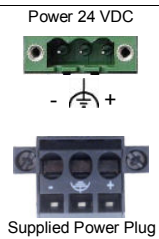
All MX-E processors have the following specifications:

- 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

### SUPPLY VOLTAGE CONNECTION

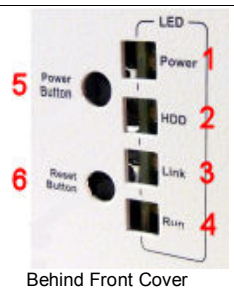
#### Power Connector

+ 24VDC Supply Plus  
GND Functional Ground\*  
- 24VDC Supply Minus  
\*Connect to ground using a conductor with minimum 2.5 mm<sup>2</sup> cross-section



### STATUS LEDS AND BUTTONS

1. Power, green
2. HDD, Yellow
3. Link, Yellow
4. Run, Green
5. Power Button
6. Reset Button



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.  
Reset Button: Triggers a hardware and PCI reset. The unit is restarted.

### HASP KEY USB PORT

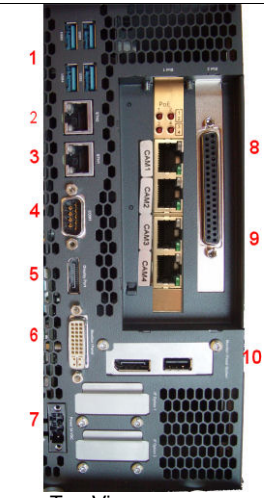
1. Reset Button
2. USB Port for Hasp Key

To enable cameras and licenses, insert the provided Hasp key in the USB port (labeled USB5), located behind the Front Cover.



### CONNECTORS

1. USB 3.0
2. Ethernet 2
3. Ethernet 1
4. RS232 (COM 1)
5. Display Port
6. DVI for Monitor
7. Supply Voltage
8. 37 pin D-Sub Digital I/O
9. M-Series or E-Series Camera (CAM1-CAM4)  
Cable 606-0677-xx
10. USB 2.0 – Keyboard/Mouse Display Port



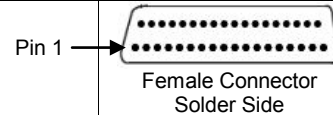
Top View

### DIGITAL I/O CABLES TERMINALS AND CONNECTIONS

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

Note: Do not disconnect the cable at the connector while power is on.

Pin/Terminal Number	Color Code	Signal Name
1	Black	Input 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	Output Plus (Note 2)
19	Blue/Red	No Connection
20	Red/Green	No Connection
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 2)



NOTES:  
1: Common Minus for input ports (External 12 to 24VDC Minus)  
2: 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
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
Output voltage	35 VDC (max)
Output current	100mA (per channel max)
Residual voltage	0.5V or less (Output currents≤50mA), 1.0V or less (Output currents≤100mA)
Response Time	Within 200 μsec

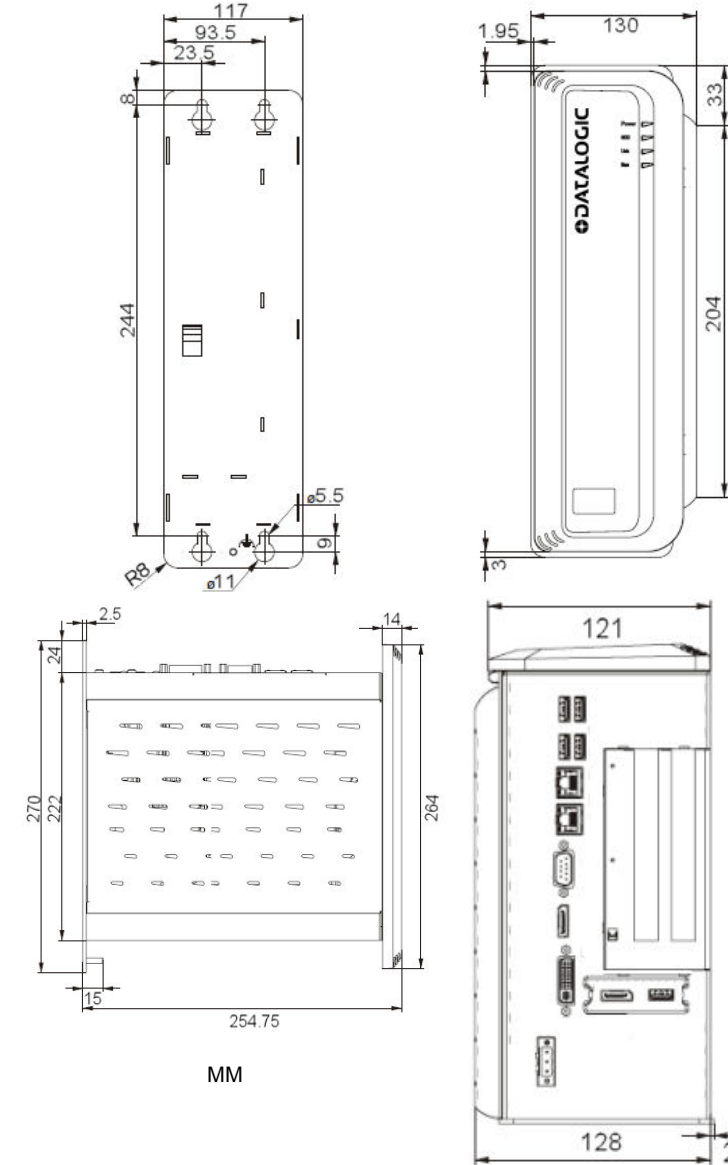
### COMMUNICATIONS

Camera communication uses Cat6 Ethernet cable and provides POE for M1xx and E1xx cameras. Use only Datalogic provided cables.

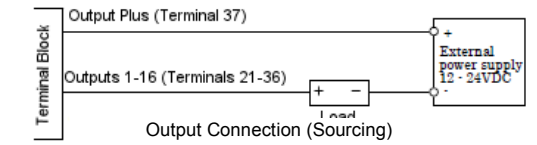
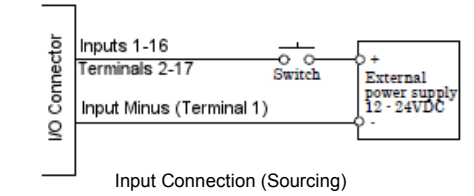
### I/O CONFIGURATION

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



### EXAMPLE I/O CIRCUIT DIAGRAMS



### 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 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	GigE (x 2 or 4 depending on model)
Dimensions	130 x 270 x 254.75 mm
Data retention	Non-volatile SSD memory
Temperature	Operating: 0 °C to 55 °C Storage: -20 °C to 60 °C
Relative Humidity (30 °C)	Operating: 10 to 90% Storage: 5 to 95%
Vibrations (EN60068-2-6)	2 to 8 Hz: 1.75 mm amplitude / 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

Via Lavino 265 - 40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 - Fax: +39 051 6759324  
www.datalogic.com e-mail: info.automation.it@datalogic.com



DATALOGIC AUTOMATION cares for the environment: 100% recycled paper. DATALOGIC AUTOMATION reserves the right to make modifications and improvements without prior notification.

Datalogic and the Datalogic logo are registered trademarks of Datalogic S.p.A. in many countries, including the U.S.A. and the E.U.

821004220

© Copyright Datalogic 2016

### 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 MX-E 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

## MX-E Processor with NPN (sinking) I/O

### QUICK REFERENCE GUIDE

#### DESCRIPTION

This guide covers MX-E processor models that contain the letter "N." For example MX-E20-2-N-1. These models provide NPN (sinking) inputs and outputs.

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

- Rugged IP20 housing
- Low Maintenance
- 16 Inputs and Outputs
- Up to 4 GigE cameras
- Easily Accessed connectors

#### SYSTEM SPECIFICATIONS

##### Processors

MX-E20: Intel Celeron 1.4 GHz; MX-E40: Intel Celeron 2.2 GHz ; MX-E80: Intel Core i7 2.3 GHz

##### Storage

MX-E20 and MX-E40: 4 GB RAM - 60 GB SSD; MX-E80: 8 GB RAM - 128 GB SSD

##### GigE camera ports

MX-E20: 2; MX-E40 and MX-E80: 2 or 4

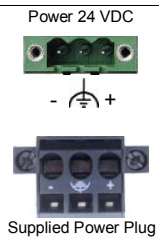
All MX-E processors have the following specifications:

- 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

#### SUPPLY VOLTAGE CONNECTION

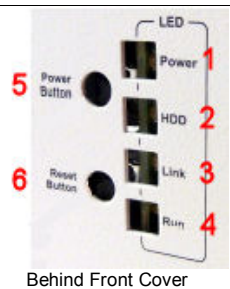
##### Power Connector

+ 24VDC Supply Plus  
GND Functional Ground\*  
- 24VDC Supply Minus  
\*Connect to ground using a conductor with minimum 2.5 mm<sup>2</sup> cross-section



#### STATUS LEDS AND BUTTONS

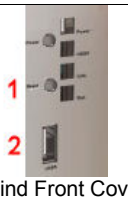
1. Power, green
2. HDD, Yellow
3. Link, Yellow
4. Run, Green
5. Power Button
6. Reset Button



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.  
Reset Button: Triggers a hardware and PCI reset. The unit is restarted.

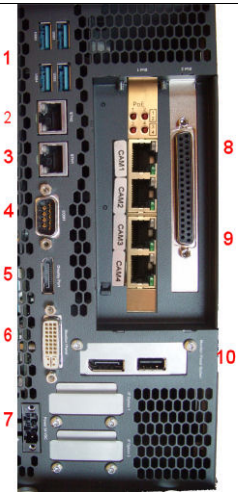
#### HASP KEY USB PORT

1. Reset Button
  2. USB Port for Hasp Key
- To enable cameras and licenses, insert the provided Hasp key in the USB port (labeled USB5), located behind the Front Cover.



#### CONNECTORS

1. USB 3.0
2. Ethernet 2
3. Ethernet 1
4. RS232 (COM 1)
5. Display Port
6. DVI for Monitor
7. Supply Voltage
8. 37 pin D-Sub Digital I/O
9. M-Series or E-Series Camera (CAM1-CAM4)  
Cable 606-0677-xx
10. USB 2.0 – Keyboard/Mouse  
Display Port



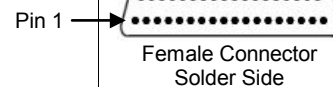
Top View

#### DIGITAL I/O CABLES TERMINALS AND CONNECTIONS

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

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)



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
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
Output voltage	35 VDC (max)
Output current	100mA (per channel max)
Residual voltage	0.5V or less (Output currents≤50mA), 1.0V or less (Output currents≤100mA)
Response Time	Within 200 μsec

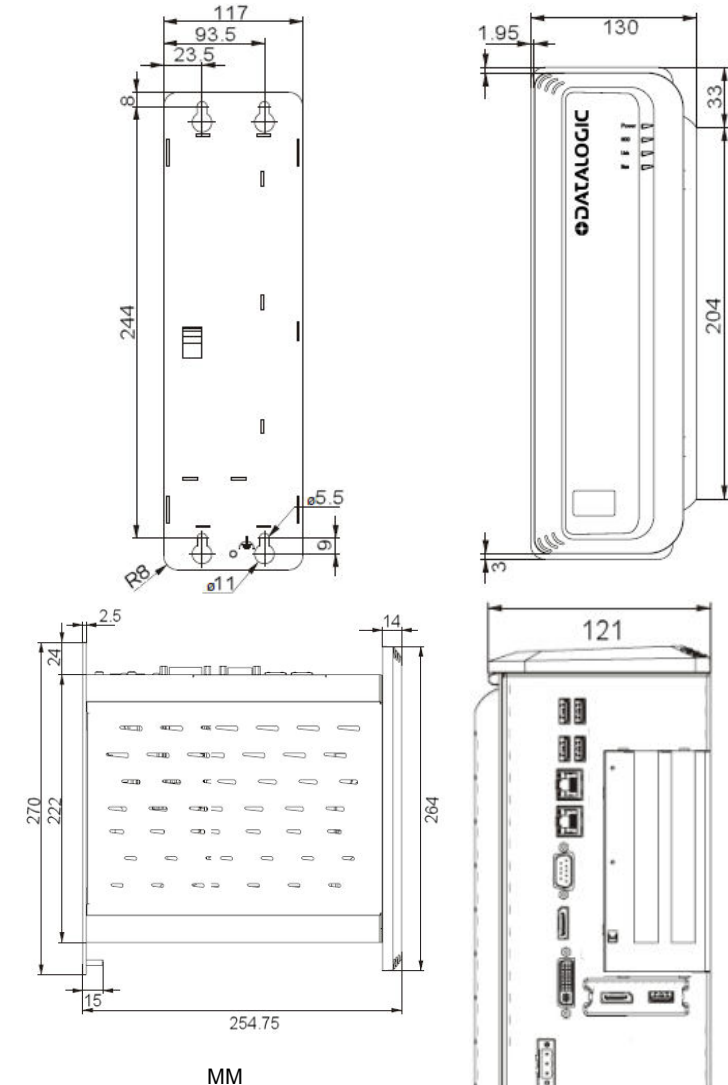
#### COMMUNICATIONS

Camera communication uses Cat6 Ethernet cable and provides POE for M1xx and E1xx cameras. Use only Datalogic provided cables.

#### 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

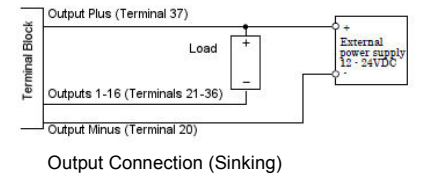
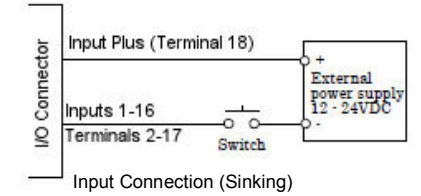


#### CAMERA CABLES, TERMINALS, AND CONFIGURATION

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 MX-E 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



#### 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 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	GigE (x 2 or 4 depending on model)
Dimensions	130 x 270 x 254.75 mm
Data retention	Non-volatile SSD memory
Temperature	Operating: 0 °C to 55 °C Storage: -20 °C to 60 °C
Relative Humidity (30 °C)	Operating: 10 to 90% Storage: 5 to 95%
Vibrations (EN60068-2-6)	2 to 8 Hz: 1.75 mm amplitude / 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

Via Lavino 265 - 40050 Monte S. Pietro - Bologna - Italy  
Tel: +39 051 6765611 - Fax: +39 051 6759324  
www.datalogic.com e-mail: info.automation.it@datalogic.com



DATALOGIC AUTOMATION cares for the environment: 100% recycled paper. DATALOGIC AUTOMATION reserves the right to make modifications and improvements without prior notification.

Datalogic and the Datalogic logo are registered trademarks of Datalogic S.p.A. in many countries, including the U.S.A. and the E.U.

821004220

© Copyright Datalogic 2016