Quick Reference for I/O-modules 0980 ESL 710 and 0980 ESL 711

This quick reference shall help to put the LioN-M I/O-modules 0980 ESL 710 and 0980 ESL 711 with Ethernet/IP interface into operation. It explains the basic settings to communicate with these new modules. This document is not intended to be a detailed operation manual.

1.　　EDS-file

For the configuration of the I/O-modules in a control system an EDS-file is required.
The names of the files are as follows:

Lion-M_EDS_0980ESL710_Rev_Vx_y.eds
Lion-M_EDS_0980ESL711_Rev_Vx_y.eds,

in which "x" expresses the Major Revision of the device and "y" the Minor Revision.

After installing the EDS-files with the help of the hardware or network configuration tools of the specific PLC manufacturers it should be available in the hardware catalogues as "General Purpose Discrete I/O" devices.

2.　　Setting the network parameters (IP-settings)

The three rotary switches are used to adjust the operation mode for receiving the network parameters (IP-settings). During a power-on reset the switch settings are read in. The selected operation mode overwrites the stored settings.

The device supports the DHCP (Dynamic Host Configuration Protocol) and BOOTP (Bootstrap Protocol) protocols for receiving the necessary network parameters like IP-address and Subnet mask.

2.1.　　Default manufacturer settings of the network parameters

IP-address:　　　　192.168.001.001 (see information below)
Subnet-mask:　　　255.255.255.000
Gateway address:　000.000.000.000

As of firmware version 1.1.3.0 and higher, the default IP-address has been changed from 192.168.100.001 to 192.168.001.001.

2.2.　　Rotary switch setting 000 (delivery state)

In the delivery state the DHCP and BOOTP functionality is activated. The network parameters are requested by DHCP requests first and, if this is not successful, by BOOTP requests. The network parameters are not stored but storing is possible by using the integrated web server.

2.3.　　Rotary switch setting 000 (network parameters have been stored before)

The last stored network parameters are used (IP-address, Subnet-mask, Gateway-Address, DHCP on/off, BOOTP on/off).

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2.4. Rotary switch setting 001 to 254

The last octet of the stored or pre-adjusted IP-address is overwritten by the setting of the rotary switches.

2.5. Rotary switch setting 255 to 998 (exception: 888)

The network parameters are requested by DHCP and BOOTP without storing.

2.6. Rotary switch setting 888

The device performs a factory reset. The network parameters are restored to the factory settings. In this mode, no network communication is possible.
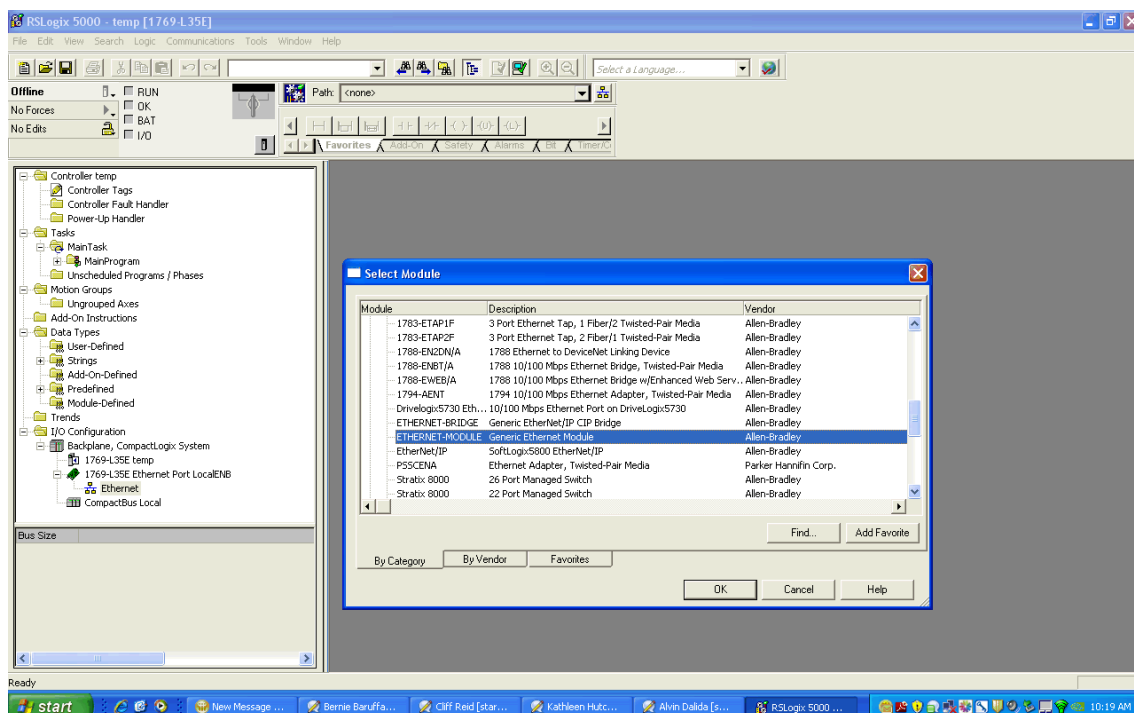
2.7. Rotary switch setting 999

The default manufacturer IP-address 192.168.001.001 is used. See information on the page before.

3. PLC configuration

The configuration and commissioning of the EtherNet/IP I/O-modules as described on the following pages was accomplished with the help of the *RSLogix 5000*-software of *Rockwell Automation*. In case of using a control system from another controller supplier please attend to the associated documentation.

1. Create a "Generic Ethernet Module" under the Ethernet section in the *I/O Configuration* tree.

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2. Edit the settings of the new *Generic Ethernet Module*. As shown in the screen shot below, the module was named "lumberg_automation_eip" and the default IP-address of 192.168.100.XXX was used so that the rotary switches can set the last octet of the IP-address.

Comm Format
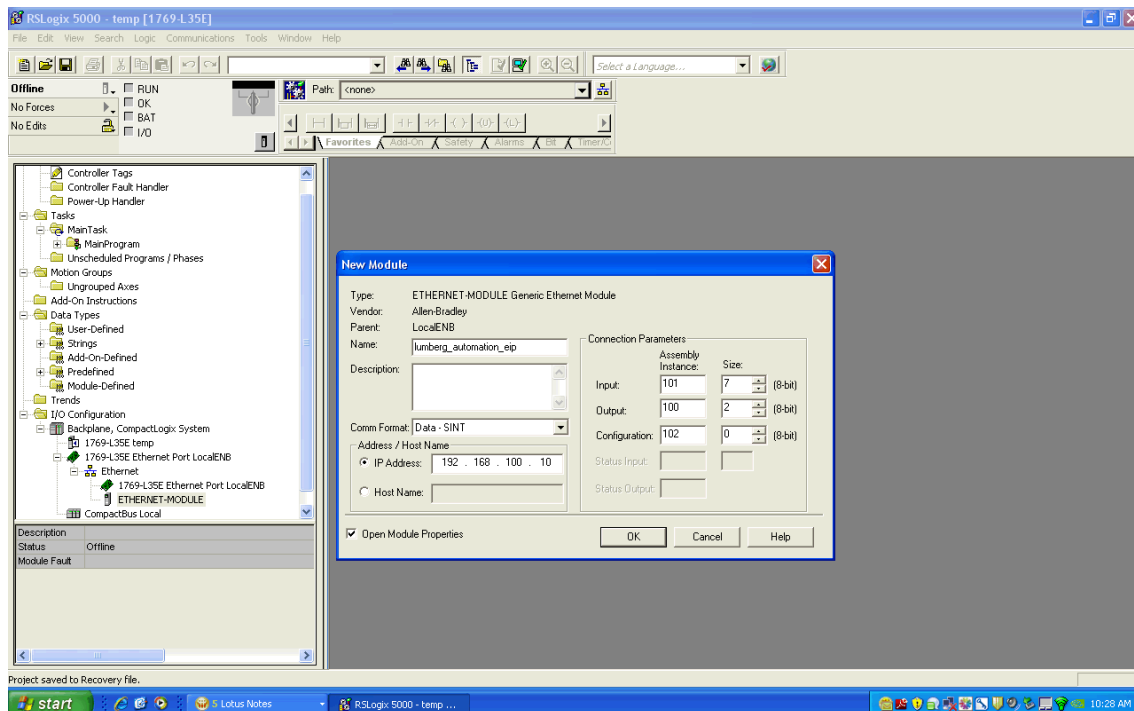The I/O-module 0980 ESL 710 requires the data type *Data – SINT* for the *Comm Format*.
The data type *Input Data – SINT* is necessary for the I/O-module 0980 ESL 711 to built up an Input Only connection with the module.
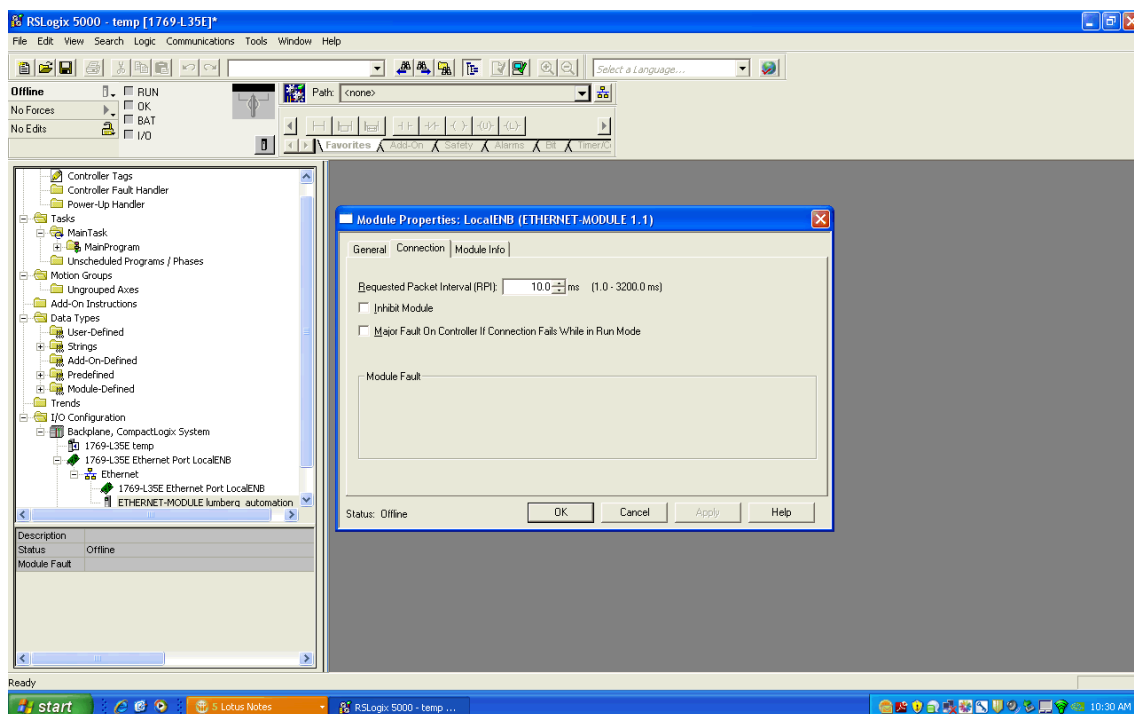
Assembly instance IDs
The I/O-module 0980 ESL 710 uses minimum two bytes and maximum seven bytes for input Assembly Instance 101 and two bytes for output Assembly Instance 100.

The second I/O-module 0980 ESL 711 uses minimum two bytes and maximum seven bytes for input Assembly Instance 101. Although the I/O-module 0980 ESL 711 does not have physical outputs a value of 193 shall be selected for the output Assembly instance. The value 193 is necessary to build up an Input Only communication path. As the *Comm Format* was set to *Input Data-SINT* it is not possible to enter a length for the output Assembly instance.

RSLogix 5000 requires a configuration assembly instance. Both modules do not provide a configuration assembly instance. Therefore it is allowed to select an instance of 102 and to set the value to zero.
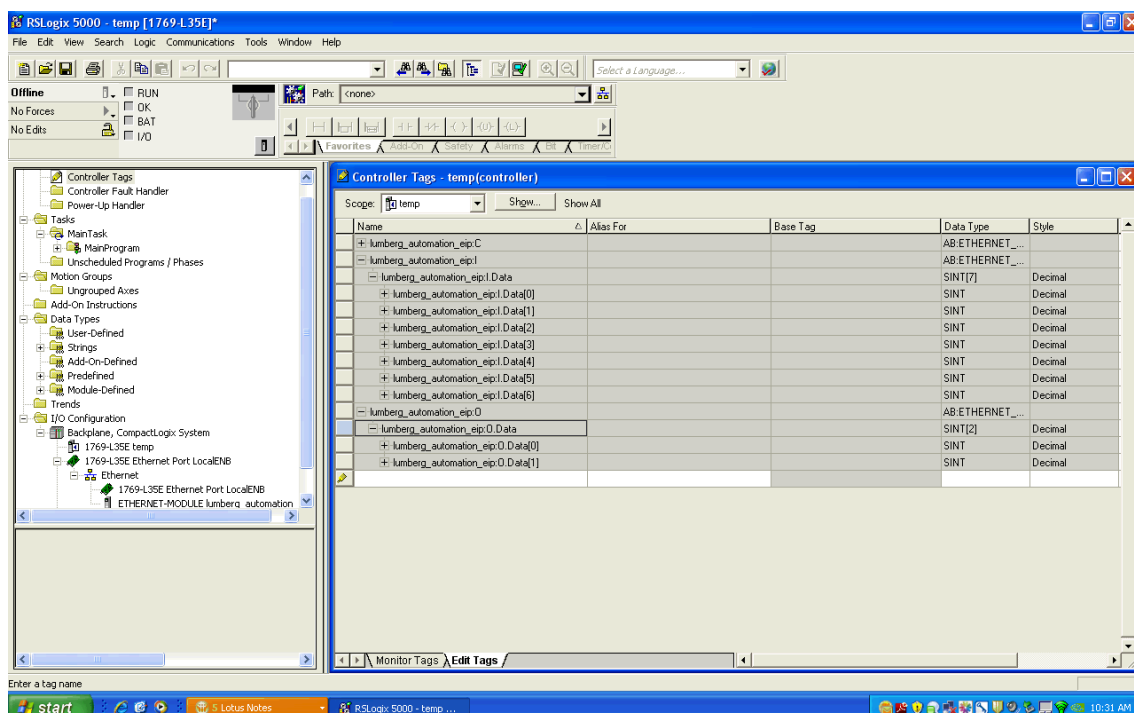

3. The setting of 10msec for the *Requested Packet Interval (RPI)* is adequate but it is possible to change this value as required. A lower value as 5ms shall not be selected.

4. After the configuration is completed the controller tags are created. The first 2 bytes of the input controller tags are the process data (channel status) of the 16 inputs, and the remaining 5 input bytes contain diagnostic information. This number of bytes is the same for both I/O-modules 0980 ESL 700 and 0980 ESL 701. Additionally, the module 0980 ESL 700 provides 2 bytes of output controller tags that include the process data of the 16 outputs. Reference the bit assignment information listed in this document in the next chapter.

It is possible to use any combination of the input or output bytes for a total of 16bits (2bytes). The mixing of inputs and outputs on the same I/O-port of the module is permitted (8 I/O-ports, 2 signals per port).

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4. Bit assignment

Please note that the amount of provider data (input data bytes) may vary depending on the selection whether diagnostic data should be transmitted or not. The diagnostic data is added as additional bytes to the standard process input data.

4.1. Provider (input) data

4.1.1. Channel status (always provided)

INPUT	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

4.1.2. Module related diagnostic (always provided with diagnostic selected)

INPUT	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 2	0	0	BW	0	SCA	SCS	LVA	LVS

4.1.3. Channel related diagnostic (only 0980 ESL 700 with diagnostic selected)

INPUT	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 3	LVS-4B	LVS-4A	LVS-3B	LVS-3A	LVS-2B	LVS-2A	LVS-1B	LVS-1A
Byte 4	LVS-8B	LVS-8A	LVS-7B	LVS-7A	LVS-6B	LVS-6A	LVS-5B	LVS-5A
Byte 5	LVA-4B	LVA-4A	LVA-3B	LVA-3A	LVA-2B	LVA-2A	LVA–1B	LVA-1A
Byte 6	LVA-8B	LVA-8A	LVA-7B	LVA-7A	LVA-6B	LVA-6A	LVA-5B	LVA-5A

Legend:
1A...8A:	Input status of channel A (contact pin 4) on ports 1 to 8
1B...8B:	Input status of channel B (contact pin 2) on ports 1 to 8
LVS:	Low voltage on sensor channel
LVA:	Low voltage on actuator channel
SCS:	Short circuit on sensor channel
SCA:	Short circuit on actuator channel
BW:	Broken wire detection

4.2. Consumer (output) data

OUTPUT	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Byte 0	4B	4A	3B	3A	2B	2A	1B	1A
Byte 1	8B	8A	7B	7A	6B	6A	5B	5A

Legend:
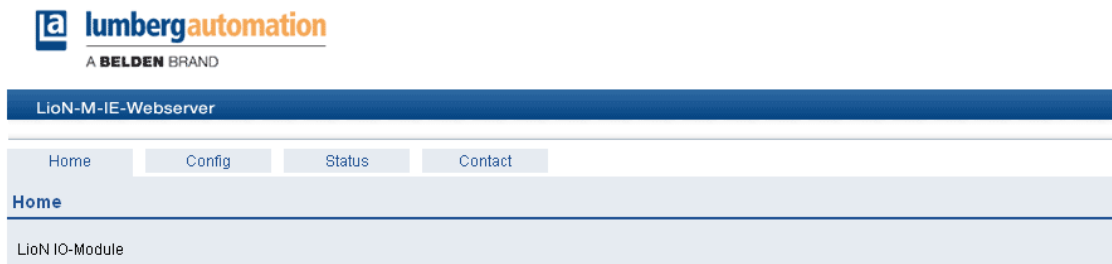| 1A...8A:	Output status of channel A (contact pin 4) on ports 1 to 8
1B...8B:	Output status of channel B (contact pin 2) on ports 1 to 8

5. The integrated Web-server

Both I/O-modules have an integrated web server for configuration, monitoring and diagnostic.

5.1. The *Home* site
The *Home* site can be reached through a web browser by selecting the address:

http://[IP-address]/home.htm.

The placeholder [IP-Address] should be replaced by the actual IP-address of the I/O-module.

5.2. The *Config* site

The *Config* site can be reached through a web browser by selecting the address:

http://[IP-address]/config.htm.

The following values and parameters can be read and changed through this site:

o Network parameters (IP settings)
  ▪ IP-address, read- and writeable
  ▪ Subnet mask, read- and writeable
  ▪ Gateway address, read- and writeable

o Additional network parameters
  ▪ BOOTP, read- and writeable
  ▪ DHCP, read- and writeable

o Device status
  ▪ Restore Factory Settings, only writeable

By pressing the button Submit the new parameter settings are transmitted to the I/O-module.
The new settings are adopted by the I/O-module only after a power-on reset.

5.3. The *Status* site

The *Status* site can be reached through a web browser by selecting the address:

http://[IP-address]/status.htm.

The following values and parameters can be read through this site (all read-only).

o Content of the Assembly Instances (Input, Output, Diagnostic)
o LAN-port status
  ▪ Duplex Mode (full duplex, half duplex)
  ▪ Speed (10 MBit, 100 MBit)
o Network parameter
  ▪ MAC address
o Size and direction of the Assembly Instances

- EtherNet/IP status
    - Standby, Operational
- Device status
    - Operating time
    - System information
    - Number of I/O-system restarts
- Firmware version and date
- Device information
- Revision
    - Part number
    - Serial number
    - Year and week of production

5.4. The *Contact* site

The *Contact* site can be reached through a web browser by selecting the address:

http://[IP-address]/contact.htm.

This site gives information about our contact data.