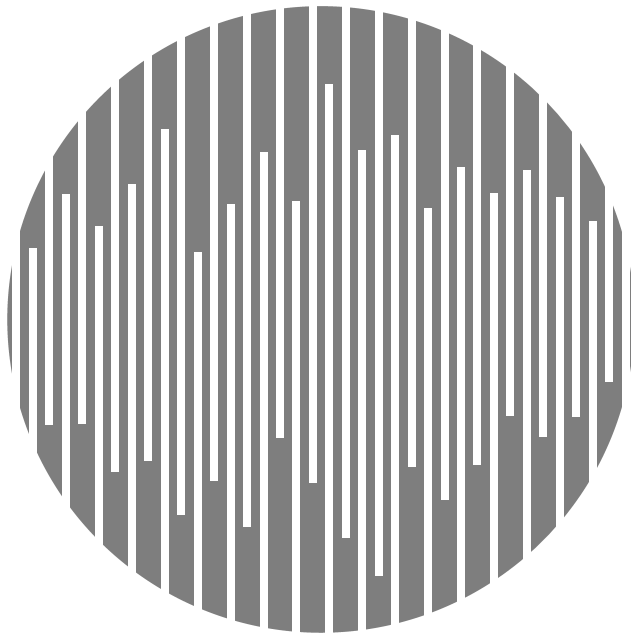


Modicon Micro Controllers Quick-Start Guide

GI-KWIK-ENG Rev. C

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Modicon Micro Controllers Quick-Start Guide

GI-KWIK-ENG Rev. B

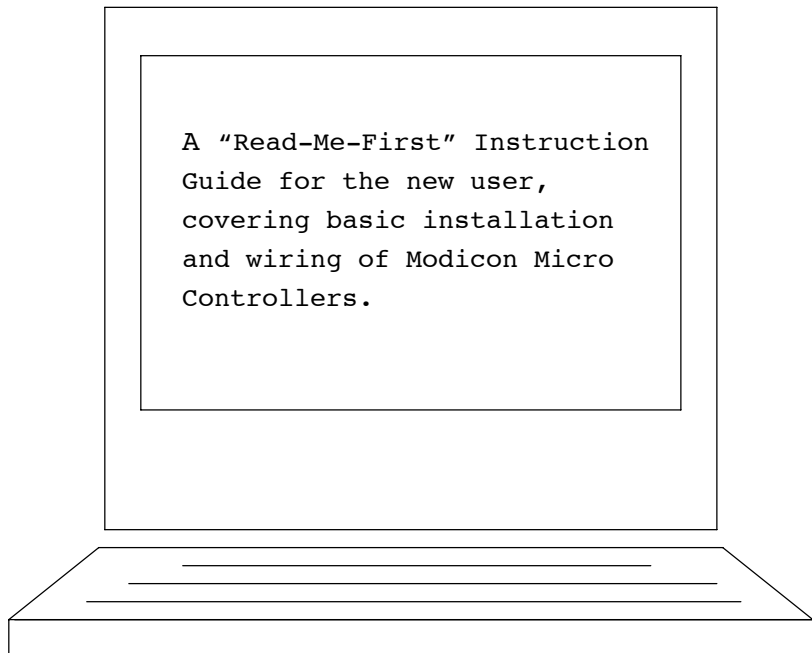


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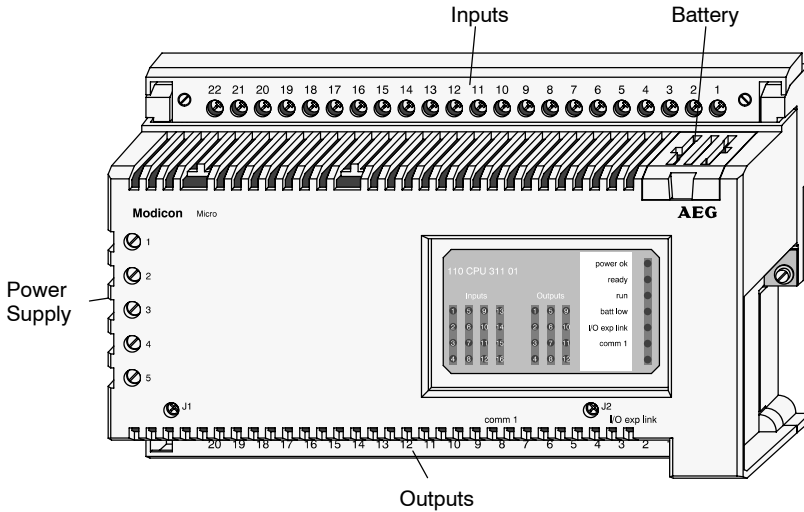
First Printing: November, 1993

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This Quick Start Guide covers the Modicon Micro PLC Part Numbers:

110CPU31101 115/230 VAC with 16 Inputs @ 115 VAC and 8 Triac and 4 Relay Outputs

110CPU31102 230 VAC with 16 Inputs @ 230 VAC and 8 Triac and 4 Relay Outputs

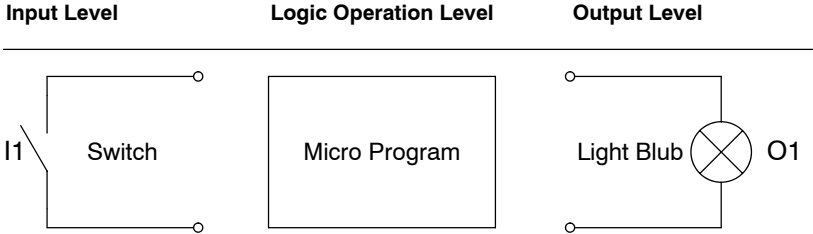


List of Materials in the Micro Box:

1. A Modicon 311 Micro PLC
2. A small bag of mounting accessories
3. The 311/411 Micro Hardware User Manual (GI-MICR-341)
4. This Quick-Start Guide
5. Any updates or bulletins

Exercise

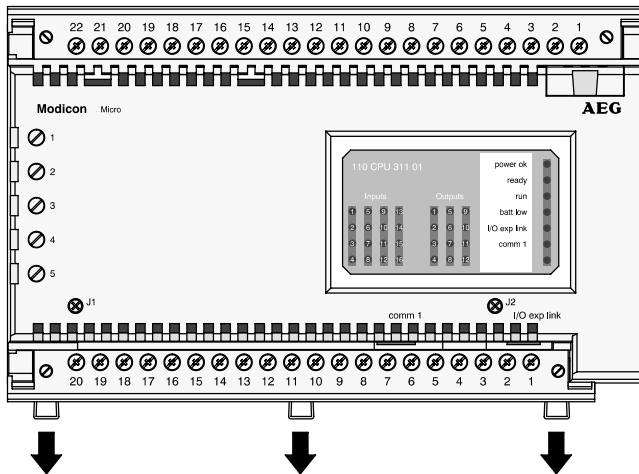
We will show you the necessary steps and operations to make a Micro run by a very simple application.
A light bulb connected to output 1 of the Micro is to be switched on and off by a switch which is connected to input 1.



Step 1. Mounting the Modicon Micro PLC

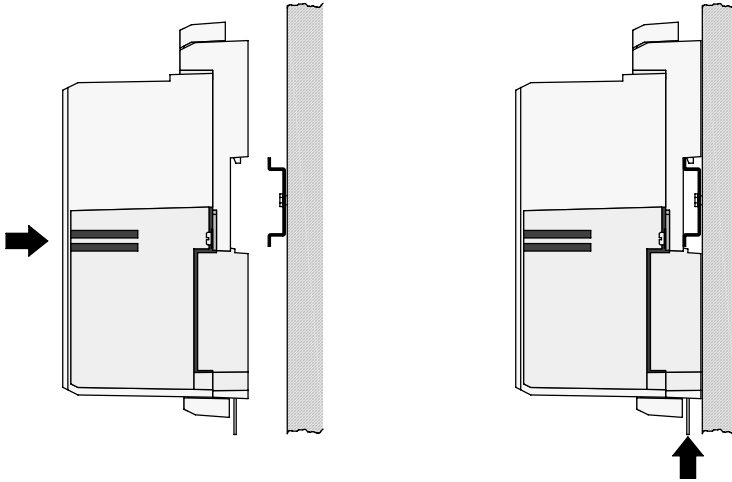
The Micro Controller may be mounted on a DIN rail or to a sub-plate or flat panel as shown in the drawings below. Complete mounting instructions are found on pages 38 – 41 of the 311/411 Hardware User Manual (GI-MICR-341).

Mounting the Micro on a DIN Rail



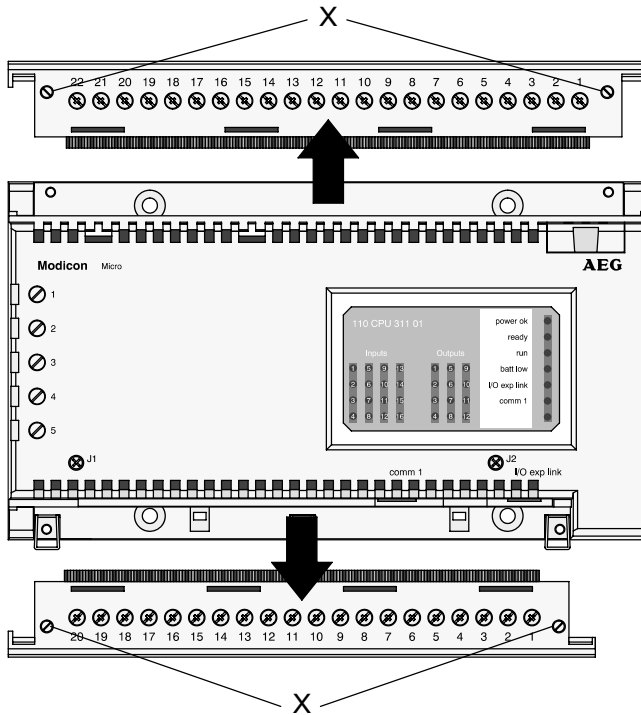
To mount the Micro on a DIN rail, locate the three clips below the lower terminal strip and pull down to open the clips.

Position the Micro over the top rail of the DIN rail and push into the desired position. Push the three clips back up into position to secure the controller to the DIN rail. If a 15 mm DIN rail is used instead of a 7.5 mm rail, use the spacers shipped with the Micro.



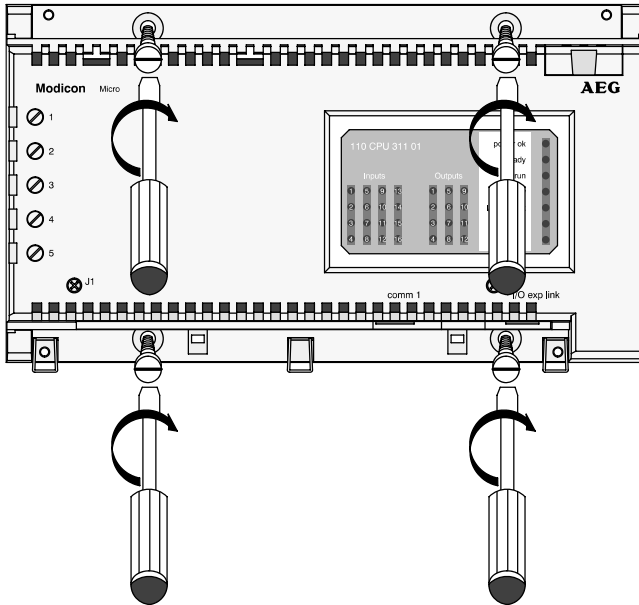
Note To keep your controller from sliding on the DIN rail, you may wish to install DIN rail end clamps. These clamps can be purchased from your DIN rail supplier.

Or Mounting the Micro on a Wall or Sub-plate



To mount the Micro on a backplane or sub-plate, locate the 4 captive screws (X) at each corner of the input (top) and output (bottom) removable terminal strips, and loosen these screws.

Remove the terminal strips by sliding them outward from the Micro to expose the 4 sub-plate mounting holes. Either screw or bolt the Micro in place, replace the terminal strips, and secure by tightening the four captive screws.

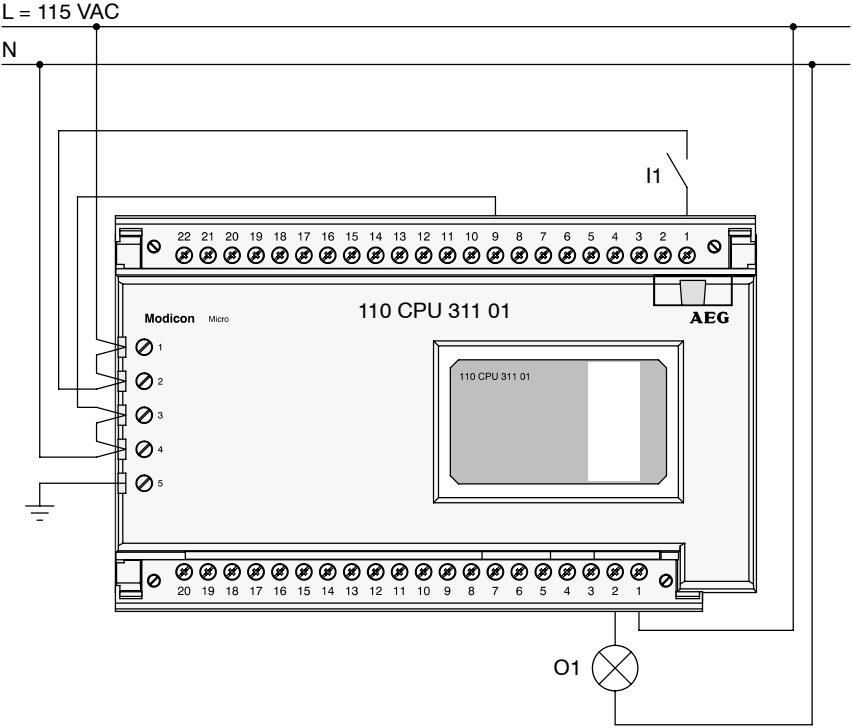


Note The sub-plate mounting hardware is not included with the Micro, and must be furnished by the user.

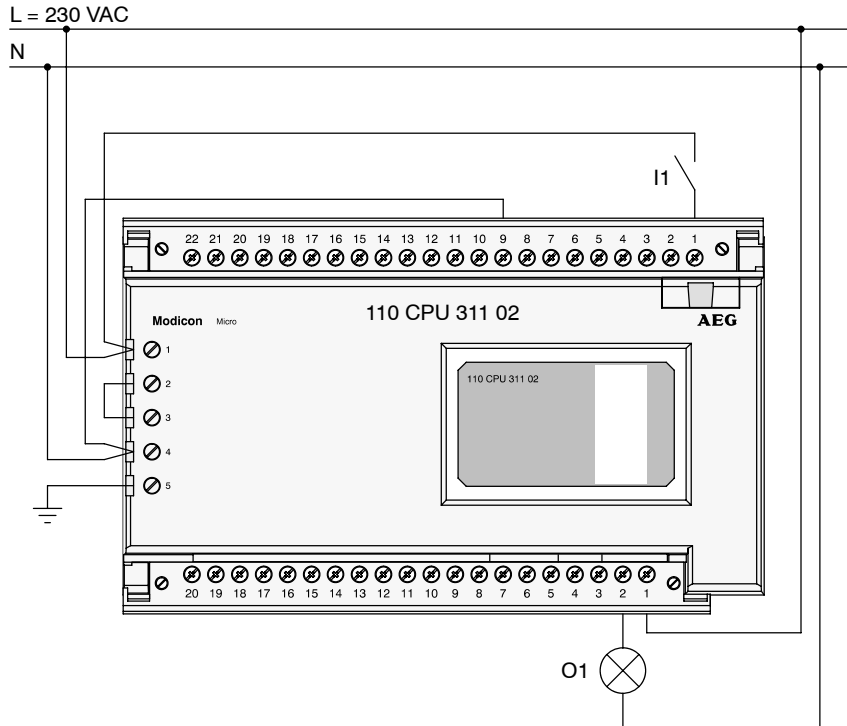
Step 2. Wiring of Power Supply and I/O Points

Wire power supply, switch and light bulb as follows:

115 VAC Power



230 VAC Power



Of course, the exercise can be done with 24 VDC power supply and 24 VDC sensors and actuators.

In this case you have to use the Micro 311 00 or 311 03.

For details, refer to 311/411 Micro Hardware User Manual (GI-MICR-341).

Step 3. Powering Up

Once you have completed Steps 1 thru 4, you are ready to supply power to the Micro. Check again to make sure that all wiring has been completed according to instructions, and that all terminal screws are tight.



Caution The Micro is not fused internally! YOU must provide fusing for all input and output points, as well as for the power supply source. Failure to do this could result in damage to the Micro.

Observe the following sequence when applying power to the Micro:

1. Turn ON the power supply to the Micro.
2. Observe the LEDs as the Micro completes its internal diagnostics.
3. The front panel indicators marked “Power OK” and “Ready” will illuminate.
4. If these indicators *are* illuminated, proceed to Step 4 for further explanation of each indicator.
5. If these indicators are not illuminated, remove power and recheck your wiring to the Micro.

Step 4. Front Panel Indicators

Below is a list of the front panel LED indicators and what their meanings are at **FIRST TIME** power up of the Micro. If your indicators are other than those indicated below, refer to the Hardware User Manual for specific information.

Power OK LED	Red and ON when power is applied to the Micro, OFF when no power is present or wiring is incorrect.
Ready LED	Amber and ON when controller is OK and has passed internal diagnostics.
Run LED	Green and flashing at power up (not configured), when the Micro has been put into the “Run” mode.
Batt Low LED	Red and ON if optional battery or Battery Capacitor is not installed, or if the lithium battery needs to be replaced (see note in Step 6 about Battery Options).
Comm1 LED	OFF unless Micro is connected to a computer or Hand-held Programmer; green and flashing when communicating with either device.
I/O Expan. Link	OFF on power-up; solid green if link is communicating with another Micro; flashing green when a communications error is detected.
Input LEDs (1 - 16)	Red and OFF or ON, depending on the status of the sensors attached.
Output LEDs (1 - 12)	OFF.

Step 5. User Memory Options and Flash Memory

Your Modicon Micro comes equipped with nonvolatile “Flash” memory for user ladder logic storage. If you want to save register or state RAM memory upon power loss, you’ll need one of the two battery options described below.

Battery Options

Available battery options are a lithium battery (Part #110XCP98000), or a 3-day battery capacitor (Part #110XCP99000). Both can be used for Register Memory backup.



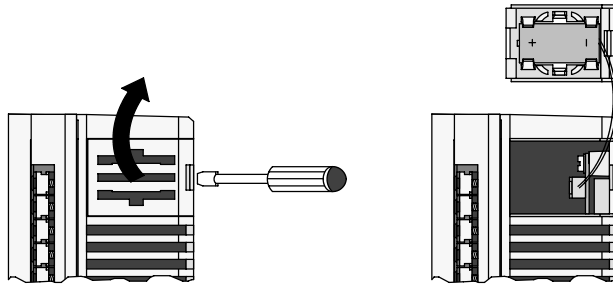
Caution User ladder logic programs **DO NOT** require battery backup, **IF** ladder logic programs are stored in nonvolatile “Flash” memory in the Micro PLC. [Refer to your Panel Software User Manual for instructions on how to use the “Save to Flash” command.] However, in order to save register memory in the event of a power failure, you will need one of the battery options. Remember, your ladder logic program is *not* automatically stored in nonvolatile “Flash” memory - you *must* intentionally perform this step in your programming software or with the Hand-held Programmer.



Note If you **do not** have a battery or a battery capacitor installed in the Micro, the “Battery Low” indicator LED on the front panel will illuminate, even though your ladder logic program maybe stored in “Flash” memory.

Step 6. Battery Installation

Battery Installation or Replacement



To install or replace the Battery or Battery Capacitor, remove the small door at the top right-hand corner of the Micro as shown in the drawing. Locate the small, white 3-conductor connector on the printed circuit board and plug the Battery or Capacitor into this connector. Replace the Battery Door. Installation is complete.

Step 7. Programming Options

Now that you have now completed all the steps necessary to mount, wire, and power-up the Micro, you are ready to begin programming. Two methods of programming the Micro are available from Modicon: the Hand-held Programmer *and* Modsoft Lite software. In this section, each of these options is briefly discussed, followed by a quick install procedure for Modsoft Lite.

Option 1. Hand-held Programmer (Modicon Part #520VPU19200)

The Hand-held Programmer is a portable, hand-sized device which features nonvolatile “flash” memory for bi-directional program transport. The Hand-held is powered by the Micro or by an A/C adapter, and lets you perform all programming functions within the Micro. Features include convenient size, password protection, and an LCD screen. A cable is provided with the unit to connect the Hand-held to the Micro. An optional “transfer kit” permits connection between the Hand-held and a computer running Modsoft programming software. Since the Hand-held requires in-depth explanation, refer to the Hand-held Programmer User Manual (GM-MICR-HHP) for further details about this product.

Option 2. Modsoft/Modsoft Lite Software (Modicon Part #371SPU92100)

Modicon supplies programming software for the Micro with either a full-feature version - Modsoft - or a package supporting the Micro and Compact only - Modsoft Lite - which is discussed here.

Step 8. Installing Modsoft Lite

Modsoft Lite programming software for the Micro can be installed on any XT/AT IBM Compatible computer. In order to program the Micro with Modsoft Lite, you will need the following equipment:

1. An XT/AT IBM compatible computer.
2. Modsoft Lite Software (Part #371SPU92100).
3. One of the following programming cables:
 - 110XCA28201** 1 m (3 ft) programming cable
 - 110XCA28202** 2 m (6 ft) programming cable
 - 110XCA28203** 4 m (12 ft) programming cable
4. One of the following computer adapters:
 - 110XCA20300** 9-pin, DB-type
 - 110XCA20400** 25-pin, DB-type
5. A Modicon Micro, correctly wired and connected to power.
6. A Micro Ladder Logic Manual (GM-MICR-LDR) and a Modsoft Lite Programmer User Manual (GM-MSLT-001).

Installation of Modsoft Lite also assumes that you have basic computer skills, and are familiar with DOS terminology and with your computer's operation.

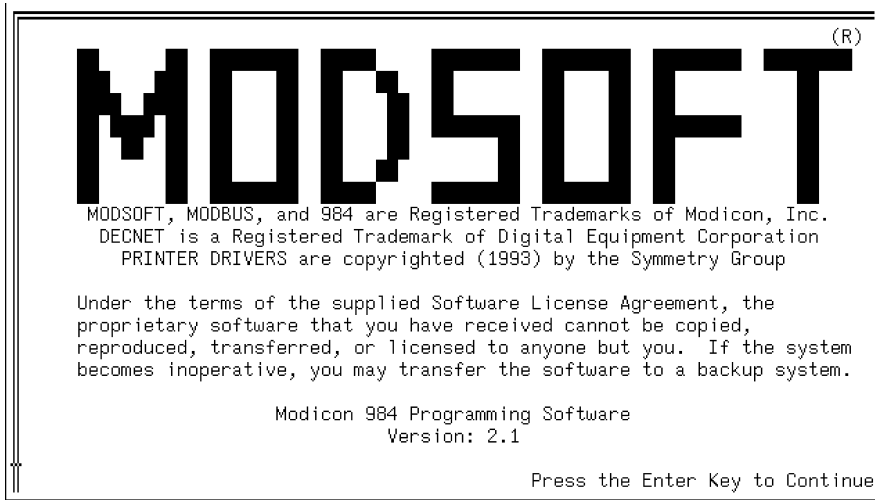


Caution Before proceeding, you should be familiar with how your computer operates. If you are unsure about any aspect of the computer, suspend installation and refer to the operating manuals that came with your computer.

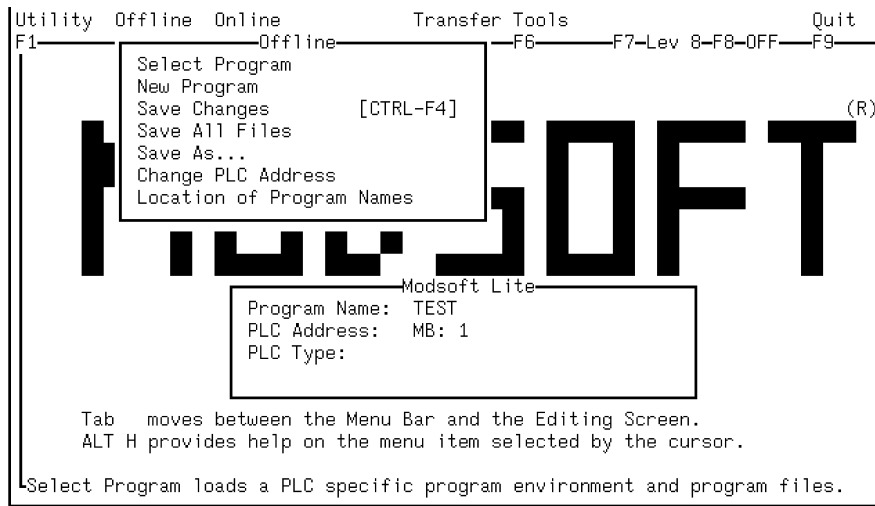
Installing Modsoft Lite (refer to Page 13 in the Modsoft Lite Programmer User Manual)

- Step 1** Modsoft Lite comes with both 3 1/2" and 5 1/4" floppy diskettes. After reading the software licensing agreement, open the diskette package and locate Disk 1 of the size diskette that your computer uses. Insert this diskette into drive A (or B, if desired) and close the drive door.
- Step 2** Change to Drive A (or B) by typing at the DOS prompt: **A:** [then press ENTER].
- Step 3** At the DOS prompt, type: **LINSTALL** [then press ENTER].
- Step 4** Modsoft Lite now displays the Install screen. This screen gives you options such as where you want to install the software, etc. Simply read and follow the screen instructions to completely install Modsoft Lite on your hard drive. Modsoft Lite will prompt you when you have successfully installed the software.
- Step 5** If you have just completed the Modsoft Lite installation, you will be in the LMODSOFT directory of your hard drive. If you have previously installed Modsoft Lite, you must change to the Modsoft Lite Directory. To do this, at the DOS prompt, type: **CD** [then press ENTER]; then type: **CD\LMODSOFT** [then press ENTER]. Your DOS prompt will look something like: **LMODSOFT>**
- Step 6** Start Modsoft Lite by typing, at the DOS prompt: **LMODSOFT** [then press ENTER].

Step 7 Modsoft Lite will start with an intro screen, as shown.



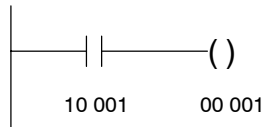
Step 8 Press any key on the keyboard to enter the Modsoft Lite Main Menu.



Step 9 You have now completed installation, and Modsoft Lite is up and running on your computer. For specific information on configuring your Micro controller, refer to Pages 14 - 21 of the Micro Ladder Logic Manual (GM-MICR-LDR); for programming information, begin at Page 43 of the same manual.

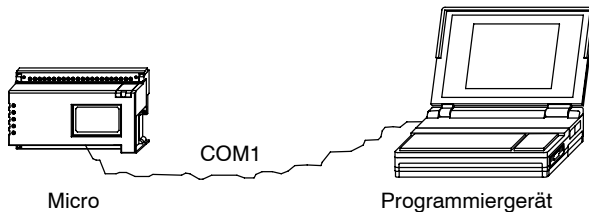
Exercise

This is the program you have to key in:



Step 9. Connecting the Micro to your Computer

You are now ready to complete the connections between the Micro and your computer. This is the final step prior to configuring and programming your Micro.



- Step 1** Plug the programming cable into the Comm1 port on the lower middle section of the Micro.
- Step 2** Plug the other end of the programming cable into the DB-type adapter (either the 9- or 25-pin adapter).
- Step 3** Plug the DB end of the adapter into the Comm1 port on the rear of your computer.
- Step 4** You have now made all required connections, and are ready to communicate with and Autoconfigure the Micro. Refer to Pages 15 - 22 of the Micro Ladder Logic Manual for specific information on these operations.

All the documents you need to continue with the Micro's operations are included, either with the controller or with the Modsoft Lite Software. This Quick-Start Guide was designed to help you get up and running fast, and not to provide detailed information about the Micro.

Need more information?

Please refer to the documents listed on Page 27 for in-depth information about all aspects of the Micro controller or Modsoft Lite software.

311/411 Micro Hardware User Manual (GI-MICR-341)

Topic	Page(s)
Specifications	9 - 10
Wiring Power	5 - 6
Wiring Inputs	12 - 31
Wiring Outputs	32 - 37
Battery Installation	42
Memory Options	3
Front panel LEDs	7
Mounting	38 - 41
Cable Pin-Outs	46

Modsoft Lite Programmer User Manual (GM-MSLT-001)

Topic	Page(s)
Installing Modsoft Lite Software	13 - 24
Software Orientation	25 - 42
Main Menu Functions	26 - 77
Configuration	79 - 110
PLC Programming	135 - 195
Quick Keys	197 - 200
Modsoft Lite in MS Windows	217 - 220

Micro Ladder Logic Manual (GM-MICR-LDR)

Topic	Page(s)
Micro Overview, scan, memory	2 - 3
Memory allocation	4 - 6
Memory Backup	7 - 8
Instruction Set	11 - 12
Start-up Procedures	14 - 15
Autoconfiguring the Micro	16 - 25
Instruction Set	47 - 132
Troubleshooting	137 - 144
Crash Codes	143 - 144

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