RCS

CommStar

Network Control Units

Model CS30

Model CS308

INSTALLATION MANUAL

Revision 3.0

5/05/03

DCN 141-00680-30

Residential Control Systems, Inc

www.resconsys.com

TABLE OF CONTENTS

Welcome to *CommStar*

Your Gateway to the Automated Home or Office.

The CommStar family of Network Control Units (NCU) provides a powerful interactive automation system that integrates control of the different subsystems throughout a home or business including Energy Management, Lighting, Security, and Audio/Video Entertainment systems.
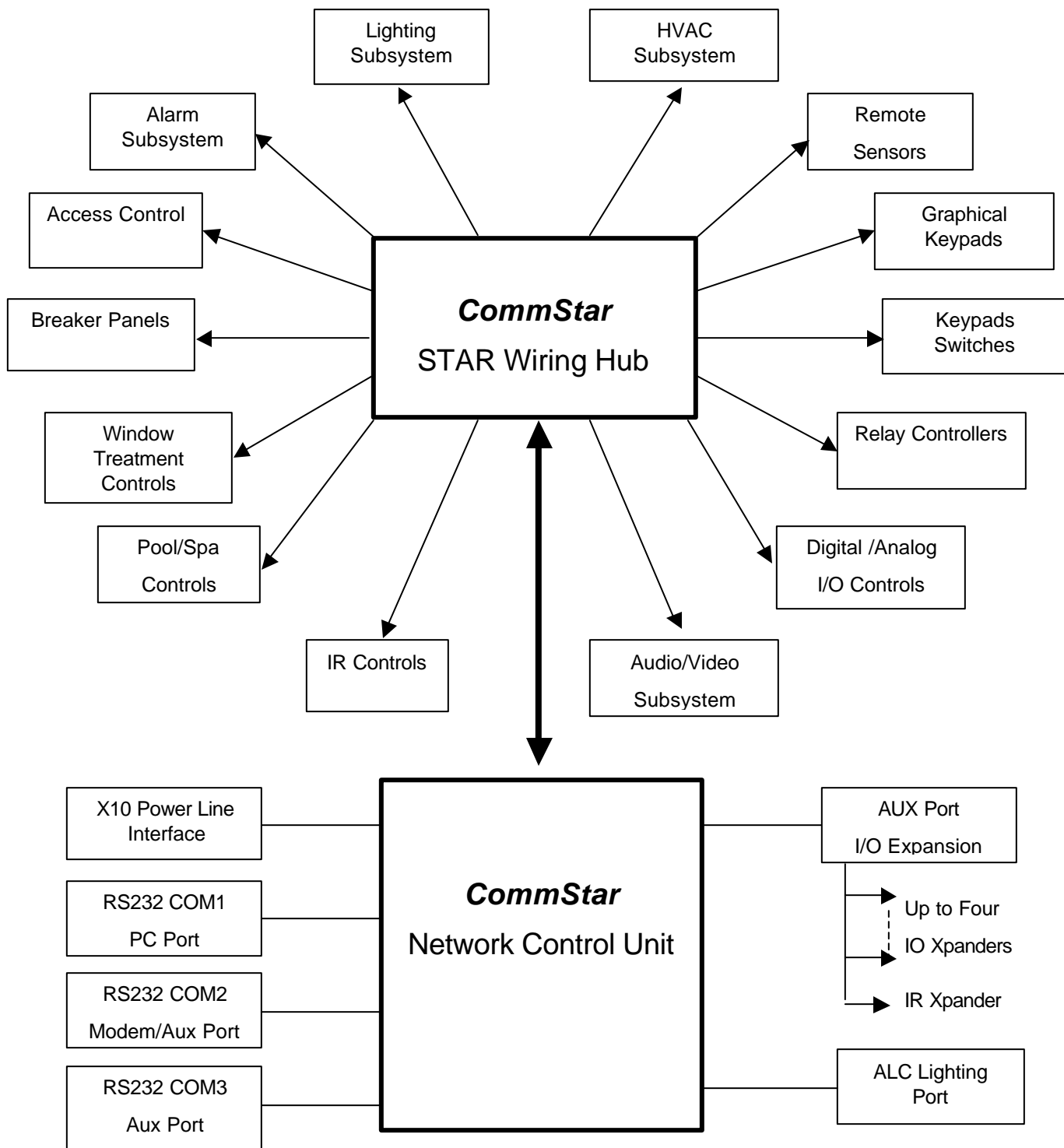
CS30/308 Features

- **Three RS-232 Serial Communication Ports –** COM1, COM2, COM3 (Normal or ALC mode)

- **RS-485 CommStar Network Port** – connects to RS-485 serial devices (Thermostats, Keypads, I/O).

- **2-Way X10 Communication Port** – Sends and Receives standard and advanced X10 signals for control of lighting and appliances.

- **Expansion Port** - Up to 4 CSIOX I/O Xpander boards (plus the IR Xpander) can be connected to this port. Each CSIOX Xpander has:

    o **16 Digital Inputs** – Voltage input

    o **8 Analog Inputs** – 8 bit A/D channels

    o **8 Relay Outputs** – SPDT 2A Relays

- **Optional 2-Way IR Communication** - Sends and Receives infrared signals with optional InfraRed Xpander™ for control of audio, video, home theater, and other infrared-operated equipment.

- **Optional OnQ ALC lighting Control Port** – Supports up to 31 ALC™ Light Switches and Dimmers

- **Real-time clock/calendar** - automatically adjusts for Daylight Savings and Leap Year.

- **Built in Battery Backup** - saves your schedule and clock settings in case of a power outage.

- **SunRise/SunSet calculations –** based on Lat/Long settings.

- **X10 Sequence Feature** - A series of X10 commands within a defined time window can trigger an Event. For example, pressing A-1, A-2, A-1 within 3 seconds could dim the lights.

- **Message Log** - Your schedule can log any Event you specify with a time-date stamp attached

- **Security Mod**e - Have your front porch light (and/or other devices) come on at 'approximately' the time you specify.

- **Power Fail Catch-up** - returns devices to their scheduled state when power fails and is then restored.

CS308 Only Features

- **8 RS-485 Channels –** Integrated on-board 8 channel Star wiring hub

    o Individual drivers for each channel supports 4000ft lines and 255 devices each.

    o 2 wire, half duplex CommStar RS-485 network.

    o Optional 12V power to network devices (750mA total all channels)

    o Common simultaneous transmission to all channels.

    o Each channel can be individually disabled

    o Network activity LED's for each channel.

CommStar Network Overview

Lighting Subsystem

HVAC Subsystem

Alarm Subsystem

Remote Sensors

Access Control

Graphical Keypads

Breaker Panels

CommStar
STAR Wiring Hub

Keypads Switches

Window Treatment Controls

Relay Controllers

Pool/Spa Controls

Digital /Analog I/O Controls

IR Controls

Audio/Video Subsystem

X10 Power Line Interface

AUX Port
I/O Expansion

RS232 COM1
PC Port

CommStar
Network Control Unit

Up to Four

IO Xpanders

RS232 COM2
Modem/Aux Port

IR Xpander

RS232 COM3
Aux Port

ALC Lighting Port

CommStar CS30/CS308 Network Control Units

What's Included

In addition to this manual, your CommStar Controller package contains:

- 1 ea *CommStar* CS30 or CS308 Control Unit.
- 1 ea AC power adapter.
- 2 ea 6-Conductor Modular DATA cable (for PC/Modem connection).
- 1 ea RJ11-DB9 cable adapter for PC com port connection
- 1 ea RJ11-DB25 cable adapter for Modem connection
- 1 ea 4-Conductor Modular TELEPHONE cable (for X10 PLI).
- 1 ea X10 Power line Interface Two Way Module (PSC05 or TW523).
- Installation CD including
    - o WinEVM Event Manager Software
    - o WinEVM Manual (PDF)
    - o CS30/308 Installation Manual (PDF)
    - o Application Notes (PDF)

What you need

- An IBM PC-AT or 100% compatible computer capable of running Microsoft Windows, with an asynchronous serial port.
- CDRom Drive for software installation.
- A hard disk with at least 5MB available.
- Microsoft Windows Win98/2000/XP.

Installing the Network Control Unit

Mounting the NCU

Choose a mounting location accessible to a continuously powered 110 VAC source.

Place the panel at a convenient viewing height and mark the mounting holes. Attach the enclosure using screws suitable for the mounting surface.

Connecting the NCU

1. Turn off the PC to be connected to the NCU.

2. Connect the NCU COM1 port to the PC Com port to be used.

   3. Plug one end of the modular DATA cable into NCU "**COM1"** port.

   4. Plug the other end of the modular DATA cable into the RJ11-DB9 adapter then into your PC's serial port

5. Connect the X10 Power Line Interface (PLI) module.

   6. Plug one end of the modular TELEPHONE cable into the NCU **"PLI"** port.

   7. Plug one end of the cable into the X10 Power Line Interface module.

   8. Plug the PLI module into an AC outlet.

9. Connect the 12VDC transformer into J6 (or an optional external 12VDC power supply into J7).

10. Plug the power transformer into an AC outlet.

11. Restart your PC.

12. Follow the instructions in the WinEVM manual to load and start WinEVM.

NOTE! Do not plug the X10 Power Line Interface into a FILTERED outlet or power strip or UPS. This will degrade or prevent the X10 signal from getting through.

Serial Com Ports

The CS30/308 has three RS-232 serial com ports. **COM1 is for reserved for connection to a PC** for use with the WinEVM software. COM2 and COM3 are for connections to modems or other serial devices under program control. Setup of these ports is performed under WinEVM Define/COM Ports.

NOTE: COM3 can be set to Serial mode or ALC mode by JP2. When in ALC mode, COM3 connector is inactive.

Serial Com Port Cables

Use the 6 wire modular DATA cable and the RJ11 to DB9 adapter provided to connect to standard serial ports.

If you are making your own serial data cables, use the following wiring diagram as a guide.

Com Port Jack/Plug Pinout

6 NC
5 TX
4 GND
3 RX
2 NC

123456
RJ11 Jack   RJ11 Plug

1 2 3 4 5
DB9 Female Connector
Back View
PC COM Port Compatible
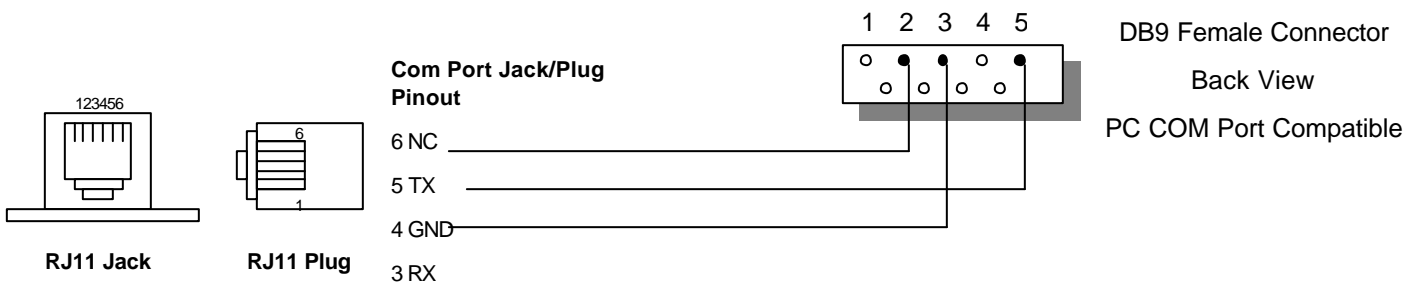
Serial Port Modem Connection

When connecting a CS30/308 COM port to a modem, use the modular 6 wire DATA cable and the RJ11/DB25 modem adapter provided. Set the COM port mode to "Modem" using WinEVM Define/COM Ports setup menu.
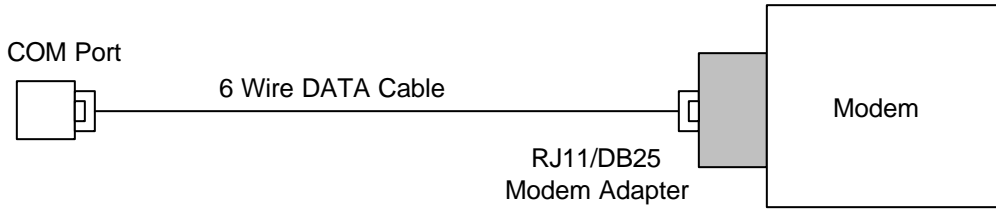
COM Port

6 Wire DATA Cable

Modem

RJ11/DB25
Modem Adapter

X10 PLI Port

The PLI port connects to the X10 power line interface module. Connect the 4 wire phone cable provided to this port and to the X10 PLI Module provided. Be sure to use the Two-Way module (PSC05 or TW523) provided or if a replacement is needed.

Normally the X10 PLI is plugged into the 120V power outlet. *If you do not connect a PLI to the NCU, its Xmit and Rec LEDs will blink continuously as a reminder that X10 communications cannot be executed.*

PLI Port

4 Wire PHONE cable

X10 PLI Module

PSC05/TW523

Powerline
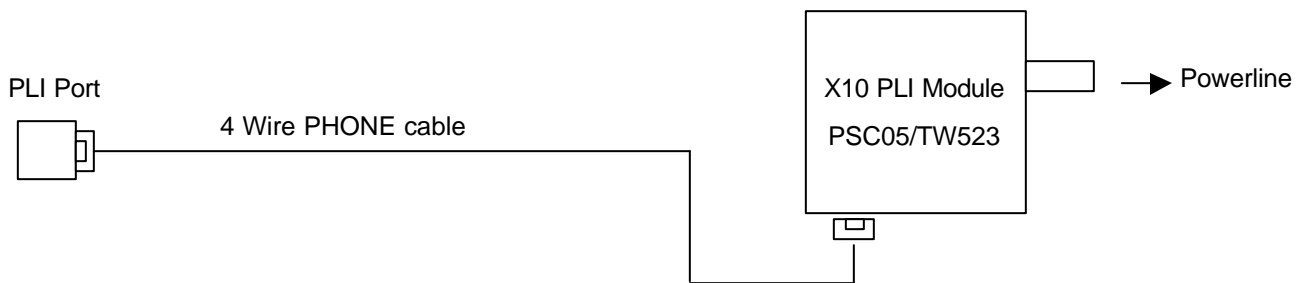
IMPORTANT! The PLI cable is a REVERSING cable. If you make your own X10 PLI cables be sure the wiring is reversing. Verify this by placing both ends side by side and check to be sure the wiring colors are reversed.

AUX Port

The AUX port is for connection to I/O-Xpanders or the IR Xpander. Up to four I/O Xpanders *PLUS* the IR Xpander can be connected to the AUX port. The Xpander devices come with the expansion cable to connect to the NCU.

CS30 RS485 Port

The CS30 RS485 port supports RS485 network devices such as Thermostats, Keypads and I/O devices. Up to 255 devices can be connected to the network. This Port is a half duplex 2 wire network (Data+, Data-). Optional 12VDC power can be provided for network powered devices. RS485 devices communicate at 9600 baud.

Always connect Data+ to Data+, and Data – to Data – when connecting RS485 network devices.

NCU		Optional Power		RS485
12VDC			12VDC	
GND			GND	Network
Data B+			Data B+	Device
Data A-			Data A-	

Last device on network termination for multi-drop networks,   generally not need for Star Wiring.
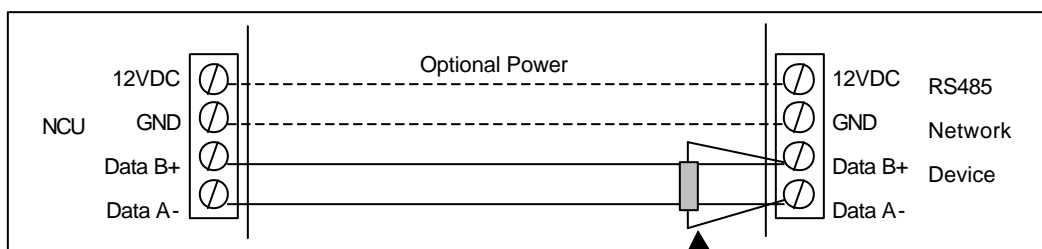
RS485 Network Configurations

Multi-Drop. RS485 Networks are Multi-Drop or Daisy Chain networks. The correct wiring topology is to wire from one device to the next in a serial method. Termination (120 ohm resistor across Data+ and Data-) is required at each end of the network, typically one at the NCU and one on the last device on the network.

```
┌──────────┐    ┌──┐   ┌──┐   ┌──┐   ┌──┐                        ┌──┐
│   NCU    │    └──┘   └──┘   └──┘   └──┘ ····· 255 Devices ····· └──┘   Last Device in Net
└──────────┘
```
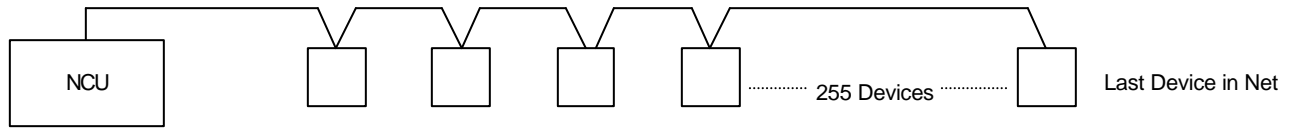
Star Topology. An alternate method of wiring is to wire in a **Star Topology**, that is, a homerun from each device back to the NCU. This method requires using a RS485 Star Wiring Hub.   Each device is on its own cable (typically a CAT 5 Twisted Pair Cable) that can be 4000 ft in length.
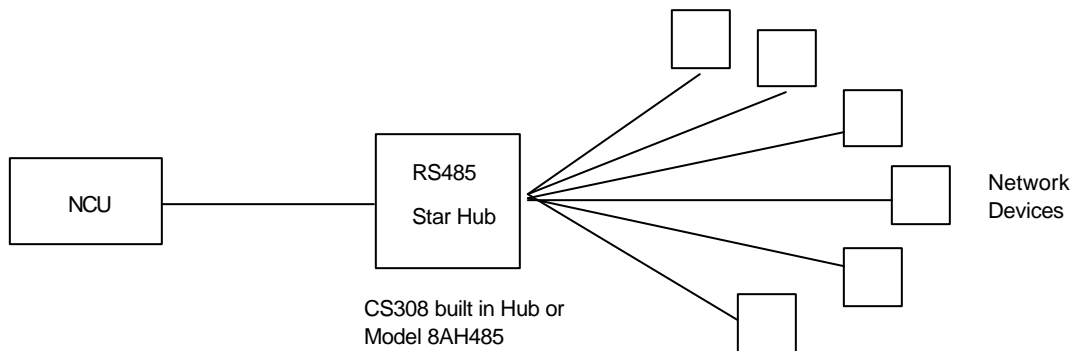
```
┌──────────┐      ┌──────────┐
│   NCU    │──────│  RS485   │────── Network
└──────────┘      │ Star Hub │        Devices
                  └──────────┘
          CS308 built in Hub or
          Model 8AH485
```

CS308 RS485 Ports

The CS308 has an integral 8 channel Star wiring hub. This is equivalent to the above Star Topology wiring diagram. Each of the CS308's 8 RS485 channels has an independent driver. This enables each channel to directly connect to devices in a star wiring network topology without regard to termination issues and each line can be up to 4000 ft in length. Optionally, you can use each channel in a multi-drop network with up to 255 devices connected to each channel, if you pay proper attention to daisy chain rules and termination requirements.

Each of the CS308 channels has an activity LED that shows incoming message activity. A master LED shows outgoing message activity. All channels transmit outgoing messages simultaneously.

Each RS485 Channel has an enable jumper JP5 – JP12. This jumper MUST be ON to allow communications on that channel. If you want to disable the channel, remove the jumper.

NOTE! If the channel activity LED is ON constant, it is an indication of a problem on the channel. This will prevent all communications on the RS485 network. Remove the channel enable jumper on the bad channel to disable that channel and to allow the other channels to communicate.

ALC Port

The CS30/308 has an optional OnQ ALC lighting control port, J6. This port supports up to 31 of the OnQ ALC light switches and dimmers. This port is configured as an alternate COM3 port. Jumper JP2 sets the COM3 Mode as normal or ALC. Set JP2 to jumper 2 and 3 to select the ALC mode.

This ALC port is not yet supported by WinEVM as an integrated device. However, ASCII commands can be sent to the port to control the light switches directly.

NCU LED Indicators

The Network Control Unit PCB contains LED status indicators that indicate various modes of operation.

System LEDs

RUN - (red) Flashes to indicate schedule is running. The RUN LED flashes once per pass through the Schedule. The flash rate is dependant on Schedule size, the larger the Schedule, the slower it will flash.

XMIT - (green) Normally on. It will flash when COMMSTAR transmits an X-10 command.

REC - (yellow) Normally on. It will flash when COMMSTAR receives an X-10 command.

NOTE! Both XMIT and REC will flash continuously at a one second interval if the X10 Power Line Interface is not plugged in and attached to the NCU.

ACTIVE - (red) Normally on and flashing. This LED indicates that NCU's processor is running (even if the schedule is stopped) and should always be flashing once/second when the NCU is powered up.

Program Download LED indication

During Program Download from the PC, the System LEDs will be in the following state:

- RUN LED = OFF
- XMIT/REC LED's = Alternating.
- ACTIVE LED = ON.

RS485 Channel LEDs

The CS30 RS485 Channel and all the CS308's eight RS485 channels each have a REC communications LED. These LED's will blink according to the incoming message traffic on the channel.

RS485 XMIT LED

The CS30/308 has a master RS485 Xmit LED LD13. This LED will blink with all outgoing RS485 message traffic from the NCU.

ALC RX LED

The CS30/308 has an optional ALC lighting control port. Received message traffic on the ALC channel will blink RX LED LD15.

ALC TX LED

Transmitted message traffic on the ALC channel will blink TX LED LD14.

NCU Jumpers

Bootstrap Mode JP1

JP1 sets the Bootstrap mode of the NCU. For normal operation it is OFF. In special circumstances, the NCU may require a forced firmware download. If this occurs, a jumper is placed on JP1 to keep the NCU in the bootstrap mode. This allows new firmware to be downloaded. Normally this is **not required** for firmware updates via the WinEVM download function.

COM3 Select JP2

JP2 sets the function of COM3. This port can be set to normal serial communications on COM3 or reconfigured as the optional ALC lighting control port (J6).

For **Normal** COM3 operation, JP2 is set to jumper 1 and 2 (upper pins). If the ALC Lighting control output is desired on J6, then JP2 is set to jumper 2 and 3 (lower pins). **IF JP2 is set to ALC mode, the COM3 jack is non functional.**

RS485 Channel Enable JP5-12

JP5 -12 enables communications for each RS485 channel. Normal setting is Enabled = jumper ON. In the event that a channel is faulty, as indicated by its channel LED being ON continuously, it can be disabled by removing its channel enable jumper. This permits the other channels to continue to operate normally.

Power

Power is provided by the supplied 12VDC, 1A plug-in power transformer. Connect to J6.

Power can also be supplied to the NCU from the plug-in terminal block at J7. Connect an optional external 12VDC, 1A minimum power source to these terminals. Watch polarity on this terminal block.

If power is supplied by J6, you can source 12VDC power off the NCU from J7. **CAUTION this is not a fused connection!** You must provide external fuse protection if you use this for external power.

A resettable fuse protects the NCU board.

Note that the RS485 network devices can be powered from the NCU. An separate on-board resettable fuse limits power for the network devices to a **maximum** of 750mA for all channels.

CS30/308 Panel
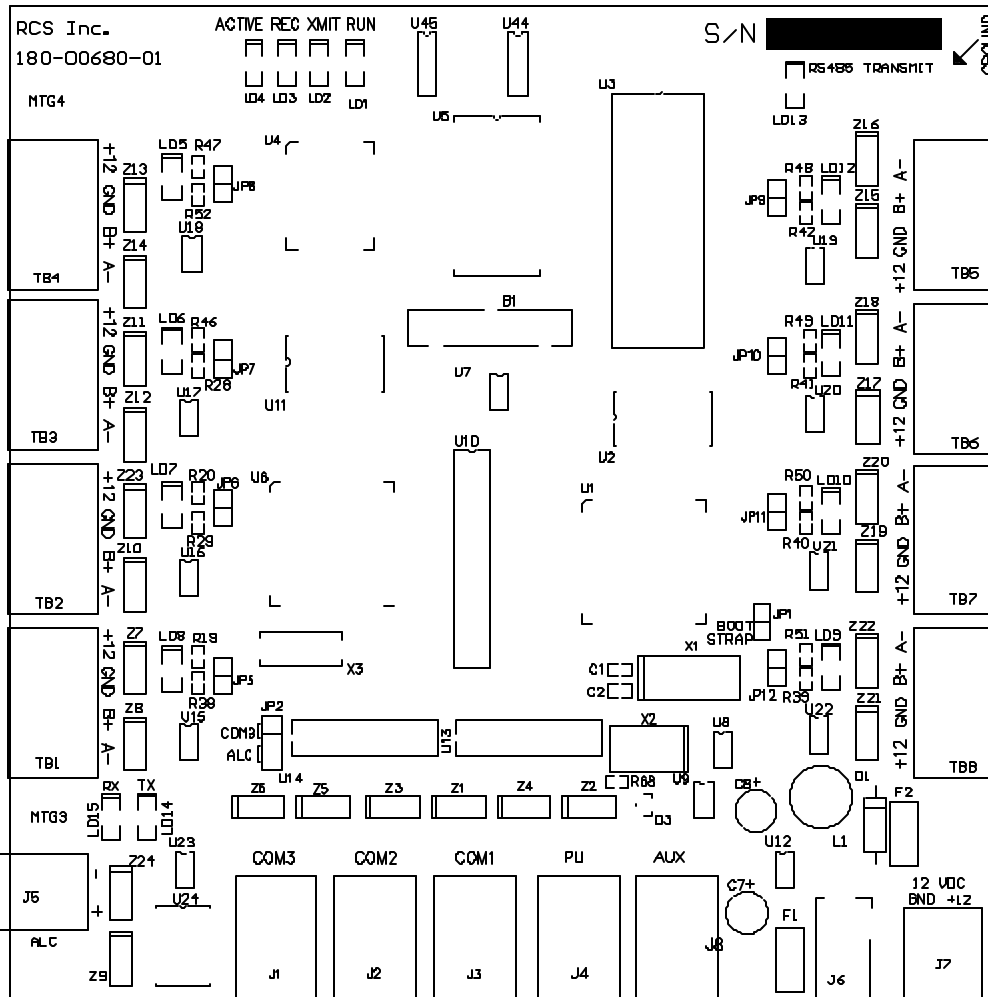
CS30/308 Terminals, Jacks, Jumpers and LEDs

TB1 - RS485 Port (CS30 &CS308)	J1 – COM3 RS232 Port	LD1 – RUN LED
TB2 - RS485 Port (CS308)	J2 – COM2 RS232 Port	LD2 – X10 XMIT LED
TB3 - RS485 Port (CS308)	J3 – COM1 RS232 Port	LD3 – X10 REC LED
TB4 - RS485 Port (CS308)	J4 – PLI Port	LD4 – ACTIVE LED
TB5 - RS485 Port (CS308)	J8 – AUX Port	LD8-12 - RS485 Rec LED
TB6 - RS485 Port (CS308)	J6 – Power Jack	LD13 - RS485 Xmit LED
TB7 - RS485 Port (CS308)	J7 – Power (Optional)	LD14 – ALC Xmit LED
TB8 - RS485 Port (CS308)	J5 – ALC Lighting Port	LD15 – ALC Rec LED

JP1 – Bootstrap Mode	JP2 – COM3 Select	JP5-JP12 – RS485 Channel Enable

CS30/308 Electrical Specifications

Power Supply	12VDC/1000mA Plug-In Transformer
Serial Communications	
Transmission Rate:	9600 bps asynchronous
Data Format:	8 Data Bits, No Parity, One stop Bit
Jacks RS-232	(3) COM1, COM2, COM3
Jacks X10 PLI	PLI
Jacks Aux	AUX
Screw Terminals	Power Input, RS485 Ports. Pluggable, screw terminals
Compatibility	IBM or compatible w/asynchronous serial port
Operating System	Windows 9X/2000
Required Disk Space	5 Mbytes
Physical Size:	12" Height, 9" Length, 2" Width

Digital Inputs (Optional IOXpander)

Quantity	16 (expandable to 80)
Type	Non-polarized, opto-isolated
Isolation	500 V channel-channel & channel-ground
Input Range	4-24V DC or AC (50-1,000 Hz)
Input Resistance	470 ohms min
Response Time	100 milliseconds typ, requires pulse width of 100 microsecond.

Analog Inputs (Optional IOXpander)

Quantity	8 (expandable to 40)
A/D Type	Successive approximation
Resolution	8 bit (20mV/bit)
Input range	0-5 V(uni-polar)
Filtering	None
Conversion Time	20us type, 30us max
Linearity	+/- 1 bit
Accuracy	0.2% of reading +/- 1 bit
Input Current	100 nA max at 25 degrees C

Relay Outputs (Optional IOXpander)

Quantity	8 (expandable to 40)
Contact Rating	2A @ 24 VDC
Contact type	Gold overlay silver
Contact resistance	100 milliohms max (initial)
Contact arrangement	SPDT
Operating time	20 milliseconds max
Release time	10 milliseconds max
Life rating	Mechanical: 10 million operations min Electrical: 100,000 min @ full load

CS30/308 Programming Specifications

X-10 Devices	256	
Timers	32	
Time Labels	32	
Flags	256	
Variables	256	
IF Macros	16	
THEN Macros	256	
RS485 Thermostats	32	
RS485 KPL7 LED Keypads	16	
RS485 KPG8 LCD Keypads	16	
RS485 Relay Control Units	16	
Xpander Relays	32	(with optional IO Xpander)
Xpander Digital Inputs	64	(with optional IO Xpander)
Xpander Analog Inputs	32	(with optional IO Xpander)
IR Commands	500	(with optional JDS InfraRed Xpander™)
Program Lines of Code		Approx 6000 - 8000, depending on the number of IF and THEN statements

Power Failure

The Network Control Unit has a built-in battery backup that allows it to retain its memory in case your house has a power failure, or you decide to move the NCU to another location. The NCU can also detect when you have had a power failure and let you act on it.

When the power goes off in your home, most of the X-10 type equipment will go off and when power comes back on and the NCU may think these devices are still on, creating an out of sync problem. Another scenario is if during the time the power was out, your schedule was supposed to turn a device on, since power was not on at the time the device was to turn on, it never did.

For example, assume you had a light scheduled to turn on at 6:15:

From 6:00 to 6:30, there was a power failure:

When the power comes back on, the light will be off because it never got the ON command at 6:15.

Power Fail Catch-up

The NCU knows that the power failed and will do the following:

- Play catch-up to the current time and force any X-10 device that has it's 'Power Fail Catch-up' flag set, to the state it would have been in had the power not gone out.

- Set the 'Power-Fail' variable for use in the Schedule.

NOTE! During Power Fail Catch-up, the yellow and green LED's will flash steadily, after catching up, both LED's will be on solid.

The Catch-up time will depend on how long power was out and how large your schedule is.

WinEVM Event Manager Software

WinEVM is a powerful PC software program that is used to (1) define and setup devices that are connected to the NCU, (2) create Schedules and download them to the NCU and (3) monitor and provide real time control of the NCU and attached devices. To use the WinEVM software with the NCU, you must load the program onto a PC and connect the NCU to the PC's Com port.

Before installing WinEVM, you should copy the distribution disks onto a set of working disks, then store the original disks for safekeeping.

WinEVM comes with an installation program that will copy the various parts of the WinEVM software onto the drives and directories that you specify. The program's menus and prompts will lead you through the install process.

Refer to the WinEVM Programming Manual (DCN: 141-00550) for additional information.

Installing WinEVM

Start Microsoft Windows.

1. Insert Setup Disk1 in drive A.

2. From Program Manager (Windows 3.1X), select File menu and choose Run, or

Win9X/2000 select START and choose Run.

3. Type a:\setup and press ENTER

A comprehensive installation/setup program will take over at this point. You will be prompted for directory information, drive, etc. Each prompt will contain default (recommended) information.

Setup WinEVM

After the Install program is done, select the **WinEVM Setup** program (from the CS30/308 program group) to allow you to set Event Manager parameters.

- Select the PC COM port that is attached to CS30/308 COM1

- Set your Latitude and Longitude (look up in Appendix A of WinEVM manual)

- Set your Time Zone.

Starting WinEVM

After connecting all cables and completing the Setup program it is time to start the Event Manager Software and test communications.

Windows 3.1X: Double click with your mouse on the WinEVM icon located in the CS30/308 group.

Win9X/2000: Select START, then select PROGRAMS, then select CS30/308, then select WinEVM.

The first time you bring up WinEVM, you will get an error message notifying you that no database can be found and WinEVM will create one for you.

WinEVM Operation

Testing Communication between WinEVM and CS30/308

Once WinEVM is up and running on the PC, we need to verify that WinEVM and the controller are communicating.

1. Select **Utilities | System Info** from the WinEVM main menu or Click on **Sys Info** button.

Either the System Info window will open or a Communication Error message will appear.

2. **Success!** If the System Info Window opens, showing the various system parameters, you have confirmed that the communications path between your PC/WinEVM and the NCU is working.

3. **Communication Error!** If this window appears, WinEVM cannot communicate with the NCU.

If you have a communication error, check the following conditions:

1. Make sure you have specified the correct PC Com port. Go to Utilities|Options and confirm Serial Port selection.

2. Be sure you are connected to the NCU **COM1** port with a Data Cable.

3. Windows cannot support shared hardware interrupts. Since COM1 and COM3 (also COM2 and COM4) typically share the same interrupts, you cannot have one serial device installed on COM1 and the other device installed on COM3 (or one device on COM2 and another on COM4).

4. If your pc has an external modem, check that it is connected to a serial port. If you have an internal modem, check the switch setting (on the board) to ensure that it is assigned to the appropriate COM port.

5. Select the Serial Port option from the System menu to check that your specification of the COM port is correct. If you cannot start WinEVM, use an editor to display the C:\WINDOWS\WINEVM.INI file. There is a line under the section entitled [WinEVM] that should appear as: Serial Port = n, where n = 1 to 4.

6. There are a number of TSR (Terminate and Stay Resident) programs that are provided with voice fax modem boards. If you have installed another software package that utilizes your board, make sure this program is not running when you start Windows. If it is still running, it will assume control of the Com Port and no other programs will have access to this port. Check your AUTOEXEC.BAT file to ensure that the program is not loaded during the boot up routine.

WinEVM Functions

Once communications to the NCU has been established, WinEVM provides the functions to Define Devices, Create Schedules, Download Schedules, Update Firmware and directly Monitor and Control COMMSTAR Network devices. Refer to the WinEVM Programming Manual for detailed descriptions and instructions on using WinEVM to control the NCU and it's devices.

Once a Schedule has been downloaded from WinEVM to the NCU, it is not necessary for the PC/WinEVM to stay connected to NCU. However the PC can be left connected to use WinEVM to monitor the NCU operation if desired.

In addition to System Info, two important WinEVM functions can help verify correct operation of the NCU. They are **Self Test** and the **Mega Controller.**

NCU Self Test

You can run a Self Test of the NCU from WinEVM. Select **Utilities|Self Test** and start the Self Test. The results of the Self Test will be displayed.

> **NOTE! If you have a schedule loaded, running Self Test will overwrite it and it will have to be reloaded.**

Mega Controller

The Mega Controller can be used to monitor and directly control many functions of the NCU and devices connected to it. Select **Utilities|Mega Controller** or click on the **Mega Controller Icon** button. The Mega Controller functions are described in the WinEVM Programming Manual.

Trouble Shooting

BEFORE YOU CALL...

The following page describe the most common questions posed to Technical Support. Each symptom is followed by the most common cause for each problem. Before calling Technical Support for further assistance, please try the list of suggestions that relate to your problem.

Once you have tried the suggestions and the symptom persists, be ready with the following information when calling Technical Support:

1. Be at your PC and have Event Manager running.

2. Note the firmware and Event Manager versions.

3. Firmware version is reported by selecting **Utility | System Info** and WinEVM version by selecting **Help | About**.

4. The type of PC you are using: 386, 486, Pentium.

5. A short description of the problem and any error messages that appear.

You can contact Technical Support at the following phone numbers:

 TEL 916-635-6784 or FAX 916-635-7668 or email: support@resconsys.com

If you decide to contact us by fax or email, please include your daytime phone number with the information requested above. The more information you include about the symptom, the easier it is for us to respond quickly and as accurately as possible. Don't forget to include your return fax number, including area code!

Common Problems and FAQ's

I keep getting Communication Errors

> Check that you have the correct serial port selected. Also check that the NCU is connected properly.

> Make sure that this serial port is not in contention with another serial port. Note that com1 and com3 share an interrupt and COM2 and COM4 share an interrupt. This means that if the NCU is connected to COM1, you cannot be using another serial device on COM3, such as a mouse. If this is the case, change the serial port that the NCU is connected to and change the serial port options.

When I look at 'System Info' my longitude and latitude are wrong

> You must change the Time Parameters in the UTILITIES | TIME/DATE SET menu for the NCU to know your location.

The SunRise and SunSet calculations are wrong

> Maker sure you have the correct longitude, latitude and Time Zone for your location listed in the TIME/DATE SET menu. This information is used to calculate the correct SunRise and SunSet times.

My Mouse does not work with WinEVM Event Manager

> If you have a serial mouse, check that it is not using the same serial port that Event Manager uses to communicate to NCU. They cannot use both COM1 and COM3, or COM2 and COM4 because COM1/COM3 share the same interrupt and COM2/COM4 share the same interrupt. You must use either COM1 and COM2, or COM3 and COM4 for the mouse and the NCU respectfully.

I have a Mouse but I don't see the Mouse cursor

> Event Manager checks your system to see if a mouse driver is loaded. If no mouse driver is loaded, Event Manger will disable the mouse so you would not see a mouse cursor. Check your config.sys file to make sure you are loading your mouse driver.

CS30/308 Wiring Diagram

- **CS30 has one RS485 Port**
- **CS308 has eight RS485 Ports**

RS485 Devices

Typical RS485 Devices

ACTIVE REC XMIT RUN

RS485P ORTS

12V
GND
DATA+
DATA –

RS485 Devices

One Device per Port for Star Wiring Topology

255 Devices per Port for Multi-drop Topology

12V
GND
DATA+
DATA –

This Port is common to CS30 and CS308

JP8
1
2

RS485 Port Enable Jumpers
Default is ON = Enabled

RS485 Port Activity LEDs

JP7
1
2

JP6
1
2

JP5
1
2

BOOTSTRAP
Normally Off

JP1
1
2

JP2
COM3 1
2
ALC 3
Default is COM3

RS485 TRANSMIT

RS485P ORTS

JP9
1
2

12V
GND
DATA+
DATA –

Thermostats
HVAC Zone
Controls

JP10
1
2

12V
GND
DATA+
DATA –

Keypads

JP11
1
2

12V
GND
DATA+
DATA –

IO Devices
Relays

JP12
1
2

12V
GND
DATA+
DATA –

Breaker
Panels

ALC LIGHTING NETWORK

Up to 31 ALC Switches

RX TX

ALC +
ALC –
ALC

COM3 COM2 COM1 PLI AUX

12VDC
GND +12

NOTE: Either COM3 or the ALC Port can be used, but not both.

Selected by JP2.

RS232
Subsystem

Data Cables

RS232 Subsystems

Lighting Controls

Security Controls

Access Controls

Energy Management

Pool Spa Controls

Modem

RJ11/DB25
Adapter

6 Wire
Data Cable

PC/WinEVM

RJ11/ DB9 Adapter

4 Wire
Phone Cable

Optional
External
Power

12VDC 1A Transformer

X10 PLI (TW523/PSC05)

Up to 4 IO Xpanders

IR Xpander