

PROGRAMMING INSTRUCTIONS

CPU-95 TERMINAL PROGRAM

FORM CPU-95 PI 4-08



WARNING: DEVIATION FROM THESE INSTRUCTIONS MAY LEAD TO IMPROPER ENGINE OPERATION WHICH COULD CAUSE PERSONAL INJURY TO OPERATORS OR OTHER NEARBY PERSONNEL.

1.0 DESCRIPTION

1.1 The Altronic **CPU-95** program operates from a standard PC and permits the operator to program a standard or custom configuration. With the Altronic **CPU-95** Terminal Program software, the user can obtain the full benefit of the capability designed into the **CPU-95** system. Custom timing curves, offset timing on an individual cylinder basis, and advanced features can be programmed. A data sheet can be printed showing, in table form, the engine firing pattern resulting from the information entered as well as other programming information. There is a monitor mode that the operator can use to monitor an existing installation and access most keypad configurable settings via the **RS-485** serial link.



1.2 The following Altronic material is required:

Altronic CPU-95 CD-ROM, P/N 609010

1.3 The following user-supplied hardware is required:

Computer: IBM-compatible PC, Windows 95/98/ME/NT4/2000
Hard drive (10 Mb of free disk space required)
CD-ROM drive
1 RS-232 serial port
SVGA graphics (800x600 or greater preferred)
Color monitor

Printer: Selections on screen for windows printer

Serial Converter: RS-485 to RS-232 serial converter for PC interface.
Two wire, half duplex, multidrop, binary communications,
RTS controlled.

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2.0 INSTALLATION

- 2.1** The program installs from a **CD-ROM** drive. A minimum of **10 mega-bytes** of free disk space is required.
- 2.2** Insert the **CD-ROM** disk into the **CD-ROM** drive and run the **SETUP95.EXE** file. If you have the autorun selection enabled on your **CD-ROM** drive, the install program will run automatically. The install program will prompt you for a destination folder where the program will be installed. The default folder is **C:\PROGRAM FILES\CPU-95**. After the install completes, you can run the program from the **Start Button, Programs Menu, Altronic Inc. CPU-95, CPU-95 menu selection**.

3.0 PROGRAM OPERATION

- 3.1 LOAD PROGRAM:** Once installed, to load the program, click on the **CPU-95** icon.
- 3.2 LOGIN FORM:** Following the opening pictorial screen, the **Login** form appears. Type in your initials or code. Select the PC communications port to which the **RS-485** Converter will be connected to. (**COM1 - COM10**). If the **COM** Port has a non-standard interrupt or address, these can be edited. Enter the Node number of the unit you want to communicate with. A Node number of **0 (zero)** will allow you to query the unit for the programmed node number.
- 3.3 MAIN FORM: 6 Options**
- A. Monitor:** allows the operator to monitor a unit and adjust values via the serial link.
 - B. Configure:** allows the operator to configure the **CPU-95** for operation.
 - C. Print:** allows the operator to print out a stored program sheet.
 - D. Web Page:** If the user is connected to the Internet, this allows direct access to the Altronic, Inc. web page (**www.altronicinc.com**).
 - E. Exit:** Quits program.
 - F. Help Menu:** About **CPU-95**; displays version information of the Terminal Program and **CPU-95** firmware.

NOTE: Pressing CANCEL at this screen will result in exiting the program.

4.0 PROGRAM EEPROM

- 4.1** The **TAB/SHIFT-TAB** or **RETURN** will move the cursor between fields.
- 4.2** Enter the **Node number** of the unit to be programmed. Values can be **1 - 254**.
- 4.3** Select the type of **Ignition Module** to be used from the drop down list.
- 4.4** Select the **Firing Pattern Code**. These are found in Application List, form **CPU-95 AL**. Pressing Enter or Double Clicking on this field will bring up the list box of firing pattern selections.
- 4.5** Enter the **number of teeth or holes**; the limits are **90-500**. Some firing patterns will have limited options as the number of teeth increases vs. firing angles.
- 4.6** Select the choice for **Current Loop** type:
- X- **No current loop will be used.**
 - A- **Standard 48 degree curve.**
 - B- **Standard 36 degree curve.**
 - C- **Standard 24 degree curve.**
 - D- **Standard 16 degree curve.**
 - E- **Standard 8 degree curve.**
- SPECIAL - Denotes user-entered special curve.**
- 4.7** Select the choice for **RPM Curve**:
- NO - No RPM Curve desired.**
 - YES - Enter an RPM curve; this makes the memory an "N" type, so a version number will have to be specified, if not already defined. Follow the instructions on screen for completing the table.**
- 4.8** Select the choice for **Advanced Features**:
- NO - No, use default choices (one-step retard active through Misc. terminal).**
 - YES - Yes, choose Advanced Features.**
Follow the instructions on screen for completing the table.
- 4.9** Select the choice for **Cylinder Offsets** (permanent modification of firing pattern):
- NO - No Cylinder Offsets desired.**
 - YES - Yes, define Cylinder Offsets; this makes the memory an "N" type, so a version number will have to be specified, if not already defined. Follow the instructions on screen for completing the table.**
- 4.10 INITIAL USER SETTINGS:** These include **Overspeed Setting**, **Energy Level**, **Multi-fire option**, and **Reset Pin Position**. Select the desired values for each field.
- 4.11 COMMENTS:** These fields are to store site-specific data in the **EEPROM**. Engine location, number and model can be stored along with four lines of user comments.

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- 4.12 SAVING DATA:** After completing the above information, pressing the **ACCEPT** button saves the input screen information. A display form will then show all selected values. To return to the input screen, press the **PREVIOUS SCREEN** button. To print a data sheet, press the **PRINT** button. It is recommended that data sheets for all generated memories be kept on file for easy reference. Pressing the **PROGRAM** button accepts the display sheet information and will generate the memory file.
- 4.13 PROGRAMMING EEPROM:** The **Shutdown Lead** must be grounded to program the **EEPROM**. Follow the instructions on the screen to complete the programming cycle and return to the **Main Form**.

NOTE: ALL MEMORY CONFIGURATIONS SHOULD BE VERIFIED BY OPERATION WITH THE IGNITION SYSTEM AND AN IGNITION TIMING DEGREE WHEEL PRIOR TO USE ON AN OPERATING ENGINE.

5.0 MONITOR MODE

- 5.1** On systems which have no **Display Module** or where the **791902-x Display Module** is being used, the communication link must be established by directly connecting the computer to the **Ignition Module**. If the **791902-x Display Module** is used it must be temporarily disconnected to use the computer monitor. The monitor program is accessed by clicking on the **CPU-95** icon from the opening screen of the programming program. **SEE SECTION 3** for details. The default location for this program is **C:\PROGRAM FILES\CPU-95\CPU-95.EXE**.

The option of a dual port **Display Module** part number **791908-1** has been added to allow for the simultaneous connection of both the **Display Module** and a customer computer or PLC via Modbus. When the **791908-1** unit is used, the computer is connected to the auxiliary output port of the **Display Module** and the monitor function is accessed by running a special program. To install the Monitor program for use with the **791908-1** display, run the setup file on the terminal software CD, **CPU-95dpd_setup.exe**. The default location of this program is **C:\PROGRAM FILES\CPU-95 DUAL PORT DISPLAY MODBUS MONITOR\CPU-95DPD.EXE**.

- 5.2** To select the **Monitor** function, click on the **Monitor** selection on the top edge of the Windows™ tool bar. On screen directions are provided to help guide the user through the **Monitor** program. Any field that has adjacent up/down arrows can be modified while the unit is being monitored. Use the mouse or **TAB/SHIFT TAB** keys to move the screen cursor to the field to be modified. Clicking on or pressing the **ENTER** key while the cursor is on either the **UP** or **DOWN ARROW** will cause the arrow to turn black for a moment and execute the appropriate request. The **UP ARROW** will increase a value or turn an option on. The **DOWN ARROW** will decrease a value or turn an option off.

Values which can be adjusted from this screen include:

- **Ignition Timing**
 - **Energy Level**
 - **Multistrike Operation**
 - **Overspeed Setting**
 - **Reset Pin Position**
 - **Value Protection**
- 5.3** Pressing **EXIT** will take the user back to the Main form. Like keypad operations, most changes are retained by the unit until changed again.

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- 5.4 DIAGNOSTIC BUTTON:** brings up the diagnostic monitor screen. This allows the operator to view coil and spark plug diagnostics.
- A. **Diagnostic field characters:**
 - “.” indicates normal operation
 - “X” indicates a faulted condition
 - B. **VIEW/ADJUST DIAG SETPOINTS button** – will open the View/Adjust Diagnostic Setpoints screen.
 - C. **AUTOCAL COILS button** – allows the user to equalize each cylinder diagnostic number.
 - D. **RESET SPARK DIAG Button** – resets the spark diagnostics.
 - E. **PRINT button** – will print out current spark diagnostic data.
 - F. **EXIT button** – will exit back to the system monitor screen.
- 5.5 VIEW/ADJUST DIAGNOSTIC SETPOINTS SCREEN:** This screen allows the operator to adjust the spark diagnostic setpoints.
- A. **Any field that has adjacent up/down arrows can be modified. Use the mouse or TAB/SHIFT TAB keys to move the screen cursor to the field to be modified. Clicking ON or pressing the ENTER key while the cursor is on the UP or DOWN ARROW will cause the arrow to turn black for a moment and execute the appropriate request. The UP ARROW will increase a value or turn an option on. The DOWN ARROW will decrease a value or turn an option off.**
 - B. **The EXIT button will exit back to the diagnostic monitor screen.**
- 5.6 AUTOCAL COILS SCREEN:** Allows the operator to equalize coil diagnostic numbers.
- A. **Enter TARGET VALUE - The valid range is listed below the box and is dependent on the current range of diagnostic numbers.**
 - B. **EQUALIZE COIL button - automatically adjusts the coil offsets to match the cylinder diagnostic number to the target value. Offsets can also be manually adjusted by using the UP/DOWN Arrow keys adjacent to each offset value.**
 - C. **ZERO OFFSET button - resets all offsets to zero.**
 - D. **RESET SPARK DIAG button - resets the spark diagnostics.**
 - E. **EXIT button - will exit back to the diagnostic monitor screen.**

6.0 SPECIAL FEATURES ON 791908-1 AND 791909-1 DUAL PORT DISPLAYS

- 6.1** In addition to all of the features available with the **791902-x Display Module**, the **791908-1 Dual Port Display Module** adds Modbus communications using an industry standard Modicon Modbus RTU protocol. The Modbus communication parameters are user selectable from either the front keypad of the module itself or by selecting the Modbus option from the Windows tool bar. Selections are available for **Baud Rate**, **Parity**, **Stop Bit**, etc. For a complete listing of Modbus registers, **SEE THE CPU-95 MODBUS.PDF FILE ON THE CD.**
- 6.2** A datalogging capability has been built into the **791908-1 Display Module** which allows the user to access up to 100 historical datalogs recording the operating RPM of the engine, the value of the spark reference numbers, the ignition timing and the presence of any diagnostic messages. These datalogs are taken at a pre-determined time interval which is user selectable. In addition to the standard time based datalogs, the occurrence of alarms or shutdowns triggers an immediate time stamped datalog. To access the datalogs from the opening screen, click on the Datalog option on the Windows tool bar.
- 6.3** A number of additional options are also available to the **CPU-95** user with the **791908-1 Display Module**. These include password protection of adjustments from the keypad, the elimination of the test function, the adjustment of the time and date, the retention of datalogs on power loss, and the datalogging interval. To access these user selectable options click on the **Configure** option on the Windows™ tool bar.
- 6.4** The **791909-1** includes the features of the **791908-1** with the addition of USB and more flexible programming options for the attached ignition module. See form **CPU-95 01-E** (operating instructions) for further details on these features.

7.0 TROUBLESHOOTING

7.1 COM485 ERROR

- A. RS232-RS485 Converter not connected or not working

7.2 NO REPLY IN 13 mSec

- A. CPU-95 node selection incorrect
- B. CPU-95 not connected
- C. CPU-95 not powered

7.3 INVALID RS-232 ADDRESS

If the message **Invalid RS-232 Address** is received when selecting the serial port in the **CPU-95** terminal program, the following procedure is required.

On your PC desktop, go to Start, Run and type in “regedit.exe”. Then successively choose the following path names:

HKEY_LOCAL_MACHINE
System
CurrentControlSet
Services
VxD
VCMM

Then change the binary data value for the **EnablePowerManagement** registry location from **01 00 00 00** to **00 00 00 00**.

MICROSOFT WARNING: Using **Registry Editor** incorrectly can cause serious problems that may require you to reinstall your operating system. Microsoft cannot guarantee that problems resulting from the incorrect use of **Registry Editor** can be solved. Use **Registry Editor** at your own risk. For information about how to edit the registry, view the **Changing Keys and Values** Help topic in **Registry Editor (Regedit.exe)** or the **Add and Delete Information in the Registry** and **Edit Registry Data** Help topics in **Regedt32.exe**.

IMPORTANT: This article contains information about editing the registry. Before you edit the registry, make sure you understand how to restore it if a problem occurs. For information about how to do this, view the **Restoring the Registry** Help topic in **Regedit.exe** or the **Restoring a Registry Key** Help topic in **Regedt32.exe**.

NOTE: This information has been taken from the Microsoft web site.

Note: You should back up the registry before you edit it. If you are running Windows NT or Windows 2000, you should also update your Emergency Repair Disk (ERD).