

MCM RS485/RS422 NETWORK

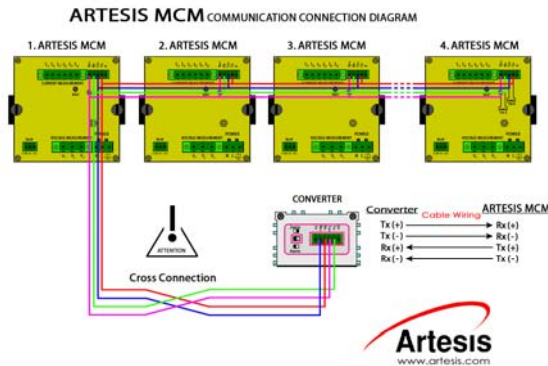
QUICK INSTALLATION GUIDE

MCM units are designed to connect to MCM Networks and to one or more computers using industry standard RS485 / RS422 networks.

This guide can be used to create a MCM Network of up to 31 MCM units. For larger installations, multiple smaller MCM Networks should be setup using this guide, and connected to a larger network as explained in MCM TCP/IP Network Quick Installation Guide. MCM Network mentioned in this guide refers to only MCM Networks with up to 31 MCM's connected together with RS485/RS422.

1. OVERVIEW OF MCM NETWORK

MCM Networks may be setup in various ways. A standard MCM Network can be seen in the picture below:



MCM communicates with other devices on the network using optically isolated (2500V) 4 wire (RS422 19200 Baud) or 2 wire (RS485 9600 Baud) physical layer. Each MCM unit works as a slave in a master-slave based protocol, hence needs a network address. MCM Networks can function at up to 1000 m distance with LIYC 2x2x0,22 shielded twisted pair cable, although in noisy environments this distance is smaller.

MCM Network protocol named ARTEBUS is made up of one HOST (PC or MOXA) and multiple CLIENTS (MCM's). HOST regularly sends data packets which include an address specific to the intended CLIENT, and that CLIENT responds accordingly.

A MCM Network can be connected to a PC using a RS485/RS232 Converter or to a wider TCP/IP network using a RS485/TCP/IP Converter units. RS485/RS232 Converter enables a PC to connect to a MCM Network using a PC standard RS232 connection.

MOXA, a RS485/TCP/IP Converter, functions as a bridge between a RS485 network and a TCP/IP network by acting as a TCP/IP server and a RS485 host at the same time. It is possible to connect MCM Networks to local intranet and internet using MOXA units.

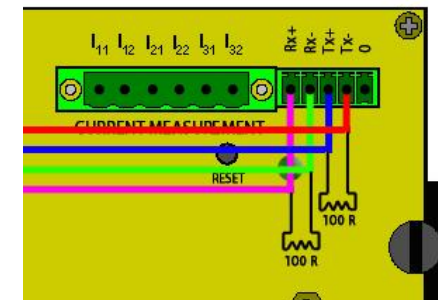
NOTE: Each MCM unit on the same network must have a unique address to function properly!

2. SETUP

2.1. Setting up a MCM Network

Follow the steps below to create a MCM Network:

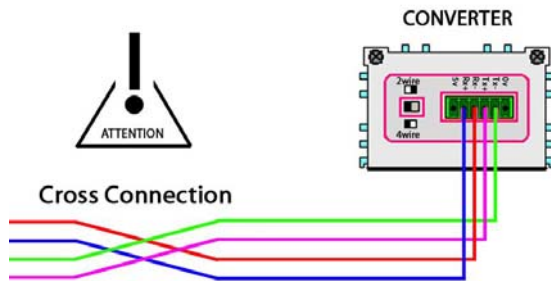
1. Prepare each MCM Unit to be connected to the current MCM Network by following instructions inside the Quick Installation Guide applicable to that specific MCM Unit.
2. Select a RS485/RS422 network topology (daisy chain – recommended, star etc.) which best suits your intended physical location. The recommended type is the one shown on page one of this guide, in which each MCM unit is connected to a four wire line with termination resistors after the last MCM unit. If such a setup is not possible, smaller MCM Networks can be setup. Refer to MCM & MCMSCADA Manuals for detailed information.
3. During cabling, try to avoid places where electromagnetic interference will be present. These places include cables with high current, magnets etc.
4. Starting from the MCM that is furthest from the PC or MOXA, cut out enough cable to reach the next MCM.
5. Attach the connector that will plug into the MCM as shown below.



6. **Only for the last MCM on the line**, connection cables for connecting 100Ohm termination resistors between Tx and Rx terminals. Attach

the terminations especially if you are going to have a large network.

7. Moving on to the next MCM, cut out the next cable to go from the 2nd furthest to 3rd furthest MCM and connect it together with the first cable and MCM plug.
8. Follow steps 4-7 above for each MCM inside your network. The last cable that you are going to cut out will be the one that goes into the RS485/RS232 Converter unit (or the MOXA unit).
9. At this point, all MCM's in your network should be connected together and a cable should be left out for converter connection. Attach this cable to the converter by doing a **cross connection** as shown below:



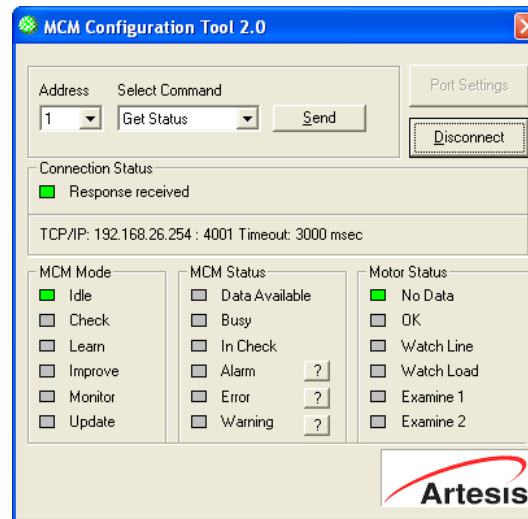
10. Plug in all the connectors and the adaptor of the converter unit. Your MCM Network is ready. If there are multiple MCM Networks in your application, follow steps 1-9 for all MCM Networks.

NOTE: If MCM Networks are going to be connected later, make sure that each MCM on the larger network has a unique address.

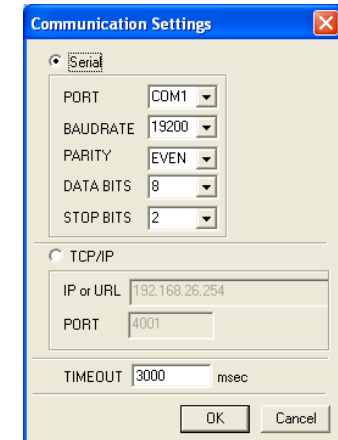
2.2. Testing the Network

After the physical connections are finished, the stability and health of the new MCM Network can be tested using a PC by following the steps below:

1. Setup MCMSCADA on the PC that you wish to use. These steps below will not require you to purchase a license.
2. Run MCMCONFIG application that was automatically setup during installation of the MCMSCADA software. The dialog below will open:



3. Click "Port Settings" button and the dialog below will be displayed. Select "Serial" to display serial port settings. **If you are using MOXA or the combination of RS485-RS232 Converter and MOXA, select TCP/IP at this point and refer to MCM TCP/IP Quick Installation Guide.**



4. These settings are filled by default by using the values below. If your network has a different setup, please update these values accordingly:
 - COM1, 19200, EVEN, 8, 2
5. Clicking "OK" will display the main window. There, click "Connect" to open the serial port.
6. For each device on your MCM Network, choose its address from the Address Pane on top. The software will try to connect to that particular device and display the message "Response Received", meaning its able to communicate with the specified MCM at that address without any problems.



Artesis MCM: Simple, Effective
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"...IT SIMPLY WORKS"

Kemal Nehrozoğlu Cad. GOSB Teknoparkı
Hightech Binası Kat: 3/B 10
Gebze 41480 Kocaeli / Turkey
Tel: (0262) 678 88 60
Fax: (0262) 678 88 55