

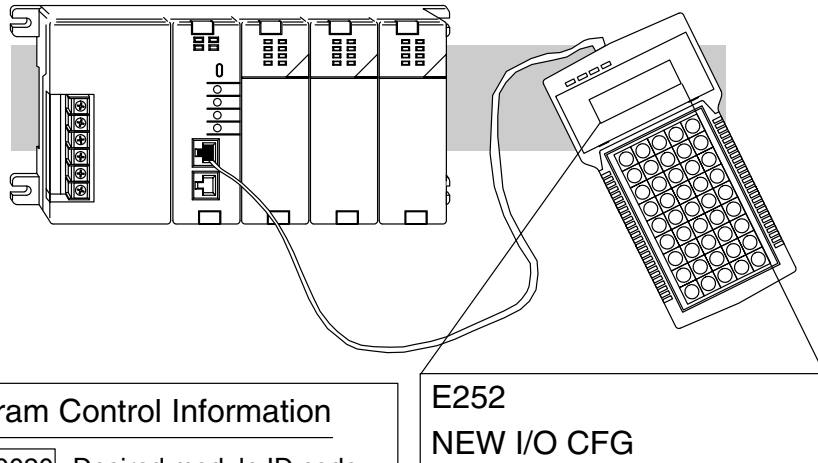
I/O Module Troubleshooting

Things to Check If you suspect an I/O error, there are several things that could be causing the problem.

- A blown fuse
- A loose terminal block
- The 24 VDC supply has failed
- The module has failed
- The I/O configuration check detects a change in the I/O configuration

I/O Diagnostics If the modules are not providing any clues to the problem, run AUX 42 from the handheld programmer or I/O diagnostics in *DirectSOFT32*. Both options will provide the base number, the slot number and the problem with the module. Once the problem is corrected the indicators will reset.

An I/O error will not cause the CPU to switch from the run to program mode, however there are special relays (SPs) available in the CPU which will allow this error to be read in ladder logic. The application program can then take the required action such as entering the program mode or initiating an orderly shutdown. The following figure shows an example of the failure indicators.



Program Control Information

V7752	0020	Desired module ID code
V7753	0021	Current module ID code
V7754	0002	Location of conflict
V7755	0252	Fatal error code
SP47	— —	I/O Configuration Error

E252
NEW I/O CFG

Some Quick Steps When troubleshooting the DL series I/O modules there are a few facts you should be aware of. These facts may assist you in quickly correcting an I/O problem.

- The output modules cannot detect shorted or open output points. If you suspect one or more points on a output module to be faulty, you should measure the voltage drop from the common to the suspect point. Remember when using a Digital Volt Meter, leakage current from an output device such as a triac or a transistor must be considered. A point which is off may appear to be on if no load is connected to the the point.
- The I/O point status indicators on the modules are logic side indicators. This means the LED which indicates the on or off status reflects the status of the point in respect to the CPU. On an output module the status indicators could be operating normally while the actual output device (transistor, triac etc.) could be damaged. With an input module if the indicator LED is on, the input circuitry should be operating properly. To verify proper functionality check to see that the LED goes off when the input signal is removed.
- Leakage current can be a problem when connecting field devices to I/O modules. False input signals can be generated when the leakage current of an output device is great enough to turn on the connected input device. To correct this, install a resistor in parallel with the input or output of the circuit. The value of this resistor will depend on the amount of leakage current and the voltage applied but usually a 10K to 20K Ω resistor will work. Insure the wattage rating of the resistor is correct for your application.
- The easiest method to determine if a module has failed is to replace it if you have a spare. However, if you suspect another device to have caused the failure in the module, that device may cause the same failure in the replacement module as well. As a point of caution, you may want to check devices or power supplies connected to the failed module before replacing it with a spare module.

Testing Output Points

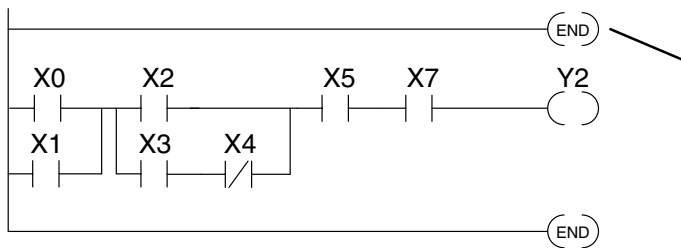
Output points can be set on or off in the DL205 series CPUs. In the DL240 and DL250 you can use AUX 59, Bit Override, to force a point even while the program is running. However, this is not a recommended method to test the output points. If you want to do an I/O check out independent of the application program, for either the DL230, DL240, DL250-1 or DL260 follow the procedure below:

Step	Action
1	Use a handheld programmer or <i>DirectSOFT32</i> to communicate online to the PLC.
2	Change to Program Mode.
3	Go to address 0.
4	Insert an "END" statement at address 0. (This will cause program execution to occur only at address 0 and prevent the application program from turning the I/O points on or off).
5	Change to Run Mode.
6	Use the programming device to set (turn) on or off the points you wish to test.
7	When you finish testing I/O points delete the "END" statement at address 0.



WARNING: Depending on your application, forcing I/O points may cause unpredictable machine operation that can result in a risk of personal injury or equipment damage. Make sure you have taken all appropriate safety precautions prior to testing any I/O points.

Handheld Programmer Keystrokes Used to Test an Output Point



Insert an END statement at the beginning of the program. This disables the remainder of the program.

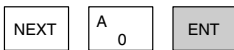
From a clear display, use the following keystrokes



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16P STATUS
BIT REF X
  
```

Use the PREV or NEXT keys to select the Y data type



```

Y 10 Y 0
□□□□□□□□□□□□□□□□
  
```

Use arrow keys to select point, then use ON and OFF to change the status



Y2 is now on

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Y 10 Y 0
□□□□□□□□□□□□■□□□
  
```