



Drake MCS – CONNECT

Basics



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Table of Contents

Introduction	1
MCS-CONNECT Features	2
Controller Network Communication	3
REMOTE – DIALUP – MCS-WIRELESS MODEM CONNECTION	4
LOCAL – CROSSOVER ETHERNET CONNECTION.....	5
LOCAL – SERIAL RS-485 CONNECTION.....	6
Downloading MCS-CONNECT	7
MCS Controller Setup	10
COM Port Driver Updates	12
MCS-CONNECT Via Local RS-485.....	15
MCS-CONNECT Via Crossover Ethernet.....	17
Transmitting Firmware Using MCS-CONNECT	19
Standard Method	19
Backdoor Method	20
Transmitting CONFIG Using MCS-CONNECT	21
Creating a Diagnostic Save	22
Troubleshooting Notes	23

Introduction

MCS-CONNECT software is part of the MCS Support System. Its purpose is to provide both local and remote communication for MCS micro controllers either by themselves or as part of a network.

MCS-CONNECT supports the following controllers:

- MCS-MAGNUM controller
- MicroMag controller

MCS-CONNECT permits the user to monitor the status of the micro controller in real time and, with proper authorization, changes can be made to the system. In as fast as 10 seconds configuration files can be transmitted to or received from an MCS micro controller.

Another powerful feature of MCS-CONNECT is its ability to graph event history. Since MCS controllers automatically perform history logging, the user can select which inputs or outputs to graph and view the results either in real time or over a user selectable period of time.

MCS-CONNECT supports the SAVE of history data in the GRAPH function as a *.txt file. This allows the user to bring the data up in MCS-CONNECT offline or in a spreadsheet program such as Microsoft Excel.

Updates for MCS-CONNECT can be downloaded directly from the MCS website under "Support", PC Software.

The program is available as Microsoft Windows based software or as Linux based software.

Note

Any and all changes, modifications, and alarm resets require a supervisor password (2112) to be entered first

MCS-CONNECT Features

MCS-CONNECT PRODUCT FEATURES

- Java application runs on Windows/Linux
- Local communication @ 19200 baud
- Local Ethernet @ 10/100 MBPS
- Remote communication via phone or Internet
- Email/Test Message alarm alerts
- Auto Print to file on alarms
- Daily Scheduled Print to Files
- Temperature and PSI Conversion Wizard
- Extended History File Save
- Interactive P/T Chart
- Lookup Tables
- Hide / Show Applicable Data
- Diagnostic Save/Auto-Send
- Window/Grids auto sizing based on screen resolution
- Customizable Workspace saving allow easy recall of window position & sizing
- Algorithm control states display
- Static & dynamic graphing / trending data
- Alarm retrieval & handling - these items can be printed and saved to PC for analysis and backup
- Manual / Auto mode control
- Setpoint modification
- Schedule modification
- Multiple authorization levels for security
- Runtime / Cycle count information
- Transmit / Receive configuration in as fast as 10 seconds
- Sensor Diagnostics
- Graphic Interface Sub List
 1. Customized to application
 2. User Customizable Gauges
 3. State Based Color and Image changes
 4. Animated device—pump rotating, comp moving, fan spin, etc.
 5. Easy view and access via graphic interface

Controller Network Communication

The MCS 485 Network can support up to 20 MCS controllers. Access to the network can be local or remote via a 14.4K Baud modem. The PC connected to the network should be running at least Windows 7 or higher with MCS-CONNECT V17 or higher.

Each MCS controller in the network must be assigned a unique software network address. With proper authorization, this can be setup using an MCS controller and LCD/Keypad. This address will be the key in establishing communications with the appropriate MCS controller. This address can be changed from the LCD / keypad.

NOTE: It is suggested that network addresses start with 1. This will allow any unit that has not had the address changed since leaving the factory to be accessible at address 0, which is the default.

Built In BMS-Controller Support

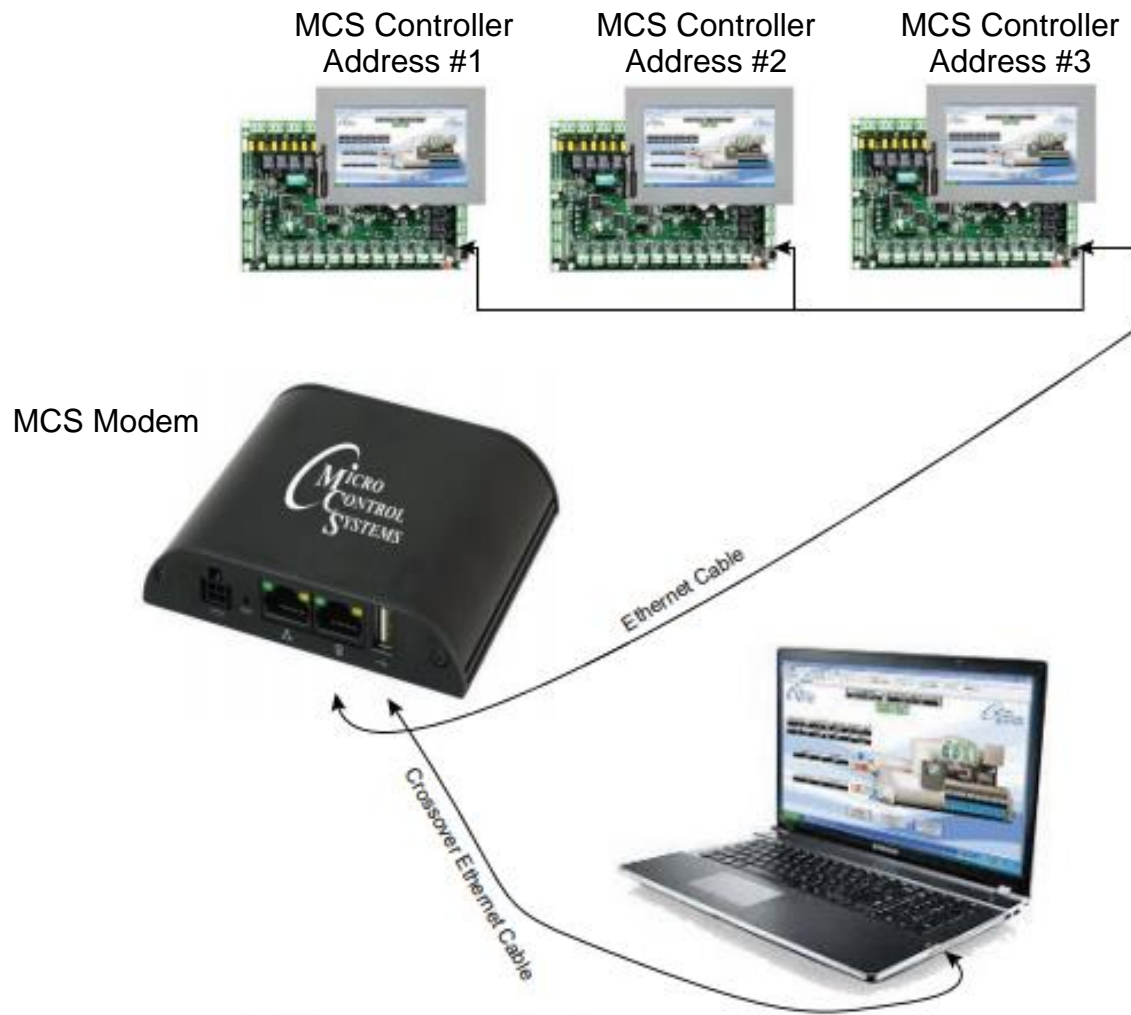
✓ = Built in Support

MCS Network Protocol Support		
	Magnum	MicroMag
Over Ethernet	Bacnet IP	✓
	Modbus IP	✓
	MCS IP	✓
Over RS485	Modbus RTU	✓
	MCS 485	✓
	Bacnet MS/TP	✓
	Johnson N2	✓
Over LonWorks	LonTalk	✓
	MCS-BMS-Gateway	✓

Requires MCS-BMS-GATEWAY

Controller Network Communication

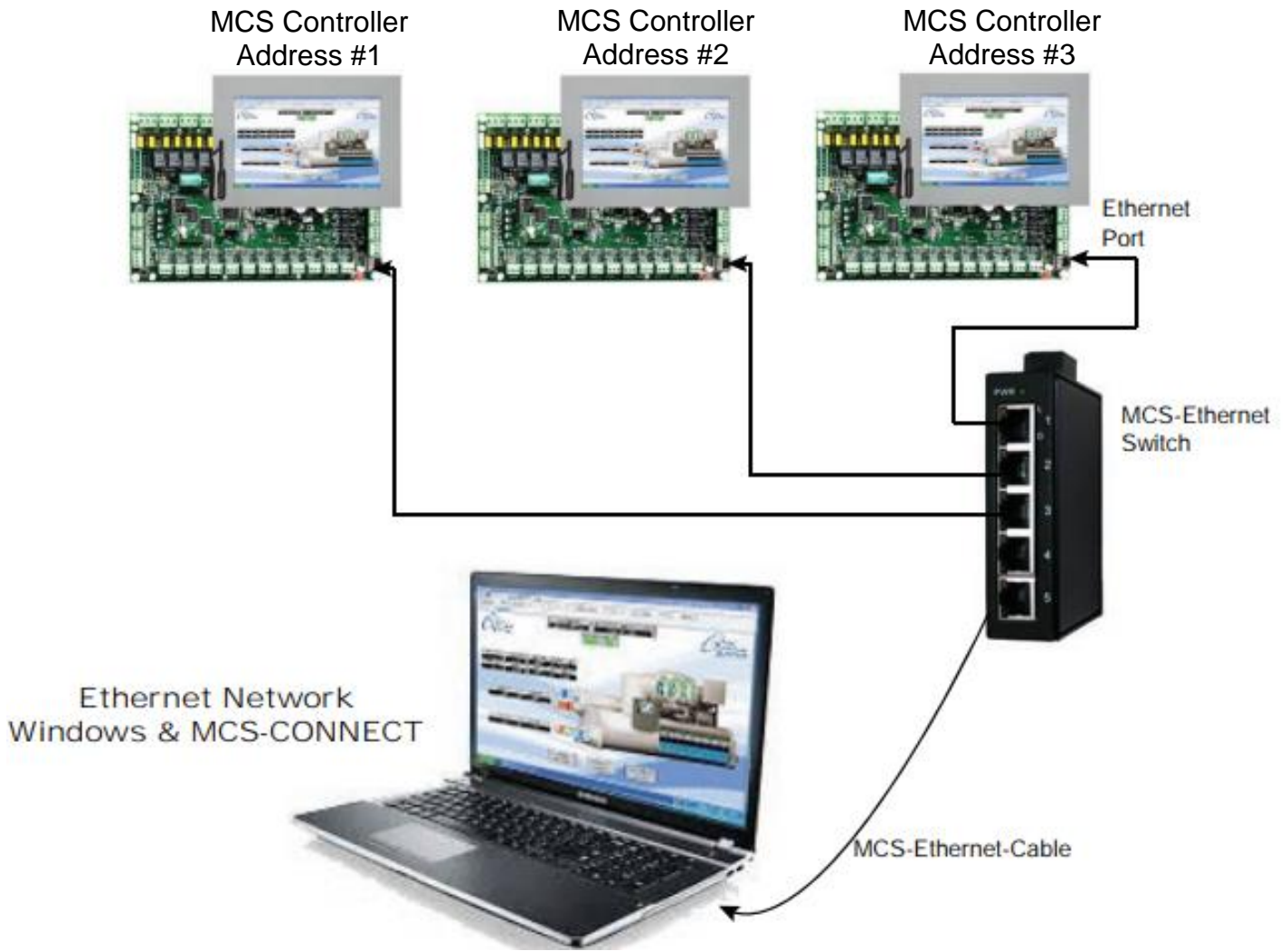
REMOTE – DIALUP – MCS-WIRELESS MODEM CONNECTION



MCS-WIRELESS MODEM is shipped from the factory with the IP address configured for you. Instructions on how to setup your PC to communicate with the MCS-WIRELESS MODEM will be included.

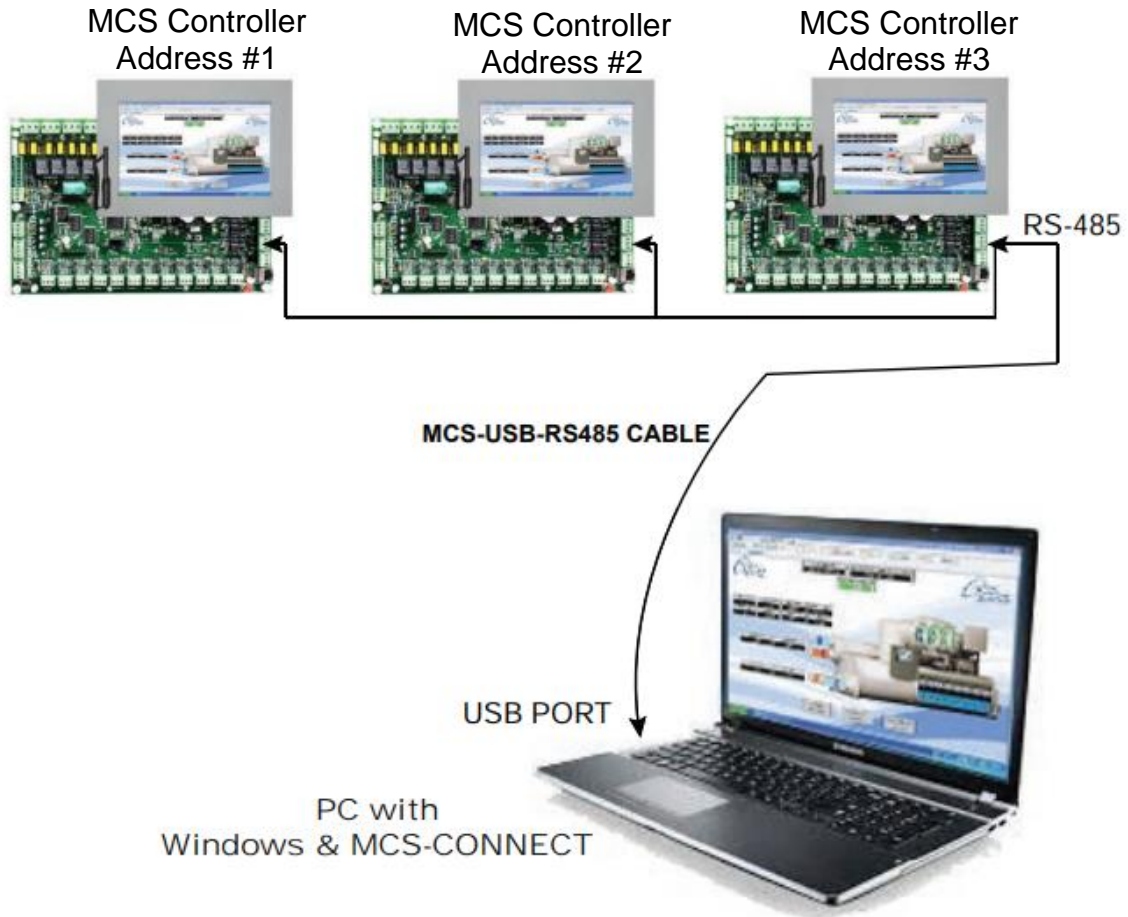
Controller Network Communication

LOCAL – CROSSOVER ETHERNET CONNECTION



Controller Network Communication

LOCAL – SERIAL RS-485 CONNECTION



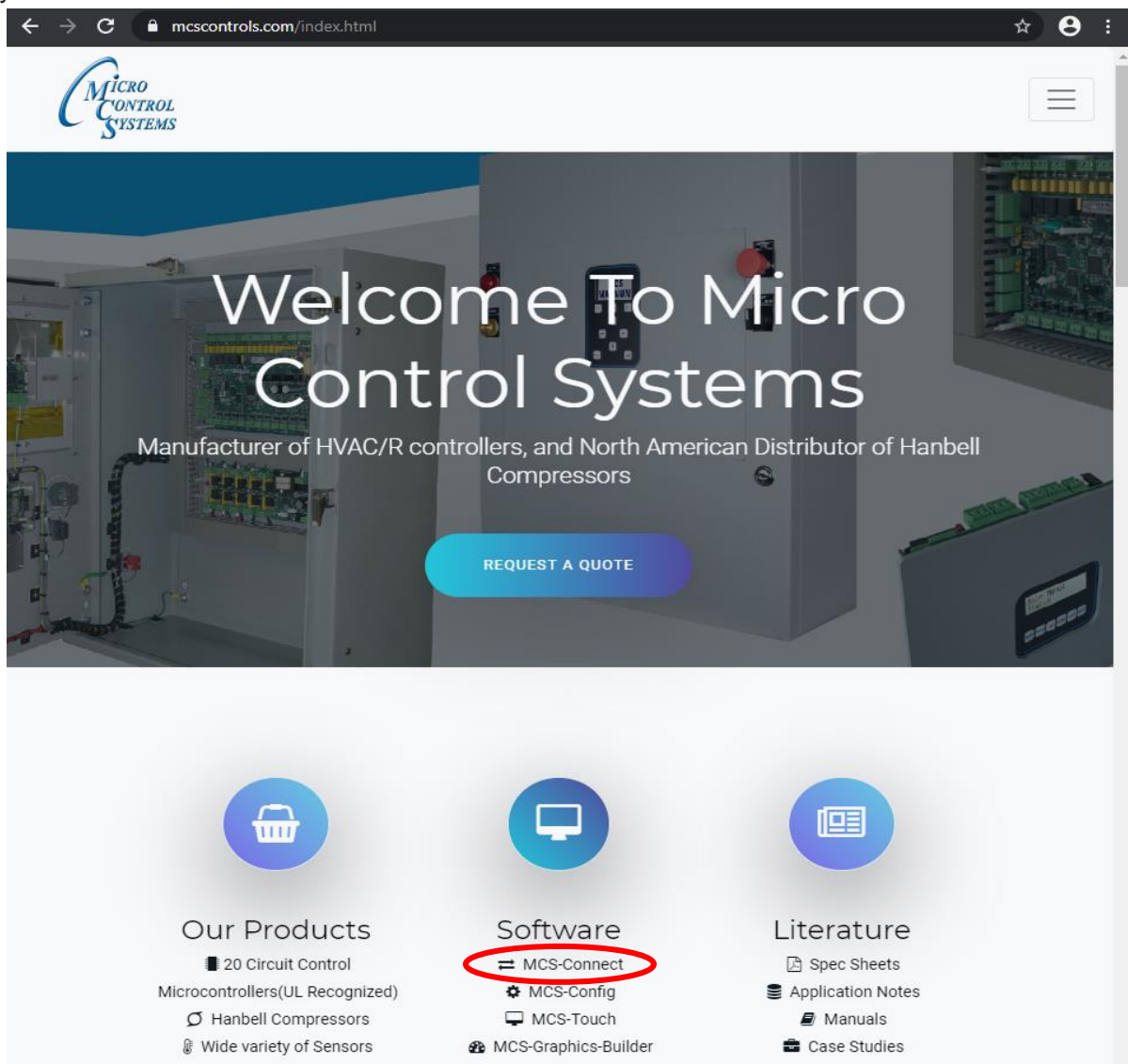
Downloading MCS-CONNECT

The latest version of MCS-CONNECT can easily be downloaded directly from our control manufactures website.

Simply visit us at www.mcscontrols.com and click on the **Support** button located on the top of the home page to jump to the PC Software page.

Once there, click on **MCS-CONNECT AUTH CODE** to download the installation file to your PC. This will allow you to make changes to the chiller configuration with the appropriate level of access.

Do not attempt to open and run the installation file directly from our website. Instead, make sure you download it. The MCS-CONNECT software section from the web site is as shown below:

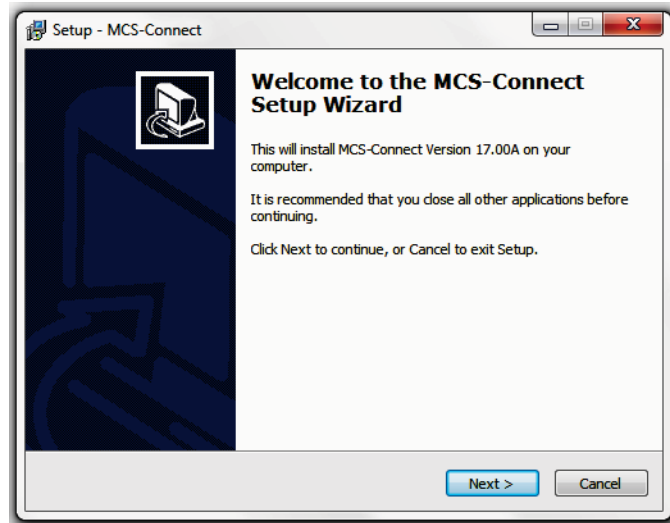


Latest Version: Connect Auth Code 18.30.11

Downloading MCS-CONNECT

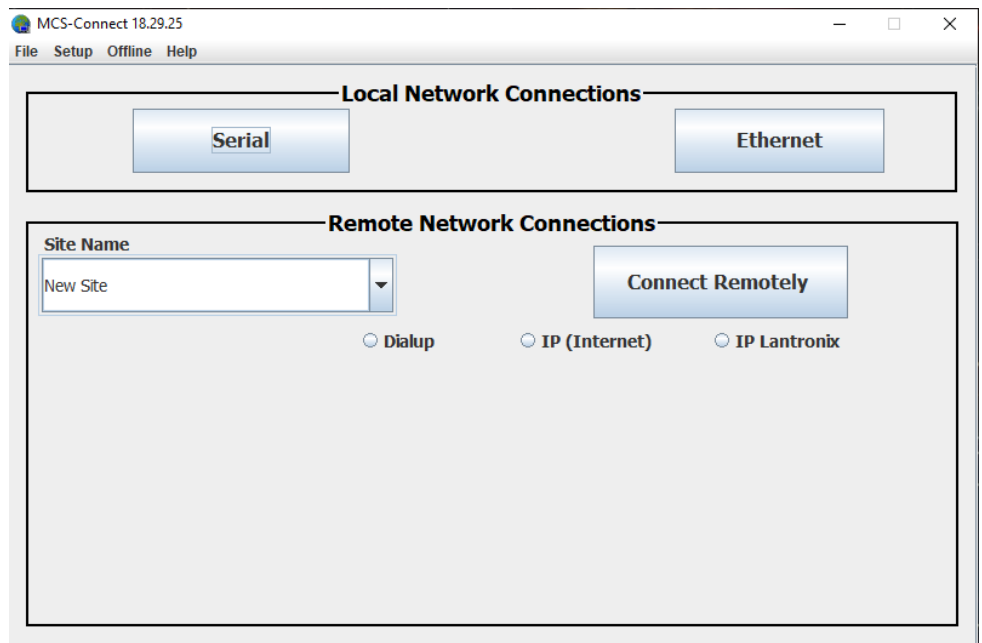
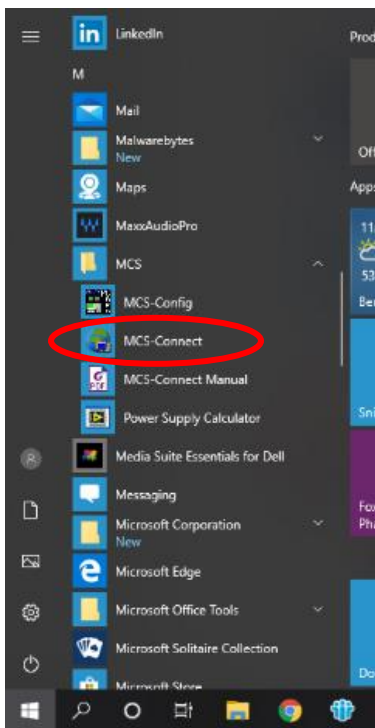
Once Downloaded, locate the .exe file either on the browser or in your computers downloads folder and double-click to run.

The MCS-CONNECT setup wizard (below) will appear. Simply click 'Next' and follow the instructions to finish installing MCS-CONNECT to your PC.



Once installed, MCS-CONNECT can be found in the START Menu or in the Downloads folder of your computer

Opening the program, the MCS-CONNECT start screen (below) should appear.



MCS Controller Setup

Before setup, the PC must be connected to an MCS controller or an MCS network by one of the following:

- Locally with an USB to RS-485 cable (included with the chiller)
- MCS-485-GATEWAY with MCS-USB-RS-232 cable to USB port on PC
- Ethernet port using crossover cable connection
- Remotely with a PC that has a 14.4-baud modem and a phone line that is available to the PC.

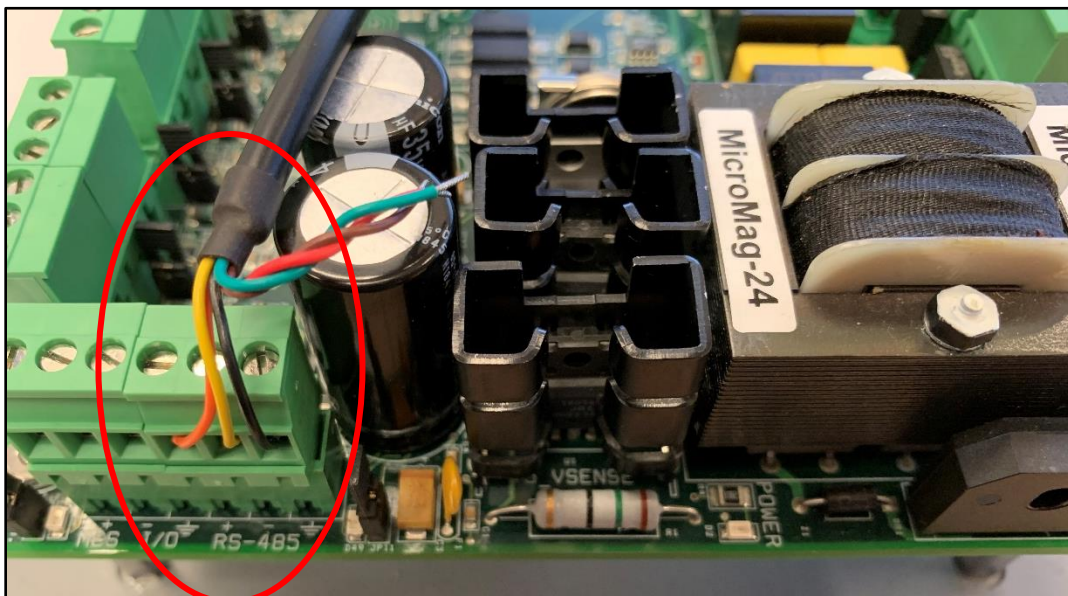
RS-485 Controller Connection

To connect with the controller via laptop, connect the USB end of the included cable to any open USB port on the PC.

On the controller, there will be a three-wire RS-485 Connection terminal. Remove the terminal block and replace with the block attached to the USB cable.

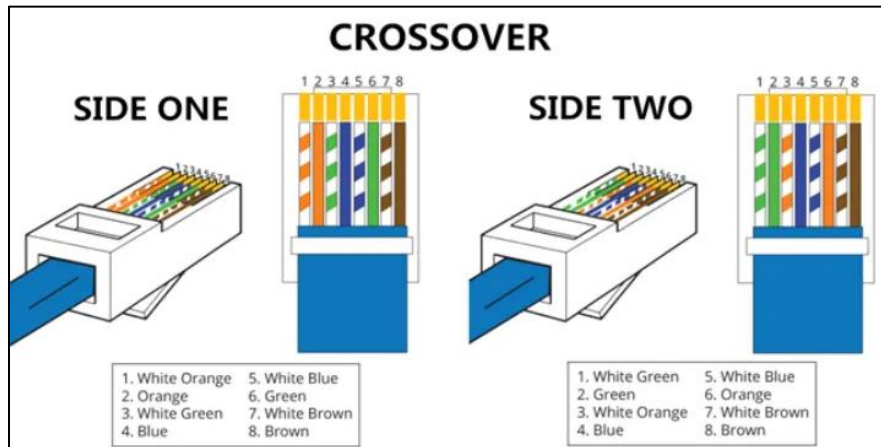
If the USB cable has loose wires, connect the leads as follows:

Orange	RS485 +
Yellow	RS485 -
Black	Ground
Red	Spare Wire
Brown	Spare Wire
Green	Spare Wire



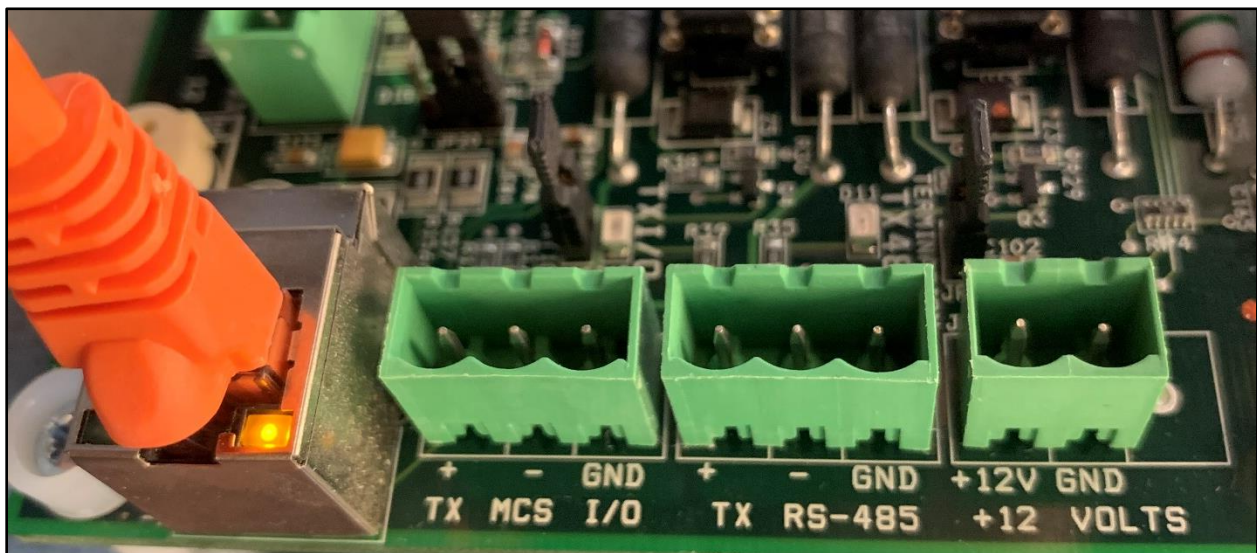
Ethernet Controller Connection

Only a Crossover Ethernet Cable can be used when connecting to dissimilar device such as the controller and PC together. See the picture below for a quick way to check if your ethernet cable is crossover



To connect with the controller via laptop, connect one end of the Crossover Ethernet Cable to the open Ethernet port of your PC.

On the MAGNUM controller ONLY, there will be an ethernet port on the board. Connect the other end of the cable to this port. The orange indicator light should be lit signaling connection between the board and PC.



COM Port Driver Updates

When trying to connect using the included FTDI brand USB to RS-485 cable, the Virtual COM Port (VCP) on your computer may need to be updated to establish communication to the controller.

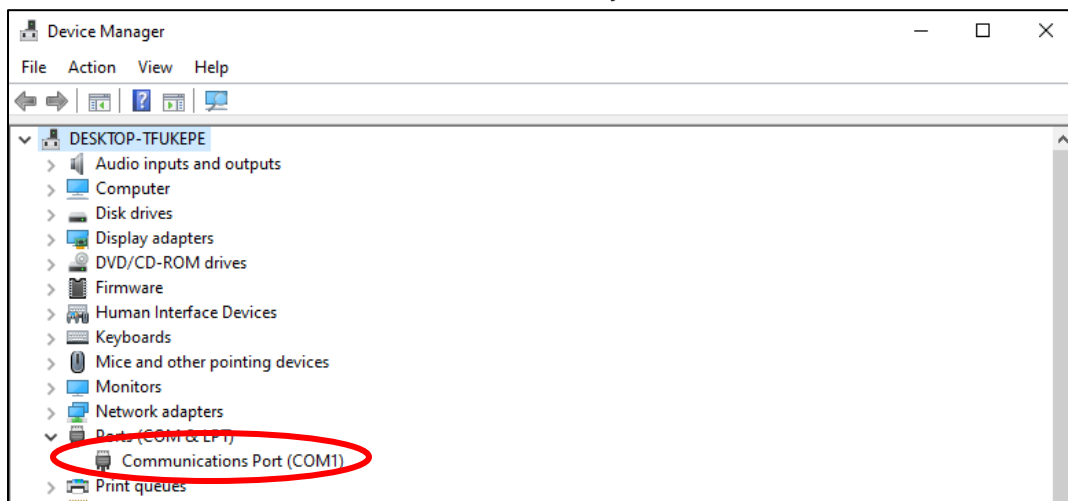
The driver updates can be found on www.ftdichip.com under the **Drivers – VCP Drivers** page. On this page you can select the proper drive for you operating system. They include support for:

- Windows (32 & 64-bit)
- Mac OS x 10.3 to 10.8 (32 & 64-bit)

With the Windows driver, there are two ways to install this driver. FTDI offers a link for a set-up executable which is an easier installation process compared to the manual installation.

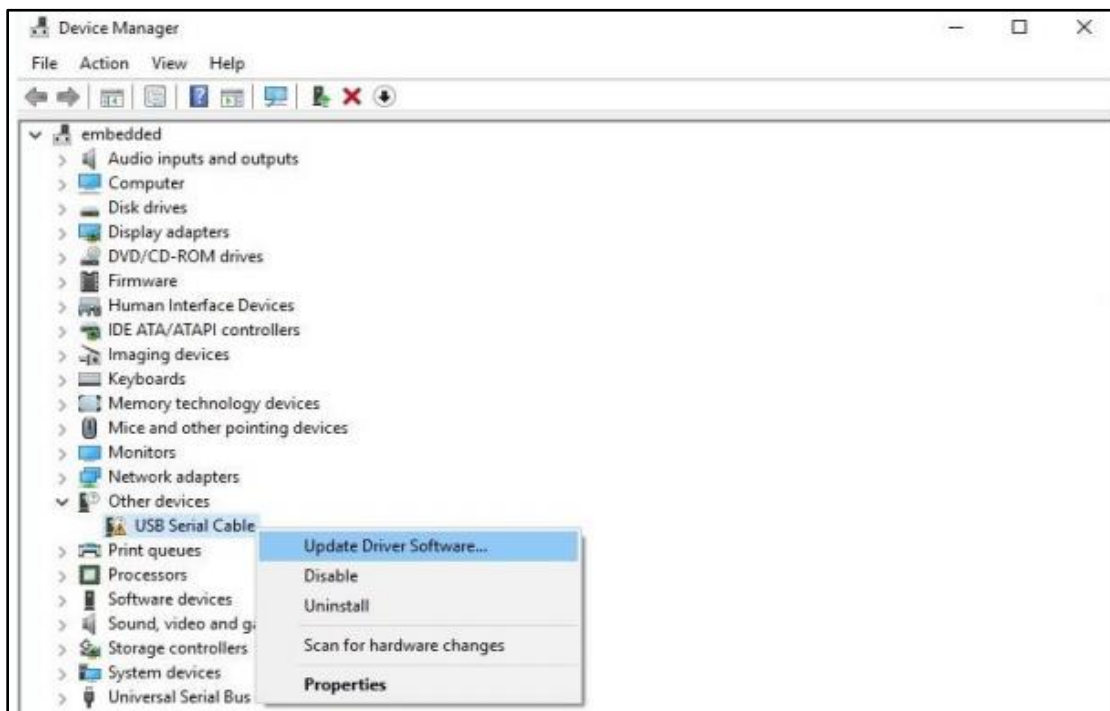
Set-Up Executable

1. Go to www.ftdichip.com and select the **Drivers** page on the left, and then select **VCP Drivers** that appears on the left (Virtual Com Port)
2. Click the [set-up executable](#) link on the right side of the page and allow the **.zip** file to download in the window. When finished downloading click the folder to open.
 - a. If this does not appear. The **.zip** file should be in the **Downloads** folder on your computer.
3. Once the folder is open, click on the **Setup.exe** file to begin the installation process.
 - a. Click **'Extract'** button to continue, and follow the prompted steps to continue through the installation and agree to the **license terms**, and finally press the **'Finish'** box to complete the download.
4. One the set-up executable has been finished; you need to connect the **FTDI USB to RS-485 cable** to your device **to finish setting up the driver installation**.
 - a. When you do this, check the **Device Manager** found in the **Control Panel** to confirm the **USB Serial Port** has been successfully installed.



Manual Installation

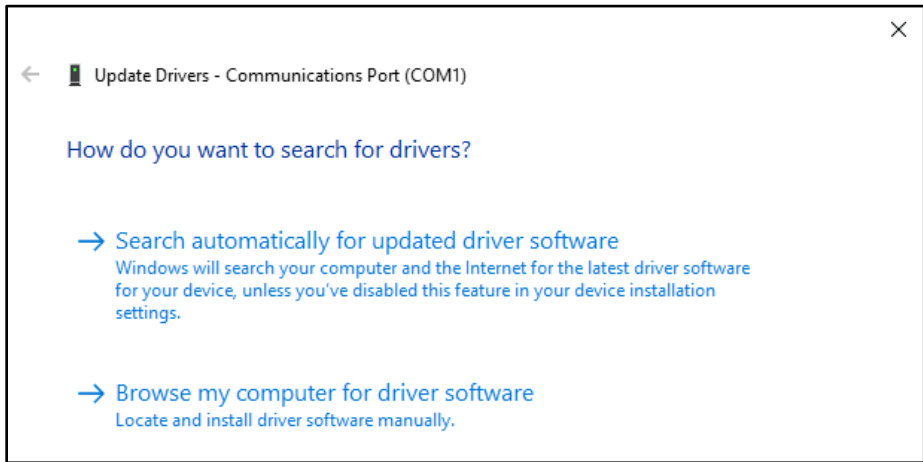
1. Go to www.fdtichip.com and select the **Drivers** page on the left, and then select **VCP Drivers** that appears on the left (Virtual Com Port)
2. Click the appropriate driver version for your operating system and allow the **.zip** file to download in the window. When finished downloading click the folder to open and Extract the folder.
 - a. If this does not appear. The **.zip** file should be in the **Downloads** folder on your computer.
3. With the controller connected via **USB to RS-485 Serial cable**, open the **Device Manager** on your computer.
 - a. A yellow warning symbol should appear under **Other Devices** tab letting you know there is no driver installed for this device.



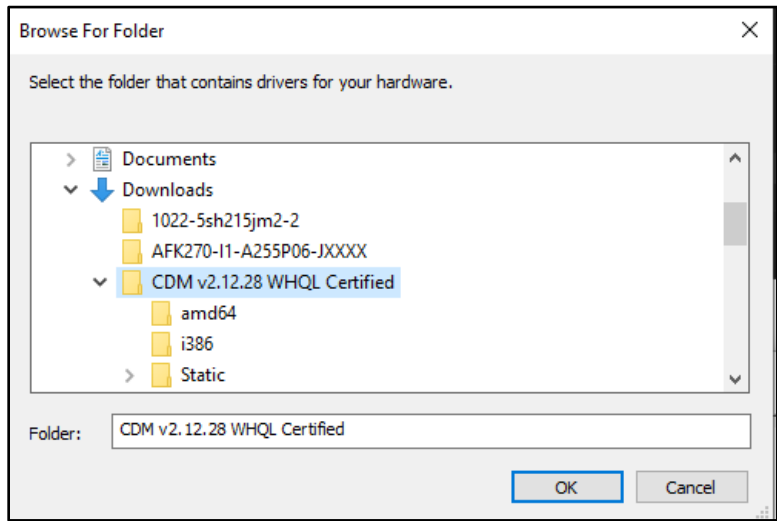
4. Right click on the flagged device and select **Update Driver Software** from the menus that appears.

COM Port Driver Updates

- 5. Select the **Browse my computer for driver software** to manual select the downloaded driver folder



- 6. Select the **Browse** option and select the **CDM folder** and click **OK** to continue



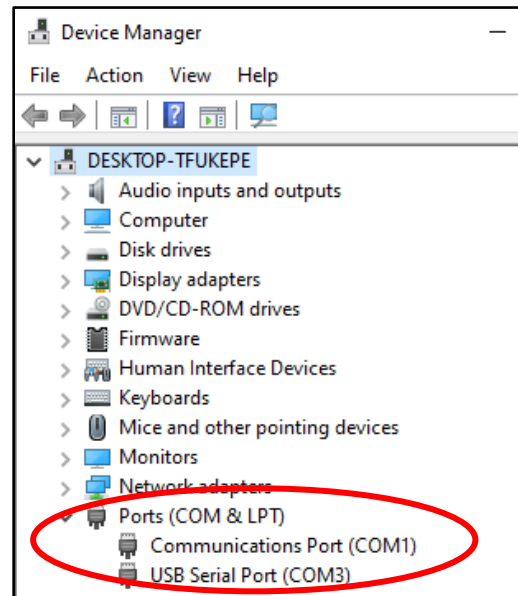
- 7. Windows proceed to install the driver software and will display a notification when installation is successfully completed



MCS-CONNECT Via Local RS-485

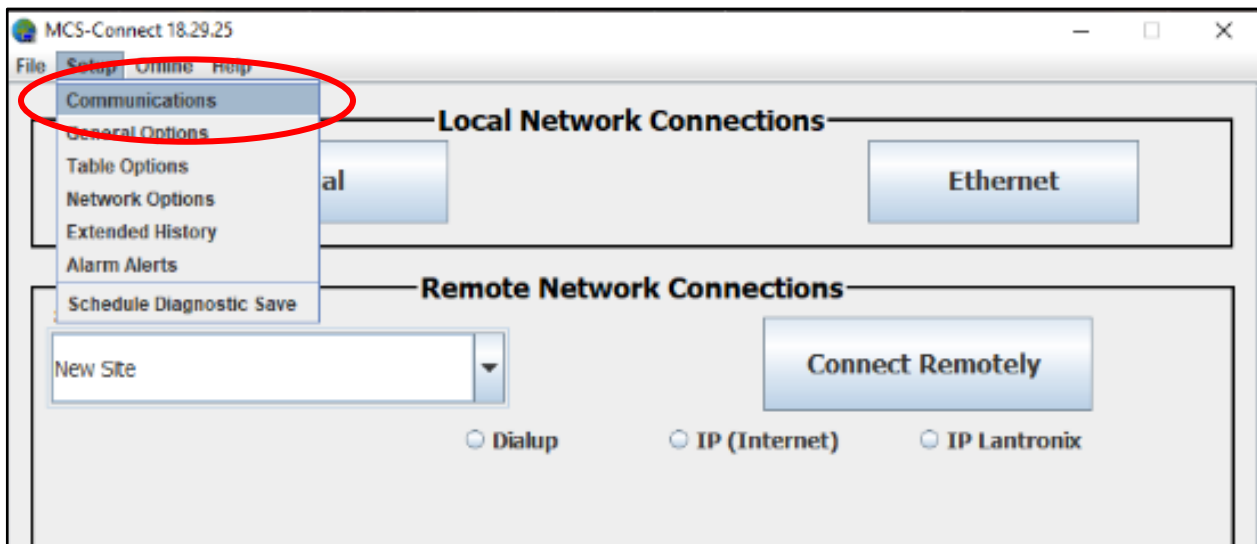
With the USB now connected to both the controller and USB port of the PC, MCS-CONNECT defaults to COM1 for Local communications and COM2 for Remote communications. Local communication refers to a direct connection between your PC and the Unit, whereas Remote communication refers to communication via your modem. If your PC uses a different port, use the button to select the appropriate port.

- To find your Windows PC's com port before starting setup for MCS-CONNECT:
 - At your desktop, right click on the **Windows** button.
 - Left click on **Device Manager**.
 - Left click on **Ports (COM & LPT)** to see which COM port is connected to **USB Serial Port**



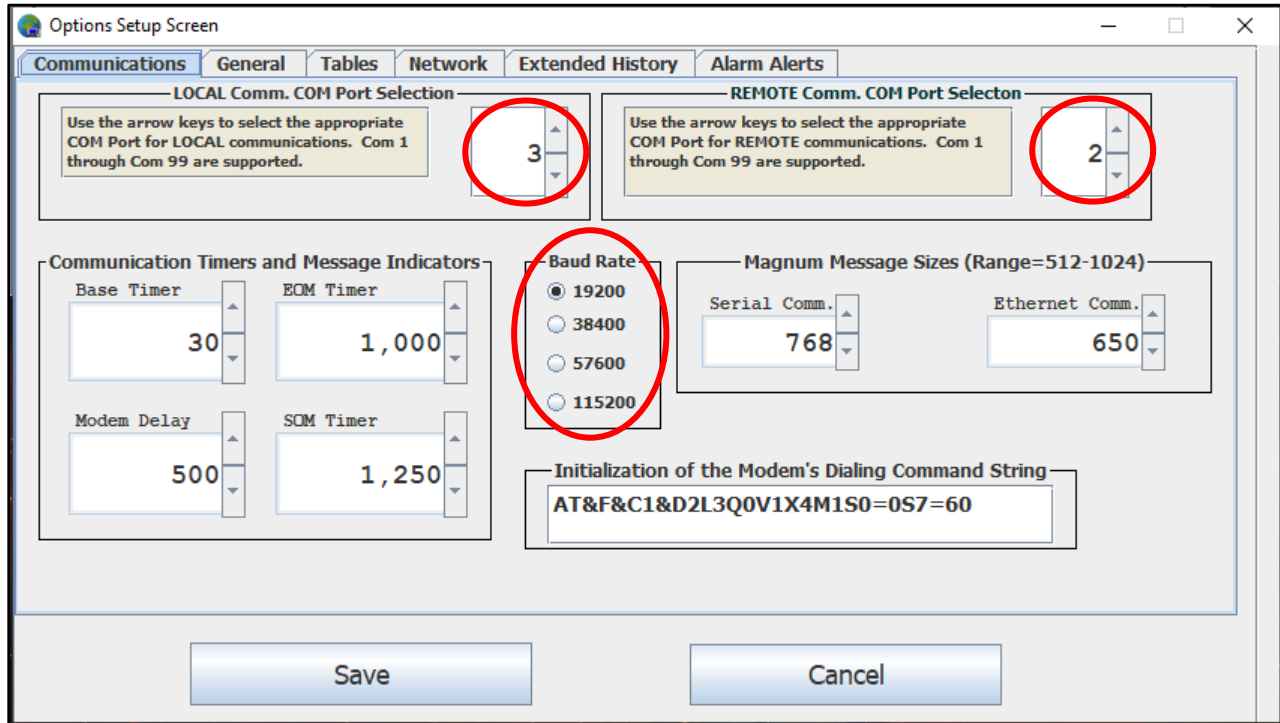
Before a serial connection can be made to an MCS controller, the correct COM Port must be identified in the previous steps must be selected on MCS-CONNECT.

- To select a COM Port for communication, choose the **Setup** menu option and then choose **Communications**



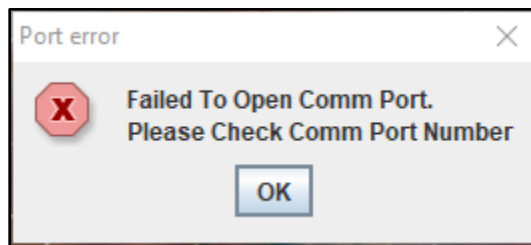
MCS-CONNECT Via RS-485

- In the following screen, use the arrows to scroll through and select the correct **LOCAL Comm. COM Port Selection** or **REMOTE Comm. COM Port Selection** for your PC and connection setup.
- Confirm the **Baud Rate** is set to **19200**. While this is the default setting from the factory, this can be changed from the controller and must match the selection in MCS-CONNECT
- Press **Save** to confirm the COM Port selection and you should be ready to connect via USB to RS-485



- Pressing **Save** and returning to the main MCS-CONNECT screen, press **Serial** under the **Local Network Connections** tab to begin scanning for connected devices under this COM Port.

NOTE: If the incorrect COM Port is selected, a **Failed To Open Comm Port** error will appear



MCS-CONNECT Via Local Crossover Ethernet

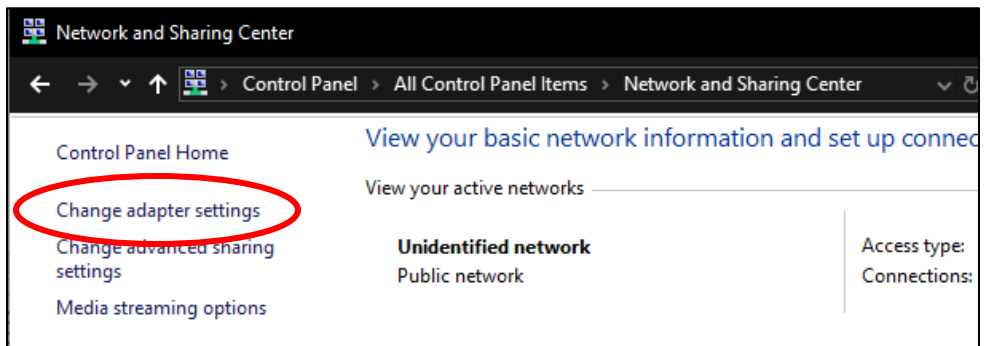
With the crossover ethernet cable connected, the board's IP Address, Subnet Mask, and Default Gateway must be known and configured with your PC.

These IP Settings can be found on the Keypad under **Serv Tools – Ethernet Network**

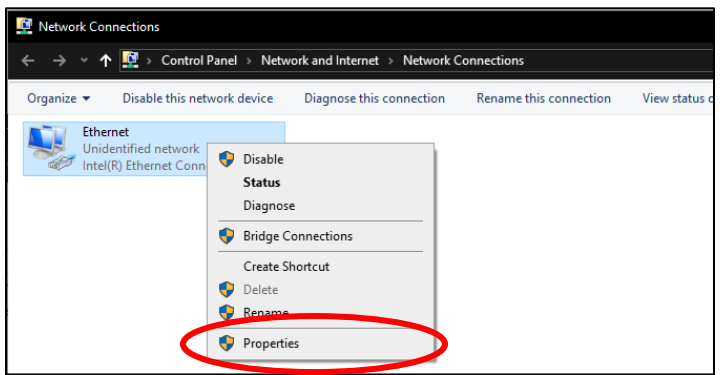
Example of Magnum IP Settings

1. IP Address 192.168.0.230
2. Default Subnet Mask 255.255.255.0
3. Default Gateway 192.168.0.1

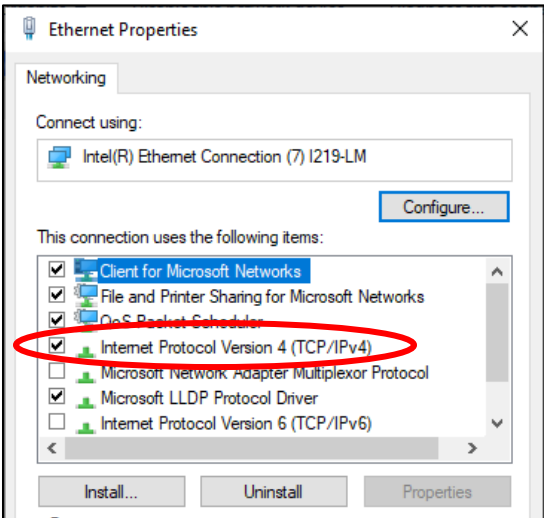
1. Left click on the **Start** button and open up the **Control Panel**
2. Open **Network and Sharing Center**
3. Left click on **Change Adapter Settings** on the left of the screen



4. Right click on the **Ethernet** network that had appeared and open the **Properties** tab

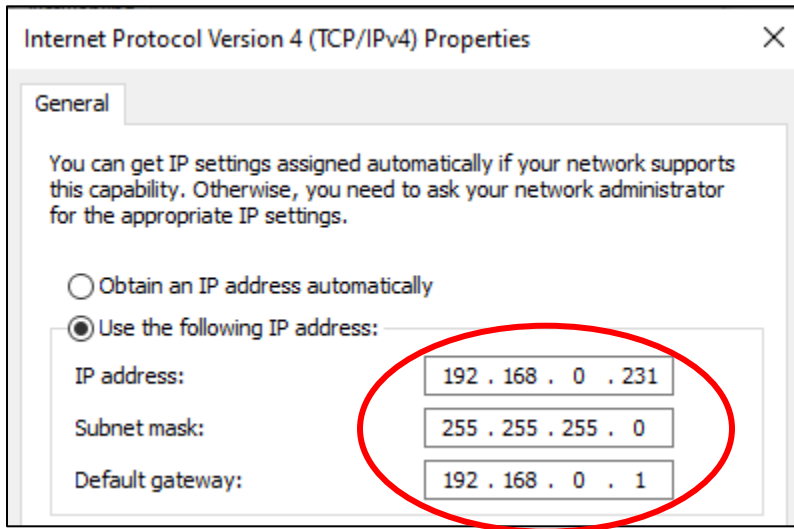


5. Under **This Connection Uses the Following Items:** check the box for **Internet Protocol Version 4 (TCP/IPv4)**

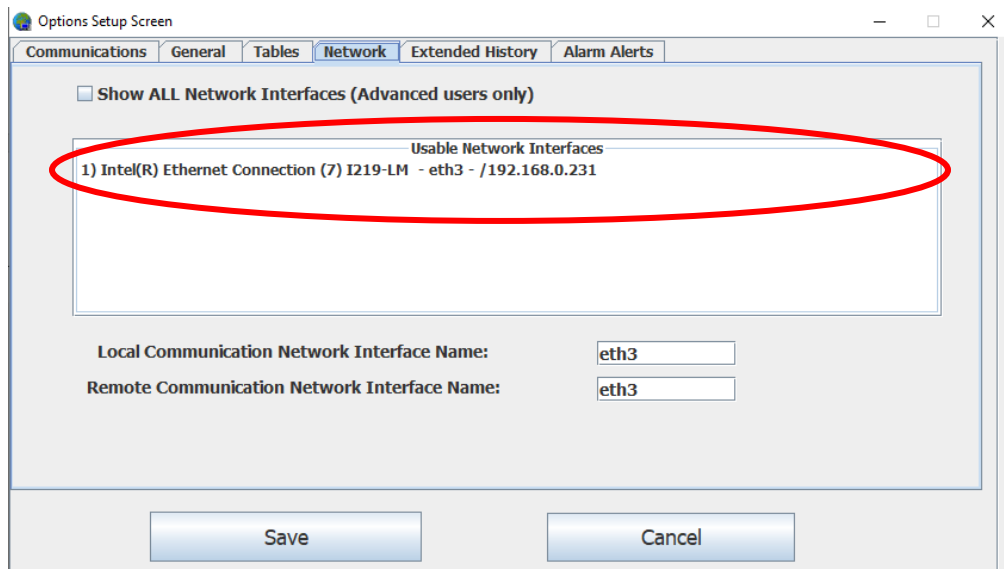


MCS-CONNECT Via Local Crossover Ethernet

6. Double click this item to open the **Internet Protocol Version 4 (TCP/IPv4) Properties**
7. Select **Use the following IP address** when using a Crossover ETHERNET Cable for PC to MCS-MAGNUM:
 - a. The **first three** numbers of the **IP address** should match exactly what's on the MAGNUM and the last number must be a different number
 - b. The **Subnet Mask** and the **Default Gateway** should match the exact values on the MAGNUM



8. Close all windows and open **MCS-CONNECT**
9. Left click the **Setup** tab and select the **Network Options** window
10. The IP Address you entered earlier should appear under **Useable Network Interfaces**



11. Click **Save** to close the window and click **Local Connections – Ethernet** to begin scanning for connected devices

Transmitting Firmware Using MCS-CONNECT

Standard Method

When loading a new CONFIG file, the MCS controller firmware may need to be updated. Current firmware files (.hex) can be found on the MCS website at www.mcscontrols.com under the **Support** tab.

Current MAGNUM Firmware:

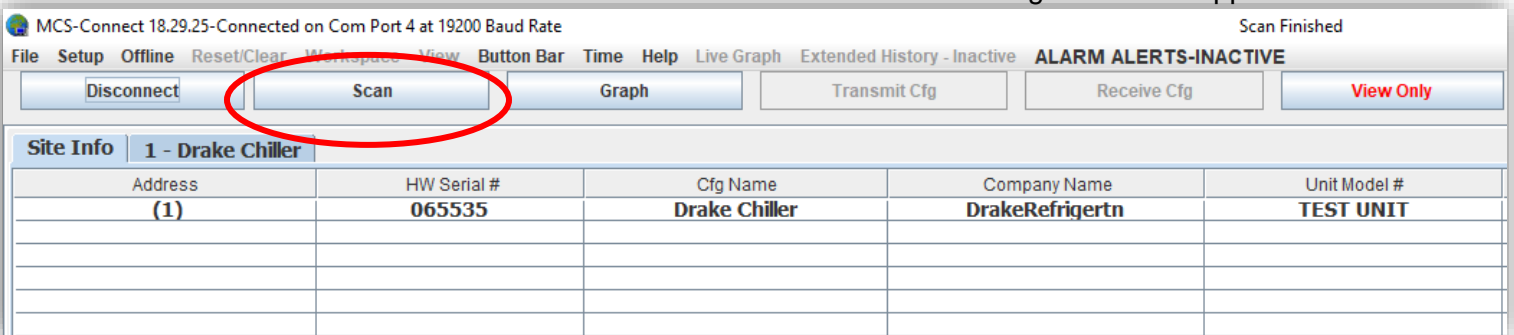
Magsoft (Version HVAC 17.62M)
2,404 KB

Current MicroMAG Firmware:

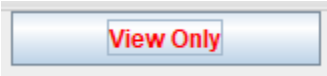
MicroMagsoft (Version uMag 18.00H)
1,891 KB

Once the correct Firmware is downloaded:

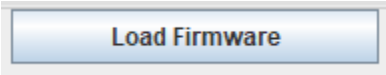
1. Open MCS Connect
2. Connect MCS controller via USB to RS485 cable and set up correct COM Ports
3. Select **Local Network Connections – Serial** and the following screen will appear



4. Select the controller you would like to access from the displayed list
 - a. You may need to **SCAN** if the Chiller does not appear



5. Click the **VIEW ONLY** button and enter **2112** for **Supervisor** level access



6. Click the now accessible **LOAD FIRMWARE** button
7. Navigate through the **File Window** to select the firmware to version **(.hex)** to upload
8. Press **OPEN** and wait for the firmware to load and the board to disconnect and restart

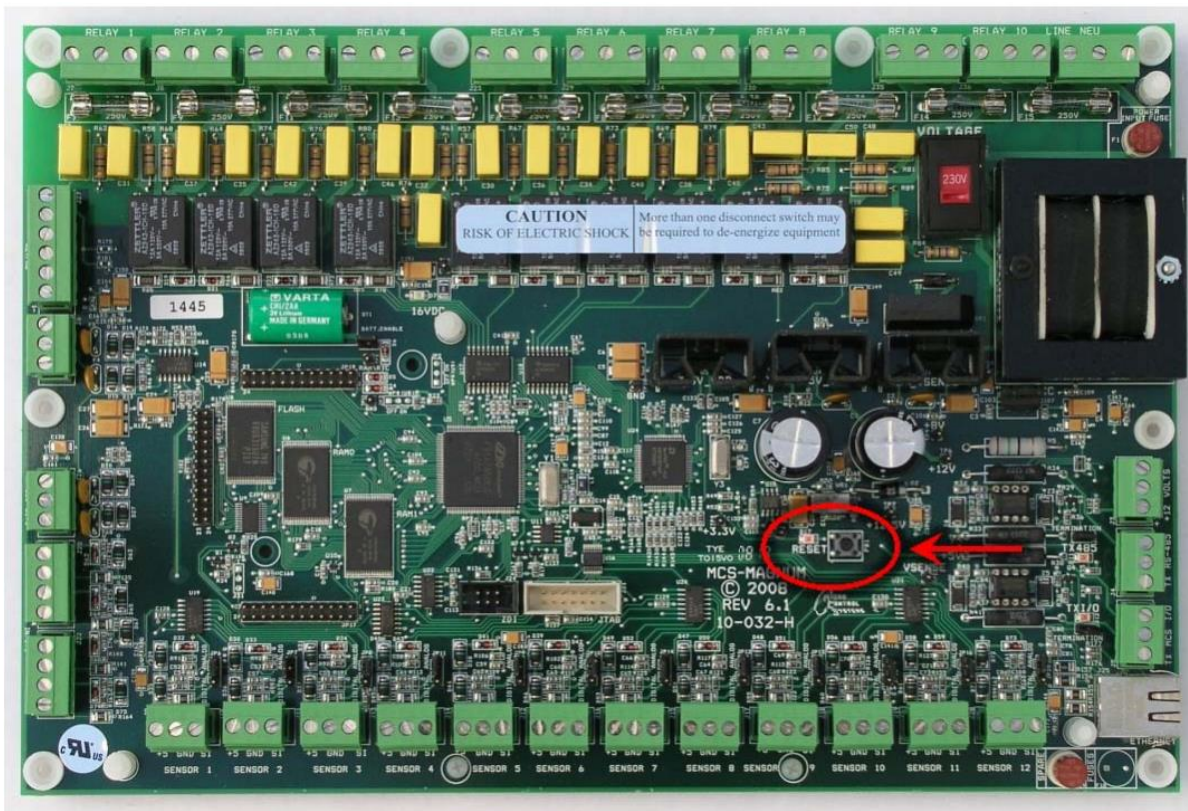
Transmitting Firmware Using MCS-CONNECT

Backdoor Method

There may be certain situations where the standard method for transmitting firmware will not work (for example, firmware corruption through incomplete transfer, power failure, etc.). The magnum may be in constant reset and might not show up on the scanning screen of MCS-CONNECT. In such instances the following backdoor method must be used to transmit firmware.

Once MCS-CONNECT is downloaded:

1. Open MCS-CONNECT
2. Select Local Serial as method of connection
3. Make sure you are **NOT** connected to the controller yet
 - a. Keep the USB to RS485 cable unplugged for this step so that the **LOAD FIRMWARE** does not become disabled.
4. This will bring up the Magnum scanning screen. Click the **LOAD FIRMWARE** button and navigate through the File Explorer Window to select the firmware to version (.hex) to upload
5. Reconnect the USB to RS485 cable to the controller.
6. **BEFORE** transmitting firmware however, locate the **RESET** button on the board. You will need to start transmitting the firmware within seconds of pressing the RESET button.
7. Press the RESET button and then immediately begin transmitting the firmware.



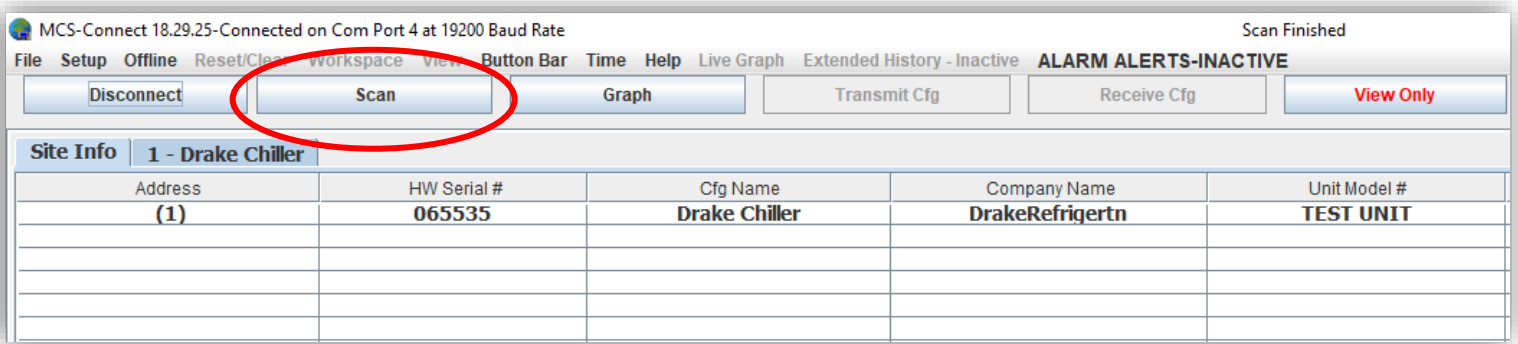
Transmitting CONFIG Using MCS-CONNECT

Connecting Locally Through Serial Cable (USB to RS-485)

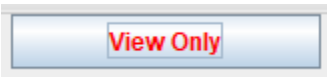
When making substantial changes to the Chillers operating conditions, it may be easier for a new Configuration file to be uploaded instead of changes through the keypad. While this can be done without internet connection, the updated CONFIG file (.cfg) must be saved locally to the computer with MCS-CONNECT

When the CONFIG file is saved locally:

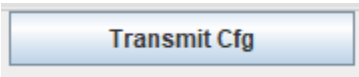
1. Open MCS-CONNECT
2. Connect MCS controller via USB to RS485 cable and set up correct COM Ports
3. Select **Local Network Connections – Serial** and the following screen will appear



4. Select the controller you would like to access from the displayed list
 - a. You may need to **SCAN** if the Chiller does not appear



5. Click the **VIEW ONLY** button and enter **2112** for **Supervisor** level access



6. Click the now accessible **TRANSMIT CFG** button
7. Navigate through the **File Window** to select the Configuration (.cfg) file to upload
8. Press **OPEN** and wait for the config. To load and the board to disconnect and restart
9. You may need to rescan to find the MCS controller after the restart

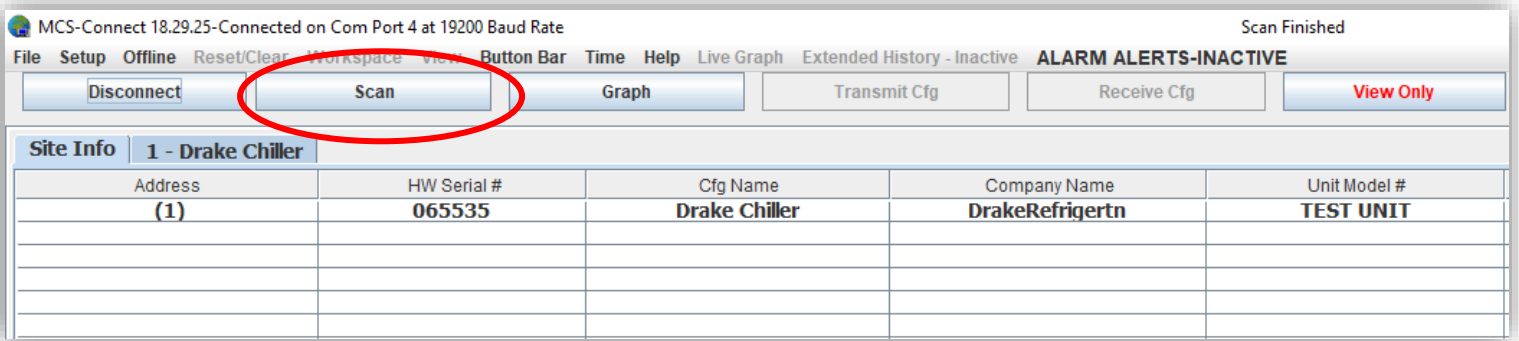
Creating a Diagnostic Save

Connecting Locally Through Serial Cable (USB to RS-485)

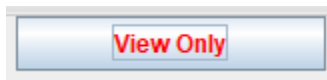
For more in depth trouble shooting capabilities, MCS offers a Diagnostic save feature, which outputs the CONFIG, History Printout, last 5 alarm printouts, and the status print to a (.zip) file.

When ready to take the diagnostic save:

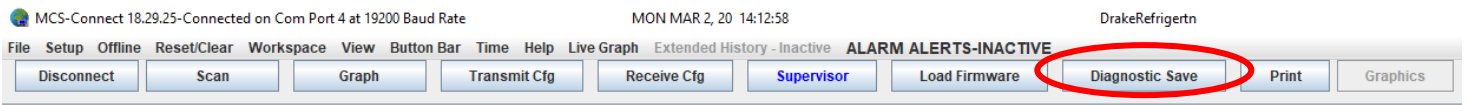
1. Open MCS-CONNECT
2. Connect MCS controller via USB to RS485 cable and set up correct COM Ports
3. Select **Local Network Connections – Serial** and the following screen will appear



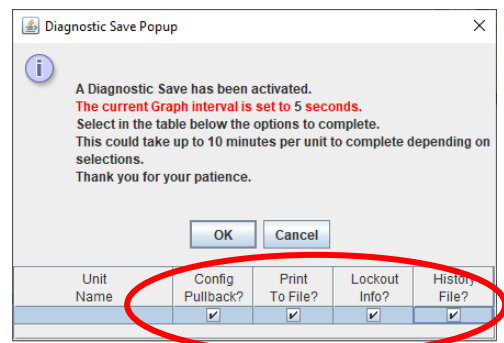
4. Select the controller you would like to access from the displayed list
 - a. You may need to **SCAN** if the Chiller does not appear



5. Click the **VIEW ONLY** button and enter **2112** for **Supervisor** level access

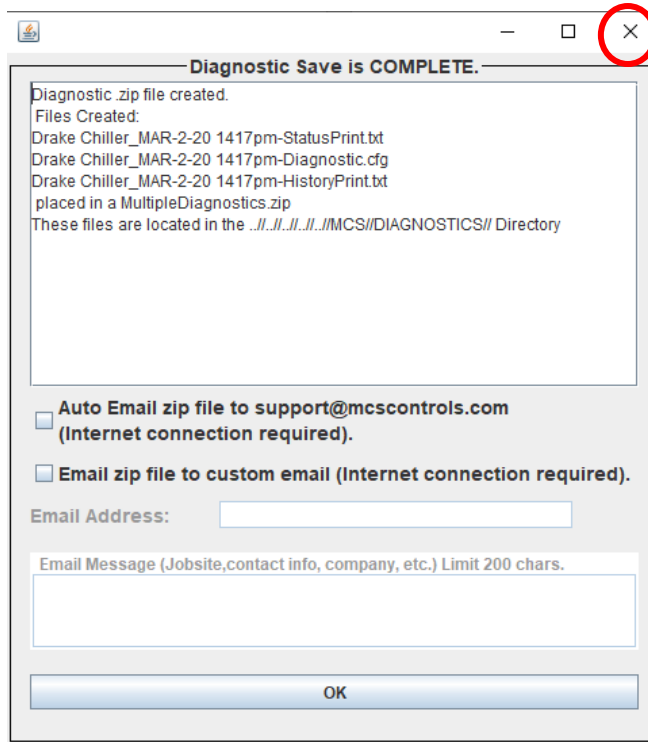


6. Click on the **DIAGNOSTIC SAVE** button
7. After hitting the button, the following pop-up will appear. Make sure **ALL FOUR** checkboxes are marked, including History File, and click **OK**.



Creating a Diagnostic Save

- 8. The diagnostic save will take a few minutes to finish. When it does the following pop-up box will appear. Hit the **X** button to close out of the window.

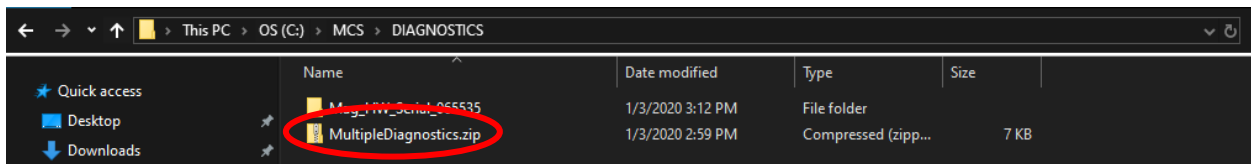


- 9. The diagnostic save will be exported as a (.zip) file to the C-Drive on your computer. To access the file, follow the path below:

a. My Computer → OS(C:) → MCS → DIAGNOSTICS

- 10. Locate the most recent file under the **DIAGNOSTIC** Folder and send to:

drakeconfigs@gmail.com





Drake Refrigeration, Inc.

2900 Samuel Drive • Bensalem, PA 19020

(888) 289-7299

Phone: (215) 638-5515

Fax: (215) 638-5518

