



Printer Control Unit

HE800PCU100

Configuration

For PCU100 (PCU) specifications and installation information, refer to datasheet (**MAN0432**). See *Technical Support* section in this document for manual updates and assistance.

1 Product Overview

The Printer Control Unit (PCU100)...

- Is a **low cost solution** that allows you to **collect, store and track data** (up to **25 hours**) and **print data Trend Reports** without costly HMI units or chart recorders.
- Comes **conveniently pre-programmed** to record and print **four standard types of data trend measurements** that are commonly used in business and industry: *Pressure, Flow Rate, Temperature* and *Level* trends.
- Allows **fast, easy** creation of **OCS interface** using **pre-programmed controls**.
- **Connects to any Hewlett-Packard printer** with IEEE 1284 parallel port and that uses PCL3 such as HP Deskjet 5650.
- Provides **customized reports** such as alarm or industry-specific reports - available for additional cost by contacting Horner Sales staff.

An example of a data trend report is on the last page of this document.

2 Configuration Overview

2.1 Brief Summary of Steps to be Taken

The following steps must be done to configure the PCU. They are covered **in detail** later in this section.

1. Setup equipment including the PCU, Hewlett Packard printer, cable, and Master Controller (Horner Operator Control Station [**OCS**] in our example).
2. Configure the OCS to interface with the PCU via the **CsCAN network**.
3. Build a **ladder program** in the OCS to interface to and control the PCU.

2.2 Equipment Setup / Network

- Interaction with the PCU100 (PCU) requires a **OCS**. Although the PCU does not have a local operator interface, it does support a remote operator interface through an OCS over a **CsCAN** network.
- As shown in **Figure 1**, the PCU is connected to a Hewlett Packard (HP) printer with the cable that comes with the PCU. The cable connects the PCU to *any Hewlett-Packard printer* with IEEE 1284 parallel port and that uses PCL3 or greater.

Note: Our example uses one PCU, but multiple PCUs can be connected to the CsCAN network.

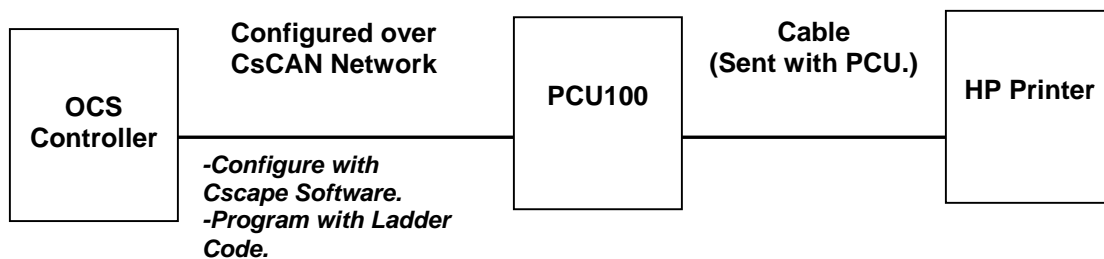


Figure 1 - PCU Setup in a CsCAN Network

2.3 Interface Configuration Software

Cscape software is used to interface the PCU to the OCS over a **CsCAN** network.

2.4 Ladder Programming

You need to build a ladder program (subroutine or sequence) that uses NETPUT and NETGET to configure and control the PCU. Examples of ladder code programs are shown in **Figures 3 through 6**. Also, refer to **Tables 1 through 2**.

3 Configuration Procedure

1. Interfacing the PCU via the Master Control (OCS in this example)

NOTE: The Network Baud Rate of the PCU unit is set to 125K.

The controller portion of OCS products is programmed in ladder logic via the Windows-based Cscape (Control Station Central Application Programming Environment) package.

- a. Run Cscape and establish a connection to the Master OCS. The default screen appears.
- b. At the top of the menu bar, click on the **Program** tab.
- c. Select **Network Config** from the pull-down menu.
- d. Click the **Option** tab. The following **Network Configuration** screen appears:

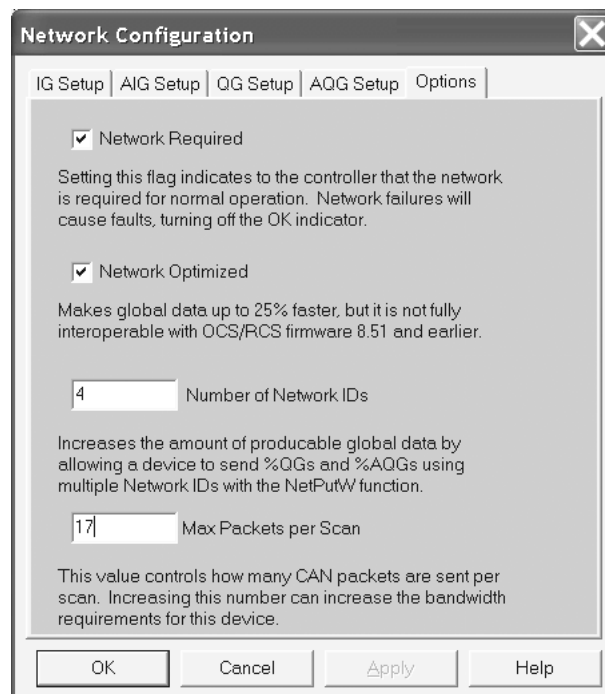


Figure 2 – Network Configuration Screen

- e. Click the **Network Required** box to the other network options.
- f. Click the **Network Optimized** box to speed network transfers.
- g. Fill in the **Number of Network IDs required by the Master OCS**. (Minimum number is 4 to support one PCU). Enter 17 or more in the **Max Packets per Scan** box to enable all packets to be transferred each scan (1 – 32 packets).
- h. Press **OK**.

2. Build Ladder Code

- a. Write Ladder Code to support the register assignments described in Tables 1 and 2. Example ladder code is located after the tables.

Table 1 – Transfers From Master Control to PCU Unit					
Network Variable	Source ID	Example OCS Register	NAME	MIN	MAX
%AQG1	4	%AI1	PRESSURE	0	1250 psi
%AQG2	4	%AI2	FLOW RATE	0	1250 gpm
%AQG3	4	%AI3	TEMPERATURE	0	1250 degrees
%AQG4	4	%AI4	LEVEL	0	125 feet
				Description	
%QG1	1	%M1	PRINT TREND	Momentary	
%QG2	1	%M2	CANCEL PRINT	Momentary	
%QG3	1	%M3	STORE DATA	Toggle - On state stores data	
%QG4	1	%M4	CLEAR DATA	Momentary	
%QG5	1	%M5	SCALE RANGE (Time)	Toggle – On state = 0-25 minutes – samples every 3 seconds. Off state = 0-25 hours – samples every 30 seconds	
%AQG1	1	%R1	Customer name field length	Number of charters in customer field	
%AQG2	1	%R2	Customer name field	30 ASCII Characters max – (15 registers)	
%AQG1	2	%R21	Job number field length	Number of characters in job number field	
%AQG2	2	%R22	Job number field	30 ASCII Characters max – (15 registers)	
%AQG1	3	%R41	Purchase order field length	Number of charters in Purchase order field	
%AQG2	3	%R42	Purchase order field	30 ASCII Characters max – (15 registers)	

Table 2 – Transfers From PCU unit to Master Control Unit (OCS)					
Network Variable	Source ID	Example OCS Register	NAME	MIN	MAX
%AQG1	10 *	%R61	Print status bar	0	100 %
* Default PCU Network ID					

- b. The following are examples of ladder code built off of the register assignments in Tables 1 and 2. Refer to the comments on each ladder code figure as they step you through the code and relate it back to the register assignments in the Tables 1 and 2.

Note: For all ladder code examples, the Master OCS uses ID 1 through 4. The PCU uses default ID 10.

You need to build a ladder program (subroutine or sequence) that uses NETPUT and NETGET to configure and control the PCU. Examples of ladder code programs are shown in **Figures 3 – 6**.

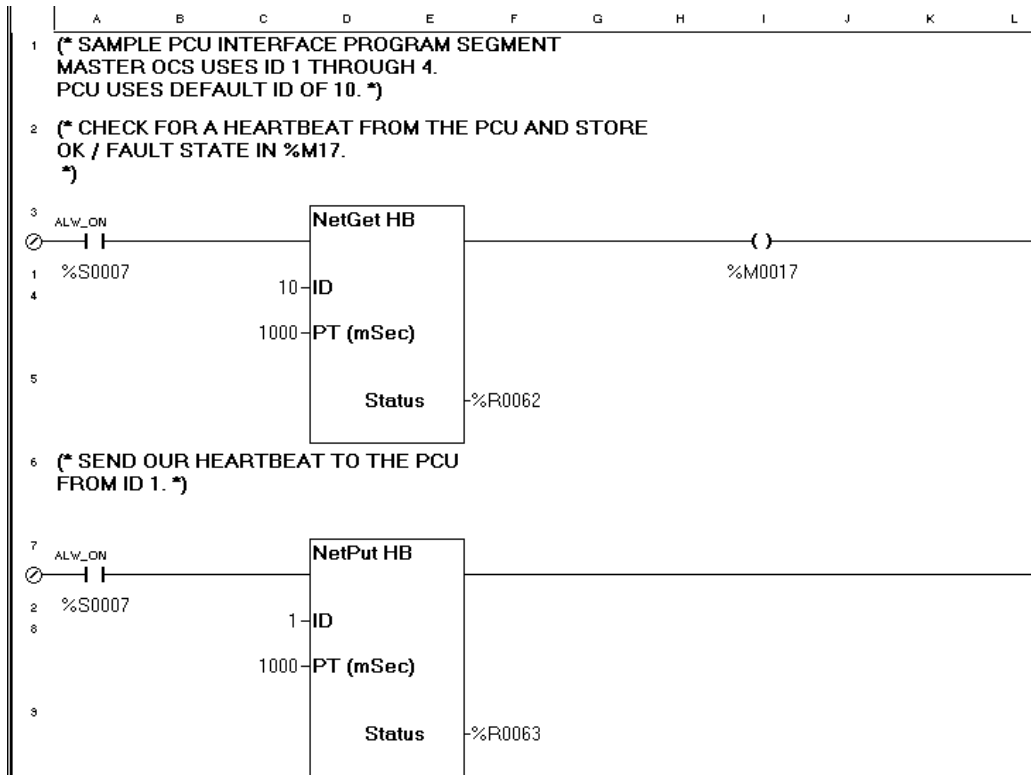


Figure 3 – Example Ladder Code - HeartBeat

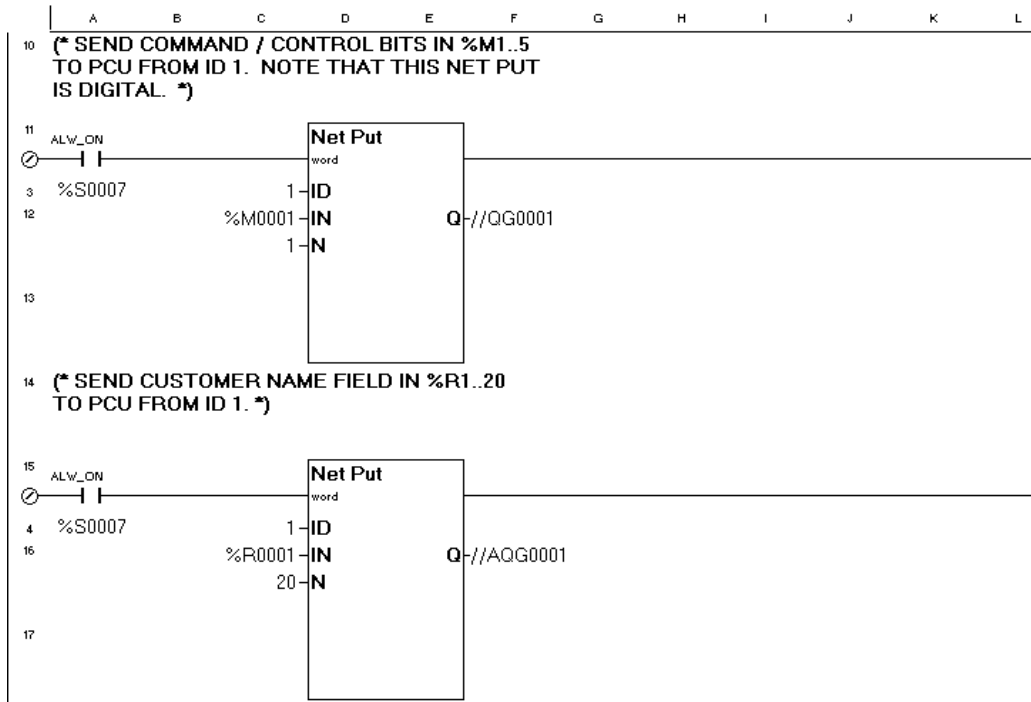


Figure 4 – Example Ladder Code - Command Controls and Customer Name Fields

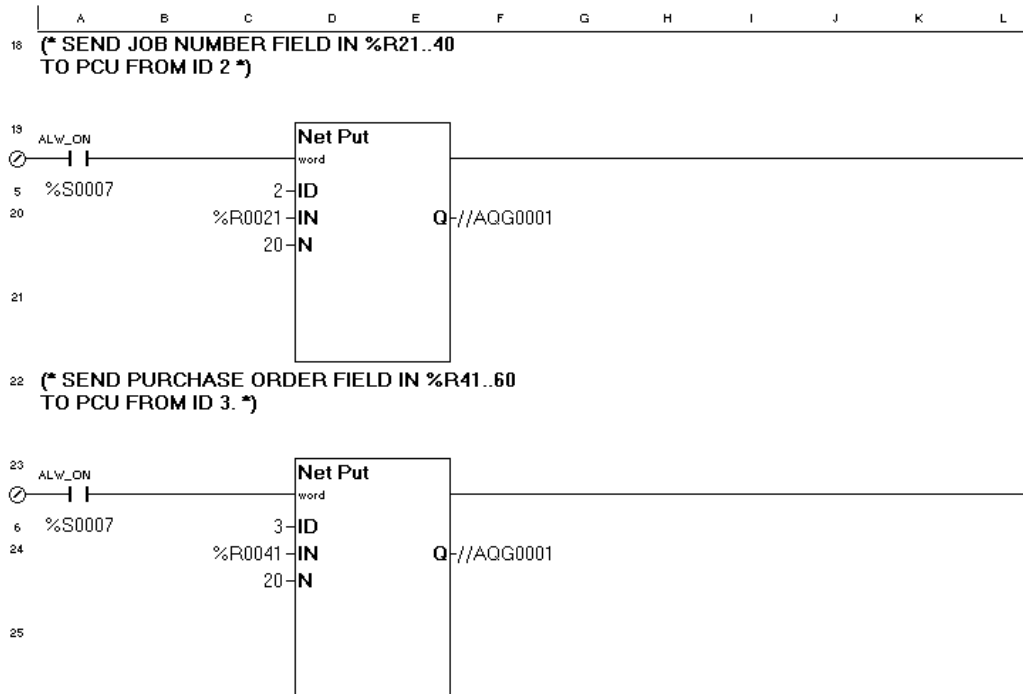


Figure 5 – Example Ladder Code – Job Number and Purchase Order Fields

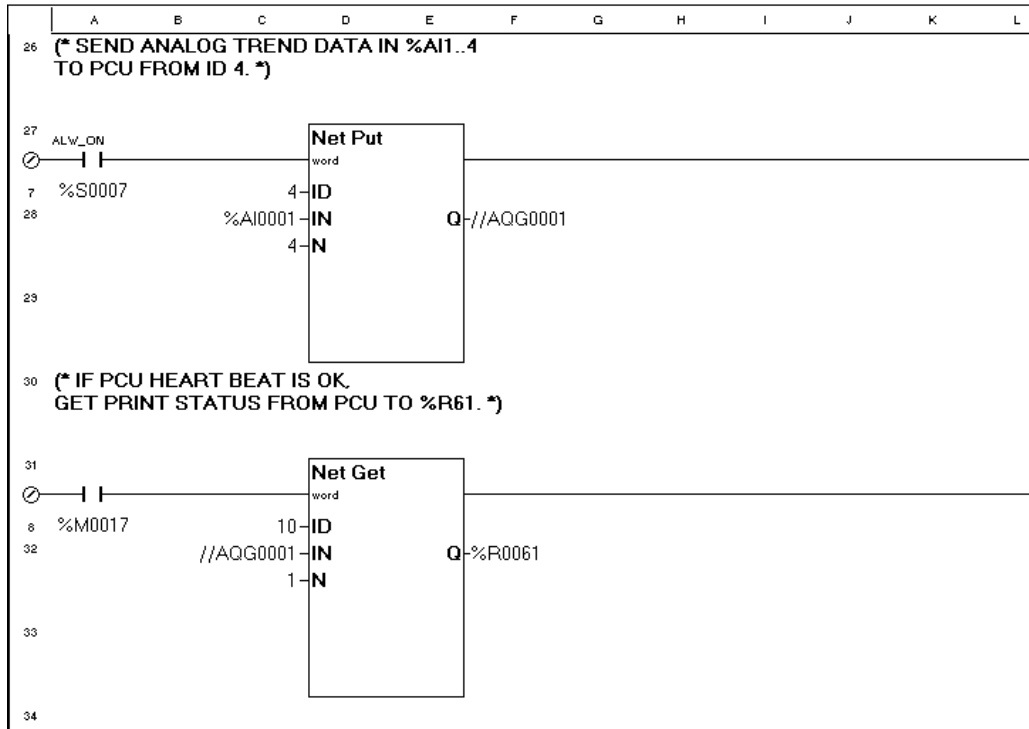


Figure 6 – Example Ladder Code – Trend Data and Print Job Status Fields

4 Operation Including Print Trend Report

Note: The following procedures reference the above example, which uses data in Table 1 and Table 2 and Ladder Code Figures 3 – 6.

1. Apply the quantities to be measured from %AI1 through %AI4.
(This references *Pressure, Flow Rate, Temperature and Level* quantities.)
2. Set %M1 through %M4 to zero.
(This references interface controls *Print Trend, Cancel Print, Store Data, Clear Data.*)
3. Set %M5 as desired for the **sample rate**.
(This references the **Scale Range**, which indicates the *time* interval that each sample occurs.)
4. Enter the **customer name, job number, and purchase order** information including **their respective lengths** in %R1 through %R60.
5. Set %M3 (**Store Data**) to 1 to enable **data capture**. Allow the network application to run until the desired number of sample intervals has passed.
6. Clear %M3 to zero to **stop data acquisition**.
7. Set %M1 to **print the trend report. (Set at least one second.)**
8. Clear %M1 to zero.

9. %M4 can be momentarily set to **one** and then cleared to **erase the stored data** in the PCU and prepare the PCU for a new capture and trend print cycle. **(Set at one second to clear.)**
10. %M2 can be momentarily set to **one** and then cleared to **cancel a print** in progress. **(Set to be on for one second.)**

5 SAFETY

All applicable codes and standards need to be followed in the installation of this product. When found on the product, the following symbols specify:



Warning: Consult user documentation.



Warning: Electrical Shock Hazard.

WARNING: To avoid the risk of electric shock or burns, always connect the safety (or earth) ground before making any other connections.

WARNING: To reduce the risk of fire, electrical shock, or physical injury it is strongly recommended to fuse the voltage measurement inputs. Be sure to locate fuses as close to the source as possible.

WARNING: Replace fuse with the same type and rating to provide protection against risk of fire and shock hazards.

WARNING: In the event of repeated failure, do not replace the fuse again as a repeated failure indicates a defective condition that will not clear by replacing the fuse.

WARNING: Only qualified electrical personnel familiar with the construction and operation of this equipment and the hazards involved should install, adjust, operate, or service this equipment. Read and understand this manual and other applicable manuals in their entirety before proceeding. Failure to observe this precaution could result in severe bodily injury or loss of life.

For detailed installation and a handy checklist that covers panel box layout requirements and minimum clearances, refer to the hardware manual of the controller you are using. (See the **Additional References** section in this document.)

- For I/O wiring (discrete), use the following wire type or equivalent: Belden 9918, 18 AWG or larger.
- Adhere to the following safety precautions whenever any type of connection is made to the module.
- Connect the green safety (earth) ground first before making any other connections.
- When connecting to electric circuits or pulse-initiating equipment, open their related breakers. Do not make connections to live power lines.
- Make connections to the module first; then connect to the circuit to be monitored.
- Route power wires in a safe manner in accordance with good practice and local codes.
- Wear proper personal protective equipment including safety glasses and insulated gloves when making connections to power circuits.
- Ensure hands, shoes, and floor are dry before making any connection to a power line.
- Make sure the unit is turned OFF before making connection to terminals. Make sure all circuits are de-energized before making connections.
- Before each use, inspect all cables for breaks or cracks in the insulation. Replace immediately if defective.

6 Additional References

For detailed installation, configuration and other information, refer to the hardware manual of the controller you are using. See the **Technical Support** section in this document for the web site address to download references and to obtain revised editions.

Additional References	
Controller	Manual Number
OCS NX Series Hardware e.g. HE-NX220, HE-NX221, HE-NX250, HE-NX251	MAN0781
Operator Control Station Hardware (OCS, OCX) e.g., OCS1XX / 2XX; Graphic OCS250	MAN0227
Remote Control Station Hardware (RCS [except RCS116], RCX) e.g., RCS210, RCS250	
Color Touch OCS Hardware e.g., OCS300, OCS301, OCS350, OCS351 e.g., OCS451, OCS551, OCS651	MAN0465
OCS LX Series Hardware e.g., LX280 / LX300; RCS116	MAN0755
MiniOCS / MiniRCS / MiniOCX / MiniRCX Hardware e.g., HE500OCSxxx	MAN0305
Other Useful References	
Cscape Programming and Reference	MAN0313
DeviceNet™ Implementation	SUP0326
Wiring Accessories and Spare Parts Manual	MAN0347

7 TECHNICAL SUPPORT

For updates and assistance, contact Technical Support at the following locations.

North America:

(317) 916-4274

www.heapg.com

Europe:

(+) 353-21-4321-266

www.horner-apg.com

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