CN 8-SW
Communications Software
for CN8200 & CN8500 Series Controllers
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

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

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WARNING: These products are not designed for use in, and should not be used for, patient-connected applications.
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.

As with all computer disks, this master disk should not be exposed to extreme heat or electromagnetic fields. If the disk is damaged or unreadable, notify us immediately.

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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 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.

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**.

**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.)

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

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.

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.
Local Alarms
The ONB-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.”

Controller Setup (cont.)

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.)
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.
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 an 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.

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 an 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.
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 system. The CN8-SW program responds, establishing 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 summary

**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.
FOR WARRANTY RETURNS, please have the following information available BEFORE contacting OMEGA:

1. Purchase Order number under which the product was PURCHASED.
2. Model and serial number of the product under warranty.
3. Repair instructions and/or specific problems relative to the product.

OMEGA's policy is to make running changes, not model changes, whenever an improvement is possible. This affords our customers the latest in technology and engineering.

RETURN REQUESTS/INQUIRIES

Direct all warranty and repair requests/inquiries to the OMEGA Customer Service Department. BEFORE RETURNING ANY PRODUCT(S) TO OMEGA, PURCHASER MUST OBTAIN AN AUTHORIZED RETURN (AR) NUMBER FROM OMEGA'S CUSTOMER SERVICE DEPARTMENT (IN ORDER TO AVOID PROCESSING DELAYS). The assigned AR number should then be marked on the outside of the return package and on any correspondence.

FOR WARRANTY RETURNS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair.
2. Model and serial number of the product.
3. Repair instructions and/or specific problems relative to the product.

FOR NON-WARRANTY REPAIRS, consult OMEGA for current repair charges. Have the following information available BEFORE contacting OMEGA:

1. Purchase Order number to cover the COST of the repair.
2. Model and serial number of the product.
3. Repair instructions and/or specific problems relative to the product.

CONDITIONS: Equipment sold by OMEGA is not intended to be used, nor shall it be used: (1) as a "Basic Component" under 10 CFR 21 (NRC), used in or with any nuclear installation or activity; or (2) in medical applications or used on humans. Should any Product(s) be used in or with any nuclear installation or activity, medical application, used on humans, or misused in any way, OMEGA assumes no responsibility as set forth in our basic WARRANTY/ DISCLAIMER language, and, additionally, purchaser will indemnify OMEGA and hold OMEGA harmless from any liability or damage whatsoever arising out of the use of the Product(s) in such a manner.

Notes
Where Do I Find Everything I Need for
Process Measurement and Control?
OMEGA...Of Course!

TEMPERATURE
- Thermocouple, RTD & Thermistor
  Probes, Connectors, Panels & Assemblies
- Wire Thermocouple, RTD & Thermistor
- Calibrators & Ice Point References
- Recorders, Controllers & Process Monitors
- Infrared Pyrometers

PRESSURE, STRAIN
AND FORCE
- Transducers & Strain Gages
- Load Cells & Pressure Gages
- Displacement Transducers
- Instrumentation & Accessories

FLOW/LEVEL
- Rotameters, Gas Mass Flowmeters
  & Flow Computers
- Air Velocity Indicators
- Turbine/Paddlewheel Systems
- Totalizers & Batch Controllers

pH/CONDUCTIVITY
- pH Electrodes, Testers & Accessories
- Benchtop/Laboratory Meters
- Controllers, Calibrators, Simulators
  & Pumps
- Industrial pH & Conductivity Equipment

DATA ACQUISITION
- Data Acquisition & Engineering Software
- Communications-Based
  Acquisition Systems
- Plug-in Cards for Apple, IBM
  & Compatibles
- Datalogging Systems
- Recorders, Printers & Plotters

HEATERS
- Heating Cable
- Cartridge & Strip Heaters
- Immersion & Band Heaters
- Flexible Heaters
- Laboratory Heaters

ENVIRONMENTAL
MONITORING AND CONTROL
- Metering & Control Instrumentation
- Refractometers
- Pumps & Tubing
- Air, Soil & Water Monitors
- Industrial Water & Wastewater
  Treatment
- pH, Conductivity & Dissolved
  Oxygen Instruments

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