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CCU/M-HUB Installation Notes

Part #: CCU/M-HUB

This equipment is designed to be installed and serviced by fully qualified field engineers. No user serviceable or installation parts inside.

Supplied:

1	x	CCU/M board with firmware for CCU-NET Hub
1	x	Mounting Bracket
1	x	Power connector for CCU/M
1	x	Relay connector for CCU/M
4	x	M4 Machine Screws
4	x	Flat Washers
1	x	Additional FCC approval label

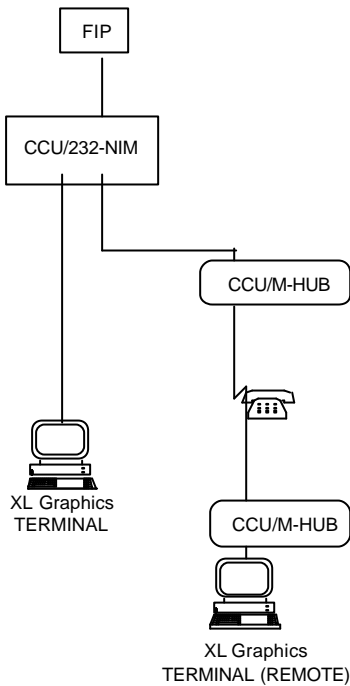
You will need:

1	x	24V Power Supply & Batt. to CCU/232. Connector supplied.
1	x	24V DC plug pack or power source
1	x	Interface cables from CCU Network to CCU/M (see later for wiring information)
1	x	Optional MXL-MPFO Adaptor plate (MXL installations)

Power Requirements:

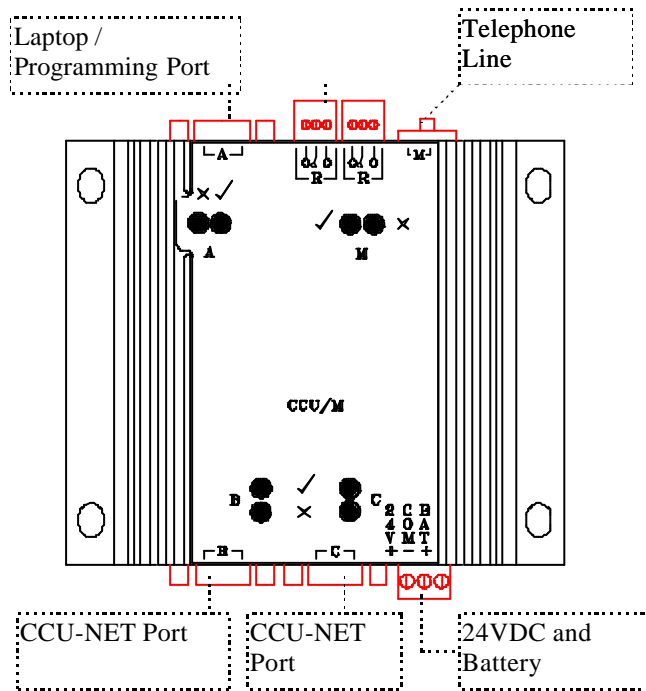
Typical:	200mA at 24VDC
Voltage Input:	20-30 VDC

1. General Configuration:



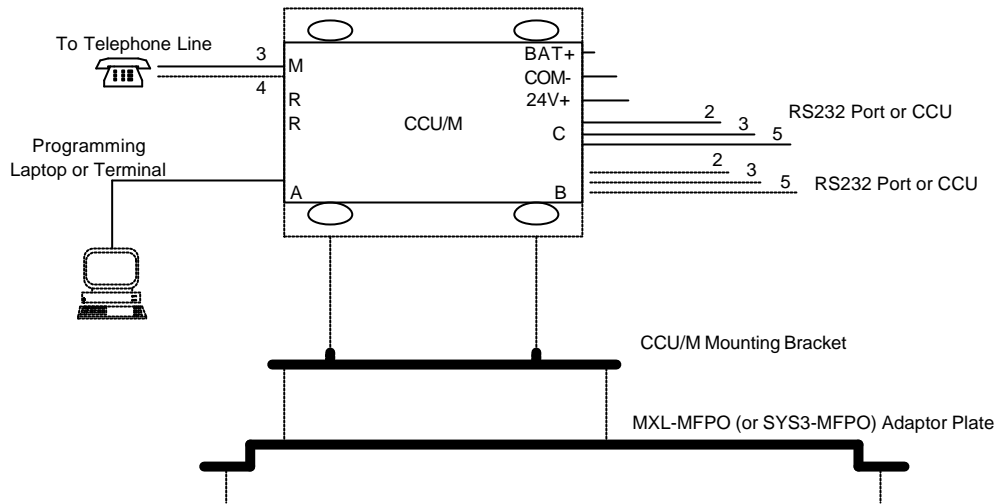
The CCU/M-HUB is used to run CCU-NET protocol through telephone lines. These may be factory setup for powered or unpowered lines. Unpowered links of up to 5 miles are possible. Alternatively, the CCU/M-HUB may be connected through the PSTN to provide a dial-in gateway to the CCU-NET. Access can be controlled using a login / password and dial-back operation is also possible.

2. Ports:



- CHN_A is used for debugging information only.
- CHN_B and CHN_C are CCUNET ports.

3. Installation of CCU/M:



4. Wiring.

4.1. Power Connection:

Connect the 24V DC power source to the supplied connector. The power connector is next to the CHN_C port. These connections are written on the board. Note that the BATTery connection is not required if the 24V is UPS (Uninterruptible Power Supply). Some 24V DC power sources lose power when changing to alternate supply (Example: CZM on MXL MMB-1), for this reason it is necessary to connect an alternate battery connection. Pin connections are labelled on the CCU as below:

CCU/232
24V
COM
BAT

4.2. Connecting CCU/M RS232 Ports B and C to the CCU network:

First determine which two port types you are connecting using the following table:

	PORT A	PORT B	PORT C
CCU/232	DTE	DTE	DCE
CCU/M	DCE	DTE	DTE
CCU/F	n/a	n/a	DCE
CCU/422			
PC COMPORT	n/a	n/a	DTE

Connecting a DTE to DCE uses a straight through cable:

Straight through cable for 9 pin DB9 cable connectors	
pin #	pin #
2	2
3	3
5	5

Connecting a DTE-DTE or DCE-DCE requires a null modem cable:

Null Modem cable for 9 pin DB9 cable connectors	
pin #	pin #
2	3
3	2
5	5

4.3.Connecting to the telephone network:

There is an RJ11 connector on the CCU/M (Marked as M for modem). Pins 3 and 4 of this connector should be connected to the dedicated telephone line and to the CCU/M at the remote end.

CCU/M
6PIN Telephone socket
3
4

Note that the connector can have 6 wires. Normally, if you look at the connector on the CCU/M, only 4 of these have pins installed. These are pins 2 to 5, so Pins 3 and 4 are the centre pins. There is a maximum limit of 5 miles on unpowered telephone lines.

- **An FCC Part 68 compliant telephone cord must be used.**
- Should the CCU/M be mounted in such a fashion as to permanently obscure the FCC approval label on the back of the CCU/M, then an additional adhesive label has been supplied. In the case of the MXL Fire Indicator Panel, this can be affixed to the door of the MXL cabinet.
- This equipment complies with Part 68 and Part 15 of the FCC rules. On the back of the CCU/M is a label that contains, among other information, the FCC registration number and ringer equivalence number (REN). If requested, this information must be supplied to the telephone company.
- The REN is used to determine the quantity of devices which may be connected to the telephone line. Excessive RENs on the telephone line may result in the devices not ringing in response to an incoming call. In most, but not all areas, the sum of RENs should not exceed five (5.0). To be certain of the number of devices that may be connected to a line, as determined by the total RENs, contact the local telephone company.
- If the CCU/M causes harm to the telephone network, the telephone company will notify you in advance that temporary discontinuance of service may be required. But if advance notice isn't practical, the telephone company will notify the customer as soon as possible. Also, you will be advised of your right to file a complaint with the FCC if you believe it is necessary.

- The telephone company may make changes in its facilities, equipment, operations or procedures that could affect the operation of the equipment. If this happens the telephone company will provide advance notice in order for you to make necessary modifications to maintain uninterrupted service.

4.4. Connecting the RS232 Port (CHN_A):

This port is configured as a DCE port. It is configured with the default settings of 9600 baud, 8 data bits, 1 stop bit, no parity. A straight through cable is required to connect this port to a laptop. You only need to connect to this port if you have to change the programmed address of the CCU.

Programming Cable

CCU/M CHN_A DB9 (DCE)	PC COMPORT DB9 (DTE)
2	2
3	3
5	5

4.5. Relay Connection:

If the relay output from the CCU/M is to be used then there are two relay sockets located next to the CHN_A connector - these are IDENTICAL and either can be used.

5. Configuration of CCU/M:

5.1. CCU Net Address:

Each CCU Node must have a unique address. Addresses 0 and 255 are reserved and CANNOT BE USED. The CCU Network supports up to 65535 addressed nodes.

The network addresses must be programmed using a laptop. A laptop is temporarily connected to CHN_A of CCU/232 for programming the address. Note that this is a straight through standard RS232 cable for laptops.

CCU/232 CHN_A 9PIN DB9 (DCE) pin #	PC/LAPTOP 25PIN DB25 pin #	PC/LAPTOP 9PIN DB9 pin #
2	3	2
3	2	3
5	7	5

A terminal program (such as Procom/Telix or Windows Terminal using VT100 emulation) can be used with communication parameters set to 9600,N,8,1. Power up the CCU. After approximately 3 seconds, all LEDS on the CCU will indicate. BEFORE this happens you can type MENU to invoke the programming menu. There is no need to press <Enter>

There are two menu options:

- ADDRESS - Addresses from 1 to 65535 can be used. The address is entered using hexadecimal notation.
- INPUTS - Specify whether you want to use the jumper address or the software address. **This must be set to NO for the CCU/M.**

After the desired values have been entered press 'S' to save and exit. Press 'X' if you want to quit without saving the changes.

5.2. Telephone Line Parameters:

The CCU/M must be configured as a MASTER at one end and as a SLAVE at the other end. This can be done using the CCUNET program.

6. LED Indicators:

Each port has a Green and a Yellow LED. The Green LED flashes whenever the port transmits. Yellow means that the port is not operating OK, or there has been supervision failure on this port.

Industry Canada - EQUIPMENT ATTACHMENT LIMITATIONS

NOTICE: The Industry Canada label identifies certified equipment. This certification means that the equipment meets telecommunications network protective, operational and safety requirements as prescribed in the appropriate Terminal Equipment Technical Requirements document(s). The Department does not guarantee the equipment will operate to the user's satisfaction.

Before installing this equipment, users should ensure that it is permissible to be connected to the facilities of the local telecommunications company. The equipment must also be installed using an acceptable method of connection. The customer should be aware that compliance with the above conditions may not prevent degradation of service in some situations.

Repairs to certified equipment should be coordinated by a representative designated by the supplier. Any repairs or alterations made by the user to this equipment, or equipment malfunctions, may give the telecommunications company cause to request the user disconnect the equipment.

Users should ensure for their own protection that the electrical ground connections of the power utility, telephone lines and internal metallic water pipe system, if present, are connected together. This precaution may be particularly important in rural areas.

Caution: Users should not attempt to make such connections themselves, but should contact appropriate electric inspection authority, or electrician, as appropriate.

NOTICE: The **Ringer Equivalence Number (REN)** assigned to each terminal device provides an indication of the maximum number of terminals allowed to be connected to a telephone interface. The termination on an interface may consist of any combination of devices subject only to the requirement that the sum of the Ringer Equivalence Numbers does not exceed 5.