M221 Connectivity

Connectivity

The M221 has several connection options which can be split into two types: I/O for process control and Data/Programming connections.

The I/O provided with the M221 will depend on the model and consist of:

➢ M221 logic controllers come with 9, 14 or 24 inputs
➢ M221 logic controllers come with 7,12 or 20 outputs
➢ M221 book controllers come with 8 inputs and 8 outputs, or 16 inputs and 16 outputs
➢ All M221 logic controllers come with removable screw terminal blocks
➢ M221 book controllers with 8 inputs and 8 outputs can be either screw or spring connector
➢ M221 book controllers with 16 inputs and 16 outputs use a HE10 connector
➢ Two independent 0-10V analog inputs
➢ Expansion bus for TM2 or TM3 I/O modules

The data connections are:

➢ USB port for programming
➢ SD card slot for data transfer
➢ Serial port for data transfer
➢ Optional Ethernet port for programming and data transfer

Special I/O

The M221 has I/O that can be used for special purposes.

The M221 Logic Controller has four fast inputs that can be used for high speed counters. These are configurable in the program. When these are being used for high speed pulse inputs the wiring should be shielded.

The first two outputs of an M221 with transistor outputs are fast outputs that can be used for pulse or PWM outputs. These can be used to control drives and other pulsed devices. When these are being used for high speed pulse outputs the wiring should be shielded.

M221 Logic controllers with relay outputs do not have high speed outputs but high speed counters can still be configured.

M221 Connectivity (cont.)

High Speed Counters

The M221 controller has two high speed counters that can be configured in five modes: Counter/down counter, Counter/down counter bi-phases, simple counter, simple down counter or frequency meter. These can be connected to the third and fourth input and configured to write to the third and fourth output of the controller.

Pulse Generator

The M221 controller has two pulse generators that can be configured to produce pulses or for Pulse Width Modulation. The timing has four preset values; 0.142ms, 0.57ms, 10ms or 1 second. These pulse generators when configured will write to the first and second digital outputs of the controller.

Ethernet Port

The Ethernet port is only available on the TM221ME logic controllers. It can be used for program upload/download as well as communicating to remote devices. The Ethernet port can communicate using Modbus TCP (salve) or Ethernet IP.

M221 Connectivity (cont.)

SD Card

The front of the M221 Logic Controller has a SD card slot. This allows a SD card to be used for data transfer and upgrading the firmware in the M221. The Schneider part number for the SD card is TMASD1
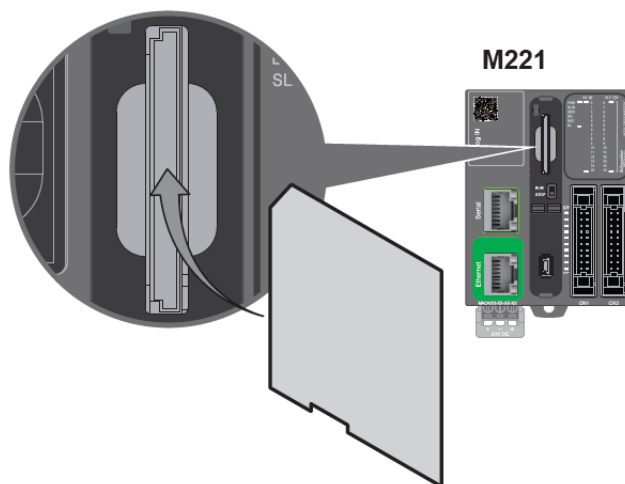
When the M221 powers up it will automatically check to see if a SD card is inserted.

Firmware Update

The files necessary for a firmware update are normally supplied in a zip file with each version of SoMachine Basic and should be used to update the M221 when a new version of SoMachine Basic is installed. Unzip the files and copy them to a SD card.

Ensure the power is off and the USB connection is removed before inserting the SD card. When the power is applied to the M221, it will check for a SD card and boot file. The boot file contains the command to copy the operating system files to the M221. These files will be copied and the M221 will perform a restart to load the new firmware.

Various LEDs will flash during the update process including the SD LED which may come on more than once. Leave the M221 until a steady state for the LEDs is seen for at least 15 seconds. The SD card can now be removed.

✎ **Note:**

DO NOT REMOVE THE POWER WHILE THE FIRMWARE UPDATE IS TAKING PLACE.

If the power is removed, the firmware will be corrupted. The M221 will not be able to perform another firmware update and must be returned to Schneider Electric for repair.