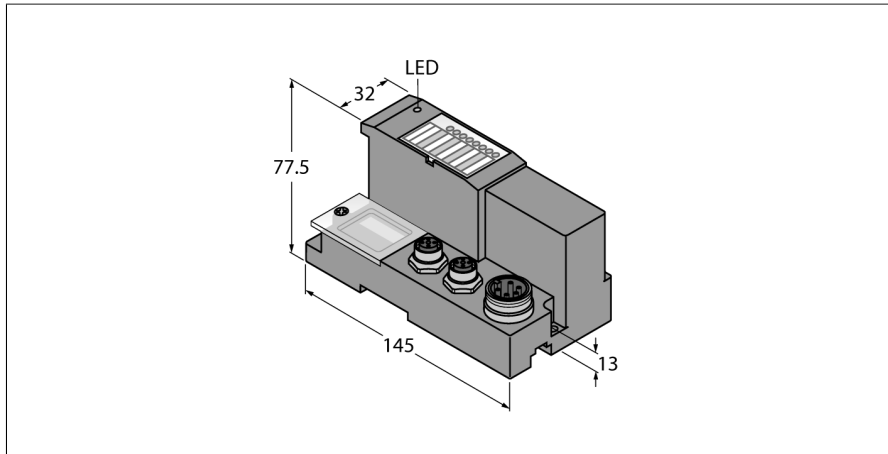


# CODESYS 3 Programmable Gateway for the BL67 I/O System Multiprotocol Ethernet Gateway for PROFINET, EtherNet/IP and Modbus TCP BL67-PG-EN-V3



- CODESYS V3 PLC Runtime
- CODESYS OPC UA server/client
- IIoT gateway for Turck Cloud
- PROFINET device
- EtherNet/IP device
- Modbus TCP master/slave
- Protection class IP67
- LEDs for display of PLC status, supply voltage, group and bus faults
- 2 × M12 Ethernet, 4-pin, D-coded
- Switched or dual MAC mode
- 10 Mbps/100 Mbps
- 7/8" male connector for power supply, 5-pin

|                                      |                                                                |
|--------------------------------------|----------------------------------------------------------------|
| Type                                 | BL67-PG-EN-V3                                                  |
| ID                                   | 6827394                                                        |
| Supply voltage                       | 24 VDC                                                         |
| System power supply                  | 24 VDC / 5 VDC                                                 |
| Field supply                         | 24 VDC                                                         |
| Admissible range                     | 18...30 VDC                                                    |
| Nominal current from module bus      | ≤ 100 mA                                                       |
| Max. sensor supply $I_{\text{sens}}$ | 4 A short circuit fuse                                         |
| max. load current $I_L$              | 10 A                                                           |
| Max. field supply current            | 10 A                                                           |
| Max. system supply current           | 1.2 A                                                          |
| Voltage supply connection            | 7/8", 5-pin                                                    |
| Fieldbus transmission rate           | 10/100 Mbps, Full/Half Duplex, Auto Negotiation, Auto Crossing |
| Fieldbus addressing                  | Rotary switch, PGM, DHCP                                       |
| Fieldbus connection technology       | 2 x M12, 4-pin, D-coded                                        |
| PLC data                             |                                                                |
| Programming                          | CODESYS V3                                                     |
| Released for CODESYS version         | V 3.5.8.10                                                     |
| Programming languages                | IEC 61131-3 (IL, LD, FBD, SFC, ST)                             |
| Application tasks                    | 5                                                              |
| Programming interface                | Ethernet, USB                                                  |
| Processor                            | ARM, 32 Bit                                                    |
| Cycle time                           | < 1 ms 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                           | 192.168.1.254 (default)                                        |
| Service interface                    | Ethernet, mini USB                                             |

## Functional principle

The programmable BL67 gateways can be used as autonomous PLCs or as decentral PLCs in a network interconnection for a fast preprocessing of signals.

BL67 gateways are the head component of a BL67 station. The BL67 electronic modules communicate over the internal module bus with the gateway and can be configured independently of the bus system.

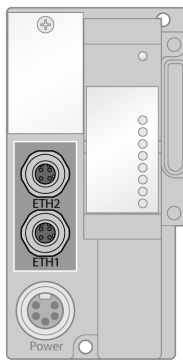
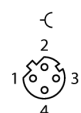
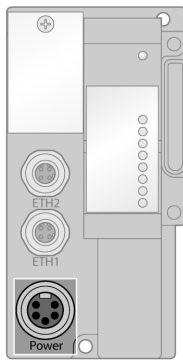
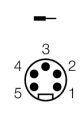
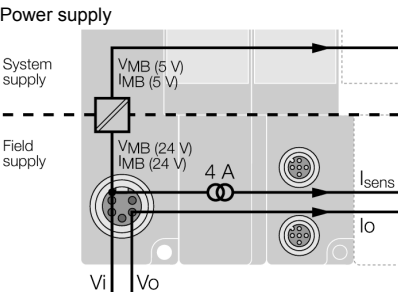
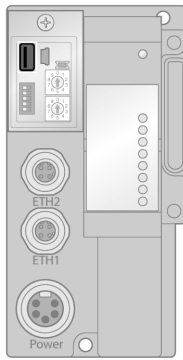
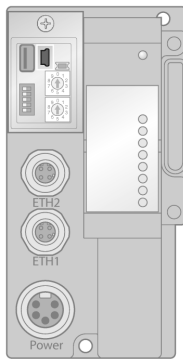
|                               |                                                |
|-------------------------------|------------------------------------------------|
| <b>Modbus TCP</b>             |                                                |
| Addressing                    | Static IP, DHCP                                |
| Supported function codes      | FC1, FC2, FC3, FC4, FC5, FC6, FC15, FC16, FC23 |
| Input Data Size               | max. 1024 register                             |
| Input register start address  | 0 (0x0000 hex)                                 |
| Output Data Size              | max. 1024 register                             |
| Output register start address | 0 (0x0000 hex)                                 |

|                         |                                   |
|-------------------------|-----------------------------------|
| <b>Ethernet/IP</b>      |                                   |
| Addressing              | acc. to EtherNet/IP specification |
| Device Level Ring (DLR) | not supported                     |
| Input Data Size         | 248 INT                           |
| Output Data Size        | 248 INT                           |

|                                 |                                 |
|---------------------------------|---------------------------------|
| <b>PROFINET</b>                 |                                 |
| Addressing                      | DCP                             |
| Conformance class               | B (RT)                          |
| MinCycleTime                    | 1 ms                            |
| Diagnostics                     | acc. to PROFINET alarm handling |
| Topology detection              | supported                       |
| Automatic addressing            | supported                       |
| Media Redundancy Protocol (MRP) | not supported                   |
| Input Data Size                 | max. 512 BYTE                   |
| Output Data Size                | max. 512 BYTE                   |

|                                       |                                                                                                               |
|---------------------------------------|---------------------------------------------------------------------------------------------------------------|
| Dimensions (W x L x H)                | 74 x 145 x 77.5 mm                                                                                            |
| Approvals                             | CE                                                                                                            |
| Ambient temperature                   | -25...+70 °C                                                                                                  |
| Temperature derating                  |                                                                                                               |
| > 55 °C Circulating air (Ventilation) | Derating: Max. power consumption = 5 A                                                                        |
| > 55 °C Steady ambient air            | Derating: Max. power consumption = 5 A                                                                        |
| Storage temperature                   | -40...+85 °C                                                                                                  |
| Relative humidity                     | 15...95 % (internal), level RH-2, no condensation<br>(when stored at 45 °C)                                   |
| Vibration test                        | Acc. 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 up to 150 Hz)     | for mounting on base plate or machinery Therefore every second module has to be mounted with two screws each. |
| Shock test                            | Acc. to IEC 60068-2-27                                                                                        |
| Drop and topple                       | acc. to IEC 68-2-31 and free fall to IEC 68-2-32                                                              |
| Electromagnetic compatibility         | Acc. to IEC 61131-2                                                                                           |
| Protection class                      | IP67                                                                                                          |
| MTTF                                  | 116 years acc. to SN 29500 (Ed. 99) 20 °C                                                                     |
| DIN rail mounting                     | yes, Attention: Offset                                                                                        |
| Direct mounting                       | Two mounting holes, Ø 6 mm                                                                                    |

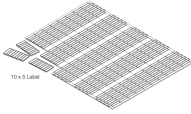
|                      |                    |
|----------------------|--------------------|
| Included in delivery | 1 x end plate BL67 |
|----------------------|--------------------|

|                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|---------------|---------------|---------------|-----------|
|    | <p><b>Ethernet</b></p> <p>The M12 D-coded Ethernet ports are used as interface for configuration, programming, and fieldbus communication. The gateway can be operated as a master or slave on a PROFINET, EtherNet/IP™ or Modbus TCP network.</p> <p><b>Ethernet Cordset (Example):</b></p> <p>M12-M12:<br/>RSSD RSSD 441-2M<br/>Ident no. U-02482</p> <p>M12-RJ45:<br/>RSSD RJ45S 441-2M<br/>Ident. no. U3-00525</p>                                                                                                                                                                                                                                | <p><b>Pin Assignment</b></p>  <table><tr><td>1 = YE (TX +)</td></tr><tr><td>2 = WH (RX +)</td></tr><tr><td>3 = OG (TX -)</td></tr><tr><td>4 = BU (RX -)</td></tr></table>                                                                                                                                           | 1 = YE (TX +) | 2 = WH (RX +) | 3 = OG (TX -) | 4 = BU (RX -) |           |
| 1 = YE (TX +)                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 2 = WH (RX +)                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 3 = OG (TX -)                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 4 = BU (RX -)                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
|    | <p><b>Power Supply</b></p> <p>The BL67 system is supplied via two 24VDC voltage groups.</p> <p>System supply <math>V_i</math><br/><math>V_i</math> supplies power to the sensor supply (<math>V_{sens}</math>) and the internal system supply, which includes Ethernet communication and the backplane bus that communicates with any connected I/O modules.</p> <p>Field supply <math>V_o</math><br/><math>V_o</math> supplies power to the outputs of any connected I/O modules.</p> <p><b>Power Cordset (Example):</b></p> <p>7/8"-7/8":<br/>RSM RKM 50-2M<br/>Ident. no. U2282-0</p> <p>7/8" single-ended:<br/>RKM 50-2M<br/>Ident. no. U2056</p> | <p><b>Pin Assignment</b></p>  <table><tr><td>1 = GND</td></tr><tr><td>2 = GND</td></tr><tr><td>3 = PE</td></tr><tr><td>4 = <math>V_i</math></td></tr><tr><td>5 = <math>V_o</math></td></tr></table> <p><b>Power supply</b></p>  | 1 = GND       | 2 = GND       | 3 = PE        | 4 = $V_i$     | 5 = $V_o$ |
| 1 = GND                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 2 = GND                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 3 = PE                                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 4 = $V_i$                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 5 = $V_o$                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
|  | <p><b>USB Host Port</b></p> <p>Storage media can be connected to the USB host port, please observe the instructions in the user manual.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <p><b>Pin Assignment</b></p>  <table><tr><td>1 = 5 VDC</td></tr><tr><td>2 = D -</td></tr><tr><td>3 = D +</td></tr><tr><td>4 = GND</td></tr></table>                                                                                                                                                               | 1 = 5 VDC     | 2 = D -       | 3 = D +       | 4 = GND       |           |
| 1 = 5 VDC                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 2 = D -                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 3 = D +                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 4 = GND                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
|  | <p><b>USB Device Port</b></p> <p>The USB device port can be used as a programming and service interface.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p><b>Pin Assignment</b></p>  <table><tr><td>1 = 5 VDC</td></tr><tr><td>2 = D -</td></tr><tr><td>3 = D +</td></tr><tr><td>4 = n.c.</td></tr><tr><td>5 = GND</td></tr></table>                                                                                                                                     | 1 = 5 VDC     | 2 = D -       | 3 = D +       | 4 = n.c.      | 5 = GND   |
| 1 = 5 VDC                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 2 = D -                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 3 = D +                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 4 = n.c.                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |
| 5 = GND                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                        |               |               |               |               |           |

# LED display

| LED       | Color     | Status          | Meaning                                                                                                |
|-----------|-----------|-----------------|--------------------------------------------------------------------------------------------------------|
| IO        |           | OFF             | No or too low power supply                                                                             |
|           | RED       | ON              | Hardware failure, the firmware is not running                                                          |
|           | RED       | FLASHING (1Hz)  | Incorrect module configuration, actual module configuration does not match the projected configuration |
|           | RED       | FLASHING (4 Hz) | No communication to the local I/Os (backplane bus)                                                     |
|           | RED/GREEN | FLASHING        | Actual module configuration differs from the configured, but can be run                                |
|           | GREEN     | ON              | Module bus without errors, actual station configuration matches the configured                         |
|           | GREEN     | FLASHING (1Hz)  | DTM force mode active                                                                                  |
| GW        |           | OFF             | No or too low power supply                                                                             |
|           | RED       | FLASHING (1Hz)  | Wink command                                                                                           |
|           | GREEN     | ON              | Gateway without error                                                                                  |
| BUS       |           | OFF             | No or too low power supply                                                                             |
|           | RED       | ON              | IP-address conflict or Restore Mode / F_Reset Mode                                                     |
|           | RED/GREEN | FLASHING        | Autonegotiation and/or DHCP/ BootP waiting for assignment of IP address                                |
|           | GREEN     | ON              | Connection established to PLC                                                                          |
|           | GREEN     | FLASHING        | Ready                                                                                                  |
| ERR       |           | OFF             | No diagnosis                                                                                           |
|           | RED       | ON              | Diagnosis of the gateway or an I/O module                                                              |
| RUN       |           | OFF             | No or too low power supply                                                                             |
|           | RED       | ON              | PLC program stopped                                                                                    |
|           | RED       | FLASHING        | No PLC program available                                                                               |
|           | GREEN     | ON              | PLC program running                                                                                    |
| APPL      | RED/GREEN |                 | This LED is controlled user-defined from the CODESYS program                                           |
| LNK1/LNK2 |           | OFF             | No Ethernet link                                                                                       |
|           | YELLOW    | ON              | Ethernet Link (10 Mbps)                                                                                |
|           | YELLOW    | FLASHING        | Ethernet communication (10 Mbps)                                                                       |
|           | GREEN     | ON              | Ethernet Link (100 Mbps)                                                                               |
|           | GREEN     | FLASHING        | Ethernet communication (100 Mbps)                                                                      |
| VI/VO     |           | OFF             | No or too low power supply                                                                             |
|           | GREEN     | ON              | VI and VO are applied                                                                                  |
|           | GREEN     | FLASHING (1Hz)  | VI voltage too low                                                                                     |
|           | GREEN     | FLASHING (4Hz)  | VO voltage too low                                                                                     |
|           | RED       | ON              | Overcurrent Isens                                                                                      |

Function accessories

| Type code                 | Ident-No. |                                                                                                | Dimension drawing                                                                   |
|---------------------------|-----------|------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| BL67-LABEL-DIN-A4-50STCK. | 6827196   | Labels for electronic modules and gateways, DIN A5 sheets, perforated, laser printing, 50 pcs. |  |