DATALOGIC

Matrix 220™

QUICK REFERENCE GUIDE

Download the Matrix 220 Product Reference Guide by reading the QR code here or see the paragraph below.

SUPPORT THROUGH THE WEBSITE

Your Product Reference Guide including installation procedures is available for download on our website as well as the configuration program.

Datalogic provides several services as well as technical support through its website. Log on to **www.datalogic.com** and click on the **SUPPORT** link which gives you access to:

- Downloads by selecting your product model from the dropdown list in the Search by Product field for specific Data Sheets, Manuals, Software & Utilities, and Drawings;
- Repair Program for On-Line Return Material Authorizations (RMAs) plus Repair Center contact information;
- Customer Service containing details about Maintenance Agreements;
- Technical Support through email or phone.

INSTALLATION PROCEDURE

1. **Physically mount the Matrix 220 reader.**
2. **Make the necessary electrical connections.**
3. **Configure the reader using the X-PRESS interface (AIM, SETUP, LEARN and TEST for simple configuration) or the DL.CODE software configuration program (complete configuration).**
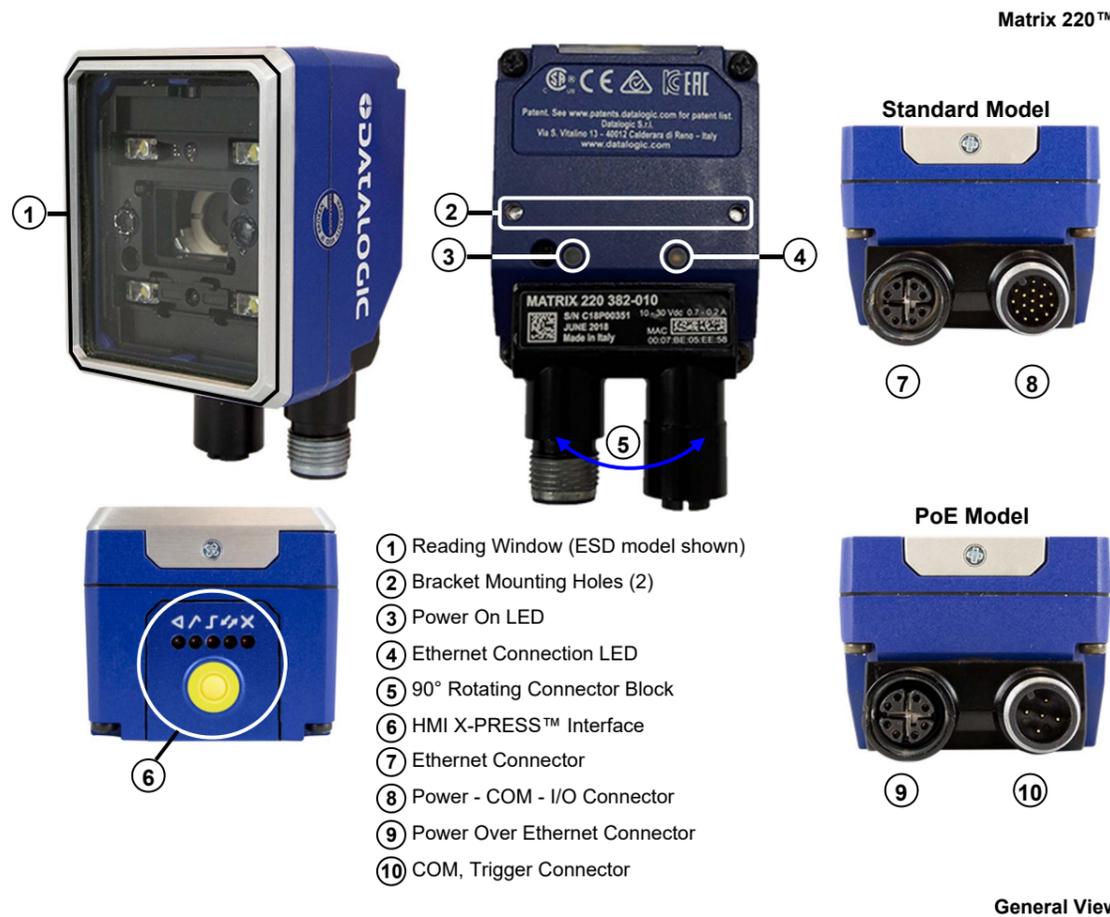
HMI X-PRESS™ INTERFACE

In normal operating mode the colors and meaning of the five LEDs are illustrated in the following table:

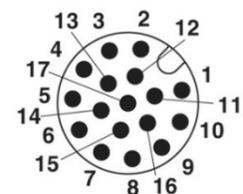|	
READY (green)	indicates the device is ready to operate.
GOOD (green)	confirms successful reading.
TRIGGER (yellow)	indicates the status of the reading phase.
COM (yellow)	indicates active communication on main serial port.
STATUS (red)	indicates a NO READ result.

During the reader startup (reset or restart phase), all the LEDs blink for one second.

The single push button gives immediate access to the following relevant functions:

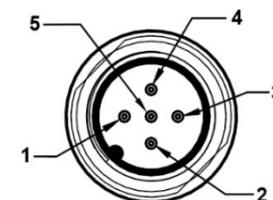|	
Test Mode with bar graph visualization to check static reading performance.
Aim turns on the LED pointers to aim the reader at the target. **The target should be centered horizontally and vertically with respect to the aiming squares**.
Setup to self-optimize and auto-configure photometry parameters.
Learn to self-detect and auto-configure for reading an unknown barcode (by type and length). Only one symbology type can be saved using this method. Performing Autolearn on a second symbology will overwrite the first one.

Matrix 220™

Standard Model

PoE Model

General View

1. Reading Window (ESD model shown)
2. Bracket Mounting Holes (2)
3. Power On LED
4. Ethernet Connection LED
5. 90° Rotating Connector Block
6. HMI X-PRESS™ Interface
7. Ethernet Connector
8. Power - COM - I/O Connector
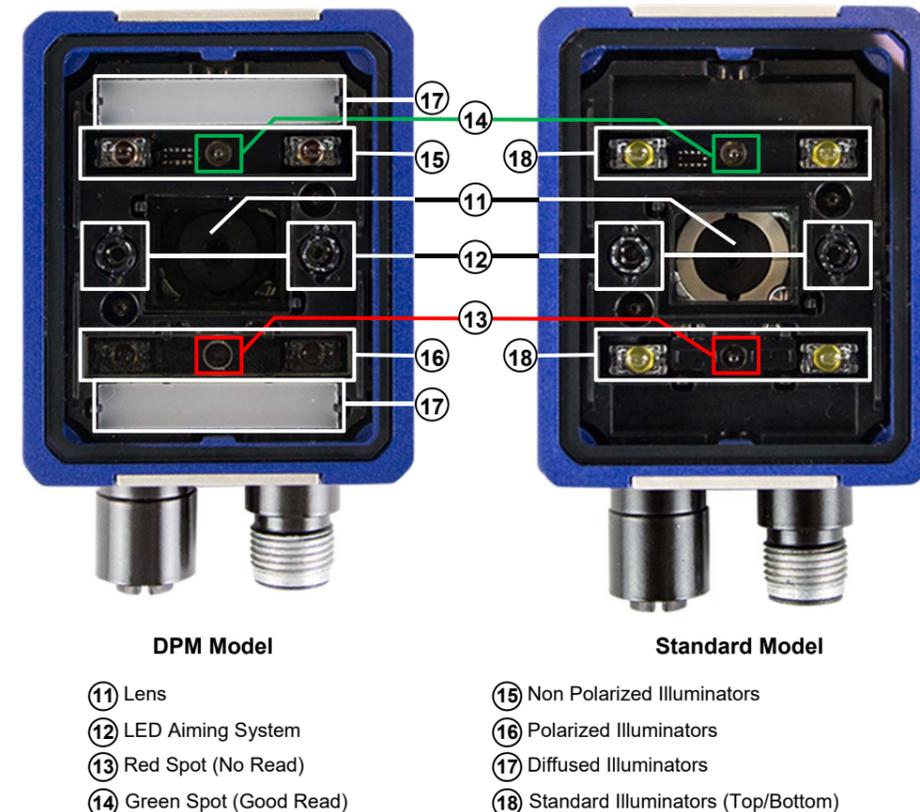9. Power Over Ethernet Connector
10. COM, Trigger Connector

DPM Model

11. Lens
12. LED Aiming System
13. Red Spot (No Read)
14. Green Spot (Good Read)

Standard Model

15. Non Polarized Illuminators
16. Polarized Illuminators
17. Diffused Illuminators
18. Standard Illuminators (Top/Bottom)

Matrix 220 Power, COM, I/O

Matrix 220 PoE COM, Trigger

Matrix 220 Ethernet

M12 17-pin Power, COM, and I/O Connector Pinout

Pin	Name	Function
1	Vdc	Power supply input voltage +
2	GND	Power supply input voltage -
Connector Case	CHASSIS	Connector case provides electrical connection to the chassis
6	I1A	External Trigger A (polarity insensitive)
5	I1B	External Trigger B (polarity insensitive)
13	I2A	Input 2 A (polarity insensitive)
3	I2B	Input 2 B (polarity insensitive)
9	O1	Output 1
8	O2	Output 2 (NPN or PNP short circuit protected and software programmable)
16	O3	Output 3
14	RX	Auxiliary RS232 RX
4	TX	Auxiliary RS232 TX
7	ID+	ID-NET™ network +
15	ID-	ID-NET™ network -

Pin	Name	RS232	RS422 Full-Duplex
17	Main Serial Port (sw selectable)	TX	TX+
11		RX	*RX+
12		-	TX-
10		-	*RX-

* do not leave floating. See Reference Manual for connection details.

M12 5-pin COM, Trigger Connector Pinout (PoE models)

Pin	Name	Function
1	I1A	External Trigger A (polarity insensitive)
2	RX	RS232 Main Serial Receive data signal
3	TX	RS232 Main Serial Transmit data signal
4	I1B	External Trigger B (polarity insensitive)
5	GND	RS232 Main Serial Reference signal

PoE models do not supply power to External Trigger.

M12 8-Pin Standard Ethernet Network Connector pinout

Pin	Name	Function
1	TX+	Transmit data (positive pin)
2	TX-	Transmit data (negative pin)
3	RX+	Receive data (positive pin)
4	RX-	Receive data (negative pin)
5	nc	Not Connected
6	nc	Not Connected
7	nc	Not Connected
8	nc	Not Connected

M12 8-Pin Power Over Ethernet Network Connector pinout

Pin	Name	Function
1	TX+	Transmit data (positive pin)
2	TX-	Transmit data (negative pin)
3	RX+	Receive data (positive pin)
4	RX-	Receive data (negative pin)
5	DC1-	DC Power (negative pin)
6	DC2-	DC Power (negative pin)
7	DC1+	DC Power (positive pin)
8	DC2+	DC Power (positive pin)

TECHNICAL FEATURES

ELECTRICAL FEATURES		
Power Supply Voltage (Vdc) Consumption (A) Max.	**Standard Models** 10 to 30 Vdc 0.40 – 0.14 A (4.2 W)	**PoE Models** 48 Vdc 0.10 A (4.8 W)
Communication Interfaces Main - RS232, RS422 full-duplex	2400 to 115200 bit/s	
Auxiliary - RS232	2400 to 115200 bit/s	
ID-NET™	Up to 1Mbaud	
Ethernet[1]	10/100 Mbit/s	
Inputs:	Opto-coupled and polarity insensitive (see Product Reference Guide for details)	
Max. Voltage	30 Vdc	
Max. Input Current	10 mA	
Outputs:	NPN or PNP short circuit protected (see Product Reference Guide for details)	
V_{OUT} (I_{LOAD} = 0 mA) Max.	30 Vdc	
V_{OUT} (I_{LOAD} = 100 mA) Max.	3 Vdc	
I_{LOAD} Max.	100 mA	
OPTICAL FEATURES (see Product Reference Guide for details)		

PHYSICAL FEATURES	
Dimensions Std Matrix 220 connector at 0° Std Matrix 220 connector at 90° ESD Matrix 220 connector at 0° ESD Matrix 220 connector at 90°	H x W x L 78 x 47 x 38 mm (3.1 x 1.9 x 1.5 in) 58 x 47 x 58 mm (2.3 x 1.9 x 2.3 in) 78 x 47 x 43 mm (3.1 x 1.9 x 1.7 in) 58 x 47 x 63 mm (2.3 x 1.9 x 2.5 in)
Weight	173 g. (6.1 oz.)
Material	Aluminium with plastic protective window cover
ENVIRONMENTAL FEATURES	
Operating Temperature[2]	-10 to 50 °C (14 to 122 °F)
Storage Temperature	-20 to 70 °C (-4 to 158 °F)
Max. Humidity	90% non-condensing
Vibration Resistance EN 60068-2-6	14 mm @ 2 to 10 Hz; 1.5 mm @ 13 to 55 Hz; 2 g @ 70 to 500 Hz; 2 hours on each axis
Shock Resistance EN 60068-2-27	30g; 11 ms; 3 shocks on each axis
Protection Class[3] EN 60529	IP65 and IP67
USER INTERFACE	
LED Indicators	Power; Ready, Good, Trigger, Com, Status; Ethernet Network; Green Spot; (see Product Reference Guide for other LEDs)
Other	X-PRESS™ Keypad Button (configurable via DL.CODE™)

SOFTWARE FEATURES			
Readable Code Symbologies			
1-D and stacked		**2-D**	**POSTAL**
• PDF417 Standard and Micro PDF417 • Code 128 (GS1-128) • Code 39 (Standard and Full ASCII) • Code 32 • MSI • Standard 2 of 5 • Matrix 2 of 5 • Interleaved 2 of 5	• Codabar • Code 93 • Pharmacode • EAN-8/13 - UPC-A/E (including Addon 2 and Addon 5) • GS1 DataBar Family • Composite Symbologies	• Data Matrix ECC 200 (Standard, GS1 and Direct Marking) • QR Code (Standard and Direct Marking) • Micro QR Code • MAXICODE • Aztec Code	• Australia Post • Royal Mail 4 State Customer • Kix Code • Japan Post • PLANET • POSTNET • POSTNET (+BB) • Intelligent Mail • Swedish Post
Operating Mode	CONTINUOUS, ONE SHOT, PHASE MODE		
Configuration Methods	X-PRESS™ Human Machine Interface Windows-based SW (DL.CODE™) via Ethernet Host Mode Programming sequences sent over Serial or Ethernet TCP interfaces		
Parameter Storage	Permanent memory (Flash)		

[1] The embedded Ethernet interface supports application protocols: TCP/IP, EtherNet/IP, Profinet IO, Modbus TCP

[2] High ambient temperature applications should use metal mounting bracket for heat dissipation.

[3] When correctly connected (fully tightened) to IP67 cables with seals

PATENTS

See www.patents.datalogic.com for patent list.

Matrix 220 is covered by one or more of the following patents:

Design patents: EP004735694

Utility patents: EP0996284B1, EP0999514B1, EP1014292B1, EP1128315B1, EP1396811B1, EP1413971B1, EP2517148B1, EP2649555B1, JP4435343B2, JP4571258B2, US6512218, US6616039, US6808114, US6997385, US7053954, US7387246, US7433590, US8058600, US8368000, US8888003, US8915443, US9268982, US9430689, US9798948, ZL200980163411.X

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.

EMC COMPLIANCE

In order to meet the EMC requirements:

* connect reader chassis to the plant earth ground by means of a flat copper braid shorter than 100 mm;
* connect pin "Earth" of the CBX connection box to a good Earth Ground;

CE COMPLIANCE

CE marking states the compliance of the product with essential requirements listed in the applicable European directive. Since the directives and applicable standards are subject to continuous updates, and since Datalogic promptly adopts these updates, therefore the EU declaration of conformity is a living document. The EU declaration of conformity is available for competent authorities and customers through Datalogic commercial reference contacts. Since April 20th, 2016 the main European directives applicable to Datalogic products require inclusion of an adequate analysis and assessment of the risk(s). This evaluation was carried out in relation to the applicable points of the standards listed in the Declaration of Conformity. Datalogic products are mainly designed for integration purposes into more complex systems. For this reason it is under the responsibility of the system integrator to do a new risk assessment regarding the final installation.

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.

EAC COMPLIANCE

Customs Union:
The CU Conformity certification has been achieved; this allows the Product to bear the Eurasian mark of conformity.

LED SAFETY

LED emission according to EN 62471.

POWER SUPPLY

This product is intended to be installed by Qualified Personnel only.

This product is intended to be connected to a UL Listed Direct Plug-in Power Unit marked LPS or "Class 2".

LEGAL NOTICES