BLxx-PG-EN-V3 Programable CODESYS 3 gateways

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1 About this manual

1.1 Documentation concept

This manual describes the hardware and the functions of the CODESYS V3-programmable gateways for the Turck product families BL20 and BL67 (BL20-PG-EN-V3 and BL67-PG-EN-V3).

The following chapters contain:

- the hardware description of BLxx-PG-EN-V3,
- the description of the device functionalities (master/device),
- the description of the Modbus-master, page 46
- examples for the connection of the BLxx-PG-EN-V3 as device (slave)
 - Modbus TCP Slave Device, page 49
 - PROFINET IO-Device, page 51
 - EtherNet/IP-Device, page 56

1.1.1 Additional documentation

Please read the following product family manuals for any general product line specific issues e.g. system description, mounting, electrical installation, station configuration etc.

BL20:

D300717 "BL20 I/O modules - hardware and engineering"

BL67:

D300529 "BL67 I/O modules - hardware and engineering"

- 1.2 Explanation of symbols used
- 1.2.1 Warnings

Action-related warnings are placed next to potentially dangerous work steps and are marked by graphic symbols. Each warning is initiated by a warning sign and a signal word that expresses the gravity of the danger. The warnings have absolutely to be observed:



DANGER!

DANGER indicates an immediately dangerous situation, with high risk, the death or severe injury, if not avoided.



WARNING!

WARNING indicates a potentially dangerous situation with medium risk, the death or severe injury, if not avoided.



CAUTION!

CAUTION indicates a potentially dangerous situation with low risk, middle or low injury, if not avoided.



ATTENTION!

ATTENTION indicates a situation that may lead to property damage, if it is not avoided.

1.2.2 Further notes



NOTE

In NOTES you find tips, recommendations and important information. The notes facilitate work, provide more information on specific actions and help to avoid overtime by not following the correct procedure.



TECHNICAL BASICS

The TECHNICAL BASICS offer technical information, basics and background information. This information lead to a better understanding of the device functions for example. The experienced user can skip this information.

➤ CALL TO ACTION

This symbol identifies steps that the user has to perform.

➡ RESULTS OF ACTION

This symbol identifies relevant results of steps



1.3 General notes

Please read this section carefully. Safety aspects cannot be left to chance when dealing with electrical equipment.

This manual includes all information necessary for the prescribed use of the devices BL20-PG-EN-V3 and BL67-PG-EN-V3. It has been specially conceived for personnel with the necessary qualifications.

1.3.1 Prescribed use

The devices described in this manual must be used only in applications prescribed in this manual or in the respective technical descriptions, and only with certified components and devices from third party manufacturers.

Appropriate transport, storage, deployment and mounting as well as careful operating and thorough maintenance guarantee the trouble-free and safe operation of these devices.

1.3.2 Notes concerning planning/installation of this product

All respective safety measures and accident protection guidelines must be considered carefully and without exception.



2 General function description

2.1 Function description

The programmable BL20/BL67 gateways can be used as autonomous PLCs or as decentral PLCs in a network interconnection for a fast preprocessing of signals. The programmable gateways allow autonomous control of applications without higher-level control.

The Ethernet ports serve as interface for programming, configuration and field bus communication.

Thanks to the multiprotocol Ethernet technology, the device can be used as slave with PLCs or PC based systems with PROFINET, EtherNet/IP or Modbus TCP. In addition to that, the device can be operated as Modbus TCP-master.

Gateways are the head component of a BL20 station. The electronic modules communicate over the internal module bus with the gateway and can be configured independently of the fieldbus protocol.

Properties:

- Programmable according to IEC 61131-3 with ODESYS V3 in:
 - IL = Instruction List
 - LD = Ladder Logic
 - FBD = Function Block Diagram
 - SFC = Sequential Function Chart
 - ST = Structured Text
- Ethernet- and programming interface
- Integrated Gold CAP-buffered RTC (Real Time Clock)
- USB Device Port as programming and service interface
- USB Host Port for connecting USB memory sticks for firmware-update, program backup, program restore, data synchronization
- Protocol converter for example from Ethernet to serial communication.
- LEDs for display of PLC status (LED APL, LED RUN), supply voltage (LED VI/VO, BL67 only), group (LED ERR) and bus errors (LED BUS)
- Integrated Ethernet switch allows line topology
- Integrated web server
- Field bus connection
 - BL67-PG-EN-V3: Ethernet, 2 x M12-female connector, 4-pol. D-codes
 - BL20-PG-EN-V3: Ethernet, 2 x RJ45-ports,
- Power supply
 - BL67-PG-EN-V3: 5-pole 7/8"-connector
 - BL20-PG-EN-V3: screw terminals
- Protection class:
 - BL67-PG-EN-V3: IP67
 - BL20-PG-EN-V3: IP20



3 Hardware description

3.1 Device structure



Fig. 1: Device structure BL20-PG-EN-V3

- A USB Host port
- **B** DIP-switch for setting the operation mode
- **C** Rotary coding switch for address assignment
- **D** Ethernet ports
- **E** Power supply
- **F** USB-Device port (Service)
- **G** SET button



Fig. 2: Device structure BL67-PG-EN-V3

3.2 Device dimensions



Fig. 3: Device dimensions BL20-PG-EN-V3



Fig. 4: Device dimensions BL67-PG-EN-V3

3.3 Block diagrams



Fig. 5: Block diagram BL20-PG-EN-V3



Fig. 6: Block diagram BL67-PG-EN-V3



3.4 Technical data

3.4.1 BL20-PG-EN-V3

Power supply	
Power supply	24 VDC
System supply	24 VDC/5 VDC
Field supply	24 VDC
Permissible range	1830 VDC
Nominal voltage from module bus	≤ 200 mA
Nominal current from module bus	8 A
Max. system supply current	1.3 A
Connection technology	screw terminals
Field bus	
Transmission rate	10/100 Mbps, Full/Half Duplex, Auto Negotiation, Auto Crossing
Address assignment	Rotary coding switches, PGM, DHCP
Connection technology	RJ45-connector
PLC data	
Programming	CODESYS 3
Released for CODESYS version	from V 3.5.6.30
Programming	IEC 61131-3 (IL, LD, FBD, SFC, ST)
OPC	yes
OPC UA	no
Application tasks	5
Programming interface	Ethernet, USB
Processor	ARM, 32 Bit
Cycle time	< 1ms for 1000 IL- commands (without I/O cycle)
Real time clock (RTC)	yes
Program memory	1024 kByte
Data memory	512 kByte
Input data	4 kByte
Output data	4 kByte
Non-volatile memory	16 kByte
Web server	
Default IP address	192.168.1.254
Service interface	Mini USB

Modbus TCP	
Address assignment	Static IP, BOOTP, DHCP
Supported Function Codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Input data size	max. 1024 registers
Input register start address	0 (0x0000 hex)
Out data size	max. 1024 registers
Output register start address	0 (0x0000 hex)
EtherNet/IP	
Address assignment	according to EtherNet/IP standard
Input data size	248 INT
Out data size	248 INT
PROFINET	
Address assignment	DCP
Conformance Class	B (RT)
MinCycleTime	1 ms
Diagnostics	according to PROFINET Alarm Handling
Topology detection	supported
Automatic address assignment	supported
Input data size	max. 512 byte
Out data size	max. 512 byte
Ambient conditions	
Operating temperature	-20+ 60 °C
Storage temperature	-25+70 °C
Relative humidity	15 to 95% (internal), Level RH-2, no condensation (at 45 °C storage)
Vibration test	according to EN 61131
Shock test	according to IEC 68-2-27
Drop and topple	according to EN 68-2-31 and free fall according to IEC 68-2-32
Electro-magnetic compatibility	according to IEC 61131-2
Protection class	IP20
General	
Dimensions (w \times l \times h)	50,6 × 114,8 × 74,4mm
Approvals	CE



3.4.2 BL67-PG-EN-V3

Power supply	
Power supply	24 VDC
System supply	24 VDC/5 VDC
Field supply	24 VDC
Permissible range	1830 VDC
Nominal voltage from module bus	≤ 100 mA
max. sensor supply I _{sens}	4 A electronic short circuit fuse
max. load current I _o	10 A
Nominal current from module bus	10 A
Max. system supply current	1.2 A
Connection technology	5-pole 7/8"-connector
Field bus	
Transmission rate	10/100 Mbps, Full/Half Duplex, Auto Negotiation, Auto Crossing
Address assignment	Rotary coding switches, PGM, DHCP
Connection technology	2 x M12, 4-Pin, D coded
PLC data	
Programming	CODESYS 3
Released for CODESYS version	from V 3.5.6.30
Programming	IEC 61131-3 (IL, LD, FBD, SFC, ST)
OPC	yes
OPC UA	not supported
Application tasks	5
Programming interface	Ethernet, USB
Processor	ARM, 32 Bit
Cycle time	< 1ms for 1000 IL- commands (without I/O cycle)
Real time clock	yes
Program memory	1024 kByte
Data memory	512 kByte
Input data	4 kByte
Output data	4 kByte
Non-volatile memory	16 kByte
Web server	
Default IP address	192.168.1.254
Service interface	Mini USB

Modbus TCP	
Address assignment	Static IP, BOOTP, DHCP
Supported Function Codes	FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23
Input data size	max. 1024 registers
Input register start address	0 (0x0000 hex)
Out data size	max. 1024 registers
Output register start address	0 (0x0000 hex)
EtherNet/IP	
Address assignment	according to EtherNet/IP standard
Input data size	248 INT
Out data size	248 INT
PROFINET	
Address assignment	DCP
Conformance Class	B (RT)
MinCycleTime	1 ms
Diagnostics	according to PROFINET Alarm Handling
Topology detection	supported
Automatic address assignment	supported
Input data size	max. 512 byte
Out data size	max. 512 byte
Ambient conditions	
Operating temperature	-40+70 °C
Temperature derating	
> 55 °C	Derating: max. field supply current = 5 A
Storage temperature	-40+85 °C
Relative humidity	15 to 95% (internal), Level RH-2, no condensation (at 45 $^\circ$ C storage)
Vibration test	according to EN 61131
up to 5 g (at 10 to 150 Hz)	for mounting on DIN rail no drilling according to EN 60715, with end bracket
up to 20 g (at 10 to 150 Hz)	for mounting on base plate or machinery Therefore every sec- ond module has to be mounted with two screws each.
Shock test	according to IEC 68-2-27
Drop and topple	according to EN 68-2-31 and free fall according to IEC 68-2-32
Electro-magnetic compatibility	according to IEC 61131-2
Protection class	IP67
DIN rail mounting	yes, please observe offset
Direct mounting	two mounting holes, 6 mm Ø
General	
Dimensions (w \times l \times h)	74 × 145 × 77.5mm
Approvals	CE



3.5 Connectors

3.5.1 Fieldbus connection

BL20-PG-EN-V3

The field bus connection is realized via:

2 x RJ45-connector

	1 = TX +
12345678	2 = TX -
	3 = RX +
00000000	4 = n.c.
	5 = n.c.
	6 = RX –
	7 = n.c.
	8 = n.c.

TX+	Transmission Data +
RX+	Receive Data +
TX-	Transmission Data -
RX-	Receive Data -

BL67-PG-EN-V3

The field bus connection is realized via:

2 x M12 (female connector), M12-Ethernet switch, 4-pole, D-coded, according to IAONA specification

-(
1 000 3 4	1 = YE 2 = WH 3 = OG 4 = BU	(TX +) (RX +) (TX -) (RX -)

Signal	Data
TX+	Transmission Data +
RX+	Receive Data +
TX-	Transmission Data -
RX-	Receive Data -

3.5.2 Power supply BL20-PG-EN-V3



BL20-PG-EN-V3



Pin- no.	Color	7/8"	Designation
1	black	GND	
2	blue	GND	
3	green/yel- low	PE	Protective earth
4	Brown	$V_{I}(U_{B})$	Feed-in of nominal voltage for input modules (sensor supply V_{sens})); also used for the generation of the system supply voltage
5	white	$V_{O}(U_{L})$	Feed-in of nominal voltage for output modules (can be switched off separately).

3.5.3 USB Device port

The USB Device port is designed as mini USB socket and can be used as service interface for the device DTMs as well as as programming interface for CODESYS.

RNDIS driver

The corresponding RNDIS driver is installed during the DTM installation in PACTware. The USB device port is shown in the DTM as additional Ethernet port .



Use the interface BL Service Ethernet in the DTM for the connection to the BLxx-PG-EN-V3.



3.5.4 USB Host port

The USB Host port is designed as USB2.0-A-socket and serves for connecting USB memory sticks for the restore and backup of CODESYS programs and for the actualization of the device firmware (see **Functions of the USB Host port (page 61**)).



3.6 Device addressing and operation mode setting

The device address and the operation mode are set using a combination of the 2 rotary coding switches and the DIP switches at the device.





Fig. 7: Rotary coding and DIP switches at BL20-PG-EN-V3

Fig. 8: Rotary coding and DIP switches at BL67-PG-EN-V3

Rotary cod- ing switches	DIP switch	nes A				Mode	Description	
	5 (MODE)	4	3	2	1			
00	1	0	0	-	-	Restore IP	Reset the device to default settings (see page 20): IP address Subnet mask gateway Auto-negotiation/ AutoMDIX	192.168.1.254 255.255.255.0 192.168.1.1 active
							QuickConnect/FSU	inactive
40	1	-	-	-	-	DHCP	Addressing via DHCP (see page 21)	
50	1	-	-	-	-	PGM	Addressing via PGM (see page 21)	
60	1	-	-	-	-	PGM-DHCP	Addressing via PGM-DHCP (see page State of delivery	22)
90	1	-	-	-	-	F_Reset	Reset to factory settings (see page 23	3)
1-99	0	-	-	-	-	Static rotary	Sets the last byte of the IP address (see The other 3 byte are taken from the IF stored in the device before.	ee page 20). ? address, which was
00	0	0	0	-	-	Address	Sets the last byte of the IP address to The other 3 byte are taken from the IF stored in the device before.	100. 9 address, which was

A "-": Switch position is irrelevant

3.6.1 Restore IP

With this setting the DIP-switches to "000" followed by a voltage reset, the module is set to the address 192.168.1.254 for IP-based services (see **Device addressing and operation mode setting** (page 19)).

This setting allows for example the I/O-ASSISTANT 3 (FDT/DTM) to communicate with the station, the device's WEB-server can be accessed using the IP-address 192.168.1.254.



NOTE

This setting is no operation mode! Please set the device to another mode after having reset the IP address to the default values.

3.6.2 Address setting via rotary coding switches (Static rotary)

When using the rotary-mode, the last byte of the station's IP address can be set via the rotary coding switches.



NOTE

All other network settings are stored in the module's non-volatile EEPROM and can not be changed in rotary mode.

Addresses from 1 to 99 can be set. The addresses 0 is used for Broadcast-messages in the subnet.

The following example shows the setting of address 73.



NOTE

The settings carried out in the rotary-mode are not stored in the module's EEPROM. Thus, they will get lost in case of a subsequent address-assignment via a BootP/DHCP or PGM.



NOTE

After changing the position of the rotary coding-switches, a voltage reset must be carried out to store the new address.



3.6.3 Address setting via the mode DHCP

In order to activate the DHCP-mode, the DIP-switch MODE is set to "ON", the rotary switches to address "40" (see Device addressing and operation mode setting (page 19)).

Address setting is carried out by a DHCP-server in the network after the start-up of the gateway.

The IP address, as well as the default subnet mask assigned to the gateway by the DHCP-server, are stored in the module's EEPROM. If the gateway is subsequently switched to another address--mode, the settings (IP address, subnet mask, etc) will be read from the module's EEPROM.



NOTE

After every change of the address-mode, a voltage reset must be done.

DHCP supports three mechanisms for IP address allocation:

- In "automatic allocation", the DHCP-server assigns a permanent IP address to a client.
- In "dynamic allocation", DHCP assigns an IP address to a client for a limited period of time. After this time, or until the client explicitly relinguishes the address, the address can be re-assigned.
- In "manual allocation", a client's IP address is assigned by the network administrator, and DHCP is used simply to convey the assigned address to the client.

DHCP in PROFINET

Please assure, that in PROFINET-applications, the address assigned via a BootP-server corresponds to the address, which is assigned in the configuration tool.

Address setting via the mode PGM 3.6.4

In order to activate the PGM-mode, the DIP-switch MODE is set to "ON", the rotary switches to address "50" (see Device addressing and operation mode setting (page 19)).



NOTE

After every change of the address-mode, a voltage reset must be done.

The PGM-mode enables access of the software I/O-ASSISTANT (FDT/DTM) to the module's network settings (see also "Address setting via DTM").



NOTE

In the PGM-mode, all network settings (IP address, subnet mask, etc.) are read from the module's internal EEPROM.

3.6.5 Address setting via the mode PGM-DHCP (universal mode)

In order to activate the PGM-DHCP-mode, the DIP-switch MODE is set to "ON", the rotary switches to address "60" (see **Device addressing and operation mode setting (page 19**)).



After every change of the address-mode, a voltage reset must be done.

The device sends DHCP-requests until an IP address is assigned (DHCP-server, PROFINET-controller, PACTware, web server, IP-Address Tool).

The assigned IP-address is stored to the device and the DHCP-client is stopped.

Even after a restart of the device, the device sends no further DHCP-requests.

PGM-DHCP in PROFINET

This mode assures a PROFINET-compliant operation of the modules.



NOTE

If a DHCP-server is used within the network, problems may occur during IP-assignment. In this case, both, the DHCP-server as well as the PROFINET-controller (via DCP), try an IPaddress-assignment.



3.6.6 F_Reset (Reset to factory setting)

In order to reset the device to factory settings, the DIP-switch MODE is set to "ON", the rotary switches to address "90" (see **Device addressing and operation mode setting (page 19)**).

This mode sets all device-settings back to the default values and deletes all data in the device's internal flash.



NOTE

This setting is no operation mode! Please set the device to another mode after having reset the IP address to the default values.

The following properties are reset to default or deleted during F_Reset:

		Default value	Comment
IP address/ subnet mask	Reset	192.168.1.254/ 255.255.255.0	The device can be accessed by the web server/DTM using this IP address but the address is not permanently stored in the device.
PROFINET device name	Reset	-	
CODESYS program	deleted	-	
parameters (PG-V3)	Reset	see Parame- ters (page 39)	
Parameters of I/O- modules	no		



NOTE

Resetting the device to factory settings via DCP-based services (via Turck IP Address Tool or TIA-Portal/Step7) does not delete the CODESYS-program (see also **Reset to factory settings (page 29)**.

3.6.7 Address setting with Turck IP Address Tool

The Turck IP Address Tool enables direct access to the Ethernet-network via the Ethernet cable. The IP configuration, as well as the PROFINET device name of the Ethernet device can be changed application specifically.

Search for devices

Scan the network using the "Search" button. All found Turck devices are shown.

🧮 Turck IP Address Tool, Ve	rs. 2.0.0.0							- • ×	
Search	Reset Factory r	eset Clipboard	Language	P Close					
No. Search less	Device name	IP address	Netmask	Gateway	Mode	Device type	Version	Adapter	~
1 UU:U7:46:FF:80:E5		192.168.1.38	255.255.255.0	192.168.1.1	PGM_DHCP	BL67-GW-EN	3.1.4.0	192.168.1.100	٦.
2 00:07:46:FF:70:01		192.168.1.13	255.255.255.0	192.168.1.1	PGM_DHCP	BL20-PG-EN-V3	1.0.5.0	192.168.1.100	
3 00:07:46:25:46:C9		192.168.1.245	255.255.255.0	192.168.1.1	PGM_DHCP	BL67-PG-EN-V3	1.0.5.0	192.168.1.100	10
								:	=
<									•

Fig. 9: Scan Ethernet network

Send WINK command

For clear device localization a Wink command can be send to the marked device using the "Wink" button. The device responds to this Wink command with a device specific blink code (see **LED displays (page 31)**).

= Turck	IP Address To	ol, Vers. 2.(0.0.0							x
P	<i>.</i>	<u>ب</u>		ŀD.		2 🗙			TUR	ск
Search	. Change	Wink Res	et Factory rese	et Clipboard	Language	Help Close			Industri <mark>ai</mark> Auto	mation
No.	MAC address	De Wink	IP address	Netmask	Gateway	Mode	Device type	Version	Adapter	_ <u>^</u>
== 1	00:07:46:06:	turck-t	192.168.1.205	255.255.255.0	0.0.0.0	PGM_DHCP	TBEN-S2-4IOL	3.0.8.0	192.168.1.100	
2	00:07:46:07:		<u>0.0.0.0</u>	255.255.255.0	192.168.1.1	PGM_DHCP	BL20-PG-EN-V3	1.0.5.0	192.168.1.100	
77 3	00:07:46:80:		<u>192.168.1.79</u>	255.255.255.0	192.168.1.1	PGM	BL20-PG-EN	2.1.3.0	192.168.1.100	
										E
Found 3	Devices									+
Found 3	Devices.		_							.::

Fig. 10: Send WINK command



Changing the IP address

Use the function "Change \rightarrow IP configuration" to change the device's IP settings.



Fig. 11: Changing the IP configuration

Changing the PROFINET device name

Use the function "Change \rightarrow device name" to change the device's IP settings.

💳 Ture	ck IP Address Tool, Ve	rs. 2.0.0.0						X
Search	Change Wink	Reset Factory re	set Clipboard	Language H	P Close			UTECH ustrial Automation
No.	M/ IP configur	ation e	IP address	Netmask	Gateway	Mode	Device type	Vers 🔺
1 2	00 Device nam 54:4A:16:B2:D8:E9	ne	<u>192.168.1.22</u> <u>172.28.7.16</u>	255.255.255.0 255.255.0.0	0.0.0.0 172.28.1.10	PGM_DHCP DHCP	TBEN-S2-4IOL-ARGEE TBEN-L1-PLC-01	3.0. ⁻ 0.2.(
- 3	00:07:46:02:43:D5	turck-bl67-spilker	<u>192.168.1.38</u>	255.255.255.0	192.168.1.1	PGM_DHCP	BL67-GW-EN	3.1.4
- 4	00:07:46:25:46:C9		192.168 1 22	000 000 000 0	0000	PCH DUCP	BLCEN-4M12LT-2RFID-S-2RFID-S	3.2.1
	00:07:46:07:FE:F3		192.161 Change	e device name		P	BL20-PG-EN-V3	1.0.!
= 6	00:07:46:1F:A2:12		192.16			P	BL20-PG-EN-V3	1.0.(
7	00:07:46:00:11:3A		192.168 Bevic	e name.			Unbekannt	2.0.!
= 8	00:07:46:FF:80:E5		192.168 turck	tben1		P	BL67-PG-EN-V3	1.0.:
9	00:50:56:C0:00:01	dt-cscheuer2	<u>192.16</u>				SIMATIC-PC	
10	00:50:56:C0:00:08	dt-cscheuer2	<u>192.16</u>	te to device	Cance	el	SIMATIC-PC	
11	3C:D9:2B:76:FD:A4	dt-ilabtestpc1	172.28.				SIMATIC-PC	
12	20:10:7A:38:6B:3D	dt-mschaefer	<u>192.168</u>				SIMATIC-PC	
13	00:0E:0C:33:CB:D0	dt-tpohl1	192.168 Device	name is valid			SIMATIC-PC	
14	00:13:3B:04:02:55	dt-cscheuer2	172.28.				SIMATIC-PC	
15	A4:17:31:59:8D:F5	dt-cscheuer2	<u>192.168.76.102</u>	255.255.255.0	192.168.76.10		SIMATIC-PC	
16	88:51:FB:5F:45:F8	dt-mhorstmann	172 28 7 5	255 255 0 0	172 28 1 10		SIMATIC-PC	
Found	18 Devices.							,



NOTE

A PROFINET device name can only be assigned, if the device has already been configured as PROFINET device via CODEYS and if the respective CODESYS project has been loaded to the device (see **chapterl 5**, **PROFINET-Device** (page 51)).

3.6.8 Address setting via DTM

The software-tool I/O-ASSISTANT 3 (FDT/DTM) enables direct access to the Ethernet-network via the Ethernet cable.

The IP address, as well as the subnet mask of the TURCK Ethernet stations, can be changed accordingto the application by using the Busaddress Management function of the BL Service Ethernet interface (TCP/IP) in the software I/O-ASSISTANT 3 (FDT/DTM).



Fig. 13: Busaddress management



PACTware - [TCP/IP Busaddress mar	nagement]
Eile Edit View Project □ </th <th>Device Extras Window Help _ 日: 口 シ 坦 印 坦 章 欲 恭 回</th>	Device Extras Window Help _ 日: 口 シ 坦 印 坦 章 欲 恭 回
Project $\Psi \times$ Device tag HOST PC TCP/IP	Device type Description Device type Description Device type Description Device type Device
	<u>د</u> ۳ •
	Planned devices
	Unline ID Busaddress Designation ('Lag') Device short name Designation ('Lag') Device short name OK Cancel Apply
	K00- Disconnected
<noname></noname>	Administrator

Fig. 14: Searching for network nodes in the Busaddress Management



NOTE

The access of the DTM to the station is only possible, if the station already has an IPaddress (see **Device addressing and operation mode setting (page 19**))

and if it is operated in switch position PGM or PGM-DHCP-mode.



NOTE

When using Windows XP as operating system, difficulties may occur with system-integrated firewall.

It may inhibit the access of PACTware (I/O-ASSISTANT V3) to the Ethernet-network. In this case, please adapt your firewall respectively or deactivate it.

PACTware - [TCP/IP Busaddress manag	gement]	x
<u>File Edit View Project De</u>	evice E <u>x</u> tras <u>W</u> indow <u>H</u> elp	7 X
i 🗋 🧉 🛃 🛃 🚇 i 🔛 i 🔛 🦌 i	■ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎ ◎	
Project Q × Device tag HOST PC TCP/IP	Device type BL Service Ethernet TURCK Description BL Service over ethernet communication DTM TURCK T P R R S Q * IP1 IP1 +0 12 5 2 2 Busaddress management	Pevice catalog
	Industrial J AN (192 168.1 100/255 255 25 0)	
	Device type Online ID IP address Netmask Gateway Ethernet address Version Mode A BL67-PG-EN-V3 150402A 192.168.1.245 255.255.255.0 192.168.1.1 00:07:46:FF:80:E5 V1.0.7.0 PGM_L BL20-PG-EN-V3 150002A 192.168.1.29 255.255.255.0 192.168.1.1 00:07:46:FF:80:E5 V1.0.7.0 PGM_L BL20-PG-EN-V3 150002A 192.168.1.29 255.255.255.0 192.168.1.1 00:07:46:FF:82.12.2 V1.0.6.0 PGM_L BL20-PG-EN-V3 1500021/2 192.168.1.29 255.255.255.0 0.0.0.0 00:07:46:254:6:C9 V3.2.15. PGM_L BL20-GW-EN 1018110 192.168.1.39 255.255.255.0 192.168.1.1 00:07:46:254:6:C9 V3.2.15. PGM_L BL20-GW-EN 1018110 192.168.1.39 255.255.255.0 192.168.1.1 00:07:46:02:43.05 V3.1.40 PGM_L BL67-GW-EN (> VN 150001F 192.168.1.39 255.255.255.0 192.168.1.1 00:07:46:02:43.05 V3.1.40 PGM_L ¥ TBEFN-S2-4/01 <	
	Planned devices Device type Online ID Busaddress Designation (Tag) Device short name	
	DK Cancel Apply	
NONAME>	Administrator	

Fig. 15: Changing the IP address

3.7 SET button

Pressing the SET button activates the write access of the device's USB Host port functions, see also chapterl 6, USB Host port functions (page 61).



Fig. 16: SET button at BL20-PG-EN-V3



Fig. 17: SET button at BL20-PG-EN-V3



3.8 Reset to factory settings

Besides the hardware rest using the rotary coding switches (seeF_Reset (Reset to factory setting) (page 23)), the TURCK IP Address Tool as well as the web server (see Reset to Factory Defaults (page 74)) offer the possibility to reset the devices to the factory settings.



NOTE

Resetting the device to factory settings via rotary coding/DIP switchesdeletes the CODE-SYS-program in the device, see also F_Reset (Reset to factory setting) (page 23). Resetting the device to factory settings via DCP-based services (via Turck IP Address Tool or TIA-Portal/Step7) does not delete the CODESYS-program (see also F_Reset (Reset to factory setting) (page 23).

3.8.1 IP Address Tool

💳 Turc	:k IP Address Tool, Ver	rs. 2.0.0.0						×	
Search	Change Wink	Reset Factory re	set Clipboard	Language H	elp Close		- Indu	JRCH Istrial Automation	*
No.	MAC address	Device name	IP address	Netmask	Gateway	Mode	Device type	Vers	*
77 1	00:07:46:FF:70:01	ŀ	actory reset	255.255.255.0	0.0.0.0	PGM_DHCP	TBEN-S2-4IOL-ARGEE	3.0.1	
2	54:4A:16:B2:D8:E9		172.28.7.16	255.255.0.0	172.28.1.10	DHCP	TBEN-L1-PLC-01	0.2.0	
- 3	00:07:46:02:43:D5	turck-bl67-spilker	192.168.1.38	255.255.255.0	192.168.1.1	PGM_DHCP	BL67-GW-EN	3.1.4	
777 4	00:07:46:25:46:C9		192.168.1.28	255.255.255.0	0.0.00	PGM_DHCP	BLCEN-4M12LT-2RFID-S-2RFID-S	3.2.1	
	00:07:46:07:FE:F3		192.168.1.13	255.255.255.0	192.168.1.1	PGM_DHCP	BL20-PG-EN-V3	1.0.5	
== 6	00:07:46:1F:A2:12		192.168.1.29	255.255.255.0	192.168.1.1	PGM_DHCP	BL20-PG-EN-V3	1.0.0	-
7	00:07:46:00:11:3A		<u>192.168.1.91</u>	255.255.255.0	192.168.1.1	ROTARY	Unbekannt	2.0.	=
== 8	00:07:46:FF:80:E5		192.168.1.245	255.255.255.0	192.168.1.1	PGM_DHCP	BL67-PG-EN-V3	1.0.3	
9	00:50:56:C0:00:01	dt-cscheuer2	192.168.203.1	255.255.255.0	0.0.00		SIMATIC-PC		
10	00:50:56:C0:00:08	dt-cscheuer2	192.168.113.1	255.255.255.0	0.0.00		SIMATIC-PC		
11	3C:D9:2B:76:FD:A4	dt-ilabtestpc1	172.28.7.23	255.255.0.0	172.28.1.10		SIMATIC-PC		
12	20:10:7A:38:6B:3D	dt-mschaefer	192.168.76.17	255.255.255.0	192.168.76.10		SIMATIC-PC		
13	00:0E:0C:33:CB:D0	dt-tpohl1	<u>192.168.1.71</u>	255.255.255.0	0.0.00		SIMATIC-PC		
14	00:13:3B:04:02:55	dt-cscheuer2	172.28.7.29	255.255.0.0	172.28.1.10		SIMATIC-PC		
15	A4:17:31:59:8D:F5	dt-cscheuer2	<u>192.168.76.102</u>	255.255.255.0	192.168.76.10		SIMATIC-PC		
16	88:51:FB:5F:45:F8	dt-mhorstmann	172 28 7 5	255 255 0 0	172 28 1 10		SIMATIC-PC		-
								+	
Found	18 Devices.								.::

Fig. 18: IP Address Tool, reset to factory settings

3.8.2 Web server

C C T http://192.168.1.13/devic D - C	Gateway Configuration ×	- □ <mark>- × →</mark>
BL20-PG-EN-V3 Embedded Website of TURCK's programmable G	ateway	TURCK
	admin@192.168.1.100 [Logout]	Automation
Gateway Configuration > Gateway Information I Gateway Diagnostics	Protocols	
Ethernet Statistics Links	Deactivate USB Host support	
Gateway Configuration Network Configuration	Deactivate Web Server	
Change Admin Password	PROFINET Configuration	
Slot 1 - BL20-E-8DO-24VDC-0.5A-P Slot 2 - BL20-E-8DI-24VDC-P	PROFINET Station Name pgv3	
Slot 3 - BL20-2AI-THERMO-PI Slot 4 - BL20-2DO-24VDC-0.5A-P Slot 5 - BL20-F-8AI-U/I-4PT/NI	Submit Reset	
	Reboot Reset to Factory Defaults	
	For comments or questions, please email TURCK Support URL http://www.turck.com * Revision V2.0.0.0	

Fig. 19: Web server, reset to factory settings

i NC

NOTE

For further information concerning the web server please read **chapterl 7** The web server.



3.9 LED displays

Every BLxx-PF V3 displays the following statuses via LEDs:

- PLC status (LED RUN),
- application specific LED APPL (freely programmable via CODESYS)
- supply voltage (LED VI/VO, BL67 only),
- common errors (LED ERR) and
- Bus errors (LED BUS)
- 2 LEDs for the Ethernet-communication LNK1 and LNK2

3.9.1 LED description BL20

LED	GREEN	RED	Meaning	Remedy
GW	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Firmware active, gateway ready	
	OFF	blinking	Wink-command received	 Wink-command received
LED	GREEN	RED	Meaning	Remedy
lOs	off	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Communication running. The modules configured corre- spond to the modules in the sta- tion.	
	blinking, 1 Hz	OFF	Station is in the Force Mode of the I/O-ASSISTANT.	 Deactivate the Force Mode of the I/O-ASSISTANT.
	OFF	ON	CPU not ready for operation, →possible causes: – too many modules at the gate- way – short-circuit in connected mod- ule – gateway hardware error.	 Check the system power supply at the gateway and the cabling. Unmount excessively mounted modules. Replace the gateway, if necessary.
	OFF	blinking, 1 Hz	Non adaptable changes in the con- figuration of the module bus nodes.	 Compare the configured station and the current configuration. Check the physical station for defective or incor- rectly plugged electronic modules.
	OFF	blinking, 4 Hz	no communication via the module bus.	 At least one module has to be plugged and has to be able to communicate with the gateway.
	blinking, alt	ernating	The current and configured mod- ule list do not match but the data exchange proceeds as normal.	 Check the physical station for pulled or new but not planned modules. Check the system power supply at the gateway.
	OFF	blinking double 1 Hz	Device internal communication disturbed	
LED	GREEN	RED	Meaning	
APPI	This I FD is a	controlled by th	e CODESYS program and can be freely	programmed by the user.

LED	GREEN	RED	Meaning	Remedy
RUN	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	PLC program running	
	blinking	OFF	Firmware updated running	see Firmware update
	OFF	ON	PLC program stopped	
	OFF	blinking	No PLC program loaded	
	OFF	blinking, 1 Hz	F_Reset is in progress	see page 23
LED	GREEN	RED	Meaning	Remedy
BUS	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Displays the logical connection to a master If more than one slave is config- ured at the PG, then the LED shows the state of the slave in CODESYS which was the first to be config- ured.	
	blinking	OFF	Device ready for operation	
	OFF	ON	Gateway error: – IP address conflict – gateway in RESTORE-mode – F_Reset activated	 Check the IP-addresses in the network Check the DIP switch position.
	blinking, al	ternating	 Auto-negotiation and/or Autonegotiation and / or waiting for DHCP- / BootP-address assign- ment. 	 The gateway waits for IP-address assignment. Wait for the address assignment to be finished.
LED	GREEN	YELLOW	Meaning	Remedy
LNKx	OFF	OFF	no link	 Check the Ethernet connection.
	OFF	ON	Link established,10 Mbps	
	off	blinking	Ethernet Traffic, 10 Mbps	
	ON	OFF	Link established,100 Mbps	
	blinking	OFF	Ethernet Traffic, 100 Mbps	
LED	GREEN	RED	Meaning	Remedy
ERR	OFF	OFF	Station running, no diagnostics	
	OFF	ON	A diagnostic message from gate- way or I/O-modules is pending.	 Check the diagnostic messages.



3.9.2 LED description BL67

LED	GREEN	RED	Meaning	Remedy
ю	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Communication running. The modules configured corre- spond to the modules in the sta- tion.	
	blinking, 1 Hz	OFF	Station is in the Force Mode of the I/O-ASSISTANT.	- Deactivate the Force Mode of the I/O-ASSISTANT.
	OFF	ON	CPU not ready for operation, →possible causes: too many modules at the gateway short-circuit in connected module gateway hardware error.	 Check the system power supply at the gateway and the cabling. Unmount excessively mounted modules. Replace the gateway, if necessary.
	OFF	blinking, 1 Hz	Non adaptable changes in the con- figuration of the module bus nodes.	 Compare the configured station and the current configuration. Check the physical BL67-station for defective or incorrectly plugged electronic modules.
	OFF	blinking, 4 Hz	no communication via the module bus.	 At least one module has to be plugged and has to be able to communicate with the gateway.
	blinking, alt	ernating	The current and configured mod- ule list do not match but the data exchange proceeds as normal.	 Check the physical station for pulled or new but not planned modules. Check the system power supply at the gateway.
	OFF	blinking double 1 Hz	Device internal communication disturbed	
LED	GREEN	RED	Meaning	Remedy
GW	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Firmware active, gateway ready	
	OFF	blinking	Wink-command received	 Deactivate an active WINK-command
LED	GREEN	RED	Meaning	Remedy
RUN	OFF	OFF	No power supply of the CPU.	Check the system power supply at the gateway.
	ON	OFF	PLC program running	-
	blinking	OFF	Firmware updated running	see Firmware update
	OFF	ON	PLC program stopped	
	OFF	blinking	No PLC program loaded	
	OFF	blinking, 1 Hz	F_Reset is in progress	see page 23
LED	GREEN	RED	Meaning	Remedy
V _I /V _o	OFF	OFF	Supply voltage too low	 Check the system power supply at the gateway.
	ON	OFF	$V_{\rm I}$ and $V_{\rm O}$ within the nominal range	
	blinking, 1 Hz	OFF	Undervoltage V _i ; system running.	 Check the system power supply at the gateway.
	blinking, 4 Hz	OFF	Undervoltage V ₀ ; system running.	
	ON (orange)	ON	Sensor supply current (I _{SENS}) too higi	ו
LED	GREEN	RED	Meaning	
APPL	This LED is c	ontrolled by th	ne CODESYS program and can be freely p	programmed by the user.

LED	GREEN	RED	Meaning	Remedy
ERR	OFF	OFF	Station running, no diagnostics	
	OFF	ON	A diagnostic message from gateway or I/ O-modules is pending.	 Check the diagnostic messages.
	COFFN		 .	
LED	GREEN	RED	Meaning	Remedy
BUS	OFF	OFF	No power supply of the CPU.	 Check the system power supply at the gateway.
	ON	OFF	Displays the logical connection to a master If more than one slaves are configured at the PG, then the LED shows the state of the slave in CODESYS which was the first to be configured.	
	blinking	OFF	Device ready for operation	
	OFF	ON	Gateway error: – IP address conflict – gateway in RESTORE-mode – F_Reset activated	 Check the IP-addresses in the network Check the DIP switch position.
	blinking, alternating		 Auto-negotiation and/or Autonegotiation and / or waiting for DHCP- / BootP-address assignment. 	 The gateway waits for IP-address assignment. Wait for the address assignment to be finished.
LED	GREEN	YELLOW	Meaning	Remedy
LNKx	OFF	OFF	no link	 Check the Ethernet connection.
	OFF	ON	Link established,10 Mbps	
	off	blinking	Ethernet traffic, 10 Mbps	
	ON	OFF	Link established,100 Mbps	
	blinking	OFF	Ethernet traffic, 100 Mbps	



3.10 Real time clock (RTC)

Properties:

Buffering	via Gold CAP			
Loading time for 95 % load	min. 10 minutes			
Buffer time at				
23 °C	4 weeks			
– 60 °C	168 hours			
– 70 °C	36 hours			

The RTC is set in the device for example using the CODESYS library "CAA Real time Clock Extern".



Fig. 20: CAA Real time Clock Extern in CODESYS
3.11 SFTP access

The SFTP access is done via a FTP client program e.g. FileZilla:

Server (SFTP protocol)	IP address of the device
User name	sftpuser
Password	password
Port	22



•

The password for the SFTP access is synchronized to the password for the web server. Changing the password for the SFTP access also changes the web server password (see page 71).

sftp://sftpuser@102.16	58 1 13 - File7illa					
Shtp://shtpuser@192.10	0.1.13 - 1 1621118					
<u>File Edit View Trans</u>	fer <u>S</u> erver <u>B</u> ookmarks <u>H</u>	lelp				
M - NOU - +	🛱 🐰 阔 💺 🖑 📰	R 🚰 🖍				
Host: 192.168.1.13	Username: sftpuser	Pass	word: •••••	••• <u>P</u> o	ort: 20	Quickconnect
Status: Listing di	irectory /CoDeSys/visu					*
Status: Directory	r listing of "/CoDeSys/visu" su a directory listing of "/CoDeSy	ccessful				
Status: Directory	listing of "/CoDeSvs" success	sful				
	,,					-
Local site: C:\Users\ -	Remote site: /CoDeSys					-
🖃 📃 Desktop 🔹						
Eigene Do	CoDeSys					
Computer	PicLogic					
🚊 🚢 C: (Sys	USB_Data					
	wisu					
Filename						
🔋 🎴						
🌗 .ida_step 😑 😑						
퉬 Anwendungsdat						
🌗 AppData 📃	Filename	Filesize	Filetype	Last modified	Permissions	Owner/Gro
Contacts	Jan 1997 - 1997					
Cookies	PlcLogic		Dateiordner	4/15/2016 12:3	drwxr-xr	00
🧮 Desktop	퉬 USB_Data		Dateiordner	4/15/2016 12:3	drwxr-xr-x	1001 1001
Documents	퉬 visu		Dateiordner	4/15/2016 12:3	drwxr-xr	00
📙 Downloads	Application.app	153.624	APP-Datei	4/15/2016 1:27:	rw-rr	0 0
🛯 📕 Druckumgebung	Application.crc	20	CRC-Datei	4/15/2016 1:27	rw-rr	0 0
📔 Eigene Dateien						
🙀 Favorites						
🕞 Links						
Lokale Einstellu 🔻						
15 files and 25 directories	Selected 1 file. Total size: 20 I	bytes				
					🔒 🚥 Queue:	empty 🔍 🔍

Fig. 21: SFTP access via FileZilla



3.12 Firmware update

The firmware update can be done using a USB storage device at the USB Host port or via the Turck DTM in PACTware.

3.12.1 Firmware update using USB storage device

For the firmware update via USB storage device, please read section Functions of the USB Host port (page 61).

3.12.2 Firmware update via DTM

The firmware update via DTM is done in the DTM Busaddress Management in PACTware.

PACTware - [TCP/IP Busaddress mar	agement]		
<u>F</u> ile <u>E</u> dit <u>V</u> iew <u>P</u> roject	<u>D</u> evice E <u>x</u> tras <u>W</u> indow <u>H</u> elp		_ 8 ×
i 🗅 💕 🛃 🎯 🗗 i 🛄 🍋 i	🗖 🔍 🧐 🧐 😫 🎉 🌾 🗐		
Project # × Device tag	Device type BL Service I Description BL Service I	Ethernet over ethernet communication DTM	
	🗖 🕶 🔐 🕼 👘 🔊 😵 🖗 IP‡ IP	t 🕕 🖄 🖳 🖄	Busaddress management
	Online available devices Add devices manually	Firmware download	
	Device type Online ID IP address BL67-PG-EN-V3 150402A 192.168.1.2	Netmask Gateway Et 45 255.255.255.0 192.168.1.1 00	hernet address Version Mode):07:46:FF:80:E5 V1.0.7.0 PGM_[
	BL20-PG-EN-V3 150C02A <u>192.168.1.2</u> BL20-PG-EN-V3 150C02A <u>192.168.1.1</u>	9 255.255.255.0 192.168.1.1 00 255.255.255.0 192.168.1.1 00	0:07:46:1F:A2:12 V1.0.6.0 PGM_[0:07:46:07:FE:F3 V1.0.5.0 PGM_[=
	BLUEN-4M12L1-2HF 1500021/2 192.158.1.2 BL20-GW-EN 1018110 192.168.1.9 BL67-GW-EN (>= VN 150001F 192.168.1.3	8 255.255.255.0 0.0.0.0 00 1 255.255.255.0 192.168.1.1 00 8 255.255.255.0 192.168.1.1 00	0:07:46:25:46:C9 V3:2:15. PGM_L 0:07:46:00:11:3A V2:0.5.0 ROTAF 0:07:46:02:43:D5 V3:1.4.0 PGM_L
	TBEN-92-4001 1500029/C 192 168 1 2	2 255 255 255 0 0 0 0 0 III	107-46-FE-70-01 V3.0.10 PGM I
	Planned devices		
	Device type Online ID Busad	dress Designation ('Tag')	Device short name
		OK	Cancel Apply
۰ III ۲	Disconnected		
NONAME>	Administrator		

Fig. 22: Busaddress Management in PACTware

4 Parameters and diagnostics

4.1 Parameters

The BLxx-PG-EN-V3 provides the following parameters.

NOTE

Parameter changes are only applied after a device restart.

Parameter name	Value	Description
Deactivate WEB server	no A	
	yes	Deactivates the web server in the device.
Deactivate USB Host	no A	
support	yes	Deactivates the USB Host port support for the device. The USB Host port functions are deactivated.
Ethernet port 1/2	Auto-negotiation A	Sets the Ethernet port to Auto-negotiation or to a
	10 Mbps, half duplex	 fixed value for transmission rate and transmission mode
	10 Mbps, full duplex	
	100 Mbps, half duplex	
	100 Mbps, full duplex	

A Default setting

4.2 Diagnostics

4.2.1 System diagnostics

The system diagnostics can be called via the instance name of the "Local_IO_BLxx"-object. Function blocks or libraries are not required.



Fig. 23: Diagnostics via call of instance

Diagnostics	Meaning	
Module diagnostics available "xModuleDiagnosticsAvailable"	At least one module sends diag- nostics.	Check the diagnostic messages.
I/O configuration deviation "xI/OConfigurationDeviation"	I/O module list adaptable modi- fied, e. g., module has been pulled.	The current and configured module list do not match but the data exchange pro- ceeds as normal. – Check the physical station for pulled or new but not planned modules. – Check the system power supply at the gateway.
Module bus error "xModuleBusError"	The Communication with the module bus station on the module bus station on the module bus is not possible.	 At least one module has to be plugged and has to be able to communicate with the gateway.
I/O configuration error "xMasterOrIOConfigurationError"	The actual module list has been changed and is incompatible, a process data exchange with the module bus nodes is not possible-	 Compare the configured station and the current configuration. Check the physical station for defective or incorrectly plugged electronic modules.



Diagnostics	Meaning	
Undervoltage U _{sys} "xUndervoltageUsys"	The load or system voltage are out of the permissible range.	Check the system power supply at the gateway.
Undervoltage at U _L "xUndervoltageFieldSupply_UI"	-	
Overload _{sys} "xOverloadlsys"	Overload at the system supply.	

4.2.2 I/O diagnostics

The diagnostics of the local I/O modules are available as process data in the modules' I/O mapping in CODESYS.

BL20_PG_EN_V3_MB_Master.project - CC	DDESYS					- C X	
Ele Edit View Project Build Online Debug Iools Window Help							
Devices 👻 🕂 🗙	BL20_2AI_THERMO_PI X	PLC_PRG	ce	MainTask 🚮 BL20_	E_8DI_24VDC_P		
BL20_PG_EN_V3_MB_Master BUDEVice (BL20-PG-EN-V3)	TURCK BL20 module bus	Channels					
PLC Logic	Parameters	Variable	M	Channel	Address	Туре І	
🖹 💮 Application	Mapping	*		Input value Ch1	%IW1	WORD	
👘 Library Manager		**		Input value Ch2	%IW2	WORD	
PLC_PRG (PRG)	Status	😑 🚞 Diagnostics					
🖹 🌃 Task Configuration	Information	🖲 🚞 Analog In 1					
🖻 💕 MainTask		🖹 🔁 Analog In 2					
		*		Measured value out of range Ch2	%IX6.3	Enumeration	
Gateway_LED_APPL (Gatewa				Wire break Ch2	%IX6.4	Enumeration	
- 1 BL20_E_8D0_24VDC_0_1 - 1 BL20_E_8D1_24VDC_0_1 - 1 BL20_E_8D1_24VDC_P_(B - 1 BL20_ZAI_THERMO_P1 (B - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1							
Image: BL20_ZOU_Z4VDC_0_SA Image: BL20_E_BAI_U_J_4PT_NI I						ing	
		Variable		Mapping Type			
		BL20_2AI_THERMO	_PI	🇞 Module			
🌾 = Create new variable 🌱 🍗 = Map to existing variable							
		•		III		4	
<	Messages - Total 0 error(s), 0 warning(s)	, 0 message(s)	_		() b(→ ₽ >	
		Last build: 🙆	0 🕐 0	(s) (0) (1) warning(s) (0) nessa Precompile:	Current user:	(nobody)	

Fig. 24: I/O-module diagnostics in the process image.



5 CODESYS-functions

The CODESYS 3 programmable multiprotocol gateways BL20-PG-EN-V3 and BL67-PG-EN-V3 can be used as follows:

Protocol	Master		Slave	
Modbus TCP	~	page 46	✓	page 49
PROFINET	-		✓	page 51
EtherNet/IP	-		✓	page 56

5.1 Supported CODESYS libraries

3S libraries	
Network	– SysSocket, 3.5.6.0 (System)
Data access	– SysFile, 3.5.6.0 (System) – SysFileAsync, 3.5.5.0 (System) – SysDir, 3.5.6.0 (System)
Time and date	– SysTime, 3.5.5.0 (System) – SysTimeCore, 3.5.5.0 (System) – SysTimer, 3.5.5.0 (System) – SysTimeRtc, 3.5.5.0 (System)
Miscellaneous	– SysEvent, 3.5.5.0 (System) – SysMem, 3.5.5.0 (System)
CAA libraries	
Network	– CAA Net Base Services, 3.5.6.0
Data access	– CAA File, 3.5.6.0
Time and date	 CAA DTUtil Extern, 3.5.5.0 CAA Real Time Clock Extern, 3.5.5.40 CAA Tick Extern, 3.5.5.0 CAA TickUtil Extern, 3.5.5.0 CAA Timer Extern, 3.5.5.0
Miscellaneous	– CAA Mathematics, 3.5.1.0 – CAA Memory, 3.5.5.0

5.2 General start-up

5.2.1 Installing the device package in CODESYS

- > Download the package "BLxx-PG-EN-V3 CODESYS Package Vx.x.x.* from www.turck.com
- ➤ Install the package using the CODESYS Package Manager "Tools → Package Manager".

Package Manager						X
Currently installed packa	iges:			Sort by:	Name •	Install
Name	Version	Installation date	Update info	License info		Uninstall
T BLxx-PG-EN-V3	1.0.5.0	23.03.2016		No license required		Details
						Updates Search updates Download CODESYS Store Rating CODESYS Store
🔲 Display versions 🛛	Search up	dates in background				Close

Fig. 25: Package Manager in CODESYS

The device package for CODESYS contains all necessary files

- CODESYS Device Description,
- CODESYS libraries,
- GSDML file,
- EDS file,
- etc.



- 5.2.2 Standard project with BLxx-PG-EN-V3 in CODESYS V3.5.8.10
 - > Create a standard project with the BLxx-PG-EN-V3 as CODESYS device.

Standard Pr	oject				
67	You are about to create a new standard project. This wizard will create the following objects within this project:				
	- One prograr - A program P - A cyclic task - A reference	nmable device as specified below LC_PRG in the language specified below which calls PLC_PRG to the newest version of the Standard library currently installed.			
	Device:	BL20-PG-EN-V3 (TURCK)			
	PLC_PRG in:	Structured Text (ST)			
		OK Cancel			

Fig. 26: Selecting the PG-V3 as CODESYS device

→ The CODESYS project is created.



Fig. 27: CODESYS project

In addition to the PLC logic, the project contains:

- Gateway LED APPL
 - for free use in the program
 - uses 2 bit in the device's output process image, the output data therefore start with an offset of 1 byte in the default configuration.
- Local_IO_BLxx
 - Configuration of the I/O modules locally connected to the BLxx-PG-EN-V3
- Ethernet interface
 - Interface for the Modbus master or the Ethernet slaves



The Ethernet interface needs no configuration.

5.3 Modbus TCP-Master

Properties	
max. number of TCP slaves	32
Min. Cycle Time	50 ms

5.3.1 Configuring the Modbus TCP-Master

The Modbus TCP master from 3S - Smart Software Solutions GmbH is used.

BL20 PG EN V3 MB Master.project* - CODESYS	
File Edit View Project Build Online Debug Tools Window	Add Device
	Name: Modbus_TCP_Master Action:
Devices 🗸 🗸 🗶	Append device Insert device Plug device Update device
	Device: Vendor: <all vendors=""></all>
Application	Name Vendor
	Fieldbusses EtherNet/IP EtherNet/IP Modbus TCP Master Modbus TCP Master Modbus TCP Master Group by category Display all versions (for experts only) Display outdated versions
Ethernet	Information: Information: Image: Market Modbus TCP Master Vendor: 35 - Smart Software Solutions GmbH Categories: Modbus TCP Master Version: 3.5.6.0 Order Number: - Description: A device that works as a Modbus Master on Ethernet.
Devices POUs	
Las	Add Device Close

Fig. 28: Add Modbus TCP-Master



 Activate the function "auto-reconnect" at the master to assure that CODESYS automatically confirms communication errors and tries to continue with executing Modbus commands instead of interrupting the Modbus communication.

Otherwise the error has to be reset using a slave function block.

BL20_PG_EN_V3_MB_Master.project* - CODESYS			
BL20_PG_EN_V3_M8_Master,project* - CODESYS Ele Edt View Project Build Online Debug Code Stateward Stat	Iools Window Help	Modbus-TCP Response Timeout (ms) 1000 ★ Socket Timeout (ms) 10 ★ Ø Auto-reconnect	MODBUS
Betternet Modbus_TCP_Master (Modbus TCP) III Devices POUs			
		Last build: 😳 0 🕐 0 🛛 Precompile: 🗸	Current user: (nobody)

Fig. 29: Configuring the Modbus TCP-Master

5.3.2 Configuring the external Modbus TCP slave

 Add an external Modbus TCP slave using the "Add Device" function and configure the slave. In this example the Turck multiprotocol device TBEN-S1-4DIP-4DOP is used as Modbus slave.



Fig. 30: Configuring the external Modbus TCP slave

- > Add Modbus Slave channels for the communication with the slave.
- Observe the process data offsets of the slave. In the example (Fig. 31: Adding Modbus Slave channels) the slave's process output data start with register 0x0800.

BL20_PG_EN_V3_MB_Master.project*	- CODESYS		
Ele Edit View Project Build Onl	ine <u>D</u> ebug <u>T</u> ools B × ₩A 🎊 [<u>Window</u> Help ầ ﷺ - ௺ 鯔 🧐 🧐 → 📲 🛠 ∁⊒ འ▣ འྒ ་▣ 炎 ⇔ ☴	
Devices	And bus Channel		•
BL20_PG_EN_V3_MB_Master			
🖻 🚪 Device (BL20-PG-EN-V3)	Channel	pe	Trig
PLC Logic	Name	Output_MB_Slave Registers (Function O	Code 04) Cycli
Contraction	Access Type	Write Single Register (Function Code 6)	
PLC_PRG (PRG)	Trigger	Cyclic Cycle Time (ms) 100	
🖹 🚟 Task Configurati 🗐 🎲 MainTask	Comment		
PLC_PR	READ Register		
Gateway_LED_APPL (Ga	Offset	·	
BL20_E_8DO_24VDC	Length	1	
BL20_E_8DI_24VDC	Error Handling	Keep last Value 🔻	
BL20_2DO_24VDC_0	WRITE Register		
BL20_E_8AI_U_I_4P	Offset	0x0800	
Modbus_TCP_Master	Length	1	
		OK Cancel	
	•		
Devices POUs	F	Add Channel Delete	Edit
		Last build: 😳 0 🕐 0 Precompile: 🧹 Current user: (nob	ody)

Fig. 31: Adding Modbus Slave channels



5.4 Modbus TCP-Slave-Device

Properties	
Max. number of input registers	1024
Max. number of holding registers	1024

5.4.1 Configuring Modbus TCP-Slave-Device

- Add the Modbus_TCP_Slave_Device to the Ethernet interface using the "Add Device"-function and configure it.
- ➤ Therefore define the number of in- and output registers (input and holding registers) which have to be exchanged with the higher-level Modbus TCP-master.

Ele Edit Vyew Project Build Online Debug Iools Window Help	BL20_PG_EN_V3_MB_Slave_Device.project* - COD	ESYS			• X
Image: Second	Eile Edit View Project Build Online Debug	<u>T</u> ools <u>W</u> indow <u>H</u> elp			
Device Modbus_TCP_Slave_Device BR.20_PG_EN_V3_MB_Slave_Device Configured Parameters Device (BL20+PG-EN-V3) Configured Parameters Device (BL20+PG-EN-V3) General Configured Parameters Configured Parameters Device (Data Configured Data Configured Parameters) Configured Parameters PLC Logic Modbus_TCP Slave Device 1/0 MainTask MainTask Information MainTask Device (BL20 Local IO BL20) Device (BL20-2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE BL20_2ATTINE BL20_2ATTINE BL20_2ATTINE BL20_2ATTINE (BL20-2ATTINE BL20_2ATTINE BL20_2ATTINE BL20_2	管 🚅 📕 🎒 🗠 🗠 🐰 🗈 💼 🗙 🏘 🤅	🕼 I 📾 I 🛅 - 🔓 I 🏙 I 🕵 🧐 -) 🗉 👋 l 🖓 🖓 👘 🖕 🕫	\$ ¢ ≓	
Device # X BL20_PG_EN_V3_MB_Slave_Device Image: TCP_Slave_Device X Device (BL20-PG_EN_V3) Modbus_TCP Slave_Device X Device (BL20-PG_EN_V3) Modbus TCP Slave Device 1/0 Device Mapping TimeOut: 2000 @: Device MainTask Information Discrete JO Gateway_LED_APPL (Gateway LED APPL Modbus TCP Slave Device 1/0 BL20_E_SD0_24VDC_0_SA_P (BL20-E30) Input Registers (% QW): 4 Input Registers (% QW): BL20_E_SD1_24VDC_0_SA_P (BL20-E30) BL20_E_SD1_24VDC_0_SA_P (BL20-E30) Data Model Start Addresses: Coils: Data Device Input Register: 0 Input Register: 0 Input Register: Modbus_TCP_Slave_Device (Modbur Modbus_TCP_Slave_Device (Modbur Modbur Input Register: 0 I					
BL20_PG_EN_V3_MB_Slave_Device Device (BL20 PG_EN_V3) Configured Parameters Image:	Devices 🗸 🗸 🗙	Device Modbus_TCP	_Slave_Device X		-
Image: Sector	BL20_PG_EN_V3_MB_Slave_Device	Coursel .	Configured Parameters		
Modbus TCP Slave Device I/O Mapping Slave Port: Solution MainTask PIC_PRG MainTask PIC_PRG Gateway_LED_APPL (Gateway LED APPL Slave Data Model Slave Solution Slave Data Model Start Addresses: Coils: Discrete Inputs: Modbus_TCP_Slave_Device (Modbus	Device (BL20-PG-EN-V3)	General	TimeOut:	2000	(ms)
Information	Application	Modbus TCP Slave Device I/O Mapping	Slave Port:	502	(
Information Onit D: Holding Registers (%1W): 4 Holding Registers (%2W): 4 Input Register (%2W): 4 </td <td>- 📶 Library Manager</td> <td>Information</td> <td>List ID.</td> <td>502</td> <td></td>	- 📶 Library Manager	Information	List ID.	502	
Holding Registers (% IW): 4 Holding Register IN Holding Register: 0 Holding Register: 0 Holding Register: 0 Holding Register: 0 Holding Register: 0 Holding Register: 0 Holding Register IN Holding Register IN HOLE HOLE HOLE	PLC_PRG (PRG)	Information	Unit ID:		
Input Registers (%QW): 4	I ask Configuration		Holding Registers (%IW):	4 🌩	
Gateway_LED_APPL (Gateway LED APPL Gateway_LED_APPL (Gateway LED APPL Local_IO_BL20 (Local IO BL20) BL20_E_8DD_24VDC_0_SA_P (BL20-E8DI- BL20_E_8AI_U_J_4PT_NI (BL20-21- BL20_E_8AI_U_J_4PT_NI (BL20-2-8 Ethernet Modbus_TCP_Slave_Device (Modbus Holding Register: 0 Input Register: 0 Holding- and Input-Register Data Areas overlay	PLC_PRG		Input Registers (%QW):	4	
Local JO BL20 (Local IO BL20) BL20 E BOD 24VDC 0 SA P (BL20 BL20 E BOI 24VDC P (BL20-4DI- BL20 E BOI 24VDC 0 SA P (BL20-2I-TI BL20 E BAI U J 4PT_NI (BL20-2-R) Data Model Start Addresses: Coils: Discrete Inputs: Discre	Gateway_LED_APPL (Gateway LED APPL				
BL20_E_BD0_24VDC_0_SA_P (BL20 Image: Bl20_E_BD1_24VDC_0_SA_P (BL20-24) Image: Bl20_E_BAI_U_I_4WDC_0_SA_P (BL20-24) Image: Bl20_E_BAI_U_I_4WT_NI (Bl20-E-8) Image: Bl20_E_BAI_U_I_	Local_IO_BL20 (Local IO BL20)				
Data Model Data Model Data Model Start Addresses: Coils: Discrete Inputs: Discrete Inputs: Discrete Inputs: Holding Register: Input Register: <td>BL20_E_8DO_24VDC_0_5A_P (BL20</td> <td></td> <td></td> <td></td> <td></td>	BL20_E_8DO_24VDC_0_5A_P (BL20				
Image: Start Addresses: Start Addresses: Image: Start Addresses: Coils: 0 Image: Start Addresses: Image: Start Addresses: Coils: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Start Addresses: Image: Start Addresses: Image: Start Addresses: Image: Start Addresses: Start Addrestart Addresses: Start Addresses: Start Add	BL20_2AI_THERMO_PI (BL20-2AI-TI		Data Model		
Coils: 0 🐨 Discrete Inputs: 0 🐨 Holding Register: 0 🐨 Input Register: 0 🐨			Start Addresses:		
Image: Second	BL20_E_8AI_U_I_4PT_NI (BL20-E-8		Coils:	0	
Holding Register: 0 定 Input Register: 0 定 Holding- and Input-Register Data Areas overlay	Modbus TCP Slave Device (Modbus		Discrete Inputs:	0 🚖	
Input Register: Input-Register Data Areas overlay			Holding Register:	0	
Holding- and Input-Register Data Areas overlay			Input Register:	0	
			- Holding- and Input-Reg	ister Data Areas ov	erlav
				Sector Bacarnead by	
Lasthuild: 🗘 0. @ 0. Prerompile: . 4		Last huild: 🙆 0 🕐 0 🛛 Precompil	e' . / Ourrow	tuser (nobodu)]

Fig. 32: Configuring Modbus TCP-Slave-Device

Which data will be mapped into the input and holding registers, depends on assignments in the PLC program or in the I/O mapping of the PG-V3 or of the local I/Os.

BL20_PG_EN_V3_MB_Slave_Device.project*	- CODESYS						_ 0 <u>X</u>
File Edit View Project Build Online I	Debug Tools Window Help						
		10 // .	→= Q ² L =				
		9 9 - E 📲 🔨 I LE ME ME	~= ¢ □	2 =			
Devices 👻 🕂 🗙	Device Modbus_T	P_Slave_Device X PLC_PR	ιG				•
BL20_PG_EN_V3_MB_Slave_Device		Channels					
Device [connected] (BL20-PG-EN-	General	Variable	Manning	Channel	Address	Type	Current Value
	Modbus TCP Slave Device I/O		wapping	Taguta	Address	туре	Current value
Library Mapager	Mapping			Outputs	%1W15	ARRA	
	Information	H- W	×	Outpute[0]	%QW2	WOPD	176
Task Configuration		E- To	Ŷ	Outputs[1]	%OW3	WORD	0
🖻 🖑 MainTask				Outputs[2]	%OW4	WORD	0
DIC_PRG		- <u>.</u>		Outputs[3]	%QW5	WORD	0
Gateway_LED_APPL (Gatewa					_		
😑 😳 🎼 Local_IO_BL20 (Local IO BL2							
- 🧐 👔 BL20_E_8DO_24VDC_0_5		•					
		Reset Mapping	Always up	date variables	Enabled 1 (use	bus cycle	task if not used in an
BL20_2AI_THERMO_PI (B		IEC Objects					
BL20_2DO_24VDC_0_5A		ice objects	. ·	-			
BL20_E_8AI_U_I_4PT_NI		Variable	Mapping	Type			
B thernet		Modbus_TCP_Slave_D	~	IoDrvModbus	TCPSlaveWrappe	r	
Modbus_ICP_Slave_Devi							
		🍫 = Create new variable	🍞 = Ma	ip to existing v	ariable		
		Bus Cycle Ontions					
		Bus Cycle Task Use naren	t bus cycle se	tting 👻			
< III >							
POUs Modules See Devices		•					E F
Magazaras Tatal 0 error(s) 0 warping(s) 22 mars							
Puild	- Correr(s)	amina(s) 🙆 22 massaga(s) 📉					• + •
Watch 1	a second permitten and	And the content of the state of					→ ₽ X
F	А		n	a			۸.
							•
watch 1 Juni Breakpoints G Cross Reference			D				
Last build: 😏 U 😗 Ü 🛛 Precompile: 🧹	RUN Pr	ogram loaded	Program u	nchanged	(urrent use	er: (nobody)

Fig. 33: Modbus TCP-Slave-Device data mapping



5.5 PROFINET-Device

Properties max. number of I/O data 1024 byte in total (512 IN + 512 OUT) NOTE It can be necessary to increase the PROFINET cycle time for larger BLxx-stations.

5.5.1 Configuring the PROFINET-device in CODESYS

Add the PROFINET_Device to the Ethernet interface using the "Add Device"-function and configure the length of the in- and output data, which have to be exchanged with the higher-level PROF-INET-master.



Fig. 34: Configuring the PROFINET-device in CODESYS

NOTE

When configuring the I/O-data the following has to be observed: The input data in CODE-SYS have to be configured as output data in the PROFINET-master configuration and the output data in CODESYS as input data.

The data thus have to be configured in reverse order in the PROFINET-master configuration (see also **Configuring the in- and output data (page 55**)). Which data will be mapped into the configured input and output data, depends on assignments in the PLC program or in the I/O mapping of the PG-V3 or of the local I/Os.

BL20 PG EN V3 PN Slave.project* - CODE	SYS							• X
The Table Manuel Devices Device D	Nelson Taala Miadam Uala							
Pile Edit View Project Build Online L	<u>ebug tools window H</u> elp							
1 🖼 🐸 💾 😂 🗠 🗠 🖇 🖷 🖫 🗙	M % ⊟ ⊞ - D` ⊞ <	§ 🧐 🕨 🔳 🔧	비니크 여름 여	3 13	옷 ㅎ 븤			
Devices 👻 🕂 🗙	Device Profinet De	vice	PRG	I OUT	1 BYTE X			
BL20_PG_EN_V3_PN_Slave	-							
🖹 🤣 🚪 Device [connected] (BL20-PG-EN-	General	Channels						
PLC Logic		Variable	Mapping	Ch	Address	Туре		Current Va
Application [run]	PNIODev-Module I/O Mapping	🖃 🧖 Counter	*	Out8	%QB3	USINT	231	
📶 Library Manager	Status	* @		Bit0	%QX3.0	BOOL	TRUE	
PLC_PRG (PRG)	Status	- *		Bit1	%QX3.1	BOOL	TRUE	
E 🔛 Task Configuration	Information	- *		Bit2	%QX3.2	BOOL	TRUE	
🖻 😻 MainTask		**		Bit3	%QX3.3	BOOL	FALSE	
PLC_PRG		*		Bit4	%QX3.4	BOOL	FALSE	
Gateway_LED_APPL (Gatewa				Bit5	%QX3.5	BOOL	TRUE	
= 😳 🚛 Local_IO_BL20 (Local IO BL1		*		Bit6	%QX3.6	BOOL	TRUE	
BL20_E_8DO_24VDC_0_5		· · · · · · · · · · · · · · · · · · ·		Bit7	%QX3.7	BOOL	TRUE	
BL20_E_8DI_24VDC_P (B								
BL20_2AI_THERMO_PI (B								
BL20_2DO_24VDC_0_5A								
Profinet_Device (Profinet								
		•						
			Reset Mappi		vavs update va	riables: 1	lse narent	t device setti
						C	ine parent	
		🍫 = Create new	variable	3	a Map to exi	sting varia	able	
		•						+
U POUS Br Modules E Devices								
Messages - Total 0 error(s) Devices ng(s), 21 mess	age(s)							- 4 X
Rolld	👻 🙃 0 error(s) 🕐 0 w	arning(s) 🙃 21 me	(a)encane	×		_	_	
Watch 1								- 4 ×
A	V-I.	- r	\	r.				÷
🔝 Watch 1 🚇 Breakpoints 🙀 Cross Reference	e List							
Last build: 😧 0 😗 0 Precompile: 🗸 🔒	RUN Program load	ded	Program	unchang	ed	Curren	t user: (n	obodv)

Fig. 35: PROFINET-device data mapping

NOTE

The PROFINET-device shows an error as long as a connection to the PROFINET-master is established.



5.5.2 Configuring the PROFINET-device in the PROFINET-master

The following example shows the PROFINET-device configuration in TIA-Portal V13 from Siemens. The PROFINET-CODESYS-device is configured as standard PROFINET-slave in TIA-Portal. Hardware in the example:

- PLC: S7 CPU315-2 PN/DP, 315-2EH13-0AB0
- BL20-PG-EN-V3, FW 1.0.5.0

Installing the GSDML-file

- Install the device's GSDML-file (GSDML-V2.3-TURCK-CDS3_PN_Device-...-xml) in the PROF-INET configuration software. It can be downloaded fromwww.turck.com
- The device is added to the hardware catalog "CDS 3 PN Device".



Fig. 36: Configuring the PROFINET-device in TIA-Portal

Configuring the PROFINET-parameters

Like for all other PROFINET-slave, the PROFINET-interface has to be configured for the CDS3 PN-Device" in the project.

Set all necessary IP-settings and assign a PROFINET-device name or use the device name which has already been assigned to the device.



Fig. 37: Settings PROFINET-interface (CDS3 PN Device)



Configuring the in- and output data

> Configure the in- and output data, which have to be exchanged with the CODESYS-device.



NOTE

The configuration of the data in TIA-Portal has to be done in reverse order compared to the configuration in CODESYS. Input data in TIA-Portal are output-data in CODESYS, and vice versa.

The configured data lengths have to match.



Fig. 38: Configuration of in- and output data in TIA-Portal/CODESYS

5.6 EtherNet/IP Slave (Device)

Properties	
max. number of I/O data	496 Byte IN 492 Byte OUT

5.6.1 Configuring the EtherNet/IP-device in CODESYS

 Add the Ethernet_IP_Slave to the Ethernet interface using the "Add Device"-function and con-figure the length of the in- and output data, which have to be exchanged with the higherlevel EtherNet/IP-PLC.

BL20_PG_EN_V3_EIP_Slave.project - CODESYS	Insert Device	
Ele Edit View Project Build Online Debug Iools Image: Second Se	Name: IN_1_WORD_1 Action: Append device Insert device Plug device Update device Device:	-
B BU PI C Logic	Vendor: <all vendors=""></all>	·
Application A	Name Vendor Version	^
PUC_PRG (PRG) PUC_PRG (PRG) PUC_PRG (PRG) PUC_PRG (PRG) PUC_PRG (PRG) PUC_PRG PUC_PRG PUC_PRG Gateway_LED_APPL (Gateway LED APPL) PUC_PRG Gateway_LED_APPL (Gateway LED APPL) PUC_PRG BL20_E_80D_24VDC_0_SA_P (BL20-E-8G BL20_E_801_24VDC_0_SA_P (BL20-2AUT-HERM BL20_E_801_2V_1 C_1 SAUT_1 SAUT_	Miscellaneous Ni scellaneous Ni Scellaneous Ni Ni WORD TURCK 1.0.3.0 Ni Ni WORD TURCK 1.0.3.0 Ni 2 WORD TURCK 1.0.3.0 Ni 2 WORD TURCK 1.0.3.0 Solution In 32 WORD TURCK 1.0.3.0 Solution In set in	ay [0000]
	Insert selected device as sibling before IN_1_WORD (You can select another target node in the navigator while this window open.)	is
Ker III A Mes	Insert Device	Close 0 mescane(s) X rrent user: (nobody)

Fig. 39: Configuring the Ethernet/IP-slave



Which data will be mapped into the configured input and output data, depends on assignments in the PLC program or in the I/O mapping of the PG-V3 or of the local I/Os.

BL20_PG_EN_V3_EIP_Slave.project* - CODES)	rs) X
File Edit View Project Build Online Del	hua Tools Window Help							
		AN	a ca da a	- 0 L.				
		2 👒 🕨 🔳 🛰 I (, e * e * e *	'≡ ¢ '	~ =			
Devices 👻 🕂 🗙	Ethernet	P_Slave 🕜 OL	JT_1_WORD	× 📄	PLC_PRG	BL20	E_8DI_24VDC_P	
BL20_PG_EN_V3_EIP_Slave		Chanada						
Device [connected] (BL20-PG-EN-V3)	EIPS-Module I/O Mapping	Channels				-		
PLC Logic	Chalum	Variable	Mapping	Chan	Address	Туре	Default Value	
Application [run]	Status	🖃 🖗 counter	*	Out16	%QW2	UINT		115
Library Manager	Information	···· •		Bit0	%QX4.0	BOOL		TRUE
PLC_PRG (PRG)	Includion	· · · · · · · · · · · · · · · · · · ·		Bit1	%QX4.1	BOOL		TRUE
Task Configuration		· · · · · ·		Bit2	%QX4.2	BOOL		FALSE
□-ॐ MainTask		`		Bit3	%QX4.3	BOOL		FALSE
一世 PLC_PRG		···· 🍫		Bit4	%QX4.4	BOOL		TRUE
Gateway_LED_APPL (Gateway L		· · · · · · · · · · · · · · · · · · ·		Bit5	%QX4.5	BOOL		TRUE
= 🔮 🛤 Local_IO_BL20 (Local IO BL20)		···· 🎾		Bit6	%QX4.6	BOOL		TRUE
BL20_E_8DO_24VDC_0_5A_		···· •		Bit7	%QX4.7	BOOL		FALSE
BL20_E_8DI_24VDC_P (8L20		···· **		Bit8	%QX5.0	BOOL		FALSE
BL20_2AI_THERMO_PI (BL2)		···· •		Bit9	%QX5.1	BOOL		FALSE
		* *		Bit10	%QX5.2	BOOL		
		···· •		Bit11	%QX5.3	BOOL		
Ethernet		- *		Bit12	%QX5.4	BOOL		
Ethernet_IP_Slave (Etherne		····· **		Bit13	%QX5.5	BOOL		
IN_1_WORD (IN 1 WOR		•						
OUT_1_WORD (OUT 1 V		R	leset Mapping	Always	s up date variab	les: Use pa	arent device setting	,
		🍫 = Create new	variable	~ •	Map to existin	ng variable		
		1						b.
I POUs I Modules Z Devices								· ·
Watch 1								- 4 ×
F	A	W=1	D		- P			Þ
👰 Watch 1 🔊 Breakpoints 🛛 Cross Reference	List							
Last build: 😳 0 🕐 0 🛛 Precompile: 🧹 🏫	RUN Program	n loaded	Prog	iram uncha	nged	Cu	irrent user: (nobo	dy)

Fig. 40: EtherNet/IP-slave data mapping

5.6.2 Configuring the EtherNet/IP-slave in EtherNet/IP PLC

The following example describes the configuration of the EtherNet/IP-slave in "RSLogix5000" V20.1. from Rockwell Automation.

The EtherNet/IP-slave is configured as standard EtherNet/IP-slave (Communications Adapter) in RSLogix.

Hardware in the example:

- Controller. Logix 5572 (Allen Bradley)
- EtherNet/IP-Bridge 1756EN2TR (Allen Bradley)
- BL20-PG-EN-V3, FW 1.0.5.0

Installing the EDS-file

- Install the device's EDS-file (Turck CDS3.eds) in the configuration software. It can be downloaded from www.turck.com
- → The device is added to the device catalog in RSLogix as "CDS 3 Ethernet/IP Slave".

RSLogix 5000 - PGEN_V3_EIP_Slave [1756-L72 20.11]* - [Mo	fodule Properties: Local:1 (1756-EN2TR 3.1)]	
Eile Edit View Search Logic Communications	<u>T</u> ools <u>W</u> indow <u>H</u> elp	- 8 ×
🖺 🗃 🖬 🎒 👗 🖻 🖻 🗠 🗠 🦷 🤇	elect Module Type	
Offline Image: Construction of the constructio	Catalog Module Discovery Favorites Enter Search Text for Module Type Clear Filters Hide Filters #	
Controller Organizer Controller PGEN, V3_EIP_Slave Controller PGEN, V3_EIP_Slave Controller Fault Handler Controller Fau	Module Type Category Filters Communication Communication Communication Digital Communication Digital Communication Controller Contro	* *
	Status: Offine OK Cancel Apply E	<u>telp</u>
(

Fig. 41: "CDS 3 Ethernet/IP Slave" in the device catalog in RSLogix5000



Slave configuration

- 🔞 RSLogix 5000 - PGEN_V3_EIP_Slave [1756-L72 20.11]* - [Module Properties: Local:1 (1756-EN2TR 3.1)] E File Edit View Search Logic Communications Tools Window Help - 5 > 🗎 🚅 🖬 🎒 👗 🗎 💼 🗠 🗠 New Module х BUN OK Energy Storage Offline General* Connection Module Info Internet Protocol Port Configuration No Forces No Edits 0 CDS3 Ethernet/IP Slave Type: Vendor: Turck Controller Organiz EIP_Bridge Parent Controller PGEN_V3_EIP_Slave BL20_PG_EN_V3 Ethernet Address Na<u>m</u>e: Private Network: 192.168.1. Description: Power-Up Handler 192 . 168 . 145 . 13 IP Address: MainTask
 MainTask
 MainProgram
 Unscheduled Programs / Phases Host Name: Motion Groups Module Definition Add-On Instructions
 Cata Types
 Cata Types
 Cata Strings
 Cata Strings
 Cata Add-On-Defined
 Cata Module-Defined
 Cata Module-Defined
 Cata Module-Defined
 Cata Configuration
 Cata Strings
 Cata St Revision: 2.7 Electronic Keying: Compatible Module Connections: Exclusive Owner Module Definition X I/O Configuration 2 -Revision: Cancel <u>H</u>elp Electronic Keying: Compatible Module • Connections: Size Name Tag Suffix Input: 256 SINT BL20_PG_EN_V3:I1 Apply Help 1 Exclusive Owner Output: 256 BL20_PG_EN_V3:01 -Ready The disabled controls cannot be changed while online. OK Cancel Help
- > Enter the device name and the device's IP address.

Fig. 42: Settings at the "CDS3 Ethernet/IP Slave"

Configuring the in- and output data

The device is automatically configured with a data width of 256 byte in- and 256 byte output data.

lectronic <u>K</u> eying: Co	mpal	tible Mod	lule	•	•	
onnections:						
Name			Size		Tag Su	ffix
Exclusive Owner		Input:	256	CINT	1	BL20_PG_EN_V3:I1
	Γ	Output:	256			BL20_PG_EN_V3:01
Select a connection	•					

Fig. 43: EtherNet/IP-Connection "CDS3 Ethernet/IP Slave"

Configuring the in- and output data which have to be exchange with the CODESYS-device is thus not necessary. The Controller Tags are automatically generated.

1 B	🔞 RSLogix 5000 - PGEN_V3_EIP_Slave [1756-L72 20.12]* - [Controller Tags - PGEN_V3_EIP_Slave(controller)]							
	<u>File Edit View Search Logic Communications I</u>	ools	<u>W</u> indow <u>H</u> elp					- B
e	ドロ (1) (1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		- # 4 % 10 17 9 Q Q	Sele	ect a Langua	ige	- 🥺	
Ren	n Run 🚺 🗖 Run Mode 🛛 🔜 🎆	Pat	h: AB_ETHIP-1\192.168.145.241\Backplane\0*	- ₽				
No F	forces		P		1			
NoE	If SLagis 5000 - PGEN_V3 EIP Slave [1756-172 20.12]* - [Controller Tags - PGEN_V3 EIP Slave(controller)] Image: State (1756-172 20.12]* - [Controller Tags - PGEN_V3 EIP Slave(controller)] If is fold View Seath Logic Communications Lools Window Help Image: State (1756-172 20.12]* - [Controller Tags - PGEN_V3 EIP Slave(controller)] Image: State (1756-172 20.12]* - [Controller Tags - PGEN_V3 EIP Slave(controller)] Image: State (1756-172 20.12]* - [Controller Tags - PGEN_V3 EIP Slave(controller)] Image: State (1756-172 - 1756) Image: State (1756-172 - 1766) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image: State (1756-172 - 1767) Image:							
Red	undancy 👧	N	Favorites 🖌 Add-On 🤾 Safety 🔏 Alarms 🔏 Bit 🔏	Timer/C				
	Controller Organizer 🗾 👻 🕂 🗙	s	cope: 🎦 PGEN_V3_EIP_ 👻 Show: All Tags			•	Y. Enter Name Filte	K
Start	Controller PGEN_V3_EIP_Slave	F	Name ===	Value	+	For 🗲	Style	Data Type
t Pa	Controller Tags				{}	 		0030:0 F0C83; E
6	Controller Fault Handler		-BL20 PG EN V3:11.ConnectionFaulted		0		Decimal	BOOL
	- Power-Up Handler		BL20_PG_EN_V3:11.Data		{}	{	Decimal	SINT[256]
	MainTask		+-BL20_PG_EN_V3:11.Data[0]		-49		Decimal	SINT
	🖬 🖼 MainProgram		BL20_PG_EN_V3:11.Data[1]		0		Decimal	SINT
	Unscheduled Programs / Phases				0		Decimal	SINT
	🖃 🚔 Motion Groups				0		Decimal	SINT
	Ungrouped Axes		E-BL20_PG_EN_V3:11.Data[4]		0		Decimal	SINT
	Add-On Instructions		E-BL20_PG_EN_V3:11.Data[5]		0		Decimal	SINT
	🖶 🗁 Data Types		E-BL20_PG_EN_V3:11.Data[6]		0		Decimal	SINT
					0		Decimal	SINT
	🕀 🕞 Strings	Controler DR C						
	Add-On-Defined		EBL20_PG_EN_V3:11.Data[9]		0		Decimal	SINT
	Predefined		E-BL20_PG_EN_V3:11.Data[10]		0		Decimal	SINT
			E-BL20_PG_EN_V3:11.Data[11]		0		Decimal	SINT
	I rends		EL20_PG_EN_V3:11.Data[12]		0		Decimal	SINT
	in a 1756 Packplane 1756-07		EL20_PG_EN_V3:11.Data[13]		0		Decimal	SINT
			E-BL20_PG_EN_V3:11.Data[14]		0		Decimal	SINT
	I 111756-EN2TR FIP Bridge		BL20_PG_EN_V3:I1.Data[15]		0		Decimal	SINT
	Ethernet		EL20_PG_EN_V3:11.Data[16]		0		Decimal	SINT
	0 BL20 PG EN V3		BL20_PG_EN_V3:11.Data[17]		0		Decimal	SINT
	1756-EN2TR EIP_Bridge		EL20_PG_EN_V3:11.Data[18]		0		Decimal	SINT
			EL20_PG_EN_V3:11.Data[19]		0		Decimal	SINT
	Image: Construction Fourier Fo							
			EBL20_PG_EN_V3:11.Data[21]		0		Decimal	SINT
			Monitor Tags / Edit Tags /			m	la i i	Panir Pani
Read		<u></u>						a

Fig. 44: Automatically generated Controller Tags of the "CDS3 Ethernet/IP Slave"



6 USB Host port functions

The USB Host port serves for connecting USB storage devices for the storage, restore and transfer of CODESYS applications as well as for updating the device firmware.



The USB Host function can be deactivated using the web-server of the CODESYS program (bit 14 of the device parameter object).

6.1 Compatible storage devices

The USB Host port is generally suitable to connect commercially available USB storage devices.

NOTE

Only use USB memory sticks formatted to FAT or FAT32. The use of memory sticks formatted to NFTS is not possible.

Depending on the current consumption of the devices, compatibility problems may occur in isolated cases.

In order to guarantee error-free operation, we recommend to use industrially tested storage devices. Ident-Nr. 6827348 - USB 2.0 Industrial Memory Stick.

NOTE

Connecting other USB devices like for example hard disks, keyboards, computer mouses etc. is not possible.

6.2 Functions of the USB Host port

For further information, see Function overview (page 63).

Read access

The read access does not require a user intervention. The CODESYS program continues to run.

- BACKUP_1: Storing the CODESYS application on the storage device
- BACKUP_2: Storing the CODESYS application and further device data on the storage device
- USB_DATA: Storing of CODESYS recipes and/or log-fileson the storage device.
- Write access

The write requires user intervention (press the SET-button for at least 3 seconds). The CODESYS program is stopped.

- RESTORE_1: Loading the CODESYS application from the storage device to the device.
- RESTORE_2: Loading the CODESYS application and further device from the storage device to the device.
- USB_DATA_WRITE: Loading of CODESYS recipes and/or log-files from the storage device to the device
- FW_UPDATE

6.2.1 General hints/prerequisites

- The storage device is formatted in FAT (FAT or FAT32).
- The storage device does contain only one folder. If the storage device contains more than one folder, not function is executed. TheRUN-LED displays errors, see Behavior of the RUN-LED in case of an error (page 66).
- The folder name defines the function to be executed (for further information, see Function overview (page 63).
- Folder names must not contain special characters.
- Boot application:
 - The names of the CODESYS-application and the file names of the boot application (*.app and *.crc) have to be identical and must not be renamed.
- Read access:

Press the SET-button within 30 seconds after having plugged the storage device. If not, the function is not executed an the storage device is unmounted.



NOTE

The storage device must not be plugged during normal operation. A restart or reset of the device with the storage device being plugged can destroy the running application.



NOTE

Unplug the storage device only if the RUN-LED flashes orange (read/write operation finished) or red/green (error).



6.2.2 Function overview



ATTENTION!

Using CODESYS recipes

Corrupt data due to manipulation of data in USB_Data file directory

> Only use 1:1-copies with Backup_2/Restore_2 when using recipes:

Function	Folder name	Description	CODESYS- program	autom. device restart
Read access				
Backup 1	BACKUP_1	 Storing the CODESYS application on the storage device. The following files are stored to the storage device. All *.app and *.crc files. PlcLogic folder Existing files with the same name will be overwritten. All other data remain unchanged. 	RUN	NO
Backup 2	BACKUP_2	Storing the CODESYS application and the device data on from the BLxx-PG-EN-V3 on the storage device. The following files are stored to the storage device. – All *.app and *.crc files. – PlcLogic folder – Folder USB_Data – IP address – PROFINET device name – Retain-data (retain.bin) Existing files with the same name will be overwritten. All other data remain unchanged.	RUN	NO
Read user data	USB_DATA	Storing the folder "USB_Data" from the BLxx-PG-EN-V3 to the stor- age device. The following files are stored to the storage device. – CODESYS recipes and/or Log files Existing files with the same name will be overwritten. All other data remain unchanged.	RUN	NO
Write access				
Restore 1	RESTORE_1	Loading the CODESYS application from the storage device into the device. The following files are loaded from the storage device to the device: - All *.app and *.crc files. - PlcLogic folder The folder must contain only one application file (*.app). All other applications on the device are deleted without further warnings. The device automatically executes a restart after unplugging the storage device.	STOP	YES

USB Host port functions

Function	Folder name	Description	CODESYS- program	autom. device restart
Restore 2	RESTORE_2	Loading the CODESYS application and further device from the storage device into the BLxx-PG-EN-V3. The following files are loaded from the storage device: - All *.app and *.crc files. - PlcLogic folder - Folder USB_Data - IP address - PROFINET device name - Retain-data (retain.bin) The folder must contain only one application file (*.app). All other applications on the device except for the retain data are deleted without further warnings. The reatin data will only be overwritten if the storage device contains a newer file. The device automatically executes a restart after unplugging the storage device.	STOP	YES
Firmware update	FW_UPDATE	Update of the device firmware. The IP address, the PROFINET device name and the CODESYS application will not be overwrit- ten. File name: BLxx-PG-EN_1234567_Vx.y.z.0.bin The device automatically executes a restart after unplugging the storage device.	STOP	YES
Write user data	USB_DATA _WRITE	Loading the folder "USB_Data"from the storage device into the device. Existing files with the same name will be overwritten. All other data remain unchanged.	STOP	YES



6.2.3 Executing the functions

BACKUP_1/BACKUP_2

- > Plug the storage device into the USB Host port.
- → The RUN-LED flashes with 4 Hz.
- → The backup is executed.
- → The RUN-LED flashes orange with 1 Hz.
- → The backup is completed.
- > Unplug the storage device.

USB_DATA

- > Plug the storage device into the USB Host port.
- → The RUN-LED flashes with 2 Hz.
- → The data are stored to the storage device.
- → The RUN-LED flashes orange with 1 Hz.
- → The storing is completed.
- > Unplug the storage device.

RESTORE_1/RESTORE_2

- > Plug the storage device into the USB Host port.
- → The RUN-LED flashes with 0.5 Hz.
- > Press the SET-button within the next 30 seconds for at least 3 seconds.
- → The RUN-LED flashes in the following order 2x green pause (1 Hz) 2 x green pause (1 Hz)
- → Loading of data is executed.
- → The RUN-LED flashes orange with 1 Hz. The loading is completed.
- > Unplug the storage device.
- → The device is automatically restarted.

FW_UPDATE

- > Plug the storage device into the USB Host port.
- → The RUN-LED flashes with 0.5 Hz.
- > Press the SET-button within the next 30 seconds for at least 3 seconds.
- → The RUN-LED flashes in the following order 3x green pause (1 Hz) 3 x green pause (1 Hz)
- → Loading of data is executed.
- → The RUN-LED flashes orange with 1 Hz. The firmware update is completed.
- > Unplug the storage device.
- → The device is automatically restarted.

USB_DATA_WRITE

- > Plug the storage device into the USB Host port.
- → The RUN-LED flashes with 0.5 Hz.
- > Press the SET-button within the next 30 seconds for at least 3 seconds.
- → The RUN-LED flashes with 2 Hz. The data are stored to the BLxx-PG-EN-V3.
- → The RUN-LED flashes orange with 1 Hz. The storing is completed.
- > Unplug the storage device.
- → The device is automatically restarted.

6.2.4 Behavior of the RUN-LED in case of an error

Error	Description	LED behavior
Timeout	 The SET-button has not been pressed within the 30 seconds after the plugging of the storage device. 	Red/green flashing (1 Hz)
Invalid folder	 The storage device contains one folder with an invalid folder name. The storage device contains several folders with valid folder names. 	_
Empty folder	 The storage device contains one valid , but empty folder. 	—
USB deacti- vated	 The USB Host function has been deactivated using vie web- server or CODESYS program. 	Red/green flashing (0.5 Hz)



7 The web server

7.1 Web server - remote access/configuration

7.2 Safety in the web server

In the web server, a default-password is assigned to the Turck devices for the administrator access.

We strongly recommend to use an individual password, in order to avoid possible misuse by a third party!

This should be done in the context of the network security concept for the complete facility in which the modules are placed.



NOTE

Please change the password as described in Change Admin Password (page 71).



NOTE

The password is transfered as plain text.

7.3 IP address

In the delivery status, neither an address nor a PROFINET name is stored in the devices.

In order to be able to access the device via web server, the web server can be opened using the IP address 192.168.1.254.

If the PC used for the configuration is situated in the same IP network, page http://192.168.1.254

can be opened in order to initially change some settings.

7.4 Home

The web server's start page shows general device information, network settings, etc. The "PLC Information" part contains information concerning the CODESYS program status.

The menu items "Station Diagnostics", "Ethernet Statistics" and "Links" can also be accessed readonly without an administrator access.

			- C X
(C) (C) Thttp://192.168.1.13/info.l P - C	🍟 Gateway Information	×	↑ ★ ♡
Datei Bearbeiten Ansicht Favoriten Extras	?		
BL20-PG-EN-V3	way		TURCK
Embedded Website of Tokek's programmable date			Induction
Coheren Jafannahian b		Password [Login]	Automation
Gateway Information >			
Gateway Diagnostics	Gateway Information		
Ethernet Statistics	Туре	BL20-PG-EN-V3	
	Identification Number	6827393	
Slot 1 - BL20-E-8D0-24VDC-0.5A-P Slot 2 - BL20-E-8DI-24VDC-P	Firmware Revision	V1.0.5.0	
Slot 3 - BL20-2AI-THERMO-PI	Bootloader Revision	V1.0.0.0	
Slot 4 - BL20-2DO-24VDC-0.5A-P	EtherNet/IP Revision	V2.7.0.0	
SIDE 5 - BL20-E-8AI-0/1-4P1/NI	PROFINET Revision	V1.3.21.0	
	Rotary Switch Mode	Rotary	
	PROFINET Station Name	pgv3	
	Network Settings		
	Ethernet Port 1 setup	Autonegotiate	
	Ethernet Port 2 setup	Autonegotiate	
	IP Address	192.168.1.13	
	Netmask	255.255.255.0	
	Default Gateway	192.168.1.1	
	MAC Address	00:07:46:07:fe:f3	
	LLDP MAC Address 1	00:07:46:07:fe:f4	
	LLDP MAC Address 2	00:07:46:07:fe:f5	
	PLC Information		
	Runtime Version	V3.5.6.30	
	Application Name	Application	
	Application Status	loaded	
	Run Stop Status	run	
	For comments or questions, please URL http://www.turck.com	email TURCK Support * Revision V2.0.0.0	~

Fig. 45: Start page of the web server of BL20-PG-EN-V3



7.5 Gateway Diagnostics

Diagnostic messages of the device are displayed on the "Station Diagnostics"-page.

					- 0 ×
🗲 🕞 🔫 http://192.168.1.13/devic 🔎	👻 💆 🔫 Gatev	vay Diagnostics ×			$\hbar \star 3$
Datei Bearbeiten Ansicht Favoriten	E <u>x</u> tras <u>?</u>				
BL20-PG-EN-V3 Embedded Website of TURCK's programmab	ole Gateway				TURCK
			Password	[Login]	Industrial Automation
Gateway Diagnostics >					
Gateway Information I Gateway Diagnostics Ethernet Statistics Links	Diagn Please t	ostics use the refresh function (e.g. F5) of your bro	owser to update	the values	
Slot 1 - BL20-E-8DO-24VDC-0.5A-P	Slot	Source		Diagnostics	
Slot 2 - BL20-E-80I-24VDC-P ! Slot 3 - BL20-2AI-THERMO-PI Slot 4 - BL20-2DO-24VDC-0.5A-P Slot 5 - BL20-E-8AI-U/I-4PT/NI	0	Gateway	I/O configurati	on deviation	
	For com	ments or questions, please email TURCK Suppor http://www.turck.com * Revision V2.0.0.0	t		

Fig. 46: Diagnostics in the web server

7.6 Ethernet Statistics

The page "Ethernet Statistics" shows information like the port-status, telegram and error counters etc. The page can above all be useful for analyzing network problems.

← → Thttp://192.168.1.13/eth_s ♪	- 🖒 🍟 Ethernet Statistics	×			↑ ★ ₽		
Datei Bearbeiten Ansicht Favoriten	E <u>x</u> tras <u>?</u>						
BL20-PG-EN-V3 Embedded Website of TURCK's programmab	le Gateway				TURCK		
			Password	[Login]	Industrial Automation		
Ethernet Statistics >							
Gateway Information I Gateway Diagnostics	Ethernet Port 1 Status	Ethernet Port 1 Status					
Ethernet Statistics	Setup Mode	Autonegotiate					
	Link State	Disconnected					
Slot 2 - BL20-E-8DU-24VDC-0.SA-P Slot 2 - BL20-E-8DI-24VDC-P	Autonegotiation Status	Failed					
! Slot 3 - BL20-2AI-THERMO-PI	Link speed	10					
Slot 4 - BL20-2DO-24VDC-0.5A-P Slot 5 - BL20-E-8AI-U/I-4PT/NI	Link Duplex	Half-Duplex					
	Ethernet Port 2 Status	5					
	Setup Mode	Autonegotiate					
	Link State	Connected					
	Autonegotiation Status	Success					
	Link speed	100					
	Link Duplex	Full-Duplex					
	Ethernet summarized	Statistics					
	RX Frame Counter	14015931					
	RX Frame Error Counter	0					
	RX Symbol Error Counter	0					
	TX Frame Counter	13945563					
	TX Frame Error Counter	0					
	Dropped Frame Counter	0					
	For comments or questions, plea: URL http://www.turck.co	e email TURCK Supp m * Revision V2.0.0.0	ort				

Fig. 47: Ethernet Statistics



The "Ethernet summarized statistics" contain the statistics for both Ethernet ports.

7.7 Links

This page contains for example a link to the product page on the TURCK-homepage.



7.8 Login/password

In order to obtain administrator rights and thus full access to the extended functions of the web server (Network Configuration, Station Configuration, etc.), you have to log-on to the web server as administrator.

For the first login use the default password "password".

The default-password should be be changed by the administrator. To do so, please follow the instructions under **Change Admin Password (page 71)**.

NOTE

Executing the "Reset to Factory Defaults" also resets the password to "password".

🗲 🕞 🄫 http://192.168.1.13/info.l 🔎 🗸	🖸 🗂 Gateway Information	×	- □ × ↑ ★ ☆
<u>D</u> atei <u>B</u> earbeiten <u>A</u> nsicht <u>F</u> avoriten Eg	tras ?		
BL20-PG-EN-V3 Embedded Website of TURCK's programmable	Gateway		TURCK
Gateway Information >		Login]	Automation
Gateway Information ! Gateway Diagnostics	Gateway Information		
Ethernet Statistics Links	Туре	BL20-PG-EN-V3	
Slot 1 - BL20-E-8D0-24VDC-0 5A-P	Identification Number	6827393	
Slot 2 - BL20-E-8DI-24VDC-P	Firmware Revision	V1.0.5.0	
I Slot 3 - BL20-2AI-THERMO-PI	Bootloader Revision	V1.0.0.0	
Inputs	EtherNet/IP Revision	V2.7.0.0	
Slot 4 - BL20-2DO-24VDC-0.5A-P	PROFINET Revision	V1.3.21.0	
Slot 5 - BL20-E-8AI-U/I-4PT/NI	Rotary Switch Mode	Rotary	
	PROFINET Station Name	pgv3	~

Fig. 48: Web server "password"

7.9 Change Admin Password

ΝΟΤΕ

For security aspects when working with the web server, please observe the notes under Safety in the web server (page 67).

NOTE

The password for the web server is synchronized to the password for the SFTP access. Changing the web server password also changes the see password for the SFTP access (page **page 36**).

Please define an individual password for administrator rights.

Default password: "password"



NOTE

Executing the "Reset to Factory Defaults" (see also Reset to Factory Defaults (page 74)) also resets the password to "password".
🔶 🕀 🔫 http://192.168.1.13/chan 🔎	- C 📑 Change Admin Password 🛛 ×	- □ ×		
Datei Bearbeiten Ansicht Favoriten E	<u>ixtras</u> ?			
0-PG-EN-V3 edded Website of TURCK's programmab	le Gateway	TURCK		
	admin@192.168.1.100 [Logout]	Industrial Automation		
Change Admin Password >				
Gateway Information 1 Gateway Diagnostics Ethermet Statistics Links Gateway Configuration Network Configuration Change Admin Password	Change Administrator Password This form allows you to setup your own password for your gateway. If you alter the d password, there's no way to recover the password except sending it to the TURCK set Old password: New password:	efault rvice.		
Slot 1 - BL20-E-8DO-24VDC-0.5A-P Slot 2 - BL20-E-8DI-24VDC-P I Slot 3 - BL20-2AI-THERMO-PI Slot 4 - BL20-2DO-24VDC-0.5A-P Slot 5 - BL20-E-8AI-U/I-4PT/NI	Retype new password:			
For comments or questions, please email TURCK Support URL http://www.turck.com * Revision V2.0.0.0				

Fig. 49: Change Admin Password

Change password

- > Change the password for the station in the web server.
- > Write the changes into the device via "Submit".
- > Restart the device (voltage reset or pressing the set-button).
- → The device has accepted the new settings, the settings have become active.



NOTE



7.10 Network Configuration

On the "Network Configuration"-page, network-relevant settings can be changed.

7.10.1 Change network parameters (port settings, IP address, etc.)

The device's network settings can be changed under "Network Configuration" only by users having administrator rights.



NOTE

The access of the web server to the station is only possible, if the station already has an IP address, **Device addressing and operation mode setting (page 19)**.

After a reset to factory settings, the device can be accessed using the IP address 192.168.1.254. This IP address is not stored permanently in the device.

If the device is set to "ROTARY" mode (Address setting via rotary coding switches (Static rotary) (page 20)), than the last byte of the IP address can not be changed via the web server.

Datei Bearbeiten Ansicht Eavoriten Ex	C TNetwork Configuration	×			
BL20-PG-EN-V3 Embedded Website of TURCK's programmable Gateway admin@192.168.1.100 [Logout] Network Configuration > Cateway Information					
1 Gateway Diagnostics Ethernet Statistics Links Gateway Configuration Network Configuration Change Admin Password Slot 1 = BL20-E-8DD-24VDC-0.5A-P Slot 2 = BL20-E-8DI-24VDC-P I Slot 3 = BL20-2AU-THERMO-PI Slot 4 = BL20-2DO-24VDC-0.5A-P Slot 5 = BL20-2D-24VDC-0.5A-P Slot 5 = BL20-E-8AI-U/I-4PT/NI	Network Settings Ethernet Port 1 setup Ethernet Port 2 setup IP Address Netmask Default Gateway MAC Address LLDP MAC Address 1 LLDP MAC Address 2 Submit Reset	Autonegotiate ▼ Autonegotiate ▼ 192.168.1 132 255.255.0 192.168.1.1 00:07:46:07:fe:f3 00:07:46:07:fe:f4 00:07:46:07:fe:f5			
For comments or questions, please email TURCK Support URL http://www.turck.com * Revision V2.0.0.0					

Fig. 50: Web server with Network Configuration

Change network parameters

- > Change the network parameters in the web server.
- > Write the changes into the device via "Submit".
- → The device has accepted the new settings, the settings have become active.



NOTE

7.11 Gateway Configuration

7.11.1 Configuration of the field bus interface

The "Gateway Configuration"-page serves for parameterizing the device's fieldbus interface:

- Deactivating the USB Host port or the web server
- Assigning a PROFINET device name

7.11.2 Reboot

"Reboot" executes a power-cycle at the device.

7.11.3 Reset to Factory Defaults

Resets the device to the default settings (factory settings), see also F_Reset (Reset to factory setting) (page 23).

← → T http://192.168.1.13/devic ♀ ♥	T Gateway Configuration ×	n ★ ¤	
Datei Bearbeiten Ansicht Favoriten Extras	2		
BL20-PG-EN-V3 Embedded Website of TURCK's programmable Gal	ieway	TURCK	
	admin@192.168.1.100 [Logout]	Industrial Automation	
Gateway Configuration >			
Gateway Information ! Gateway Diagnostics	Protocols		
Ethernet Statistics Links	Deactivate USB Host support		
Gateway Configuration	Deactivate Web Server		
Change Admin Password	PROFINET Configuration		
Slot 1 - BL20-E-8DO-24VDC-0.5A-P Slot 2 - BL20-E-8DI-24VDC-P	PROFINET Station Name pgv3		
! Slot 3 - BL20-2AI-THERMO-PI Slot 4 - BL20-2D0-24VDC-0.5A-P	Submit Reset		
Slot 5 - BL20-E-8AI-U/I-4PT/NI	Reboot Reset to Factory Defaults		
For comments or questions, please email TURCK Support URL http://www.turck.com * Revision V2.0.0.0			

Fig. 51: Web server "Gateway Configuration"

Gateway Configuration

- > Change the configuration in the web server.
- > Write the changes into the device via "Submit".
- → The device has accepted the new settings, the settings have become active.

NOTE



7.12 Slot Parameters

Parameterization of the in-/ outputs 7.12.1

The "Parameters"-page is used to parameterize the module's I/O-channels.



NOTE

Parameter changes by the web server are valid in the device until the CODESYS program is downloaded to the device again, the device is restarted or parameters are changed in CODESYS by online change.



Fig. 52: Web server "Parameters"

Change parameters

- > Change the module parameters in the web server.
- Write the changes into the device via "Submit".
- Restart the device (voltage reset or pressing the set-button).
- The device has accepted the new settings, the settings have become active.



NOTE

7.13 Using mobile devices

The internal web server has a responsive design. This means, the web functions can also be executed using a mobile device, e.g. a smartphone.

The web content is automatically adapted to the smaller display in order to assure an optimized web server representation.

The Turck device and the mobile device have to be nodes of the same network. Please assure therefore that the IP addresses of both devices are part of the same subnet (e.g. 255.255.255.0).

In addition to that, a WLAN access has to be available for the mobile device.



For comments or questions, please email TURCK Support URL http://www.turck.com * Revision V1.0.0.0

Fig. 53: Access to the web server via smartphone

7.14 Web server logout

In order to disconnect a logged in user/PC with administrator rights from the web server, a logout is necessary.

If only the web browser is closed, the last active access is reactivated when opening the web server again from the same PC, which means, possibly with all administrator rights.

7.15 Deactivating the web server

NOTE

If, for safety reasons, the web serves has to be deactivated completely, this is possible via the device parameters in CODESYS or in the web server itself (see **page 74**). If the web server is deactivated using the web server itself, further access to it is only possible following a device reset to the factory settings (see **page 74**).



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