

Your Global Automation Partner



BLCEN EtherNet/IP™

Configuration Guide

Version: 2.7.1

555T00006 11/2/2016

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About this Guide

Following document is about configuration of the EtherNet/IP version of the BLCEN product family on AB ControlLogix and CompactLogix PLCs. The document applies to all BLCEN devices with the composite firmware revision 3.3.2.0. This revision supports device web server pages for the IO setup and monitoring.

The document is utilizing features of BLCEN-8M12LT-4AI-VI-8XSG-P station to configure device using TURCK_BLOCK_STATIONS catalog file(s).

BLCEN Stations

Introduction

The BLCEN series are multiprotocol communication adapters which support multiple Ethernet standards: Modbus TCP/IP, EtherNet/IP and PROFINET. The factory default, “out of the box” setting, is that all Ethernet protocols are enabled. After power up, a multiprotocol station is listening on all necessary ports to detect on which kind of network it is used. The “Active Fieldbus Protocol” is defined as the first protocol to do one of the following actions:

- Modbus TCP - Write to output register range.
- EtherNet/IP - Establish Class 1 Exclusive Owner connection to device.
- PROFINET RT - Connect request.

This “Configuration Guide” describes features and configuration procedure of the BLCEN series, using for example configuration of BLCEN-8M12LT-4AI-VI-8XSG-P in the EtherNet/IP network.

BLCEN Common Features

The BLCEN common features are:

- Support 3 protocols: EtherNet/IP, Modbus TCP/IP, PROFINET
- ACD (Address Conflict Detection)
- DLR (Device Level Ring)
- QC (QuickConnect)
- Two D-coded Ethernet ports ETH1 and ETH2. and embedded multiport switch
- Two M12 24VDC power connectors, pass-through
- Two rotary address switches
- Advanced Web server
- Device configuration using CIP Bridging and device “Catalog” file
- 1 or 2 slot housing accommodates up to two IO modules
- Cost effective, flexible design, allows different combination of discrete, analog or technology modules

BLCEN Product Design

The BLCEN series is designed to accommodate up to two IO modules utilizing two different housing styles. The IO modules originate from BL67 product family¹ thus providing standardization of IO modules across different applications. Two style IO connectors, M8 or M12, provide connection for a single or dual IO signals. Detailed device information is provided by the device data sheet.

¹ BL67 User Manual – I/O Modules, D300529 2009

Part Number Scheme

BLCEN-8M12LT-4AI-VI-8XSG-P

Connector Type (8M12)		
Number	Amount	Description
8M8	8	M8 thread
16M8	16	M8 thread
1M12	1	M12 thread
2M12	2	M12 thread
3M12	3	M12 thread
4M12	4	M12 thread
5M12	5	M12 thread
6M12	6	M12 thread
8M12	8	M12 thread

Housing style (L)	
Initial	Description
S	Small
M	Medium
L	Large

Power feed (T)	
Initial	Description
T	AUX power
H	High Current Aux power

Slot 1 module		
Discrete	Analog	Technology
4DI-P(D)	2AI - I	1CNT-ENC
4DI-N	2AI - V	1RS232
8DI-N	2AI - PT	1RS485-422
8DI-P(D)	2AI - TC	1SSI
8XSG-P(D)	2AO - I	2RFID-S
4DO-0.5A-P	2AO - V	
4DO-2A-P	4AI - VI	
4DO-2A-N	4AI - TC	
4DI4DO-PD	2AI2AO - VI	
8DO-0.5A-P	4AI4AO - VI	
8DO-0.5A-N	4AO - V	
8DO-R-NO		

Slot 2 module		
Discrete	Analog	Technology
4DI-P(D)	2AI - I	2RFID-S
4DI-N	2AI - V	
8DI-N	2AI - PT	
8DI-P(D)	2AI - TC	
8XSG-P(D)	2AO - I	
4DO-0.5A-P	2AO - V	
4DO-2A-P	4AI - VI	
4DO-2A-N	4AI - TC	
4DI4DO-PD	2AI2AO - VI	
8DO-0.5A-P	4AI4AO - VI	
8DO-0.5A-N	4AO - V	
8DO-R-NO		

Data sheet

BLCEN data sheet is available at TURCK web site: <http://www.turck.us> :

Enter the device P/N into search box to get product information and configuration files:

The screenshot shows the TURCK website interface. At the top, there's a navigation bar with links to TURCK.COM, TURCK CONNECT, a phone number, a Rep Locator, a search bar containing 'BLCEN-', and the TURCK logo. Below this is a secondary navigation bar with links to INDUSTRIES & SOLUTIONS, PRODUCTS, NEWS, SUPPORT, and COMPANY. The main content area is titled 'Product BLCEN-8M12LT-4AI-VI-8XSG-P'. It features a sidebar on the left with categories like SENSORS, IDENTIFICATION, CONNECTIVITY, and FIELDBUS TECHNOLOGY. The main content area includes a product image, a description of the BL compact™ multiprotocol fieldbus station, and a table of download links for various files like Data Sheet, Catalog, and Customer CAD File.

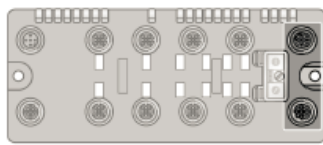


BLCEN-8M12LT-4AI-VI-8XSG-P

- Compact fieldbus I/O module in IP69K
- EtherNet/IP™, Modbus® TCP, or PROFINET® slave
- Integrated Ethernet Switch
- 10 Mbps / 100 Mbps supported
- Two 4-pole M12, D-coded, connectors for fieldbus connection
- 2 rotary switches for node address
- IP69K
- M12 I/O connectors
- LEDs indicating status and diagnostics
- Electronics galvanically separated from the field level via optocouplers
- 8 Configurable digital PNP channels, 24 VDC
- Max. 0.5A per channel
- Selection of filtering times (Input delay)
- Invertible inputs
- 4 analog inputs for current or voltage
- 0/4...20 mA or -10/0...+10 VDC (selectable per channel)

Connection Diagrams

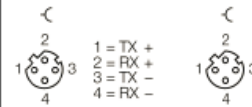
Ethernet connectors:



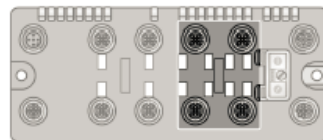
Ethernet

Fieldbus cable (example): RSSD RSSD 441-2M ident-no. U-02482
or RSSD-RSSD-441-2M/S2174 ident-no. 6914218

Pin Assignment (M12, D-code)



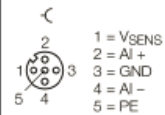
IO connectors - slot 1:



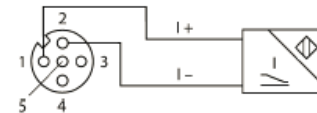
Slot 1: Analog Inputs

Extension cable (example): RK 4.5T-2-RS 4.5T/S653 ident-no.
U2187-09 or RKC4.5T-2-RSC4.5T/TEL ident-no. 6625212

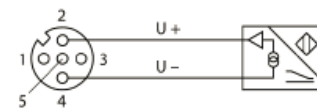
Pin Assignment



2-wire Technology (Current)



2-wire Technology (Voltage)



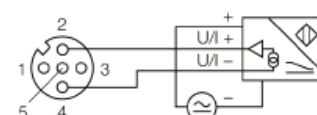
3-wire Technology



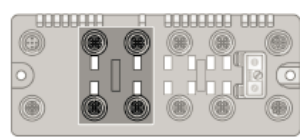
4-wire Technology



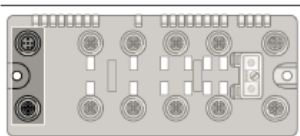
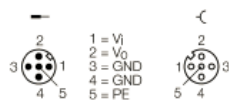
4-wire Technology (External Power)



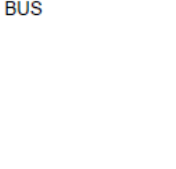
IO connectors - slot 2:

	Slot 2: Digital Inputs and Outputs Extension cable (example): RK 4.4T-2-RS 4.4T ident-no. U2445 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208	Pin Assignment  1 = V_{SENS} 2 = Signal B 3 = GND 4 = Signal A 5 = PE
---	---	---

AUX power connectors:

	Auxiliary Power Supply Extension cable (example): RKC 4.4T-2-RSC 4.4T ident-no. U5264 or RKC4.4T-2-RSC4.4T/TEL ident-no. 6625208	Pin Assignment  1 = V_I 2 = V_O 3 = GND 4 = GND 5 = PE
---	---	--

LED Diagnostics

Station LED status			
LED	Color	Status	Description
		OFF	No power
	RED	ON	Low power or station error
	RED	FLASHING (1 Hz)	I/O module configuration error
	RED	FLASHING (4 Hz)	No I/O module bus communication
	GREEN	ON	Station ok
	GREEN	FLASHING	Force mode active
		OFF	Power Off
	GREEN	ON	Connected to Master
	GREEN	FLASHING	Ready
	RED	ON	Error
	RED	FLASHING	WINK
	YELLOW	ON	DHCP/BOOTP Search
		OFF	No Link
	GREEN	ON	Link
	GREEN	FLASHING	Traffic
	YELLOW	ON	100 Mbit Linked

I/O LED status slot 1			
LED	Color	Status	Description
		OFF	No diagnostics active
	RED	ON	Station error/ module bus communication failure
	RED	FLASHING (0.5Hz)	Any diagnostics active
		OFF	Not active
	GREEN	ON	Active
	GREEN	FLASHING (0.5 Hz)	Underflow in measuring range
	GREEN	FLASHING (4 Hz)	Overflow in measuring range
* D1 LED also reports gateway diagnostics			
I/O LED status slot 2			
LED	Color	Status	Description
		OFF	No diagnostics active
	RED	ON	Station error/ module bus communication failure
	RED	FLASHING (0.5Hz)	Any diagnostics active
		OFF	Channel status x = "0" (OFF), no diagnostics active
	GREEN	ON	Channel status x = "1" (ON)
	RED	ON	Short-circuit at output
* D2 LED also reports gateway diagnostics			

IO Data Structure

Refer to the station data sheet for information on exact IO data map.

BLCEN-8M12LT-4AI-VI-8XSG-P IO data map

Input data map contains input and diagnostic data as follows:

INPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
AI 1 ₀	0	AI 1 ₀ LSB							
	1	AI 1 ₀ MSB							
AI 1 ₁	2	AI 1 ₁ LSB							
	3	AI 1 ₁ MSB							
AI 1 ₂	4	AI 1 ₂ LSB							
	5	AI 1 ₂ MSB							
AI 1 ₃	6	AI 1 ₃ LSB							
	7	AI 1 ₃ MSB							
	8	DI 2 ₀	DI 2 ₁	DI 2 ₂	DI 2 ₃	DI 2 ₄	DI 2 ₅	DI 2 ₆	DI 2 ₇
	9	-	-	-	-	-	-	-	-
Diagnostics	10	Module number reporting diagnostic data							
	11	Replace Station	-	Diagnostics Active	-	-	-	-	-
Slot 1 (ref. Byte 10)	12	-	-	-	-	-	-	Open Circuit AI 1 ₀	Range Error AI 1 ₀
	13	-	-	-	-	-	-	Open Circuit AI 1 ₁	Range Error AI 1 ₁
	14	-	-	-	-	-	-	Open Circuit AI 1 ₂	Range Error AI 1 ₂
	15	-	-	-	-	-	-	Open Circuit AI 1 ₃	Range Error AI 1 ₃
OUTPUT	BYTE	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
	0	DO 2 ₀	DO 2 ₁	DO 2 ₂	DO 2 ₃	DO 2 ₄	DO 2 ₅	DO 2 ₆	DO 2 ₇
	1	-	-	-	-	-	-	-	-

Abbreviations:

- AI 1x Slot 1, analog input “x”, x=[0,1,2,3]
- LSB least significant byte
- MSB most significant byte
- DI 2y Slot 2, discrete input “y”, y=[0,1,...,7]
- Module number reporting diagnostic data = [1, 2]
- Diagnostic active bit, used in combination with module number
- Range error AI 1x Measurement range error, overflow / underflow²
- Open Circuit AI 1x Current measurement < 4mA
- DO 2y Slot 2, discrete output “y”, y=[0,1,...,7]

The device IO data not effectively used (up to 48 words) is populated by 0's.

² D300529 – BL67 User Manual IO Modules

IP Address Setup

The general procedure for IP address setup is:

- Set rotary switches to desired position
- Cycle (reset) power to the station
- Run IP address utility to assign IP address
- Set address switches to rotary mode or PGM mode
- Cycle power to the station

When address switches are in rotary mode, the last octet may be dialed in 1-92 range. Some address positions are reserved for dedicated functions.

Default IP Address

The default IP address, when rotary switches are set to 0:

- IP-address 192.168.1.254
- Subnet mask 255.255.255.0
- Default gateway 192.168.1.1

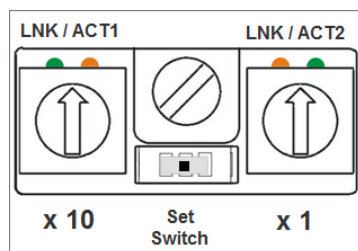
To reset IP address to the default, set address switches to 0 and cycle device power. Upon reset, set rotary switches to one of the modes as described hereafter.

Address Switches

The BLCEN has two rotary switches marked as follows:

- x10 sets the last digit of IP address to a 10's value
- x1 sets the last digit of IP address to a 1's value

Switch position determines either address or device mode of operation as follows:



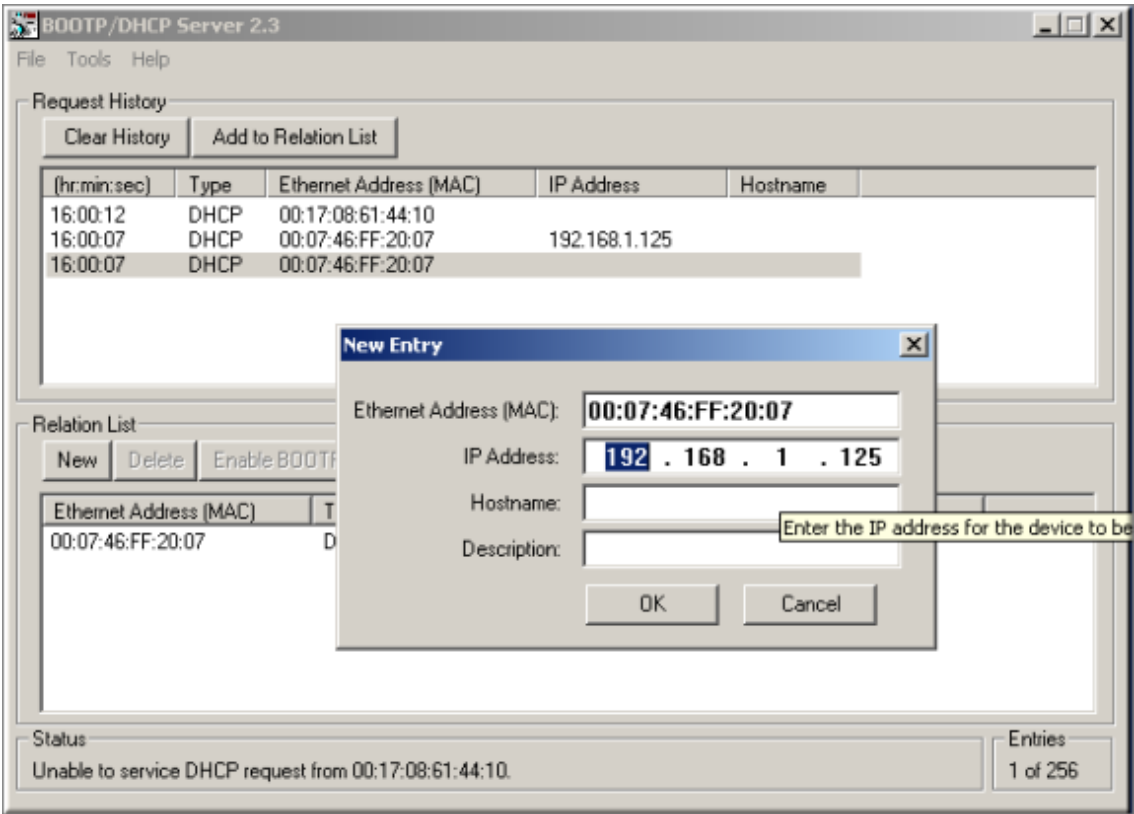
- 0 - 192.168.1.254
- 1- 92 - Rotary mode 1..92
- 93 - BOOTP
- 94 - DHCP
- 95 - PGM
- 96 - PGM-DHCP
- 97- 99 - Vendor specific address

When using the static rotary mode, the last octet of the module's IP address can be set via the rotary coding-switches in 1...92 range. The 100, ..., 254 range is also available when rotary switches are set to PGM mode after assigning address using BOOTP, DHCP, PGM or PGM-DHCP mode. After running either mode, set rotary switches to PGM mode and cycle the power.

The device retains assigned address in the TCP/IP object.

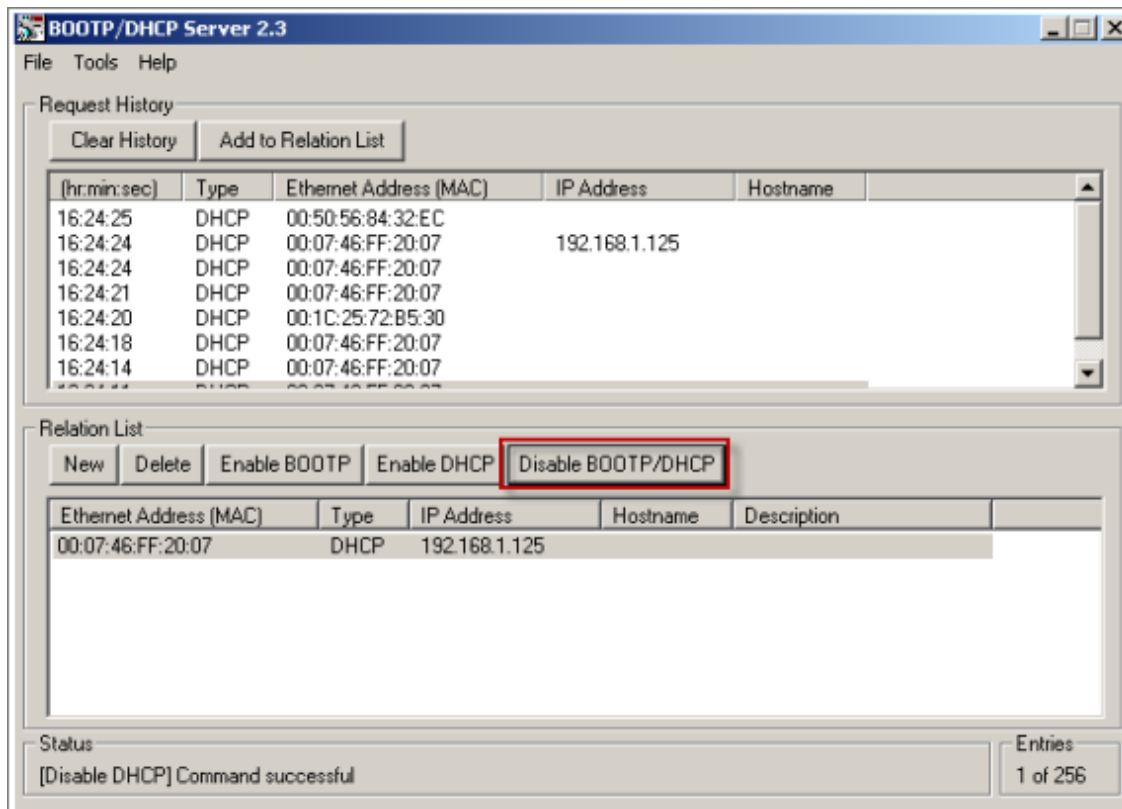
BOOTP/DHCP Mode (93/94)

The device obtains IP address from the BOOTP or DHCP servers when address switches are set to 93 (BOOTP) or 94 (DHCP) position. The IP address, as well as the subnet mask assigned to the station, is stored in the device's EEPROM. When the station is subsequently switched to rotary or PGM mode and its power reset, the IP address is read from the EEPROM.



PGM-DHCP Mode (96)

When the rotary switches are set to 96 it enables PGM–DHCP mode of operation. This mode is the out-of-the-box mode and provides the customer with powerful and convenient IP address setup. Procedure is the identical to DHCP mode. When finished, **click on “Disable BOOTP/DHCP” button**. Leave address switches in 96 position and cycle power. The IP address is read from the EEPROM memory.



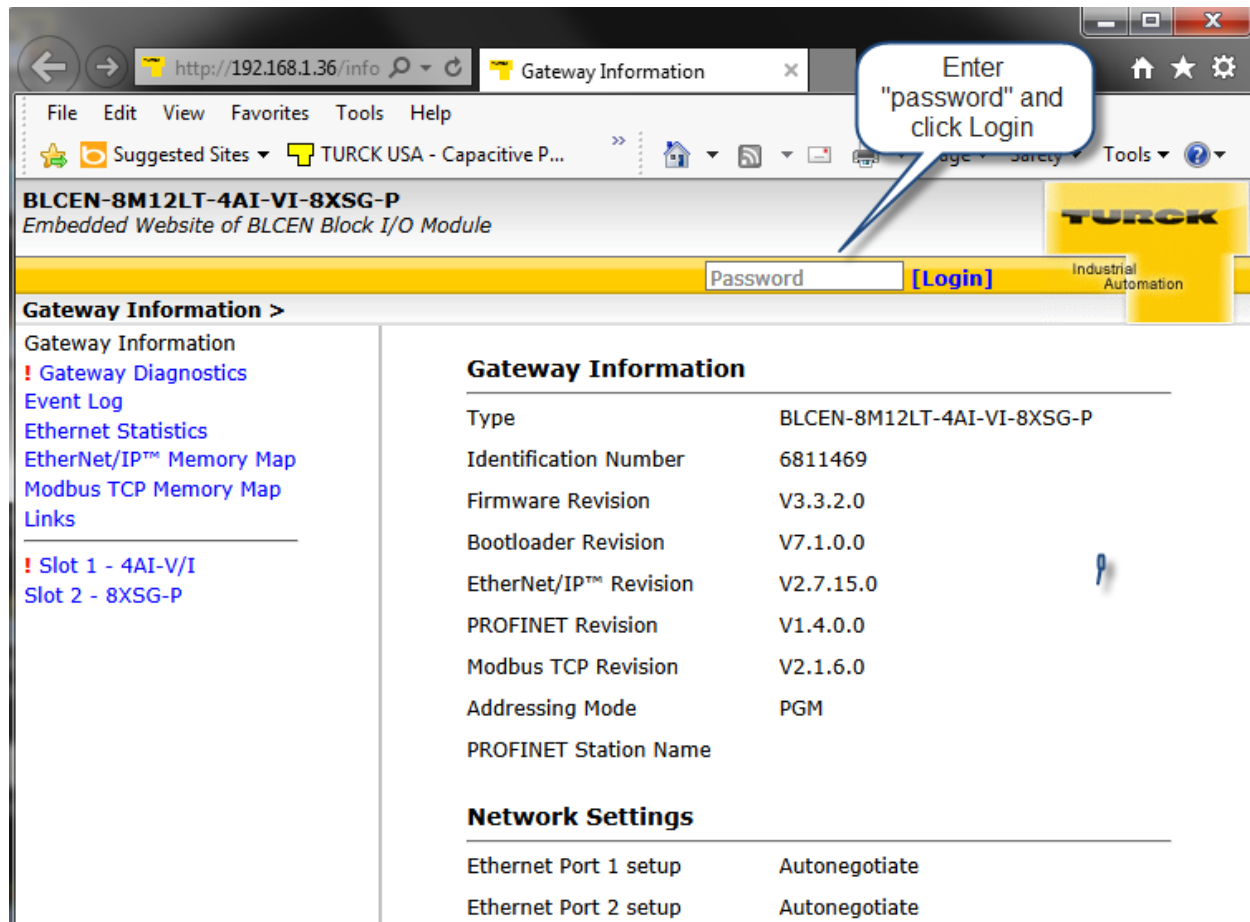
PGM Mode (95)

When the rotary switches are set to 95 (PGM mode), the device will use either the factory default IP address on the first power-up or maintain current IP address whatever it is. While in the PGM mode, the device IP address may be changed, with software tools like:

- Device WEB server
- TURCK IP address tool
- IOAssistant configuration tool

PGM (95) and Web Server

- Set address switches to 95 and power-up device
- Enter current IP address of the device into a Web browser (e.g. 192.168.1.36)
- Sign-in as administrator; enter **"password"** into "Password" field and press Login. It will enable read/write access to the device various parameters



The left-hand portion of the main page provides access to different device information, a few to mention:

- Note that the composite firmware revision, which includes all device components, is 3.3.2.0
- EtherNet/IP firmware revision is 2.7.15.0
- "Addressing mode" indicates position of the address switches

The web server main page, when signed-in as the administrator, has additional entries like “Gateway Configuration and Network Configuration” pages:

The screenshot shows a web browser window with the address bar displaying `http://192.168.1.36/info`. The page title is "Gateway Information". The browser's address bar shows the URL `http://192.168.1.36/info`. The page header includes the TURCK logo and the text "Industrial Automation". The main content area is titled "Gateway Information" and contains a table of system details. A sidebar on the left lists various navigation options.

Gateway Information

Type	BLCEN-8M12LT-4AI-VI-8XSG-P
Identification Number	6811469
Firmware Revision	V3.3.2.0
Bootloader Revision	V7.1.0.0
EtherNet/IP™ Revision	V2.7.15.0
PROFINET Revision	V1.4.0.0
Modbus TCP Revision	V2.1.6.0
Addressing Mode	PGM
PROFINET Station Name	

Network Settings

Left Sidebar Navigation:

- Gateway Information >
- Gateway Information
- ! Gateway Diagnostics
- Event Log
- Ethernet Statistics
- EtherNet/IP™ Memory Map
- Modbus TCP Memory Map
- Links
- Gateway Configuration
- Network Configuration
- Change Admin Password
- ! Slot 1 - 4AI-V/I
 - Parameters
 - Inputs
- Slot 2 - 8XSG-P
 - Parameters
 - Inputs
 - Outputs

The “network configuration” page provides administrator’s access to Ethernet address setup:

- Select “Network Configuration” at the left column
- Enter new IP address e.g. 192.168.1.136 and press **“Submit”**
- Leave rotary switches in 95 position

Network Configuration

admin@192.168.1.48 [Logout]

Network Configuration >

- Gateway Information
- ! Gateway Diagnostics
- Event Log
- Ethernet Statistics
- EtherNet/IP™ Memory Map
- Modbus TCP Memory Map
- Links
- Gateway Configuration
- Network Configuration**
- Change Admin Password

! Slot 1 - 4AI-V/I Parameters Inputs

Slot 2 - 8XSG-P Parameters Inputs Outputs

Network Settings

Ethernet Port 1 setup	Autonegotiate
Ethernet Port 2 setup	Autonegotiate
IP Address	192.168.1.136
Netmask	255.255.255.0
Default Gateway	192.168.1.1
MAC Address	00:07:46:25:4f:8f
LLDP MAC Address 1	00:07:46:25:4f:90
LLDP MAC Address 2	00:07:46:25:4f:91

Submit **Reset**

The device immediately comes up with the new IP address:

Network Configuration

admin@192.168.1.48 [Logout]

Network Configuration >

- Gateway Information
- ! Gateway Diagnostics
- Event Log
- Ethernet Statistics
- EtherNet/IP™ Memory Map
- Modbus TCP Memory Map
- Links
- Gateway Configuration
- Network Configuration**
- Change Admin Password

! Slot 1 - 4AI-V/I Parameters Inputs

Slot 2 - 8XSG-P Parameters Inputs Outputs

Network Settings

Ethernet Port 1 setup	Autonegotiate
Ethernet Port 2 setup	Autonegotiate
IP Address	192.168.1.136
Netmask	255.255.255.0
Default Gateway	192.168.1.1
MAC Address	00:07:46:25:4f:8f
LLDP MAC Address 1	00:07:46:25:4f:90
LLDP MAC Address 2	00:07:46:25:4f:91

Submit **Reset**

PGM (95) and TURCK IP address tool

TURCK IP address tool is used to search devices on the Ethernet network, identify devices using “Wink” command, change Ethernet address and reset device.

- Start the IP address tool and press search
- BLCEN is discovered at IP 192.168.1.136 (mode is PGM)

Turck IP Address Tool, Vers. 2.0.0.0

No.	MAC address	Device name	IP address	Netmask	Gateway	Mode	Device type	Version	Adapter
1	00:07:46:25:4F:8F		192.168.1.136	255.255.255.0	192.168.1.1	PGM	BLCEN-8M12LT-4AI-VI-8XSG-P	3.3.2.0	192.168.1.48
2	00:21:CC:5C:7F:11	bbegicwin7	172.26.2.32	255.255.248.0	172.26.0.1		SIMATIC-PC		172.26.2.32
3	C0:C1:C0:88:44:45	bbegicwin7	0.0.0.0	0.0.0.0	0.0.0.0		SIMATIC-PC		192.168.1.48

Found 3 Devices.

- Highlight device, press “Change”, enter new IP address and press “Write to device”

Turck IP Address Tool, Vers. 2.0.0.0

Change device IP configuration

IP configuration

MAC address: 00:07:46:25:4F:8F

IP address: 192.168.1.16

Netmask: 255.255.255.0

Gateway: 192.168.1.1

☐ Set IP configuration temporarily

Write to device Cancel

- Device comes up immediately with the new IP address:

Turck IP Address Tool, Vers. 2.0.0.0

No.	MAC address	Device name	IP address	Netmask	Gateway	Mode	Device type	Version	Adapter
1	00:07:46:25:4F:8F		192.168.1.16	255.255.255.0	192.168.1.1	PGM	BLCEN-8M12LT-4AI-VI-8XSG-P	3.3.2.0	192.168.1.48
2	00:21:CC:5C:7F:11	bbegicwin7	172.26.2.32	255.255.248.0	172.26.0.1		SIMATIC-PC		172.26.2.32
3	C0:C1:C0:88:44:45	bbegicwin7	0.0.0.0	0.0.0.0	0.0.0.0		SIMATIC-PC		192.168.1.48

RESTORE Mode (0)

The RESTORE mode (0) is a special mode which restores the IP address to the factory default values, but leaves other device parameters as they are. Station responds to PING command, but it does not operate when switches are set to 0.

Set address to 0 and cycle the power to the station to restore following values:

- IP address: 192.168.1.254
- Mask: 255.255.255.0
- Gateway: 192.168.1.1

Set rotary switches to any position as previously described and cycle device power.

RECOVERY Mode (99)

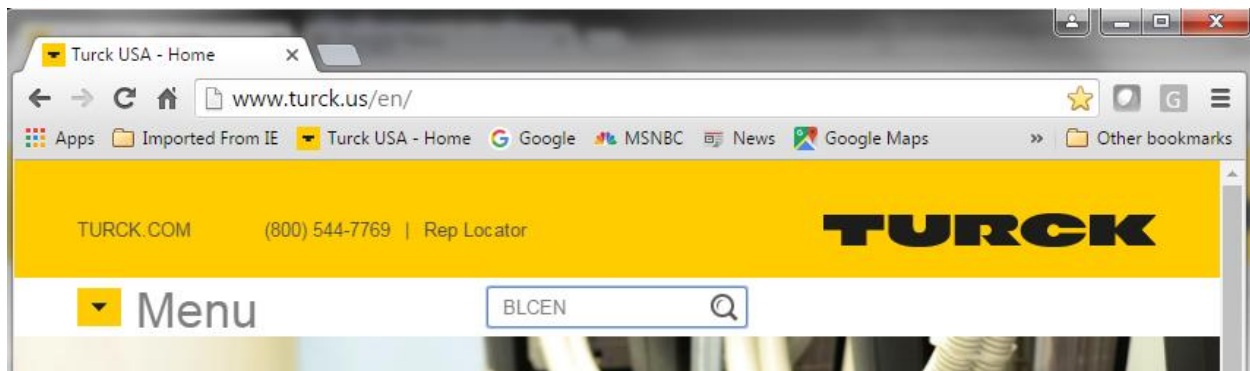
The RECOVERY mode (99) is a special mode which resets all device resources to factory default values. It will clear all previously assigned parameter values to the gateway and IO modules. Set rotary switches to 99 and cycle the power to the station. Wait for a moment, set rotary switches as previously described and cycle device power again.

TURCK_BLOCK_STATIONS Catalog File

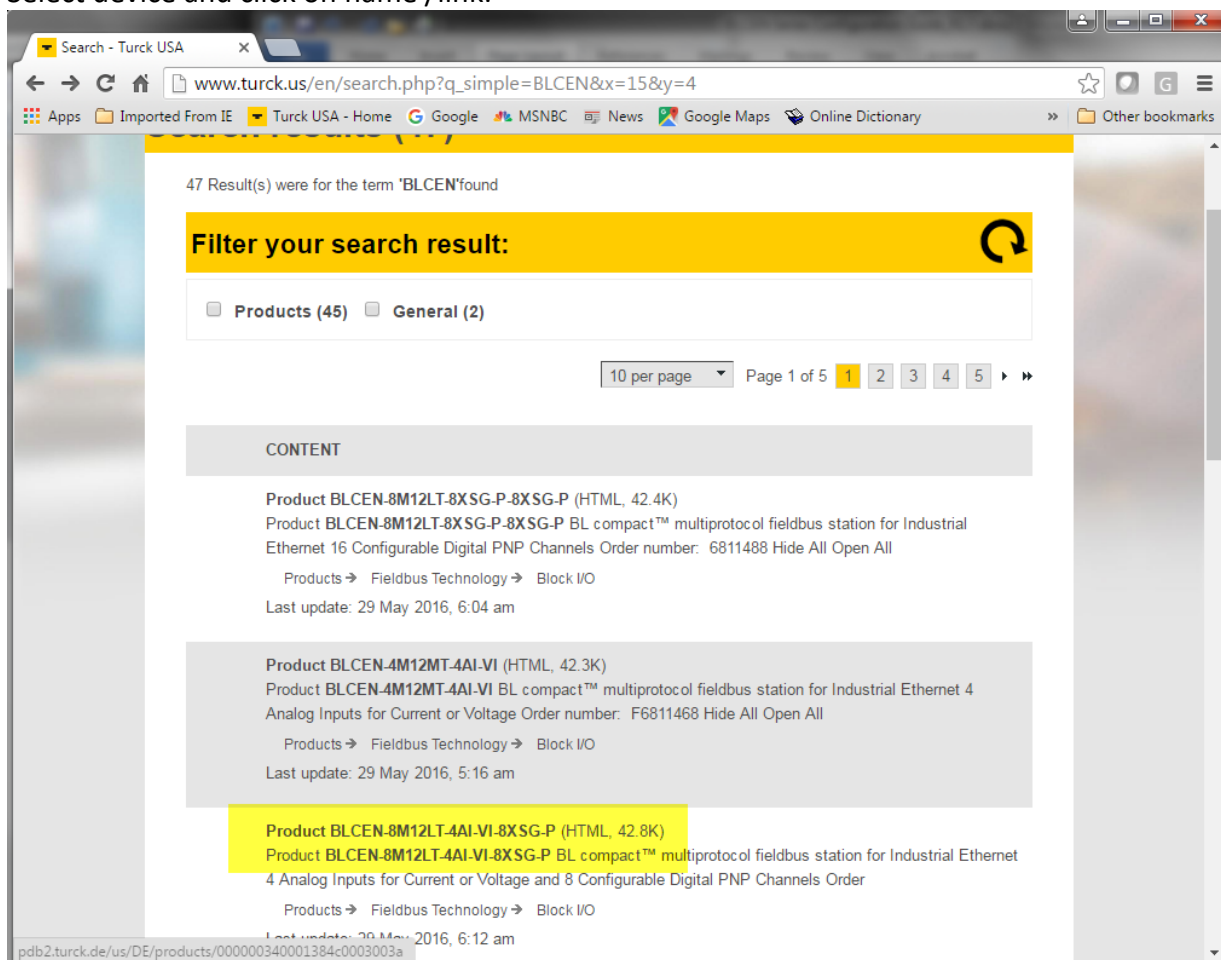
Download Catalog Files

A catalog file is RSLogix5000 project which contains predefined configurations of block IO stations.

Go to TURCK web site and enter “BLCEN” into search area:



Select device and click on name /link:



Download Configuration file / EDS file and unzip it:

The screenshot shows the TURCK website interface. The top navigation bar includes links for INDUSTRIES & SOLUTIONS, PRODUCTS, NEWS, SUPPORT, and COMPANY. The main content area displays the product page for BLCEN-8M12LT-4AI-VI-8XSG-P. On the left, there is a sidebar with a 'PRODUCT SEARCH' section and various category links. The main product description includes a technical drawing of the device and its specifications. Below the description, there is a table of downloadable files.

SPECIFICATIONS		INFO MATERIAL	
Data Sheet (English)		423 KB	Download
Catalog	Networks Catalog	83714 KB	Download
Customer CAD File	2D (DWG)	570 KB	Download
Configuration file	EDS files	1429 KB	Download
Configuration file	GSDML files	111 KB	Download

Save downloaded items; TURCK-CATALOG group contains "TURCK_BLOCK_STATIONS" catalog files.

The screenshot shows a WinZip window with the file 'BLC_ETHERNETIP (1).zip' open. The left sidebar shows the folder structure, with 'TURCK-CATALOG' selected. The main window displays the contents of this folder, which include several files named 'TURCK_BLOCK_STATION...'. The status bar at the bottom indicates that 0 files are selected and the total size of the files is 16,162KB.

Catalog File Distribution

The catalog files are distributed as “L5K” files and they are named as follows:

Name	Size	Date modified	Type
TURCK_BLOCK_STATIONS_V19_FULL.L5K	3,567 KB	5/11/2016 4:47 PM	RSLogix 5000 Import/...
TURCK_BLOCK_STATIONS_V19_LITE.L5K	3,554 KB	5/11/2016 4:47 PM	RSLogix 5000 Import/...
TURCK_BLOCK_STATIONS_V24_FULL.L5K	3,565 KB	5/11/2016 4:48 PM	RSLogix 5000 Import/...
TURCK_BLOCK_STATIONS_V24_LITE.L5K	2,057 KB	5/11/2016 4:48 PM	RSLogix 5000 Import/...
TURCK_BLOCK_STATIONS_V24_LITE_BLCEN.L5K	1,511 KB	5/11/2016 4:48 PM	RSLogix 5000 Import/...

The files are created for users that may have different versions of RSLogix5000 or Studio5000 programming software. For example RSLogix5000 Lite or Mini version operates only CompactLogix PLCs. If you have RSLogix5000 / Studio5000 full edition, you may use any catalog file.

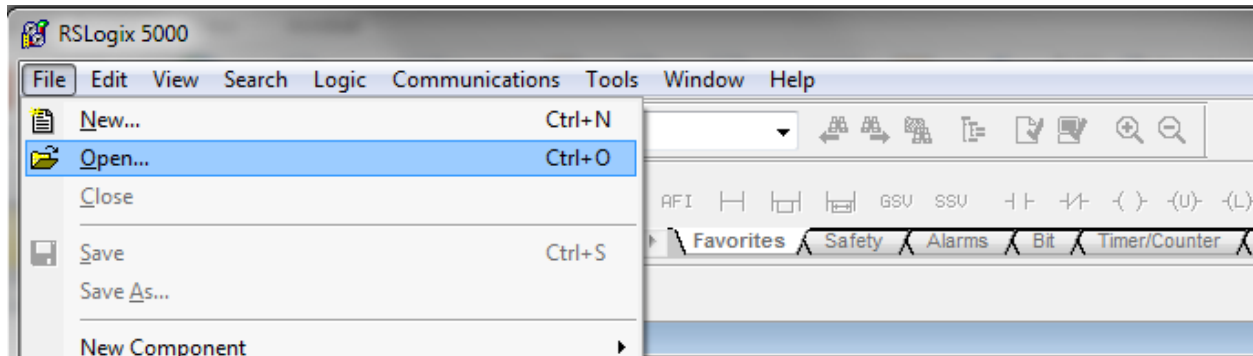
RSLogix5000 Enterprise Edition (revision 19 and 20)		
	Professional, Full, Standard Editions	Lite, Mini and Service Edition
Catalog file name	TURCK_BLOCK_STATIONS_V19_FULL.L5K	TURCK_BLOCK_STATIONS_V19_LITE.L5K
Studio5000 / Logix Designer (revisions 24 and above)		
	Professional, Full, Standard Editions	Lite, Mini and Service Edition
Catalog file name	TURCK_BLOCK_STATIONS_V24_FULL.L5K	TURCK_BLOCK_STATIONS_V24_LITE.L5K
		TURCK_BLOCK_STATIONS_V24_LITE_BLCEN.L5K

The catalog file “TURCK_BLOCK_STATIONS_V19_LITE.ACD” will be used throughout this document. It is based on the following entries:

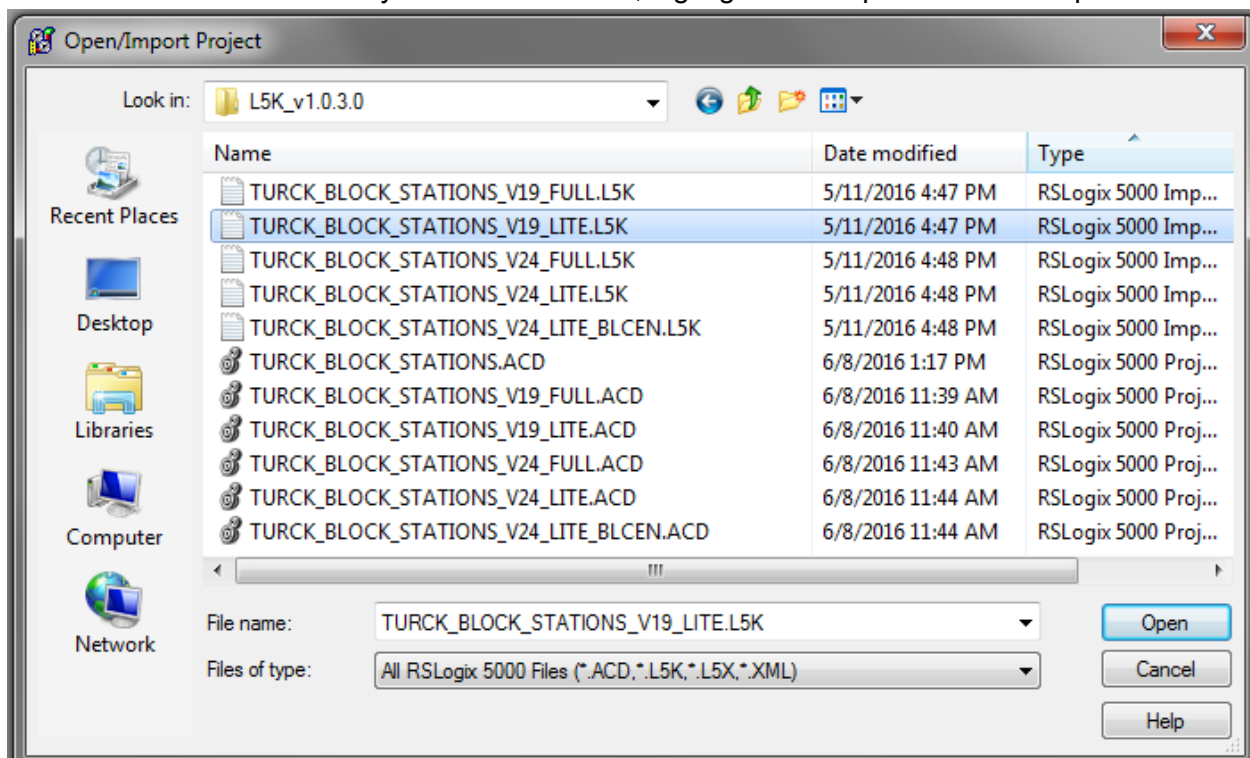
- 1768-L45 CompactLogix 5345 controller
- 1768-ENBT Ethernet bridges
- The BLOCK_IO Ethernet bridge contains configurations of FEN20, TBEN-Lx, TBEN-Sx, FGEM, FXEN
- The BLCEN Ethernet bridge contains configurations of all BLCEN stations

L5K file are imported into project as follows:

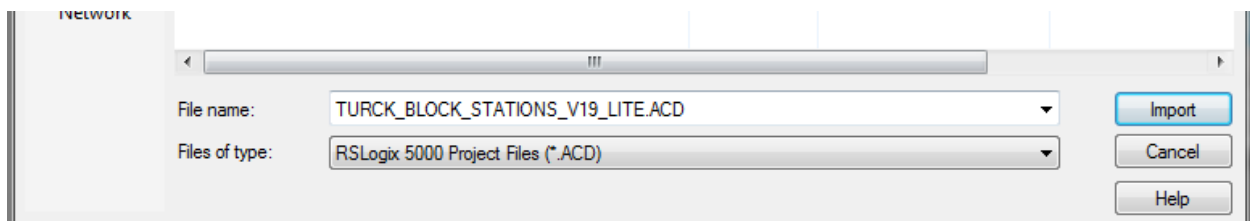
- Start new project and select “Open”



- Go to location where you saved L5K files, highlight file to open and click “Open”:

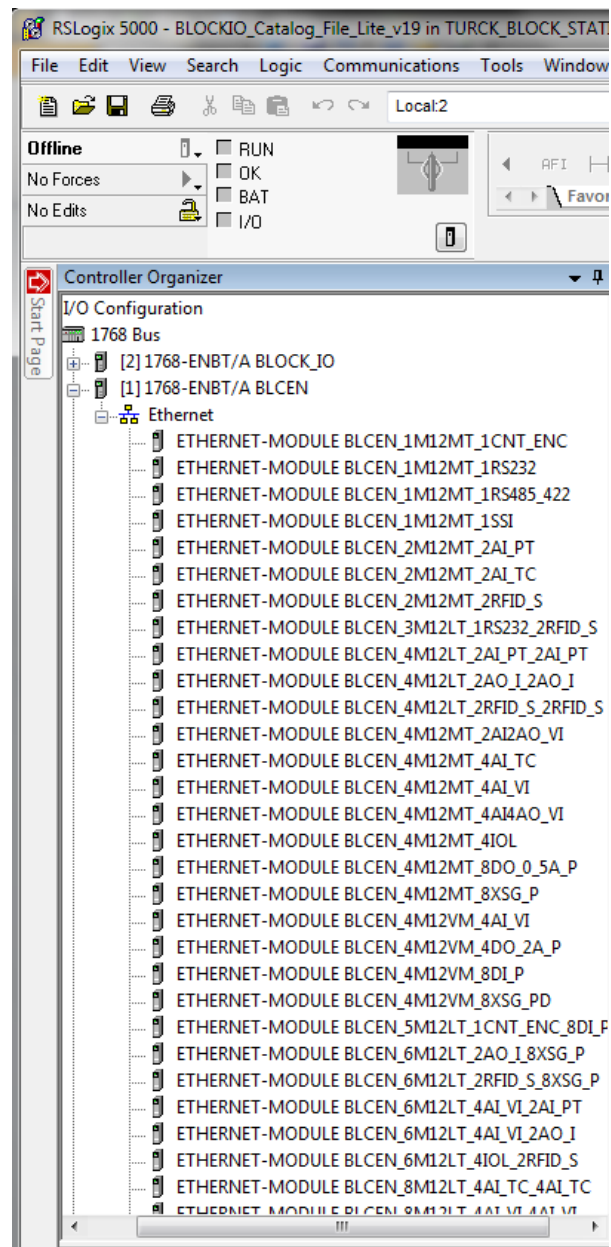
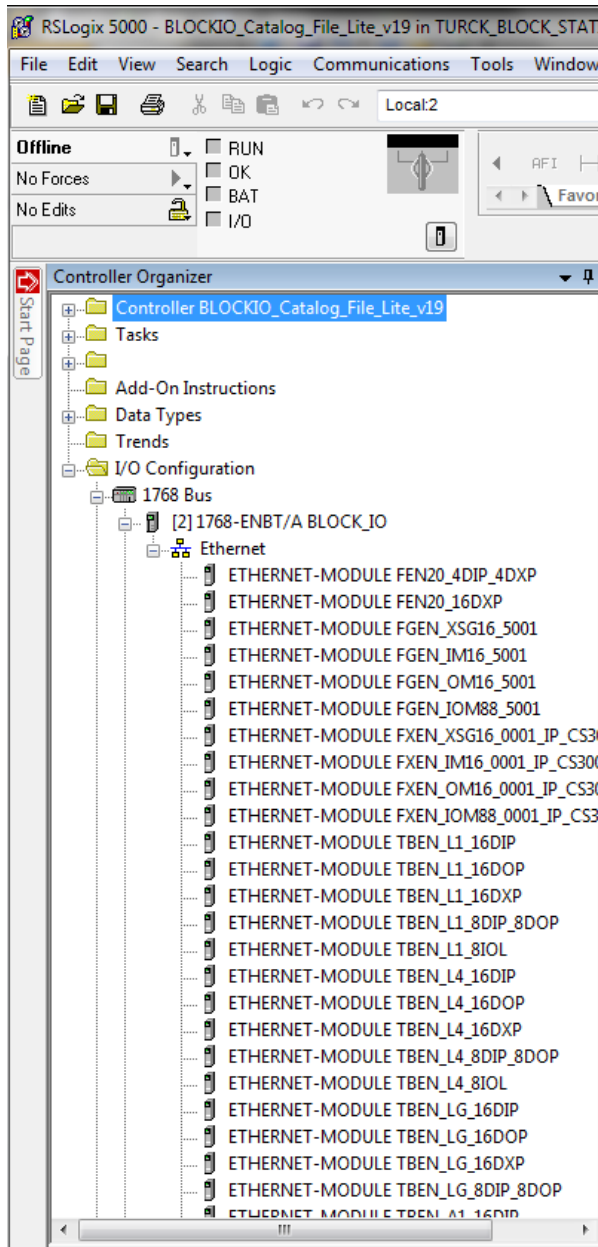


- Click “Import” to save file into your location:



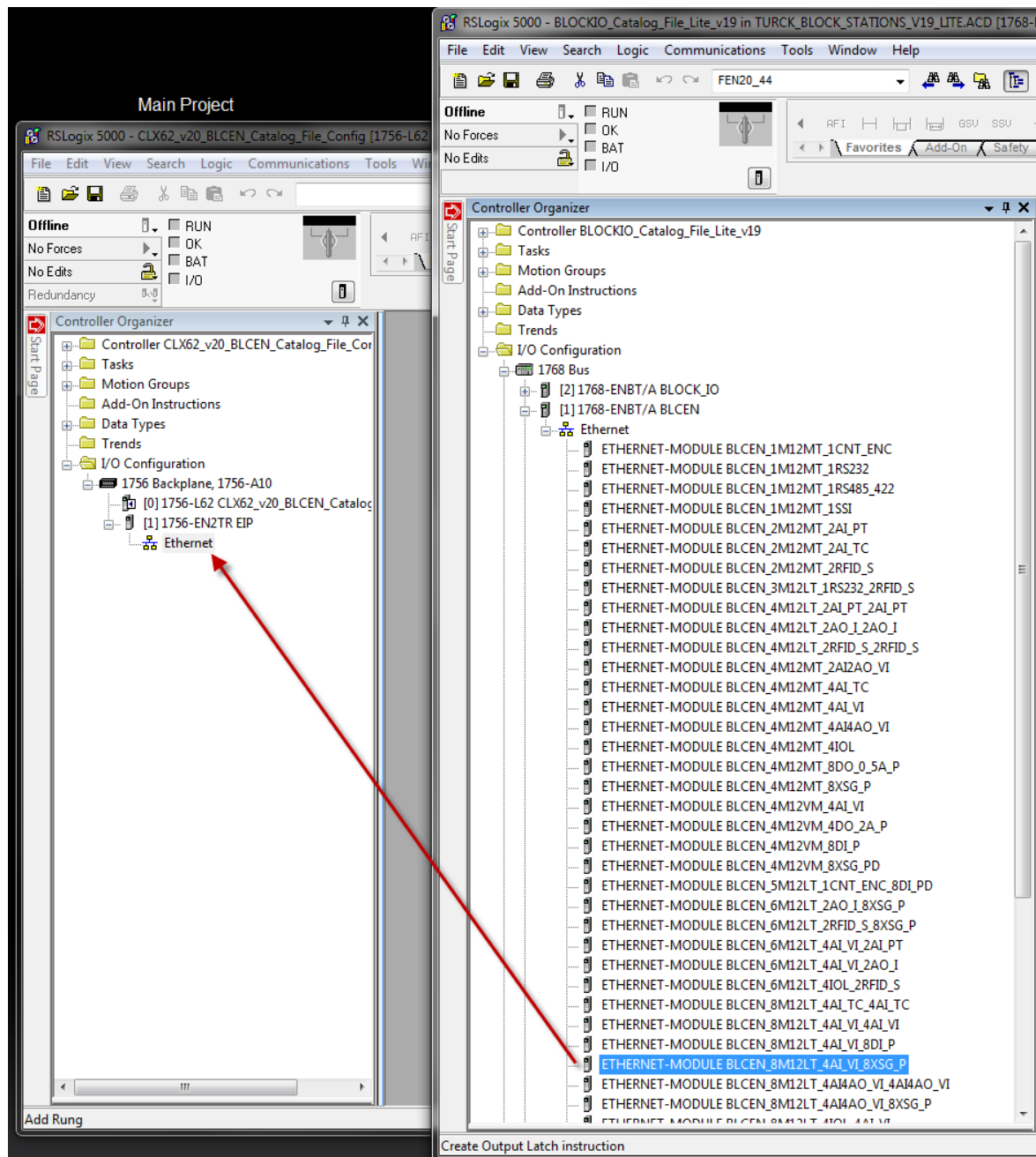
Catalog File Content

“TURCK_BLOCK_STATIONS_V19_LITE.ACD” catalog file or project contains configurations of the following Turck stations, preconfigured using generic device profile:

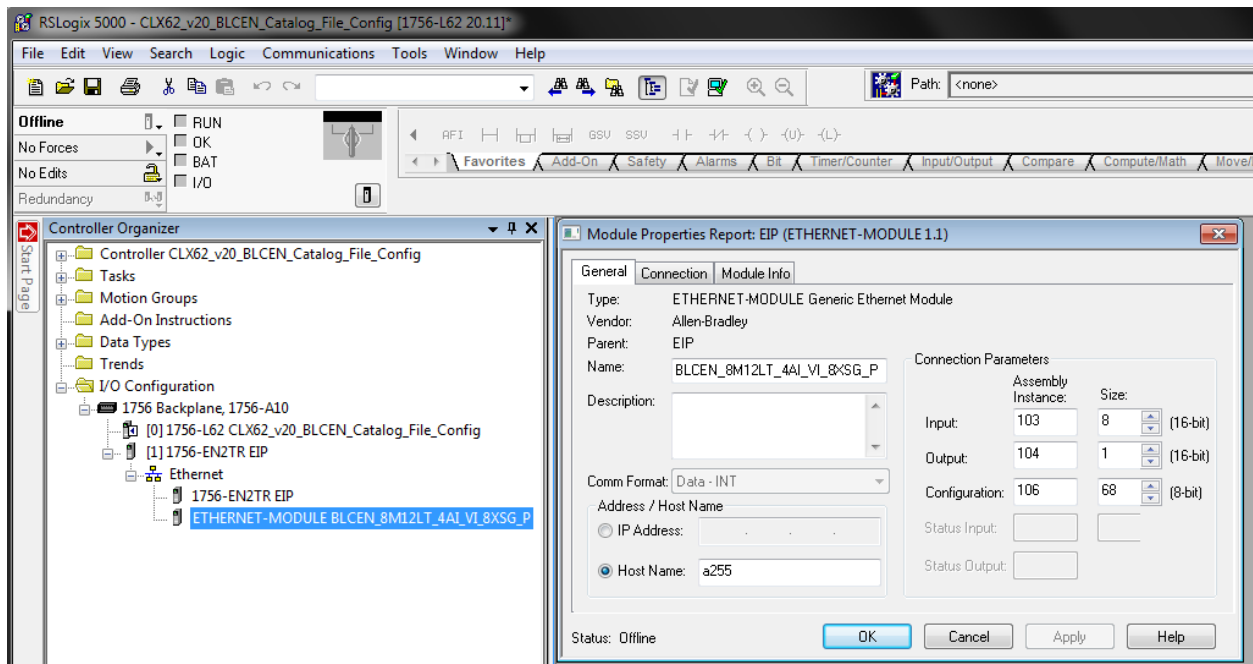


Configure BLCEN using Catalog File

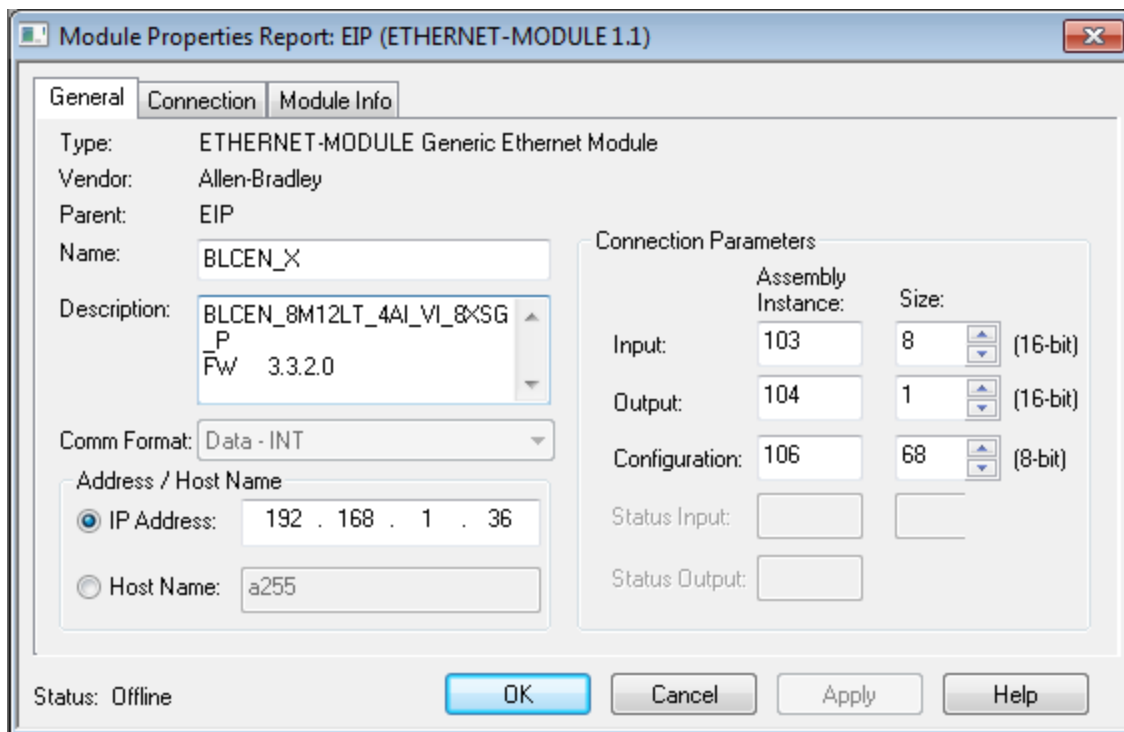
The first step is to configure BLCEN with the controller. Open both your online project and the catalog in separate windows. Expand the “1768-ENTB/A BLCEN” bridge in the catalog and drag the “BLCEN_8M12LT_4AI_VI_8XSG_P” device from the catalog into your project into Ethernet group.



Highlight “ETHERNET-MODULE BLCEN_...” in the Controller Organizer and open “Module Properties” page:



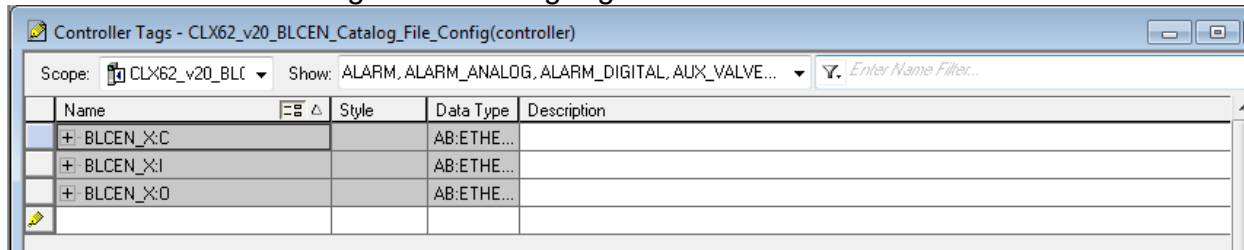
The device is renamed as “BLCEN_X” and assigned an IP address of 192.168.1.36.



Click Apply and OK to complete device configuration.

BLCEN Configuration Tag

Once the device is configured following tags are created:

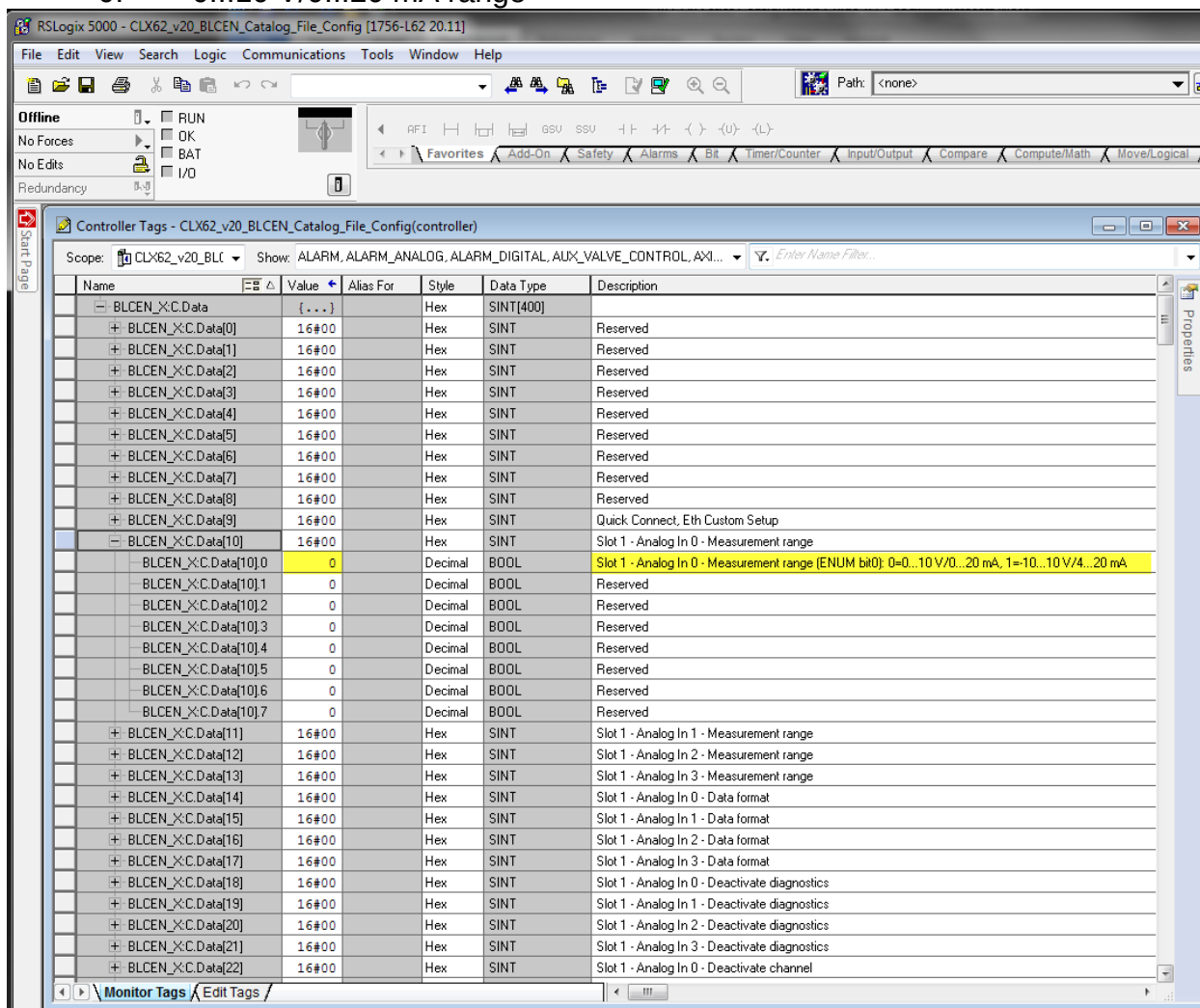


Name	Style	Data Type	Description
BLCEN_X:C		AB:ETHE...	
BLCEN_X:I		AB:ETHE...	
BLCEN_X:O		AB:ETHE...	

The configuration tag BLCEN_X:C provides access to parameters used for IO module configuration, e.g. measurement range description shows:

“Slot 1 - Analog In 0 - Measurement range (ENUM bit0): 0=0...10 V/0...20 mA, 1=-10...10 V/4...20 mA” where:

- 1: -10...10 V/4...20 mA range
- 0: 0...10 V/0...20 mA range



Name	Value	Alias For	Style	Data Type	Description
BLCEN_X:C.Data	{...}		Hex	SINT[400]	
BLCEN_X:C.Data[0]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[1]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[2]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[3]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[4]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[5]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[6]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[7]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[8]	16#00		Hex	SINT	Reserved
BLCEN_X:C.Data[9]	16#00		Hex	SINT	Quick Connect, Eth Custom Setup
BLCEN_X:C.Data[10]	16#00		Hex	SINT	Slot 1 - Analog In 0 - Measurement range
BLCEN_X:C.Data[10].0	0		Decimal	BOOL	Slot 1 - Analog In 0 - Measurement range (ENUM bit0): 0=0...10 V/0...20 mA, 1=-10...10 V/4...20 mA
BLCEN_X:C.Data[10].1	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].2	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].3	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].4	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].5	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].6	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[10].7	0		Decimal	BOOL	Reserved
BLCEN_X:C.Data[11]	16#00		Hex	SINT	Slot 1 - Analog In 1 - Measurement range
BLCEN_X:C.Data[12]	16#00		Hex	SINT	Slot 1 - Analog In 2 - Measurement range
BLCEN_X:C.Data[13]	16#00		Hex	SINT	Slot 1 - Analog In 3 - Measurement range
BLCEN_X:C.Data[14]	16#00		Hex	SINT	Slot 1 - Analog In 0 - Data format
BLCEN_X:C.Data[15]	16#00		Hex	SINT	Slot 1 - Analog In 1 - Data format
BLCEN_X:C.Data[16]	16#00		Hex	SINT	Slot 1 - Analog In 2 - Data format
BLCEN_X:C.Data[17]	16#00		Hex	SINT	Slot 1 - Analog In 3 - Data format
BLCEN_X:C.Data[18]	16#00		Hex	SINT	Slot 1 - Analog In 0 - Deactivate diagnostics
BLCEN_X:C.Data[19]	16#00		Hex	SINT	Slot 1 - Analog In 1 - Deactivate diagnostics
BLCEN_X:C.Data[20]	16#00		Hex	SINT	Slot 1 - Analog In 2 - Deactivate diagnostics
BLCEN_X:C.Data[21]	16#00		Hex	SINT	Slot 1 - Analog In 3 - Deactivate diagnostics
BLCEN_X:C.Data[22]	16#00		Hex	SINT	Slot 1 - Analog In 0 - Deactivate channel

Note: Use the configuration tag to configure IO modules. The configuration is downloaded to the device from the controller each time communication with the device is established.

BLCEN Input / Output Tags

Input tag provides multiple entries, like measurements:

Controller Tags - CLX62_v20_BLCEN_Catalog_File_Config(controller)						
Scope: CLX62_v20_BLC		Show: ALARM, ALARM_ANALOG, ALARM_DIGITAL, AUX_VALVE_CONTROL, AXI...		Enter Name Filter...		
Name	Value	Style	Data Type	Description		
+ BLCEN_X0.C	{...}		AB:ETHERNET...			
- BLCEN_X1	{...}		AB:ETHERNET...			
- BLCEN_X1.Data	{...}	Decimal	INT[8]			
+ BLCEN_X1.Data[0]	0	Decimal	INT	Slot 1 - Analog In 0 - Input value		
+ BLCEN_X1.Data[1]	0	Decimal	INT	Slot 1 - Analog In 1 - Input value		
+ BLCEN_X1.Data[2]	0	Decimal	INT	Slot 1 - Analog In 2 - Input value		
+ BLCEN_X1.Data[3]	0	Decimal	INT	Slot 1 - Analog In 3 - Input value		
+ BLCEN_X1.Data[4]	0	Decimal	INT	Slot 2 - Input value		
+ BLCEN_X1.Data[5]	0	Decimal	INT	Scheduled diagnostic header data		
+ BLCEN_X1.Data[6]	0	Decimal	INT	Refer to datasheet for module's specific diagnostic data		
+ BLCEN_X1.Data[7]	0	Decimal	INT	Refer to datasheet for module's specific diagnostic data		
+ BLCEN_X0	{...}		AB:ETHERNET...			

Diagnostics:

- BLCEN_X1.Data[5]	0	Decimal	INT	Scheduled diagnostic header data		
- BLCEN_X1.Data[5].0	0	Decimal	BOOL	Slot number (INT bit0)		
- BLCEN_X1.Data[5].1	0	Decimal	BOOL	Slot number (INT bit1)		
- BLCEN_X1.Data[5].2	0	Decimal	BOOL	Slot number (INT bit2)		
- BLCEN_X1.Data[5].3	0	Decimal	BOOL	Slot number (INT bit3)		
- BLCEN_X1.Data[5].4	0	Decimal	BOOL	Slot number (INT bit4)		
- BLCEN_X1.Data[5].5	0	Decimal	BOOL	Slot number (INT bit5)		
- BLCEN_X1.Data[5].6	0	Decimal	BOOL	Slot number (INT bit6)		
- BLCEN_X1.Data[5].7	0	Decimal	BOOL	Slot number (INT bit7)		
- BLCEN_X1.Data[5].8	0	Decimal	BOOL	Reserved		
- BLCEN_X1.Data[5].9	0	Decimal	BOOL	Reserved		
- BLCEN_X1.Data[5].10	0	Decimal	BOOL	Reserved		
- BLCEN_X1.Data[5].11	0	Decimal	BOOL	Reserved		
- BLCEN_X1.Data[5].12	0	Decimal	BOOL	Module present but field supply is missing: 0=no, 1=yes: 0=no, 1=yes		
- BLCEN_X1.Data[5].13	0	Decimal	BOOL	Diagnostic active: 0=no, 1=yes: 0=no, 1=yes		
- BLCEN_X1.Data[5].14	0	Decimal	BOOL	Wrong module: 0=no, 1=yes: 0=no, 1=yes		
- BLCEN_X1.Data[5].15	0	Decimal	BOOL	Empty slot: 0=no, 1=yes: 0=no, 1=yes		
+ BLCEN_X1.Data[6]	0	Decimal	INT	Refer to datasheet for module's specific diagnostic data		
+ BLCEN_X1.Data[7]	0	Decimal	INT	Refer to datasheet for module's specific diagnostic data		
+ BLCEN_X0	{...}		AB:ETHERNET...			

Output tag:

Controller Tags - CLX62_v20_BLCEN_Catalog_File_Config(controller)						
Scope: CLX62_v20_BLC		Show: ALARM, ALARM_ANALOG, ALARM_DIGITAL, AUX_VALVE_CONTROL, AXI...		Enter Name Filter...		
Name	Value	Style	Data Type	Description		
+ BLCEN_X0.C	{...}		AB:ETHERNET...			
+ BLCEN_X1	{...}		AB:ETHERNET...			
- BLCEN_X0	{...}		AB:ETHERNET...			
- BLCEN_X0.Data	{...}	Decimal	INT[1]			
- BLCEN_X0.Data[0]	0	Decimal	INT	Slot 2 - Output value		
- BLCEN_X0.Data[0].0	0	Decimal	BOOL	Slot 2 - Digital In/Out 0 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].1	0	Decimal	BOOL	Slot 2 - Digital In/Out 1 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].2	0	Decimal	BOOL	Slot 2 - Digital In/Out 2 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].3	0	Decimal	BOOL	Slot 2 - Digital In/Out 3 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].4	0	Decimal	BOOL	Slot 2 - Digital In/Out 4 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].5	0	Decimal	BOOL	Slot 2 - Digital In/Out 5 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].6	0	Decimal	BOOL	Slot 2 - Digital In/Out 6 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].7	0	Decimal	BOOL	Slot 2 - Digital In/Out 7 - Output value: 0=off, 1=on		
- BLCEN_X0.Data[0].8	0	Decimal	BOOL	Reserved		
- BLCEN_X0.Data[0].9	0	Decimal	BOOL	Reserved		
- BLCEN_X0.Data[0].10	0	Decimal	BOOL	Reserved		

It is important to emphasize that parameterization of the device IO ports has to be done using the configuration tag of your main project. DO NOT use web server or PACTware to do IO parameterization, because it will be overwritten during project download to the PLC, or after power-up of the station.

The device Web server and/or PACTware may be used:

- To read current IO setup when device is connected to a PLC
- To read and write parameters during IO test when device is not connected to a PLC

Read Parameters - Web Server

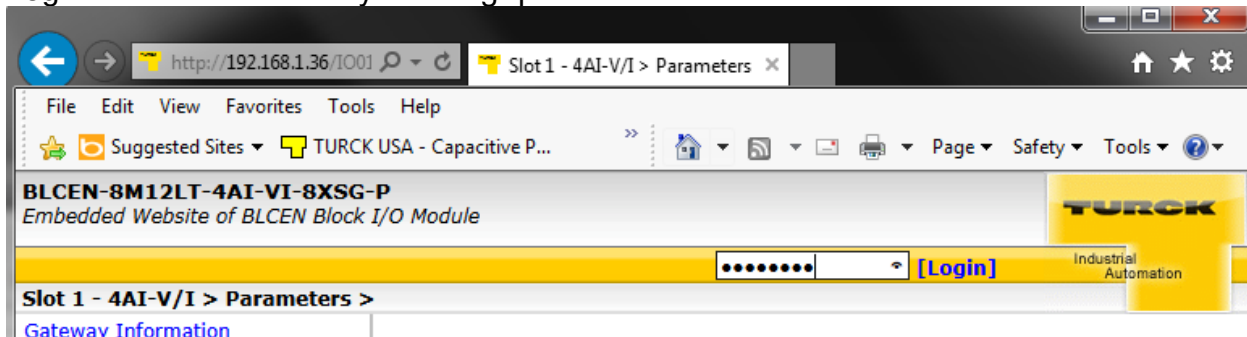
To read IOL parameters, open the main page and expand parameters entries:

The screenshot shows a web browser window displaying the configuration page for a TURCK BLCEN-8M12LT-4AI-VI-8XSG-P module. The browser address bar shows the URL <http://192.168.1.36/1001>. The page title is "BLCEN-8M12LT-4AI-VI-8XSG-P Embedded Website of BLCEN Block I/O Module". The page has a yellow header with the TURCK logo and a "Login" button. The main content area is titled "Slot 1 - 4AI-V/I > Parameters >". On the left, there is a navigation menu with links: Gateway Information, Gateway Diagnostics, Event Log, Ethernet Statistics, EtherNet/IP™ Memory Map, Modbus TCP Memory Map, Links, Slot 1 - 4AI-V/I (highlighted), Parameters (highlighted), Inputs, and Slot 2 - 8XSG-P. The main content area displays the "Slot 1 - Parameters" table.

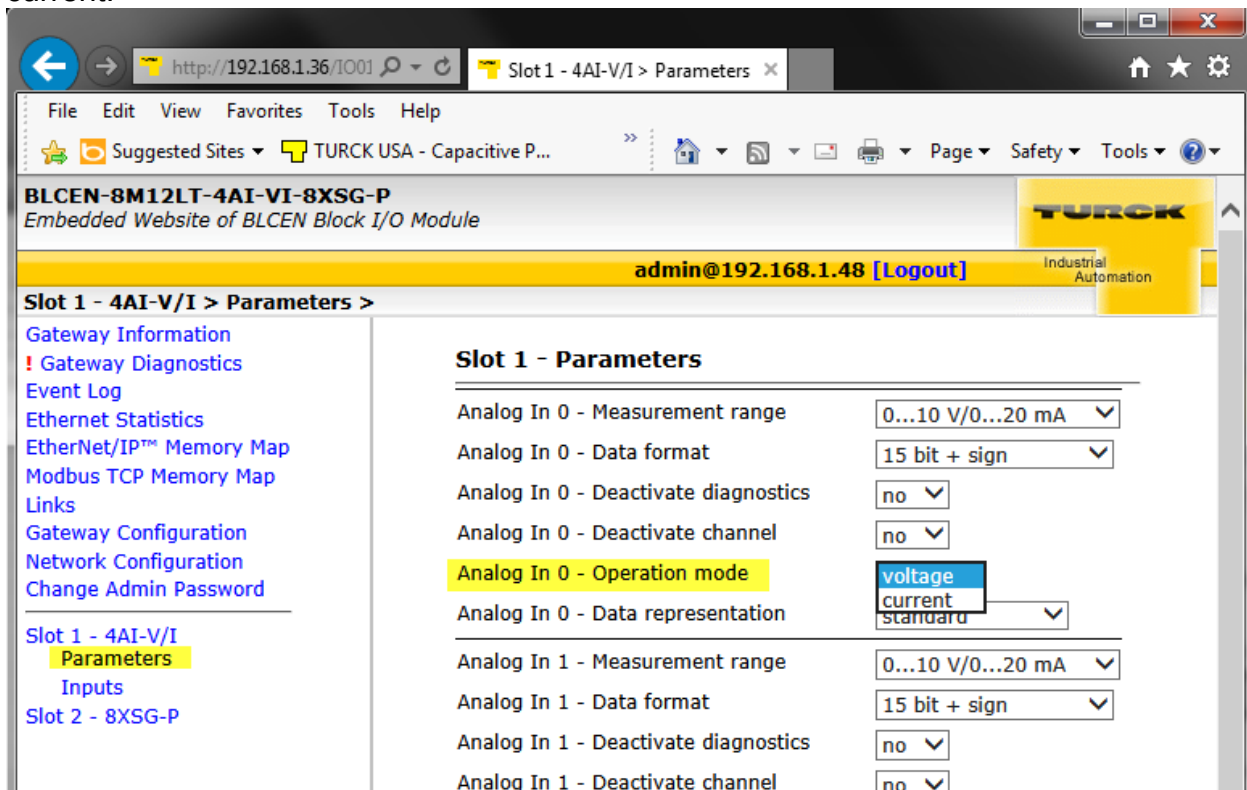
Slot 1 - Parameters	
Analog In 0 - Measurement range	0...10 V/0...20 mA
Analog In 0 - Data format	15 bit + sign
Analog In 0 - Deactivate diagnostics	no
Analog In 0 - Deactivate channel	no
Analog In 0 - Operation mode	voltage
Analog In 0 - Data representation	standard
Analog In 1 - Measurement range	0...10 V/0...20 mA
Analog In 1 - Data format	15 bit + sign
Analog In 1 - Deactivate diagnostics	no
Analog In 1 - Deactivate channel	no
Analog In 1 - Operation mode	voltage
Analog In 1 - Data representation	standard
Analog In 2 - Measurement range	0...10 V/0...20 mA
Analog In 2 - Data format	15 bit + sign
Analog In 2 - Deactivate diagnostics	no

Write Parameters - Web Server

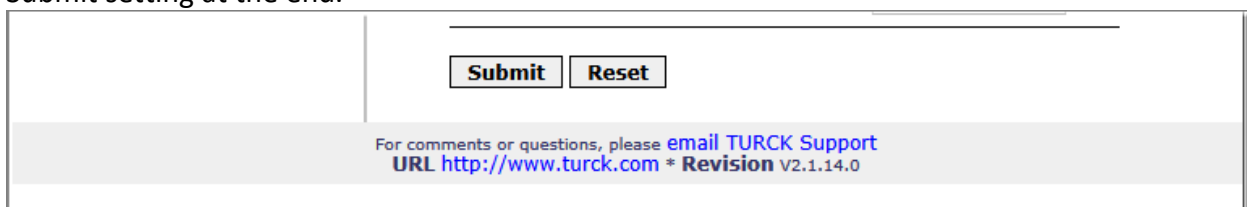
Log-in as administrator by entering “password”:



Select IO channel to configure, Analog In 0, and select operation mode: voltage or current.



Submit setting at the end.



Restore parameter(s) setup to the factory defaults, press “Reset to Factory Defaults”:

The screenshot displays the 'Gateway Configuration' web interface for the BLCEN-8M12LT-4AI-VI-8XSG-P module. The browser address bar shows 'http://192.168.1.36/devi'. The page header includes the product name and the TURCK logo. A navigation menu on the left lists various configuration options. The main content area is divided into several sections:

- Protocols:** A list of protocols with checkboxes to deactivate them: Deactivate EtherNet/IP™, Deactivate Modbus TCP, Deactivate PROFINET, and Deactivate Web Server.
- EtherNet/IP™ Configuration:** A section with checkboxes to activate various features: Activate GW Control Word, Activate GW Status Word, Activate Scheduled Diagnostics (checked), Activate Summarized Diagnostics, and Activate Quick Connect.
- PROFINET Configuration:** A section with a text input field for the PROFINET Station Name.
- Modbus Configuration:** A section with a note about the watchdog timer and connection timeout, followed by input fields for Watchdog Timer (0) and Connection Timeout (0).

At the bottom of the configuration area, there are four buttons: 'Submit', 'Reset', 'Reboot', and 'Reset to Factory Defaults' (highlighted in red). Below these buttons is a button labeled 'Erase ARGEE Program'. The footer of the page provides contact information for TURCK Support and the revision number V2.1.14.0.

Factory default parameterization:

The screenshot shows a web browser window with the address bar displaying `http://192.168.1.36/1001`. The page title is "Slot 1 - 4AI-V/I > Parameters". The browser's address bar also shows "Slot 1 - 4AI-V/I > Parameters". The page content includes a sidebar with navigation links and a main area displaying the "Slot 1 - Parameters" table.

BLCEN-8M12LT-4AI-VI-8XSG-P
Embedded Website of BLCEN Block I/O Module

Slot 1 - 4AI-V/I > Parameters

Gateway Information
Gateway Diagnostics
Event Log
Ethernet Statistics
EtherNet/IP™ Memory Map
Modbus TCP Memory Map
Links

Slot 1 - 4AI-V/I
Parameters
Inputs
Slot 2 - 8XSG-P
Parameters
Inputs
Outputs

Slot 1 - Parameters

Analog In 0 - Measurement range	0...10 V/0...20 mA
Analog In 0 - Data format	15 bit + sign
Analog In 0 - Deactivate diagnostics	no
Analog In 0 - Deactivate channel	no
Analog In 0 - Operation mode	voltage
Analog In 0 - Data representation	standard
Analog In 1 - Measurement range	0...10 V/0...20 mA
Analog In 1 - Data format	15 bit + sign
Analog In 1 - Deactivate diagnostics	no
Analog In 1 - Deactivate channel	no
Analog In 1 - Operation mode	voltage
Analog In 1 - Data representation	standard
Analog In 2 - Measurement range	0...10 V/0...20 mA
Analog In 2 - Data format	15 bit + sign
Analog In 2 - Deactivate diagnostics	no
Analog In 2 - Deactivate channel	no
Analog In 2 - Operation mode	voltage
Analog In 2 - Data representation	standard
Analog In 3 - Measurement range	0...10 V/0...20 mA
Analog In 3 - Data format	15 bit + sign
Analog In 3 - Deactivate diagnostics	no
Analog In 3 - Deactivate channel	no
Analog In 3 - Operation mode	voltage
Analog In 3 - Data representation	standard

For comments or questions, please email TURCK Support
URL <http://www.turck.com> * Revision V2.1.14.0