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YEAR 2000 COMPLIANT

User's Guide



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CN8-SW
Communications Software for CN8200 & CN8500 Series Controllers

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Introduction

Features

Login/Logout Operator Security with Password Protection and Multiple Security Levels

Automatic Controller Detection

User-Defined Controller IDs

Switchable Graphic and Text View

Easy Viewing/Editing of Parameters

Adds Two Local Alarms for Each Controller

Programmable Data Logging Frequency

Real-Time Graph Windows

DDE-compatible

Congratulations on your purchase of CN8-SW Remote Monitoring and Control Software. With this software, you can control up to 255 Omega Series CN8200 and CN8500 controllers connected via an RS-485 network using an IBM-compatible computer. You will need the following minimum hardware and software configuration:

- *IBM PC or 100% compatible, 386SX or better*
- *Minimum of 1 MB of free hard-disk space, additional space for logging*
- *MS-DOS 5.0 (or later) and Microsoft Windows 3.1, Windows 95/NT*
- *RS-485 interface or RS-232-to-RS-485 converter*

We suggest that you glance through this instruction manual before installing this software in order to become acquainted with its features and operation. You should also have a familiarity with the basic operating procedures of the CN8200 or CN8500 controllers.

If you have questions or require any assistance with installation or operation, please contact Omega at 1-800-622-2378.

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Communications Setup

This software is designed for bidirectional communications to Omega CN8200 or CN8500 controllers connected via an RS-485 to RS-232 converter to an available serial port on your computer. After you have successfully logged in, follow these setup instructions carefully.

1. Verify that all controllers on the network are configured to use the same baud rate, and that they have been assigned different network IDs.
2. From the OPTIONS menu, select COMMUNICATIONS. The COMMUNICATIONS SETUP window will appear (Figure 1).
3. Scroll and select the CONNECTOR PORT for your RS-232 interface.
4. Scroll and select the appropriate BAUD RATE.
5. Scroll and select the appropriate DATA FORMAT, e.g., n, 8, 1 (parity, data bits, stop bits).

The optimal settings for polling frequency and time - out are dependent on baud rate. Too fast a setting is undesirable. Ex. At 2400 baud, a polling frequency faster than 200 ms may cause the controllers to stop responding.

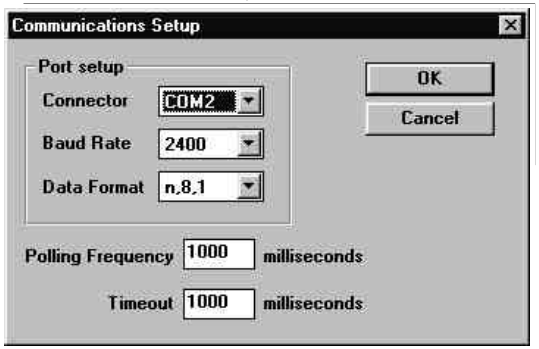


Figure 1. Communications Setup Window.

Communications Setup *(cont.)*

6. For now, do NOT change the default POLLING FREQUENCY or the TIMEOUT frequency (1000 milliseconds).
7. When all settings are correct, click on the OK button. After the program is operational, you may go back and change the default polling frequency and timeout values. The lower these values are, the faster the program will update controller information. The optimal settings for polling frequency and timeout are dependent on baud rate. Too fast a setting is undesirable. Ex. At 2400 baud, a polling frequency faster than 200 ms may cause the controllers to stop responding.

Controller Setup

The CN8-SW program uses the network ID numbers you've assigned to your controllers in order to communicate to them. Using its Automatic Controller Detection (ACD) feature, the program can find and identify each controller on the network automatically.

After logging in and setting communications parameters, simply select START FIND CONTROLLERS from the OPTIONS menu (Figure 2). When each controller has been located, select STOP FIND CONTROLLERS.

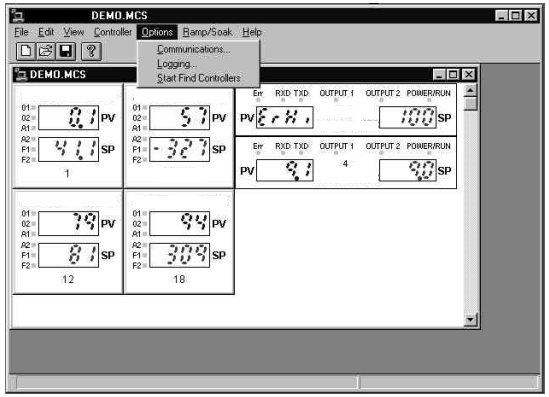


Figure 2.
Options and
Graphic View Menu.

Note: *During the ACD process, the controllers' process variable and setpoint will be displayed as N/A. After selecting* ***STOP FIND CONTROLLERS*** *(or after the automatic detection procedure is completed), the current values will be acquired from the controllers and displayed.*

Controller Setup *(cont.)*

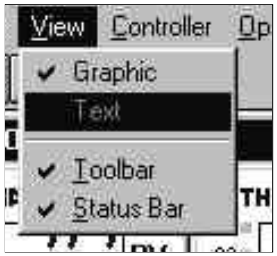


Figure 3.
View Menu.

Selecting a Controller

To enable the software to perform an operation on an individual controller on your network, you must first select it by clicking on its screen image. When selected, a dark blue border will appear around the controller's screen image.

Adding and Deleting Controllers

The software allows you to remove individual controllers from software control and add them back at any time. Simply select ADD CONTROLLER from the CONTROLLER menu to add a controller. To remove a controller, first select it by clicking on its screen image, and then choose DELETE CONTROLLER from the CONTROLLER menu. The selected controller will then be deleted.

Switching Views

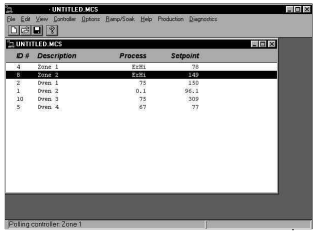


Figure 4.
Text View.

There are two types of views available (Figure 3):

- Graphic View – shows controllers as images.
- Text View – shows controllers as a list. This allows more controllers to be shown on the screen at the same time.

You can switch to the one you prefer by selecting it in the VIEW menu.

Viewing/Changing Controller Parameters

To view or change the control parameters for any individual Omega controller on the network, click on the controller's screen image, and select PARAMETERS from the CONTROLLER menu. You can also double-click on the controller's screen image. This will display the Controller Profile Screen (Figure 5). Click on the appropriate tabs for the parameters you wish to view or change. To change a parameter's value or setting, type in the new value or click on the appropriate option box. When finished, click on APPLY to send new values to the controller before you click on the next tab. To close the dialog box, click on OK (or CLOSE) button.

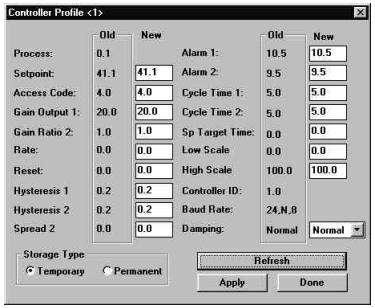


Figure 5.
Profile Screen

Controller Setup (cont.)

Naming Controllers

If you used the automatic controller detection feature to locate each controller on your network, the software will label each controller with the network ID you've assigned it. To change its name, click on the controller's screen image, select CONFIGURE from the CONTROLLER menu, and enter the new name.

Re-Naming a Controller

To re-name a controller, click on its screen image and select CONFIGURE from the CONTROLLER menu. Type the new name into the dialog box that appears and click OK or press ENTER.

Changing a Setpoint

To adjust a setpoint, click on the controller's screen image and select SETPOINT from the CONTROLLER menu or right-click the controller. Type the new setpoint into the dialog box that appears and click SEND and DONE.

Placing a Controller into Standby or Manual Control Modes

To change the state of a controller to standby or manual control, click on its screen image and select either STANDBY or MANUAL CONTROL from the CONTROLLER menu.

Autotuning a Controller

To initiate autotuning for any individual controller, click on its screen image and select AUTOTUNE from the CONTROLLER menu.

Initiate a Ramp to Setpoint

To enable ramp to setpoint in an Omega controller equipped with this feature, click on its screen image and select RAMP TO SETPOINT from the CONTROLLER menu. The ramp-to-setpoint feature will only function under certain conditions. (See controller instruction manual for details.)

Controller Setup (cont.)

Local Alarms

The CN8-SW program provides two additional "local" alarm setpoints for each controller on the network: one PROCESS HIGH and one PROCESS LOW. They do not affect the operation of the controller's regular alarms and have no effect on the controller itself. They are only used for indication within the program. These alarms may be configured by clicking on the controller's screen image and selecting ALARMS from the CONTROLLER menu. In the LOCAL ALARMS dialog box that appears (Figure 6), click on the appropriate check box(es), PROCESS HIGH and/or PROCESS LOW, to enable the alarm(s) desired. Type in the alarm values and click OK or press ENTER. When a high alarm is active, the Process Value display is bright red and the A1 indicator icon is "illuminated." When the low alarm is active, the Process Value display is blue and the A2 indicator is "illuminated."

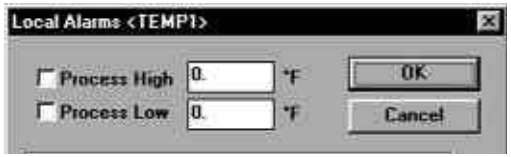
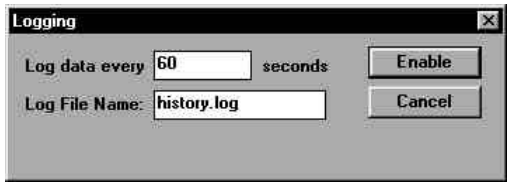


Figure 6. Local Alarms Dialog Box.

Data Logging



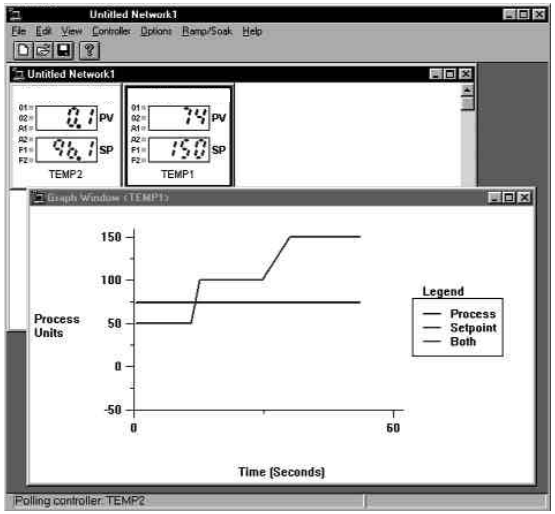
To enable data logging, select LOGGING from the OPTIONS menu and enter the logging frequency (integers only, in seconds) and a log file name, then click on ENABLE. Be sure to specify the full path name for the log file using DOS filename conventions, e.g., C:\PROCESS\ TEMPLOG. The program will then start capturing and time-stamping the process and setpoint values of each controller on the network and save them to an ASCII file at the specified frequency. The log file can be read by any spreadsheet program, text editor or word processor.

It will also give you the option of appending or overwriting data to an existing log file when you specify the same log file name at a later time. The log data, which is identified with each controller's name, may also be imported directly into a Microsoft Excel or Lotus 1-2-3 spreadsheet for further analysis and graphing.

Note: *Choosing a very fast logging frequency will cause the software to generate large amounts of data to the log file very quickly. Select a logging frequency that is optimal for your needs.*

Graph Window

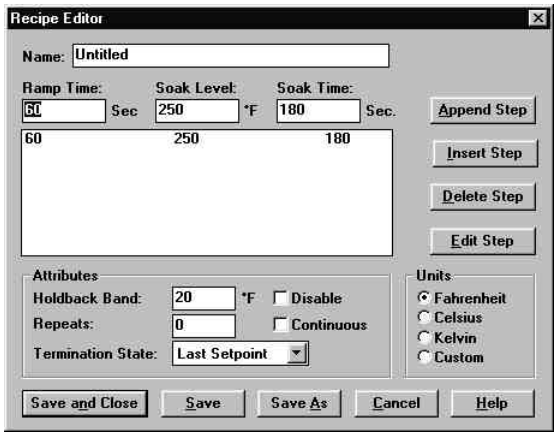
The CN8-SW program allows an operator to visually track a selected controller's instantaneous setpoint and process values over a period of several minutes with an on-line graphing feature. To enable graphing, click on the controller's image and then select GRAPH from the CONTROLLER menu. By importing logged data into a spreadsheet such as Excel or Lotus 1-2-3, the more extensive graphing features of these programs may be utilized.



Ramp/Soak Feature

To set ramp/soak parameters, select NEW or EDIT from the RAMP/SOAK top menu and enter the desired settings in the RECIPE EDITOR screen that appears. To change an existing ramp/soak recipe, select EDIT from the RAMP/SOAK top menu and use the “EDIT RECIPE” window to locate the existing ramp/soak recipe file. Open the file and make the desired changes.

Once a ramp/soak recipe is enabled, you may select RUN under the RAMP/SOAK top menu to initiate the ramp/soak program, or HOLD or RESUME to send these commands to the selected controller.



DDE Server

Overview

The DDE (Dynamic Data Exchange) protocol is a set of messages and guidelines. It sends messages between applications that share data and uses shared memory to exchange data between applications. Applications can use the DDE protocol for one-time data transfers and (or) for continuous exchanges in which applications send updates to one another as new data becomes available. An application sending data is called a ‘DDE server’ and application receiving data is a ‘DDE client’. Three strings identify information transferred: *application name, topic name* and *item name*. The CN8-SW program acts as DDE server providing the data gathered from Omega’s controllers.

Terminology

DDE conversation

The interaction between client and server applications.

Application, Topic, and Item Names

The DDE protocol identifies the units of data passed between the client and server with a three-level hierarchy of application, topic, and item names.

Each DDE conversation is uniquely defined by the application name and topic. At the beginning of a DDE conversation, the client and server determine the application name and topic. The application name is usually the name of the server application. For example, when Microsoft Excel acts as the server in a conversation, the application name is Excel.

The DDE topic is a general classification of data within which multiple data items may be “discussed” (exchanged) during the conversation. For applications that operate on file-based documents, the topic is usually a filename. For other applications, such as the CN8-SW program, the topic is an application-specific name.

Because the client and server together identify a DDE conversation, the application name and topic that define a conversation cannot be changed during the course of the conversation.

A DDE data item is information related to the conversation topic exchanged between the applications. Values for the data item can be passed from the server to the client, or from the client to the server.

DDE Server (cont.)

Dynamic Data Exchange from the User's Point of View

The following example illustrates how two DDE applications can cooperate, as seen from the user's point of view.

The user wants to use Microsoft® Excel to track the process value of a particular controller on the network. The DDE conversation between Microsoft Excel and the CN8-SW program takes place as follows:

The user initiates the conversation by supplying the name of the application (CN8-SW) that will supply the data and the particular topic of interest - PV (for Process Variable). The resulting DDE conversation is used to request the process variable of a specific controller.

Microsoft Excel broadcasts the application and topic names to all DDE applications currently running in the svstem. The CN8-SW program responds, estab-lishing a conversation with Microsoft Excel about the PV topic.

The user can then create a spreadsheet formula in a cell that requests that the spreadsheet be automatically updated whenever a particular process variable changes. For example, the user could request an automatic update whenever a change occurs in the process variable of the controller with ID number 12 by specifying the following Microsoft Excel formula:

=CN8SW|PV!no12 (Note: Hyphen is not used in application name)

The user can terminate the automatic updating of the no12 process variable update at any time. Other data links that were established separately (such as for updates for other controllers) still will remain active under the same PV conversation.

The user can also terminate the entire conversation between Microsoft Excel and the CN8-SW program on the PV topic, so that no specific data links on that topic can be established without initiating a new conversation.

The client program can be any package compatible with DDE, such as Labtech, Labview, etc.

DDE Server (cont.)

CN8-SW DDE conversation parameters summar y

Application name

CN8SW (No hyphen)

Topic name

- 'PV' for Process Variable
- 'SP' for SetPoint

Item Name

noXXX, where XXX is controller's network ID number without leading zeros. For example: no1, no25, no128 are legal item names (controller with that ID must be on the network) and no002, no1543 or no05 are illegal and the program will not recognize them.

Important note:

The CN8-SW program must be running before any attempt to establish a DDE conversation with a client program.

Notes

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