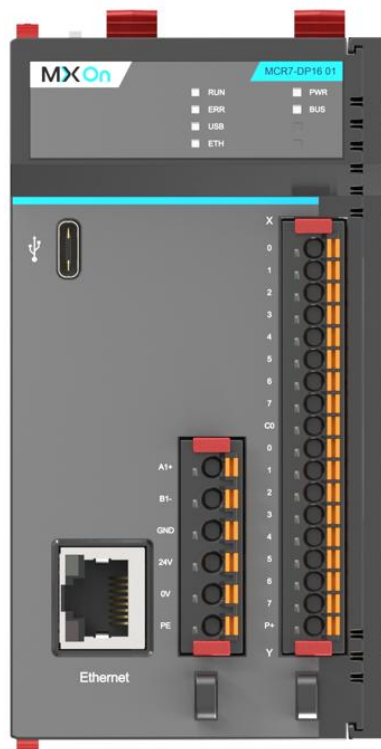


# MCR7-DP16 01

## Datasheet

**Document Version : 01**

**Publication Date : 2026-05-26**



# 1 Product Overview

## 1.1 Product introduction

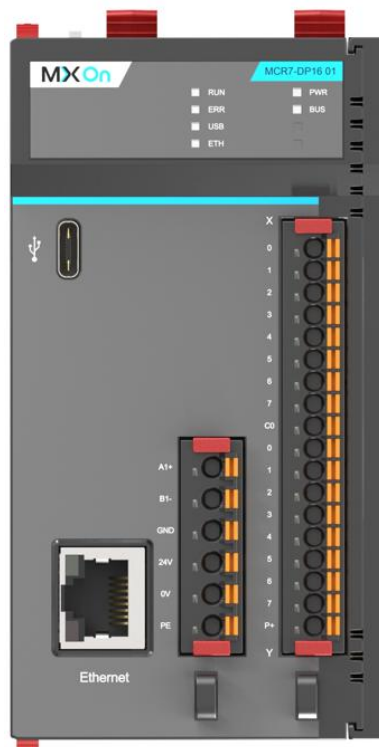
The MCR7 Series PLC, represents a new generation of programmable logic controllers (PLCs) that integrate cutting-edge industrial technologies and high-performance components.

Key Features:

- ◆ Object-Oriented Programming (OOP) Design: Enhances code reusability and modularity.
- Compliance with IEC 61131-3 Standard: Ensures industry-standard programming compatibility.
- ◆ Dual Programming Language Support: Combines Ladder Logic (LD) and Structured Text (ST) for flexible development.
- ◆ Compatibility with Japanese & European PLC Styles: Adapts to diverse user preferences while enabling complex computational functions.
- ◆ Motion Control Compliant with PLCOpen Standards: Supports advanced automation and precise motion control applications.

The MCR7 Series PLC is engineered to deliver high reliability, advanced functionality, and seamless integration, making it ideal for modern industrial automation systems.

## 1.2 Product Appearance



## 2 Main Information

| Item                               | MCR7-DP16 01                  |
|------------------------------------|-------------------------------|
| Series                             | MCR7                          |
| Product Or Component Type          | Programmable Logic Controller |
| Rated Power Supply Voltage         | 24V DC                        |
| Discrete Input Number              | 8 (8 Fast)                    |
| Discrete Output Type               | PNP Transistor                |
| Discrete Output Number             | 8 (8 Fast)                    |
| Discrete Output Voltage            | 5~30V DC;                     |
| Discrete Output Current Per Point  | Max 2A                        |
| Expansion module carrying capacity | None                          |

## 3 Detail Specification

### 3.1 Fast Transistor input (HSC)

| Item            |                    | Specification                                                                                                   |
|-----------------|--------------------|-----------------------------------------------------------------------------------------------------------------|
| Rated Voltage   |                    | 24V DC                                                                                                          |
| Input Range     |                    | 19.2~28.8V DC                                                                                                   |
| Input type      |                    | NPN/PNP                                                                                                         |
| Input points    |                    | 8                                                                                                               |
| HSC Channel     |                    | 4                                                                                                               |
| Rated Current   |                    | 0.1A                                                                                                            |
| Input impedance |                    | 2.8KΩ                                                                                                           |
| State           | Voltage in state 1 | > 15 V DC (15~28.8V DC)                                                                                         |
|                 | Voltage in state 0 | < 5 V DC (0~5V DC)                                                                                              |
|                 | Current in state 1 | > 5 mA                                                                                                          |
|                 | Current in state 0 | < 1.5 mA                                                                                                        |
| Max Frequency   | A/B                | 100kHz                                                                                                          |
|                 | Pulse/Direction    | 200kHz                                                                                                          |
|                 | Single Phase       | 200kHz                                                                                                          |
| Operation Mode  |                    | <ul style="list-style-type: none"> <li>◆ A/B</li> <li>◆ Pulse/Direction</li> <li>◆ Single/Dual Phase</li> </ul> |
| Cable length    |                    | Max 5m                                                                                                          |
| Type            |                    | Shielded cable                                                                                                  |
| Wiring terminal |                    | Removable terminal block                                                                                        |

## 3.2 Fast Transistor Output

| Item                         | Specification                                 |
|------------------------------|-----------------------------------------------|
| Rated voltage                | 24V DC                                        |
| PTO Power input range        | 19.2~28.8V DC                                 |
| PTO Power reverse protection | Available                                     |
| Output type                  | PNP                                           |
| Output Points                | 8                                             |
| PTO Channels                 | Max 8                                         |
| PTO/PWM output current       | 0.5A (when used as normal output)             |
|                              | 0.1A (when used as a fast output)             |
| Insulation resistance        | > 10 MΩ                                       |
| Leakage voltage              | < 1.5V (Current is 0.1A)                      |
| Minimum load impedance       | 80Ω                                           |
| Maximum PTO output frequency | PNP: 100kHz                                   |
| Maximum PWM output frequency | 50kHz                                         |
| Duty cycle resolution        | Not greater than 0.5%                         |
| Duty cycle range             | 0%~100%                                       |
| Operating mode               | Pulse/direction output                        |
| Cable length                 | Maximum 5m                                    |
| Cable type                   | Shielded cable, including 24V DC power supply |
| Wiring terminal              | Removable terminal block                      |

### 3.3 Environmental Characteristics

| Item                          | Specification                                                                                                   |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------|
| Operating ambient temperature | -10°C~60°C                                                                                                      |
| Storage temperature           | -20°C~70°C                                                                                                      |
| Relative humidity             | 55%~95%, without condensation                                                                                   |
| Pollution Degree              | 2 (IEC60664)                                                                                                    |
| IP rating                     | IP20                                                                                                            |
| Coating                       | Coated protection, dry film thickness $\geq 20\mu\text{m}$ ; reinforced dry film thickness $\geq 40\mu\text{m}$ |
| Altitude                      | Operation: 0m~3,000m<br>Transportation: $\leq 6,000\text{m}$                                                    |
| Seismic performance           | 5~13.2Hz Amplitude 7mm, 13Hz~100Hz Acceleration 2G, 20 times each in X, Y and Z axes                            |
| Impact performance            | Semi-positive sine wave, acceleration 15G, duration 11ms, 6 times in each of the X, Y and Z directions          |

### 3.4 Electromagnetic Susceptibility

| Standard              | Method                    | Item                                                     |
|-----------------------|---------------------------|----------------------------------------------------------|
| EN IEC 61000-6-4:2019 | CISPR 16-2-1              | Conducted Emissions at AC Mains Power Port(150kHz-30MHz) |
|                       | CISPR 32                  | Conducted Emissions at Wired Network Port(150kHz-30MHz)  |
|                       | CISPR 16-2-3              | Radiated Emissions(30MHz-1GHz)                           |
|                       | CISPR 16-2-3              | Radiated Emissions(Above 1GHz)                           |
| EN IEC 61000-6-22019  | EN 61000-4-6:2014         | Conducted Immunity at AC Mains Power Port(150kHz-80MHz)  |
|                       | EN 61000-4-6:2014         | Conducted Immunity at Signal Port(150kHz-80MHz)          |
|                       | EN 61000-4-4:2012         | Electrical Fast Transients Burst at AC Mains Power Port  |
|                       | EN 61000-4-4:2012         | Electrical Fast Transients Burst at Signal Port          |
|                       | EN 61000-4-2:2009         | Electro static Discharge                                 |
|                       | EN 61000-4-8:2010         | Power Frequency Magnetic Field                           |
|                       | EN IEC 61000-4-3:2020     | Radiated Immunity(80MHz-6GHz)                            |
|                       | EN 61000-4-5:2014+A1:2017 | Surge at AC Mains Power Port                             |
|                       | EN 61000-4-5:2014+A1:2017 | Surge at Signal Port                                     |
|                       | EN IEC 61000-4-11:2020    | Voltage Dips and Interruptions                           |

The MCR7 Series DC power supply type PLCs system meets the following safety standards:

- ◆ IEC 61010-1:2010 + A1:2019
- ◆ AMD1: 2016

## 3.5 Power

### 3.5.1 Safety notes

- ◆ If the specified voltage range cannot be maintained, the output may not switch as expected. Please use a proper safety interlock and voltage monitoring circuit.
- ◆ Required for the MCR7 Series PLCs and associated I/O extension modules. According to IEC 61140, the 24V DC power supply must be rated for Safety Extra Low Voltage (SELV) or Protected Extra Low Voltage (PELV). These power supplies are isolated between the electrical input and output circuits of the power supply.
- ◆ The MCR7 Series PLCs must be supplied by a 24V external power supply device. During a power failure, the PLC associated with a suitable power supply can continue to operate normally for at least 10 ms according to the IEC standard.
- ◆ For relay output ( $\geq 2A$ ) wiring, use a conductor with a cross-sectional area of at least  $0.5 \text{ mm}^2$  and a rated temperature of at least  $80^\circ\text{C}$ .

### 3.5.2 Connect Power Cord

Make sure the external DC power supply meets the following characteristic requirement.

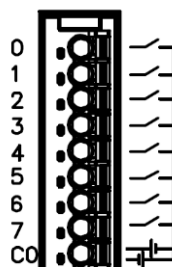
| Item                      | Specification  |
|---------------------------|----------------|
| Rated voltage             | 24V DC         |
| Supply voltage range      | 20.5~28.8V DC  |
| Power interruption time   | 10ms at 24V DC |
| Maximum peak current      | 35A            |
| Maximum power consumption | 15W            |

The method of connecting DC power cords is as follows:

- ◆ Connect the positive pole of the external DC power supply to the "24V" terminal of the PLC DC power input.
- ◆ Connect the negative pole of the external DC power supply to the "0V" terminal of the PLC DC power input.



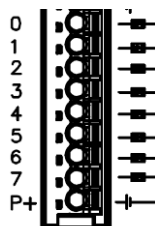
## 3.6 Digital Input Wiring Diagram



- ◆ The C0 terminal can be connected to the positive or negative terminal of the power supply according to the input type.
- ◆ When using the high speed pulse input, use a shielded cable and keep it well earthed.

## 3.7 Transistor Output Wiring Diagram

- ◆ PNP type (Source) transistor output wiring:



## 3.8 Connect to USB Port

You can program for the PLC via USB interface. The method of connecting USB ports is as follows:

- 1) Connect the Type-C end of the USB connection cable to the USB interface of the PLC.
- 2) Connect the Type-A end of the USB cable to the USB interface of the PC.



### 3.9 Connect to Ethernet Port

Ethernet interface is RJ45 type, 10Mbps/100Mbps, adaptive/half full duplex.

The following diagram shows the Ethernet connector pin definitions:



| No. | Signal |
|-----|--------|
| 1   | TD+    |
| 2   | TD-    |
| 3   | RD+    |
| 4   | -      |
| 5   | -      |
| 6   | RD-    |
| 7   | -      |
| 8   | -      |

Using RJ45 standard Ethernet cable to connect Ethernet ports of PLC to Ethernet port of device such as PC.

### 3.10 Connect to Serial Communication Port 1

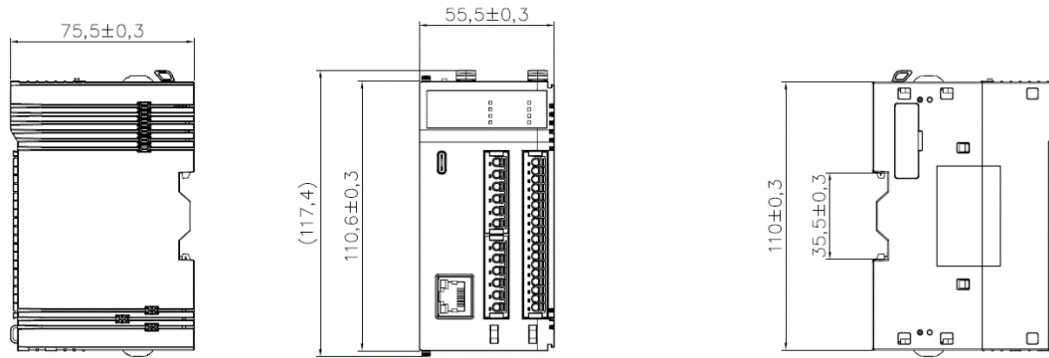
The position of serial port 1 of the controller is shown below, Serial port 1 interface type is RS485, with isolation



## 4 Dimension&Installation

### 4.1 Product dimension

CPU Dimension(Unit: mm)



| Model        | IO | DIN rail dimension | Dimension |
|--------------|----|--------------------|-----------|
|              |    |                    | W×H×D     |
| MCR7-DP16 01 | 16 | 35                 | 56×118×76 |

### 4.2 Ventilation requirements

The equipment needs to be installed in a cabinet with good ventilation conditions and to ensure that there is enough space around the equipment to allow it to dissipate heat.



- ◆ Install the equipment that dissipates the most heat on top of the cabinet to ensure proper ventilation.
- ◆ Do not install the equipment next to or above equipment that may cause overheating.
- ◆ To ensure that the equipment works well, please keep the ambient temperature between 0 °C and 50 °C.

### 4.3 Minimum Spacing

The MCR7 Series PLCs have an IP20 protection grade and must be installed in a chassis. The installation spacing must be taken into account when installing this product. There are 3 types of spacing as follows:

- ◆ Spacing to all sides of the cabinet (including panel doors).
- ◆ Spacing between the terminal block and the wiring duct. This distance reduces electromagnetic interference between the controller and the wiring ducts.
- ◆ Spacing to other heat generating equipment installed in the same cabinet.

The minimum spacing for the MCR7 Series PLCs installation (the spacing between PLC upper panel (lower panel, left panel, or right panel) and cabinet sides is at least 30mm; the spacing between PLC front panel and cabinet door is at least 80mm).

## 4.4 Anti-foreign object sticker

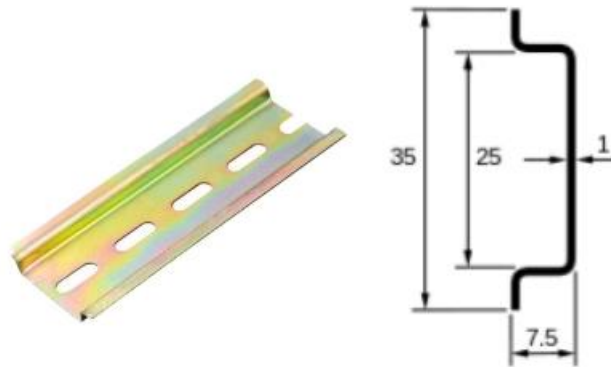
Do not remove the anti-foreign object protection sticker during installation to prevent foreign objects from falling into the machine and causing short circuits and other faults. After installation and before powering up the unit, the anti-foreign object protection sticker must be removed to avoid overheating of the PLC caused by poor heat dissipation.

## 4.5 Installation of DIN Rail

The controller and its extension modules can be installed on DIN rails which can be fitted to a flat installation surface.

1) Prepare DIN rails of the following specifications and install DIN rails into the cabinet.

The recommended DIN rail for PLC installation is 35 mm high and 7.5 mm deep, as shown below.



2) Press down on the red installation buckle of the PLC to make the guide rail installation slot open. Then insert the PLC into the DIN rail.

3) Pull up the red installation buckle of the PLC to lock it onto the DIN rail.