

# Programmable Fieldbus Controllers

## ◀◀ Section 2

### PERSPECTO® Control Panels

- Merging control and visualization
- 8.9 cm ... 38.1 cm (3.5" ... 15")

## ◀ Section 3.1

### PFC200

- Maximum performance in a minimum space
- High processing speed
- Additional operating controls (e.g., start/stop switch)
- Based on Linux® also in high-level language

## Programmable Fieldbus Controllers

- Decentralized intelligence based on fieldbus couplers
- Programmable to IEC 61131-3
- WAGO-I/O-SYSTEM 750, modular

## Section 3.3 ▶

### Programmable Fieldbus Controller XTR












For demanding applications where the following are critical:

- Extreme temperature stability
- Immunity to interference and impulse-voltage withstand
- Vibration and shock resistance

# Controllers

## Programmable Fieldbus Controllers

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CPU	ETHERNET				PROFIBUS	CANopen	Others	Description	Item No.	
	MODBUS TCP	EtherNet/IP	BACnet/IP	KNX IP						
	x	x				IEC 60870-5 IEC 61850 IEC 61400-25	ETHERNET Controller	750-880 750-881	66 68	
	x	x				Media redundancy	ETHERNET Controller	750-885 750-882	70 72	
	x	x				MODBUS RTU IEC 60870-5 IEC 61850 IEC 61400-25	Telecontrol Controller	750-872	74	
	x	x				MODBUS RTU	ETHERNET TCP/IP Controller, RS-232	750-873	76	
	x	x					ETHERNET Controller	750-852	78	
	x			x			KNX IP Controller	750-889	80	
	x		x				BACnet/IP Controller	750-831	82	
	x		x				BACnet/IP Controller	750-830	84	
	x					BACnet MS/TP	BACnet MS/TP Controller	750-829	86	
	x						ETHERNET TCP/IP Controller	750-843 750-842	88 90	
						DeviceNet	DeviceNet Controller	750-806	92	
						MODBUS RTU	MODBUS Controller	750-815/300-000 750-816/300-000	94 96	
					S		PROFIBUS Controller	750-833	98	
						M/S	CANopen Controller	750-837 750-838	100 102	
						INTERBUS	INTERBUS Controller	750-804	104	

M: Master, S: Slave

# 3 Programmable Fieldbus Controllers

## 62 General Product Information

### Programmable Fieldbus Controllers: Open – Flexible – Compact

WAGO controllers are suitable for various tasks in industry, process and building automation, e.g., measurement and production data acquisition. Based on the fieldbus couplers for all standard fieldbus systems, they are programmable to IEC 61131-3. Direct connection to a wide range of I/O modules from the WAGO-I/O-SYSTEM 750 optimizes adaptation to the application.

### Building Automation

Thanks to specific characteristics, the controllers for the BACnet/IP and KNX IP bus systems are optimized for building automation. The diverse portfolio of stackable I/O modules allows the integration of external systems such as lighting control (DALI), sun protection (SMI), wireless switches (EnOcean) and much more.

### Marine Systems and Onshore/Offshore Industry

International approvals coupled with industry-specific features permit use in shipbuilding and other harsh sectors. Meeting stringent criteria permits operation on marine diesels and in the EMC-sensitive area of a vessel's bridge. Because WAGO meets the marine industry's significantly greater requirements for immunity to interference or emission of interference and mechanical performance, WAGO I/O is well-suited to other industries.

### Telecontrol technology

Standardized telecontrol protocols according to IEC 60870-5, IEC 61850 or IEC 61400-25 ensure the use of the programmable fieldbus controllers in telecontrol technology.

### Link between Process Data and IT Application

The controllers ideally combine real-time requirements with IT functionality. They support both MODBUS/TCP and ETHERNET/IP for use in industrial environments. HTTP, SNMP, FTP, BootP, DHCP, DNS and other protocols simplify integration into IT environments. Integrated Web pages and Web-based visualization provide IT applications with real-time process data. Furthermore, the PLC incorporates library functions for email, SOAP, ASP, IP configuration, ETHERNET sockets and file system.

### Worldwide Approvals

International approvals for building and industrial automation, as well as the process and shipbuilding sectors guarantee worldwide use even under harsh operating conditions, e.g., ATEX, BR-Ex, IECEx, UL 508, UL ANSI/ISA and shipbuilding.

### Modular Expandability

With the WAGO-I/O-SYSTEM 750, the programmable fieldbus controllers can be expanded to almost any input/output interface. The modular, DIN-rail mount design allows for easy installation, expansion and modification of the I/O node. The streamlined design prevents installation errors. In addition, proven CAGE CLAMP® technology offers fast, vibration-proof and maintenance-free connections that are independent of operator skill. Depending on the I/O module's granularity, the field peripherals can be directly wired using 1-, 2-, 3- or 4-wire technology.

### Maximum Reliability and Ruggedness

The WAGO-I/O-SYSTEM is engineered and tested for use in the most demanding environmental conditions (e.g., temperature cycling, shock/vibration loading and ESD) according to the highest standards. Spring Pressure Connection Technology guarantees reliable operation. Integrated QA measures in the production process and 100 % function testing ensure consistent quality.



- Controllers for all standard fieldbus systems
- Include industry-specific features
- Programmable via CODESYS per IEC 61131-3
- Expandable with the WAGO-I/O-SYSTEM 750's broad portfolio
- Extensive IT integration possibilities
- Flexible platform adapts to diverse applications and environments
- Tested and approved worldwide
- Maintenance-free

# Programmable Fieldbus Controllers

## Versions

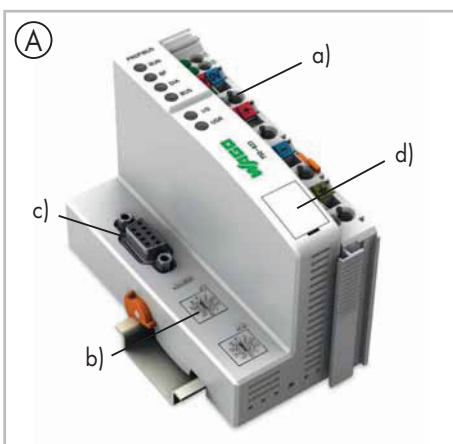
### Extended Temperature Range

Industrial automation technology is typically operated in temperatures ranging from 0 °C to 55 °C. However, there are applications that require an extended temperature range. Select fieldbus controllers are available in an extended temperature range of -20 °C to +60 °C.



For extreme cases – when even the extended temperature range is not sufficient – the WAGO-I/O-SYSTEM 750 XTR is available.

## Interfaces and Configurations



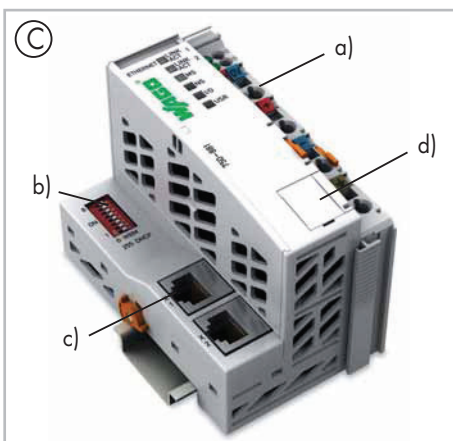
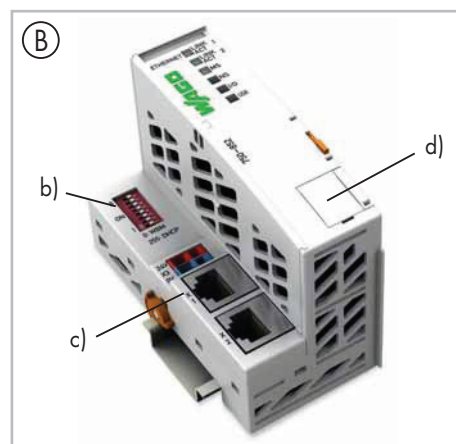
- Technical differences on the connection level.
- Optional address switch (b) and fieldbus interface (c)
- Service port (d)

### Housing design (A)

- Includes supply module (a)
- W x H\* x L (mm) 51 x 65 x 100

### Housing design ECO (B)

- W x H\* x L (mm) 50 x 65 x 97

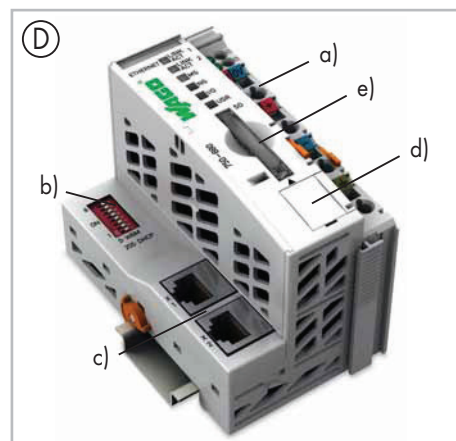


### Housing design (C)

- Includes supply module (a)
- W x H\* x L (mm) 62 x 65 x 100

### Housing design (D)

- Includes supply module (a)
- SD card slot for external storage media (e)
- W x H\* x L (mm) 62 x 65 x 100

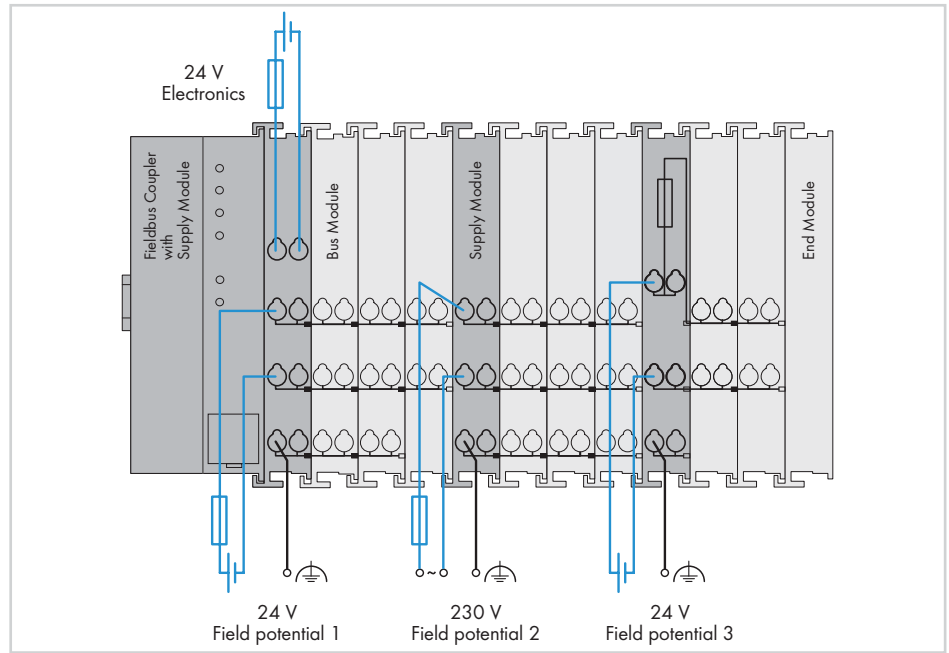


\*Height from upper edge of the DIN-rail

### Power Supply

Power is always channeled to the internal electronics power supply by the fieldbus coupler. The power supply to the field-side supply is electrically isolated via the supply module on the fieldbus coupler or a separate potential supply module. The division enables a separate supply for sensors and actuators. Snapping the I/O modules together automatically routes the supply voltages (system power supply 5 VDC via the data contacts and field supply via the optional power jumper contacts). Supply modules with diagnostics enable additional power supply monitoring. This ensures a flexible, user-specific supply design for a station.

The current supply to the electronics is limited by a maximum value. This value is dependent on the coupler used. If the sum of the internal current demand of all the I/O modules should exceed this value, an additional bus supply module is necessary. Even in this case, power supply to the field-side supply of 10 A may not be exceeded. However, different power supply modules allow a new power supply, formation of potential groups and the implementation of emergency stops.



### Notes

Additional steps must be implemented based on where the I/O-System is installed:

- As part of **shipbuilding** or in the onshore/off-shore sector, specific power and field-side power supply filters must be provided (750-624/626).
- As part of operating **intrinsically safe Ex i modules**, use of a specific supply module is required (750-625). In addition, specific power and field-side power supply filters must be provided (750-624/626).

- As part of operating **safety-related I/O modules**, PELV/SELV power supply units must be used for 24 VDC supply of electronics and field. In addition, specific power and field-side power supply filters must be provided (750-626).

Please refer to the manual for details about the power supply's design.

### Interference-Free in Safety-Related Applications

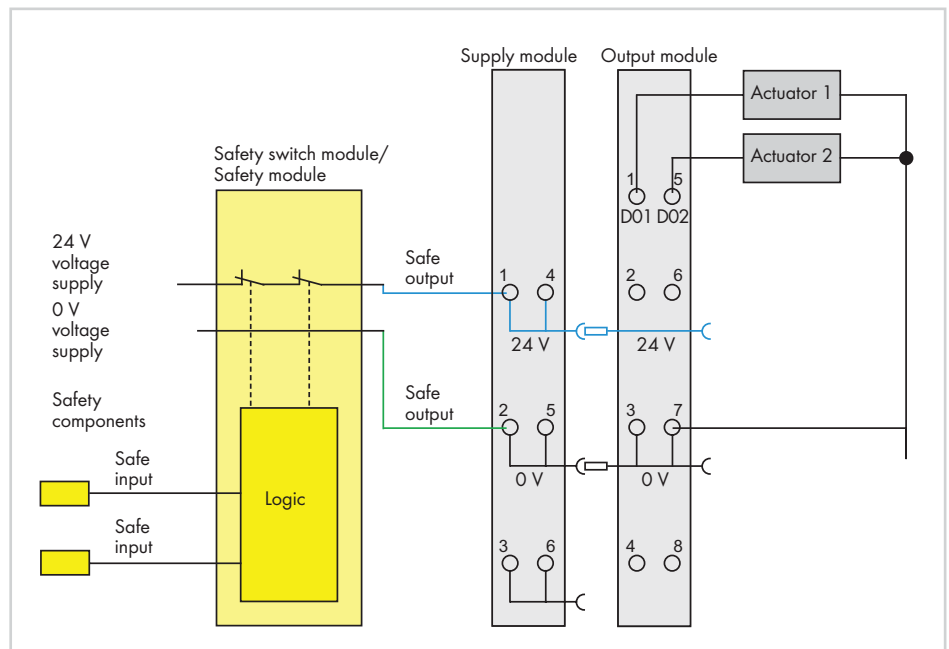
To safely and easily perform cost-effective, centralized deactivation of complete actuator groups, the actuator's power supply can be switched off using a safety switching device. This can either be performed for each individual actuator or by turning off the power supply to a group of control outputs.

In the event of failure, ensure that no interference from other current or power circuits occurs – even when the control voltage is switched off – so the defined safety function properties (logic and time response) remain unchanged.

Some modules are designed to provide interference-free safety functionality. These modules comply with safety requirements up to Category 4 of DIN EN ISO 13849-1:2007. The safety category and performance level depend solely on the safety components and their wiring.

### Notice:

Interference-free WAGO I/O modules have no active influence on the safety function, they are not an active part of the safety application and are not a substitute for the safety switching device! When using the components in safety functions, the corresponding notes must be observed in the relevant manual.



Example: Two-channel, double-pole power supply disconnection

Explanation of the components for the item number key

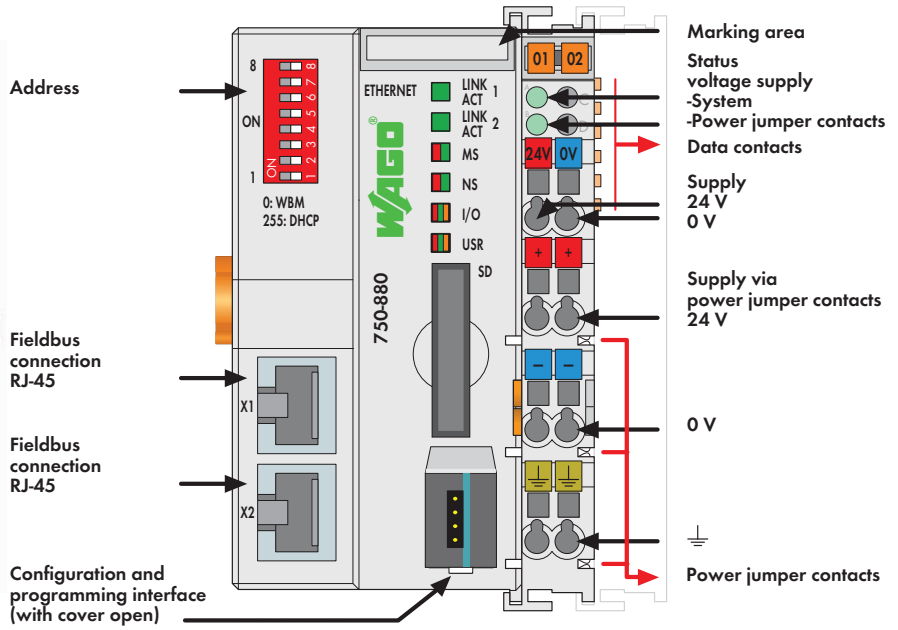
Item No. : 750-8xx		
0x, 1x:	16-bit CPU	INTERBUS, DeviceNet, MODBUS
2x, 3x:		BACnet, PROFIBUS, CANopen
4x:		ETHERNET
5x:	32-bit	ETHERNET ECO
7x, 8x:	32-bit Multitasking	ETHERNET, Telecontrol Protocols ETHERNET, Media Redundancy KNX IP
.../025-000: Extended temperature range of -20 °C ... +60 °C		

## Standards and Rated Conditions

General Specifications	
Operating voltage	24 VDC (-25 % ... +30 %)*; *for all shipbuilding-certified couplers
Operating temperature	0 °C ... +55 °C
Operating temperature for versions with an extended temperature range	-20 °C ... +60 °C
Storage temperature	-25 °C ... +85 °C
Storage temperature for versions with extended temperature range	-40 °C ... +85 °C
Relative humidity (without condensation)	95 %
Operating altitude	without temperature derating: 0 m ... 2000 m; with temperature derating: 2000 m ... 5000 m (0.5 K/100 m); max.: 5000 m
Degree of contamination	II acc. to IEC 61131-2
Vibration resistance	0.5g (4g for all shipbuilding certified controllers) acc. to IEC 60068-2-6
Shock resistance	15g acc. to IEC 60068-2-27
EMC immunity to interference	acc. to EN 61000-6-2 / marine applications
EMC emission of interference	acc. to EN 61000-6-3 / EN 61000-6-4 / marine applications
Protection type	IP20
Mounting position	any
Type of mounting	DIN-rail
Housing material	Polycarbonate, polyamide 6.6
Stress due to contaminants	acc. to IEC 60068-2-42 and IEC 60068-2-43
Maximum pollutant concentration with a relative humidity < 75 %	SO <sub>2</sub> ≤ 25 ppm; H <sub>2</sub> S ≤ 10 ppm
Connection technology	CAGE CLAMP®
Conductor cross-section; stripped lengths for standard controllers:	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> /28 ... 14 AWG; 8 ... 9 mm/0.33 in.
ECO controllers:	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> /28 ... 16 AWG; 5 ... 6 mm/0.22 in.
Current via power jumper contacts	max. 10 A

# PLC - ETHERNET Programmable Fieldbus Controller

32-bit CPU, multitasking



In conjunction with the WAGO-I/O-SYSTEM, the ETHERNET PLC can be used as a programmable controller within ETHERNET networks. The PLC supports all digital, analog, and specialty modules within the 750/753 Series, and is suitable for data rates of 10/100 Mbit/s. Two ETHERNET interfaces and an integrated switch allow the fieldbus to be wired in a line topology. This eliminates additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X). The DIP switch configures the last byte of the IP address and may be used for IP address assignment. The PLC supports both MODBUS/TCP and ETHERNET/IP for use in industrial environments. It also supports a wide variety of standard ETHERNET protocols for easy integration into IT environments (e.g., HTTP, BootP, DHCP, DNS, SNTP,

SNMP, FTP). For use in telecontrol applications; the 750-880/025-001 and -002 Controllers support the IEC 60870-5-101/-103-104, IEC 61850-7, and IEC 61400-25 communication protocols. An integrated Web server provides the user with configuration options and status information from the controller. The controller is programmable according to IEC 61131-3, capable of multitasking, and features a battery-backed RTC. 1 MB data memory is available. The 750-880 PLC has a slot for a removable memory card, allowing device parameters or files (e.g., boot files) to be transferred from one controller to another. The memory card can be accessed via FTP and be used as an additional drive.

Description	Item No.	Pack. Unit
<b>ETHERNET Controller</b>	<b>750-880</b>	1
ETHERNET Controller/T	750-880/025-000	1
Extended temperature range: -20 °C ... +60 °C		
ETHERNET Controller Telecontrol/T	750-880/025-001	1
Extended temperature range: -20 °C ... +60 °C		
ETHERNET-Controller Telecontrol ECO/T	750-880/025-002	1
Extended temperature range: -20 °C ... +60 °C		
Accessories	Item No.	Pack. Unit
SD memory card, 2 GB	758-879/000-001	1
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
<b>Miniature WSB Quick marking system</b>		
plain	248-501	5
with marking	see Section 11	
Approvals		
Conformity marking	CE	
Korea Certification	KC (750-880, 750-880/025-000, 750-880/025-001)	
Marine applications (versions upon request)	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	Class I, Div. 2, Grp. ABCD, T4	
ANSI/ISA 12.12.01	I M2 Ex d I Mb,	
TÜV 07 ATEX 554086 X	II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		

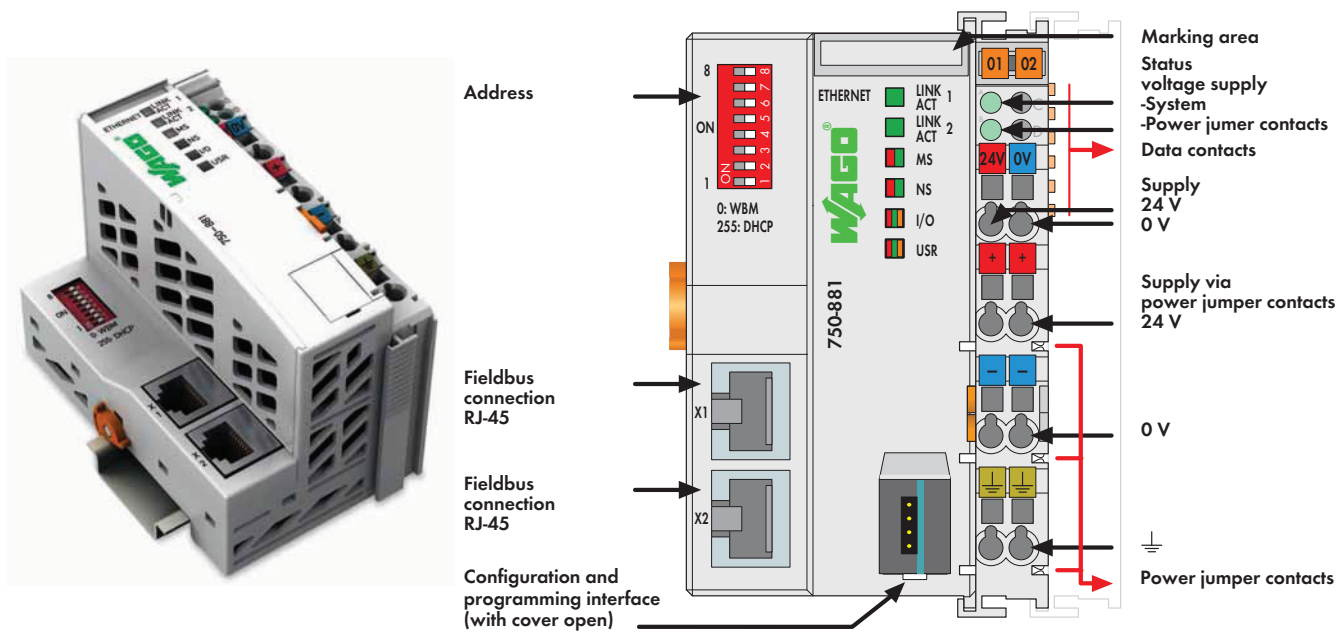
System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP
	100 Ω, Cat 5;
	Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP
	750-880/025-001 and -002 IEC 60870-5-101/-103/-104, IEC 61850-7, IEC 61400-25
Programming	WAGO-I/O-PRO V2.3
	IEC 61131-3 IL, LD, FBD (CFC), ST, FC
SD card slot	Push-push mechanism, sealable cover lid
Type of memory card	SD and SDHC up to 32 GB (All guaranteed properties are only valid in connection with the WAGO 758-879/000-001 memory card.)





# PLC - ETHERNET Programmable Fieldbus Controller

32-bit CPU, multitasking



The 750-881 ETHERNET PLC connects ETHERNET to the modular WAGO-I/O-SYSTEM.

The PLC automatically configures, creating a local process image which may include analog, digital or specialty modules. Analog and specialty module data is sent via words and/or bytes; digital data is sent bit by bit.

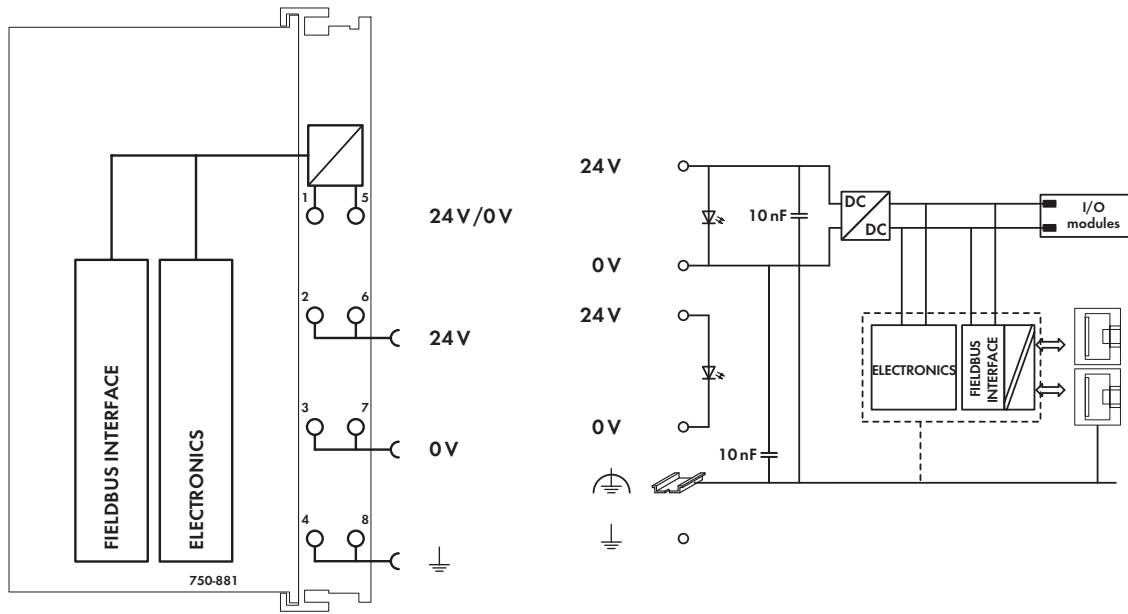
Two ETHERNET interfaces and an integrated switch allow the fieldbus to be wired in a line topology. This eliminates additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X).

The DIP switch configures the last byte of the IP address and may be used for IP address assignment.

The PLC is designed for fieldbus communication in both EtherNet/IP and MODBUS networks. It also supports a wide variety of standard ETHERNET protocols (e.g., HTTP, BootP, DHCP, DNS, SNTP, SNMP, FTP). An integrated Web server provides the user with configuration options and status information from the controller. The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC.

Description	Item No.	Pack. Unit
<b>ETHERNET Controller</b>	<b>750-881</b>	<b>1</b>
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	Class I, Div. 2, Grp. ABCD, T4	
ANSI/ISA 12.12.01	I M2 Ex d I Mb,	
TÜV 07 ATEX 554086 X	II 3 G Ex nA IIC T4 Gc,	
	II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb,	
	Ex nA IIC T4 Gc,	
	Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP
	100 Ω, Cat 5;
	Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC

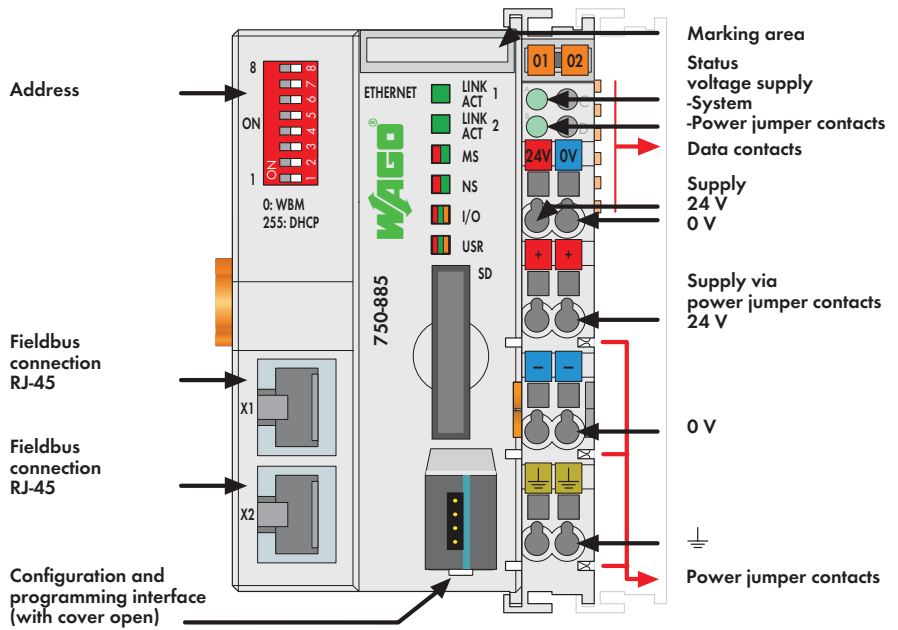


Technical Data	
Number of I/O modules	64
with bus extension	250
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	1024 Kbytes
Data memory	512 Kbytes
Non-volatile memory (retain)	32 Kbytes
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	161 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# PLC - ETHERNET Programmable Media Redundancy Fieldbus Controller

32-bit CPU, multitasking, with memory card slot

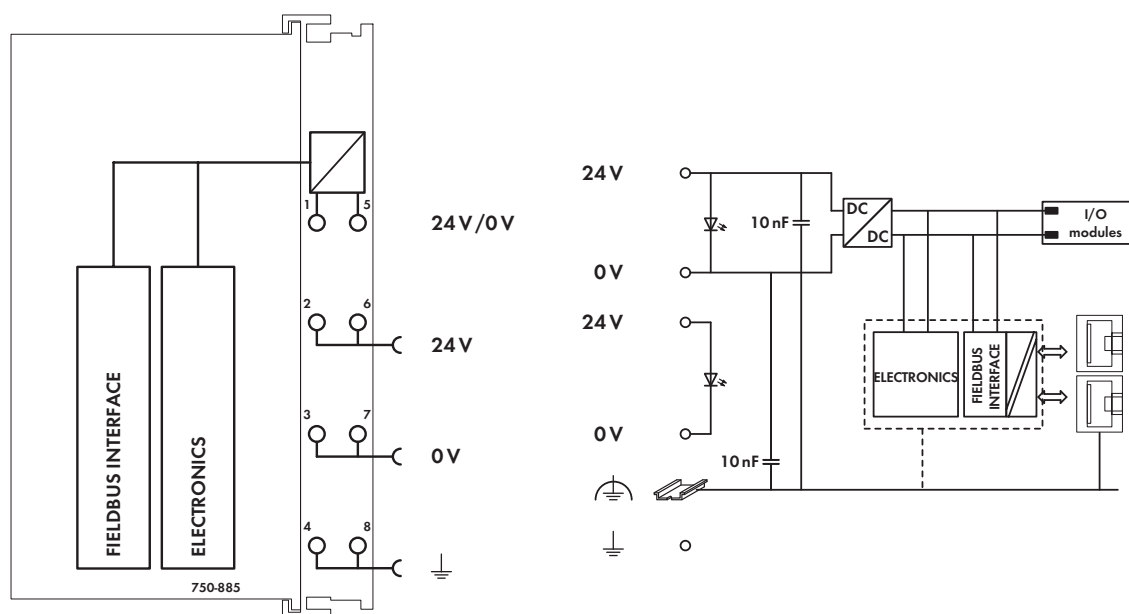


In conjunction with the WAGO-I/O-SYSTEM, the 750-885 ETHERNET PLC serves ETHERNET networks requiring fast and safe media redundancy. The PLC supports all digital, analog and specialty modules found within the 750/753 Series, and is suitable for data rates of 10/100 Mbit/s. Media redundancy is achieved by operating the controller in two separate networks – which is accessible via two different IP addresses (including two MAC IDs). Cross communication between separate channels is not possible. The two separate ETHERNET interfaces allow redundant connection of two transmission paths (no hub or switch required). Both interfaces support Auto-Negotiation and Auto-MDI(X). The DIP switch configures the last byte of both default IP addresses and may be used for IP address assignment (DHCP, BootP).

The media redundancy PLC is designed for fieldbus communication via MODBUS/TCP in ETHERNET networks. It also supports a wide variety of standard ETHERNET protocols (e.g., HTTP, BootP, DHCP, DNS, FTP). An integrated Web server provides configuration options to the user, while displaying PLC status information. The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC. A data memory of 1 Mbyte is available. For memory expansion, the 750-885 PLC is equipped with a removable memory card slot.

Description	Item No.	Pack. Unit
ETHERNET MR/SD Fieldbus Controller	750-885	1
ETHERNET MR/SD Fieldbus Controller/T	750-885/025-000	1
Extended temperature range: -20 °C ... +60 °C		
Accessories	Item No.	Pack. Unit
SD memory card, 2 GB	758-879/000-001	1
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
Approvals		
Conformity marking	CE	
Marine applications (versions upon request)	GL	
UL 508		
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω, Cat 5; Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
Redundancy function	via two logically separated ETHERNET interfaces
SD card slot	Push-push mechanism, sealable cover lid
Type of memory card	SD and SDHC up to 32 Gbytes (All guaranteed properties are only valid in combination with the WAGO 758-879/000-001 memory card.)



### Technical Data

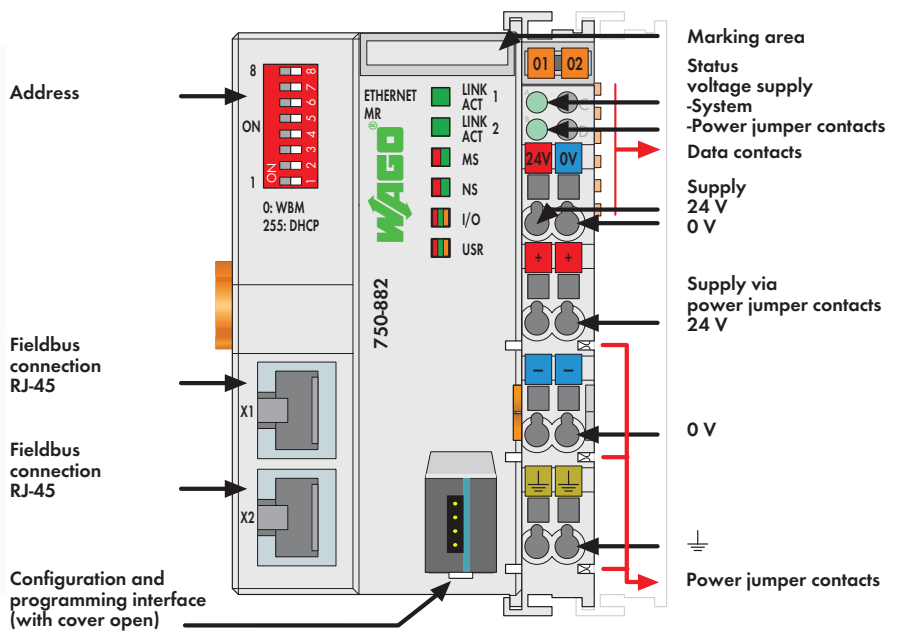
Number of I/O modules	64
with bus extension	250
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	32 Kbytes
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	164 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# PLC - ETHERNET Media Redundancy Programmable Fieldbus Controller

32-bit CPU, multitasking

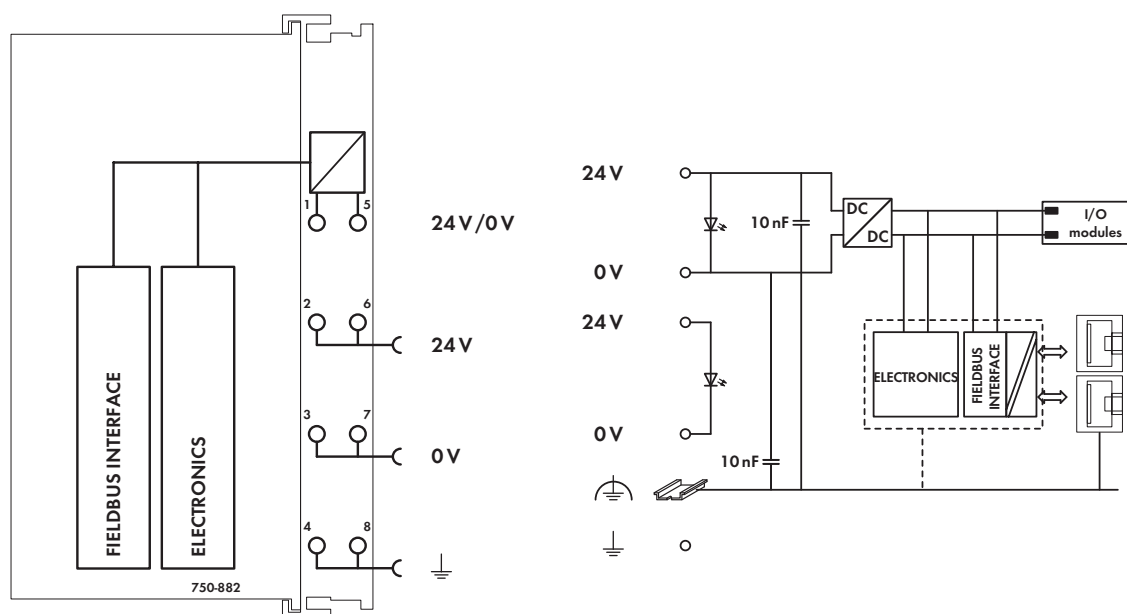


In conjunction with the WAGO-I/O-SYSTEM, the 750-882 ETHERNET PLC is used in ETHERNET networks requiring fast and safe media redundancy. The PLC supports all digital, analog and specialty modules found within the 750/753 Series, and is suitable for data rates of 10/100 Mbit/s. Media redundancy is achieved by operating the controller in two separate networks, in which it is accessible via two different IP addresses (including two MAC IDs). Cross communication between separate channels is not possible. The two separate ETHERNET interfaces allow redundant connection of two transmission paths (no hub or switch required). Both interfaces support Auto-Negotiation and Auto-MDI(X). The DIP switch configures the last byte of both default IP address and may be used for IP address assignment (DHCP, BootP).

The media redundancy controller is designed for fieldbus communication via MODBUS in ETHERNET networks. It also supports a wide variety of standard ETHERNET protocols (e.g., HTTP, BootP, DHCP, DNS, FTP). An integrated Web server provides the user with configuration options and status information from the controller. The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC.

Description	Item No.	Pack. Unit
Media Redundancy ETHERNET Controller	750-882	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system	plain	248-501
	with marking	see Section 11
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	Class I, Div. 2, Grp. ABCD, T4	
ANSI/ISA 12.12.01	I M2 Ex d I Mb,	
TÜV 07 ATEX 554086 X	II 3 G Ex nA IIC T4 Gc,	
	II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb,	
	Ex nA IIC T4 Gc,	
	Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP
	100 Ω, Cat 5;
	Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
Redundancy function	via two logically separated ETHERNET interfaces



### Technical Data

Number of I/O modules	64
with bus extension	250
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	1024 Kbytes
Data memory	512 Kbytes
Non-volatile memory (retain)	32 Kbytes
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	164 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# PLC Programmable Fieldbus Telecontroller

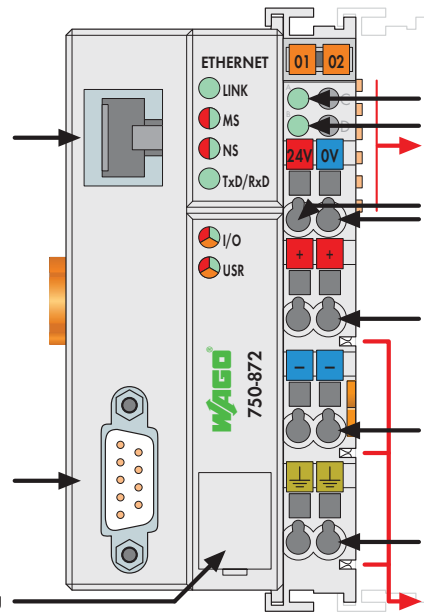
32-bit CPU, multitasking



Fieldbus connection RJ-45

Fieldbus connection RS-232

Configuration and programming interface



Status voltage supply -System -Power jumper contacts  
Data contacts  
Supply 24 V 0 V  
Supply via power jumper contacts 24 V  
0 V  
Power jumper contacts

This PLC from the WAGO-I/O-SYSTEM meets all requirements for telecontrol technology applications.

The controller offers many different application protocols for I/O data control (MODBUS TCP/RTU, IEC 60870-5-101/-104, 3964R, RK512, Ethernet/IP) or for system management and diagnostics (HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP and SMTP).

For Web-based applications, HTML pages can be generated on an internal server. Programs are directly accessible via XML and ASP. Furthermore, the PLC incorporates library functions for e-mail, SOAP, ASP, IP configuration, ETHERNET sockets and file system.

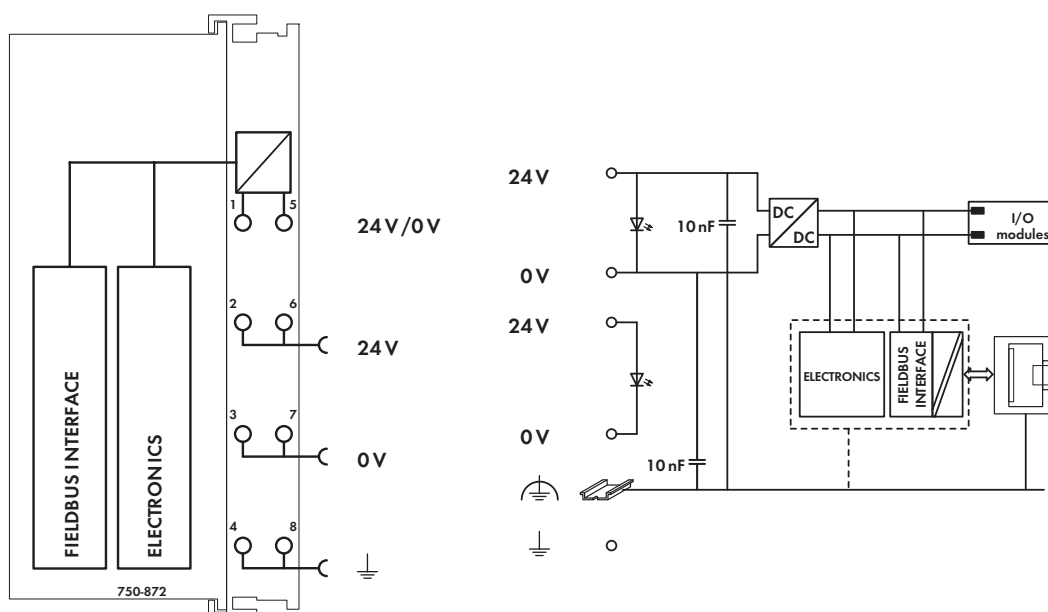
The PLC has a battery-backed RTC and 32-bit multitasking CPU. Programming PLC applications is performed in compliance with IEC 61131-3. The programmer can access all fieldbus and I/O data.

IEC 60870-5-101/-103/-104, IEC 61850 and IEC 61400-25 telecontrol protocols can be accessed via CoDeSys function blocks.

For users who do not want to write a PLC program, protocols may also simply be configured via CoDeSys tool.

Description	Item No.	Pack. Unit
Telecontrol Controller RJ-45 + D-Sub	750-872	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
<b>System data ETHERNET:</b>	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω Cat 5
Max. length of fieldbus segment	100 m hub station and 750-872; max. length of network limited by ETHERNET specification
Baud rate	10/100 Mbit/s
Buscoupler connection	RJ-45
Protocols	MODBUS/TCP (UDP), EtherNet/IP, HTTP, BootP, DHCP, DNS, NTP, SNTP, FTP, SNMP
<b>System data Serial:</b>	
No. of controllers connected to Master	limited
Transmission medium	Shielded Cu cable 2 (4) x 0.25 mm <sup>2</sup>
Max. length of fieldbus segment	1200 m (depending on baud rate/cable)
Baud rate	9600 baud ... 115 200 baud
Buscoupler connection	1 x D-Sub 9; socket
Libraries	IEC 60870-5-101/-103/-104, 3964R/RK512, IEC 61850, IEC 61400-25
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



### Technical Data

Number of I/O modules	64
with bus extension	250
Max. input process image	2 Kbytes
Max. output process image	2 Kbytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	30 Kbytes (18 Kbytes retain, 12 Kbytes flag)
File system	2 Mbytes
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	300 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC
IEC60870-5-101 and -104 library	
Document of conformity	see <a href="http://www.wago.com">www.wago.com</a>
Number of control stations	4
Number of information objects	150
Functions	Client and server
IEC 61850 and 61400-25 library	
Document of conformity	see <a href="http://www.wago.com">www.wago.com</a>
Function	Server

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	184 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4



# PLC - ETHERNET TCP/IP Programmable Fieldbus Controller, RS-232

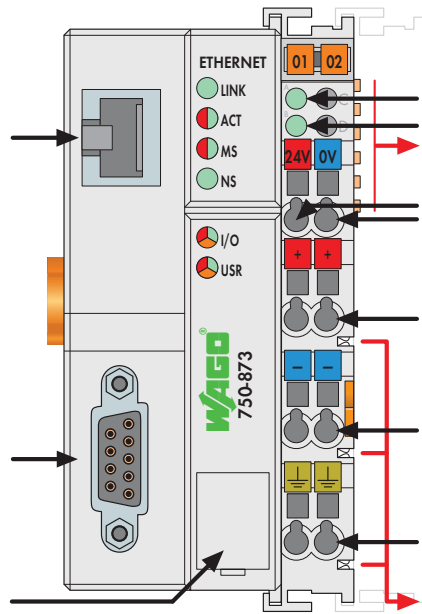
32-bit CPU, multitasking



Fieldbus connection RJ-45

Fieldbus connection RS-232

Configuration and programming interface



Status voltage supply -System -Power jumper contacts Data contacts

Supply 24 V 0 V

Supply via power jumper contacts 24 V

0 V

⊥

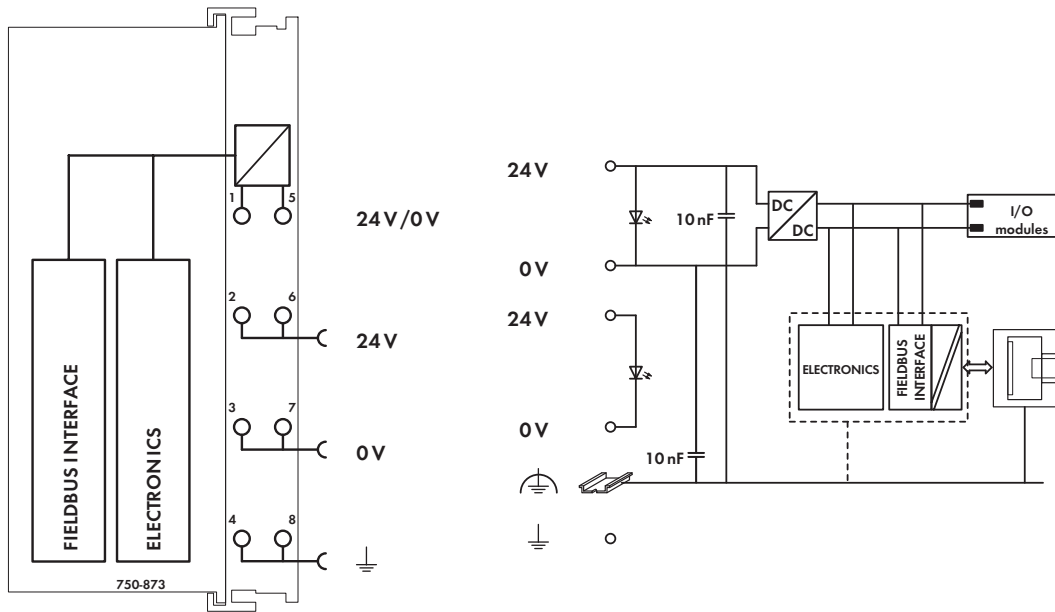
Power jumper contacts

This PLC connects ETHERNET to the WAGO-I/O-SYSTEM. The controller automatically configures, creating a local process image which may include analog, digital or specialty modules. Analog and specialty module data is sent via words and/or bytes; digital data is sent bit by bit. The controller is capable of 10/100 Mbit/s data rates and is programmable in accordance with IEC 61131-3. The controller provides 512 KB program memory, 256 KB data memory and 24 KB retain memory for this. It is capable of multitasking, has a battery-backed, real-time clock and is based on a 32-bit CPU. The PLC offers many different application protocols which can be used for data acquisition or control (MODBUS, ETHERNET/IP) or for system management and diagnostics (HTTP, BootP, DHCP, DNS, SNMP, FTP, SMTP).

For Web-based applications, HTML pages can be generated on an internal server. The integrated RS-232 interface communicates with external devices. The PLC can also be addressed as Modbus RTU slave via RS-232 interface.

Description	Item No.	Pack. Unit
ETHERNET TCP/IP RS-232 Controller	750-873	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	Class I, Div. 2, Grp. ABCD, T4	
ANSI/ISA 12.12.01	I M2 Ex d I Mb,	
TÜV 07 ATEX 554086 X	II 3 G Ex nA IIC T4 Gc,	
	II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb,	
	Ex nA IIC T4 Gc,	
	Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
<b>System data ETHERNET:</b>	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω Cat 5
Max. length of fieldbus segment	100 m hub station and 750-873; max. length of network limited by ETHERNET specification
Baud rate	10/100 Mbit/s
Buscoupler connection	RJ-45
Protocols	MODBUS/TCP (UDP), EtherNet/IP, HTTP, BootP, DHCP, DNS, SNMP, FTP, SNMP
<b>System data Serial:</b>	
Transmission medium	shielded Cu cable 2 (4) x 0.25 mm <sup>2</sup>
Max. length of fieldbus segment	15 m depending on the baud rate / on the cable (at 19200 baud)
Baud rate	9600 baud ... 115 200 baud
Buscoupler connection	1 x D-Sub 9; socket
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC

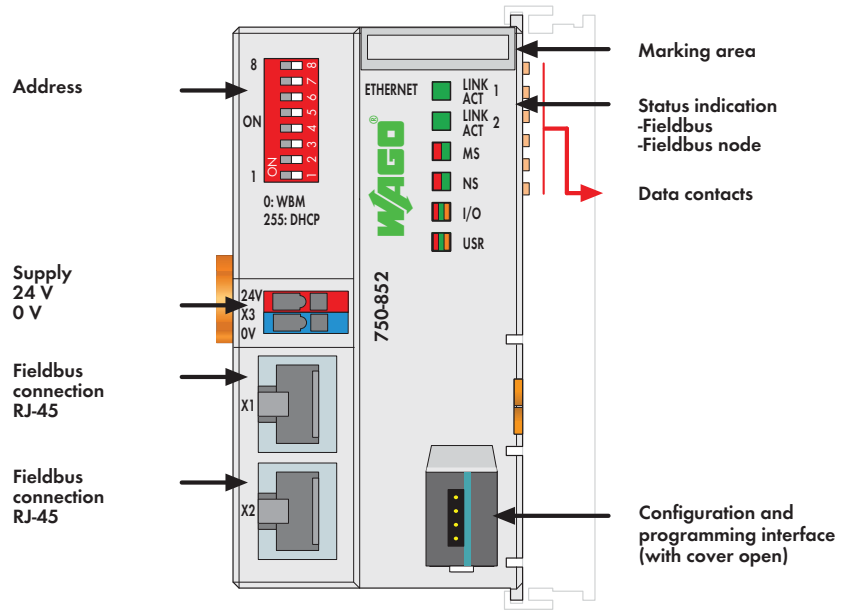


Technical Data	
Number of I/O modules	64
with bus extension	250
Max. input process image	2 Kbytes
Max. output process image	2 Kbytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	via PC
Program memory	512 Kbytes
Data memory	256 Kbytes
Non-volatile memory (retain)	24 Kbytes (16 Kbytes retain, 8 Kbytes flag)
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	300 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	193.4 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# PLC - ETHERNET Programmable Fieldbus Controller ECO

32-bit CPU



The 750-852 ETHERNET PLC connects ETHERNET to the modular WAGO-I/O-SYSTEM.

The PLC automatically configures, creating a local process image which may include analog, digital or specialty modules. Analog and specialty module data is sent via words and/or bytes; digital data is sent bit by bit.

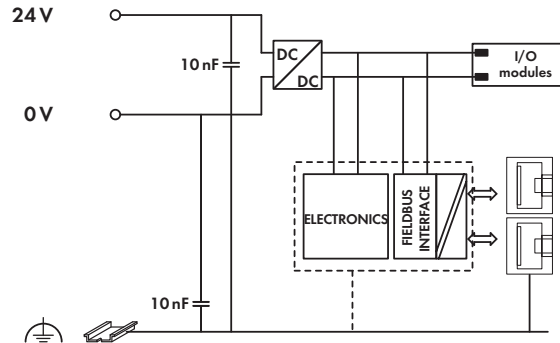
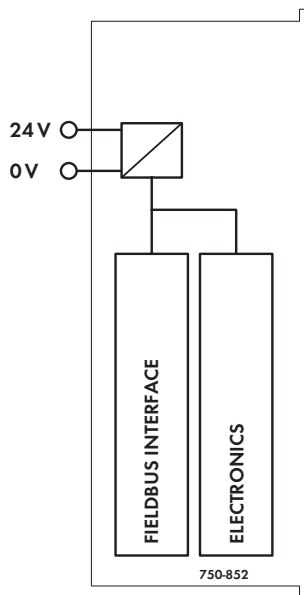
Two ETHERNET interfaces and an integrated switch allow the fieldbus to be wired in a line topology. This eliminates additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X).

The DIP switch configures the last byte of the IP address and may be used for IP address assignment.

The PLC is designed for fieldbus communication in both EtherNet/IP and MODBUS networks. It also supports a wide variety of standard ETHERNET protocols (e.g., HTTP, BootP, DHCP, DNS, SNMP, FTP). An integrated Web server provides the user with configuration options and status information from the controller. The IEC 61131-3 programmable controller is multitasking-capable.

Description	Item No.	Pack. Unit
ETHERNET ECO Controller	750-852	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system	plain	5
	with marking	see Section 11
<b>Approvals</b>		
Conformity marking	CE	
Marine applications	GL	
UL 508		

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP
	100 Ω, Cat 5;
	Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNMP, FTP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC

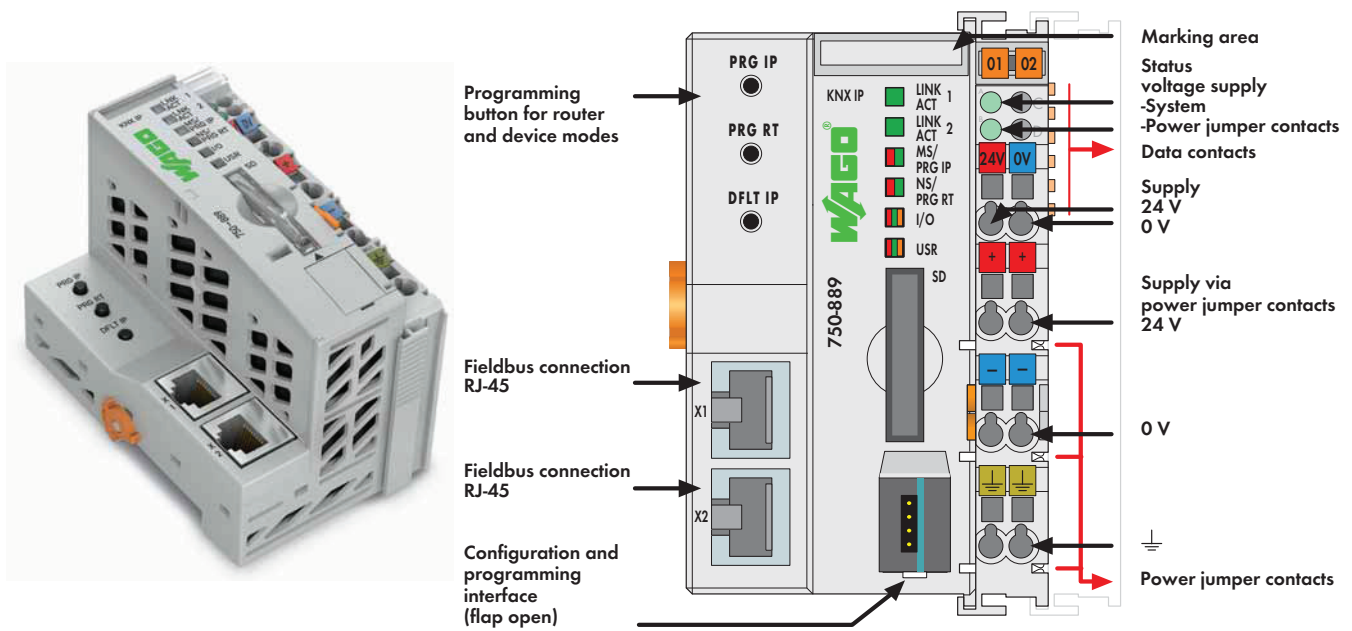


Technical Data	
Number of I/O modules	64
with bus extension	250
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	512 Kbytes
Data memory	256 Kbytes
Non-volatile memory (retain)	8 Kbytes
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	300 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	400 mA
Total current for I/O modules (5 V)	700 mA
Isolation	500V system/supply

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 1.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	5 ... 6 mm / 0.22 in
Dimensions (mm) W x H x L	50 x 65 x 97
	Height from upper-edge of DIN 35 rail
Weight	83.1 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# KNX IP Programmable Fieldbus Controller

32-bit CPU, multitasking

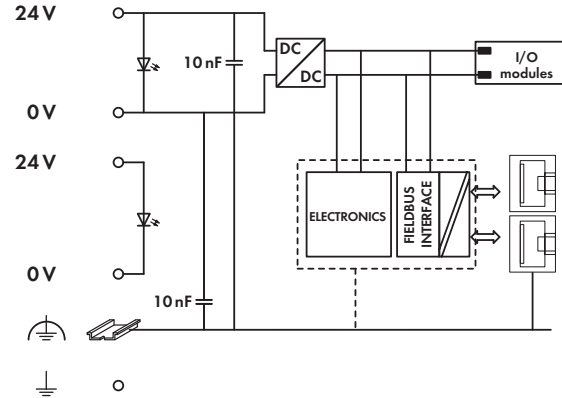
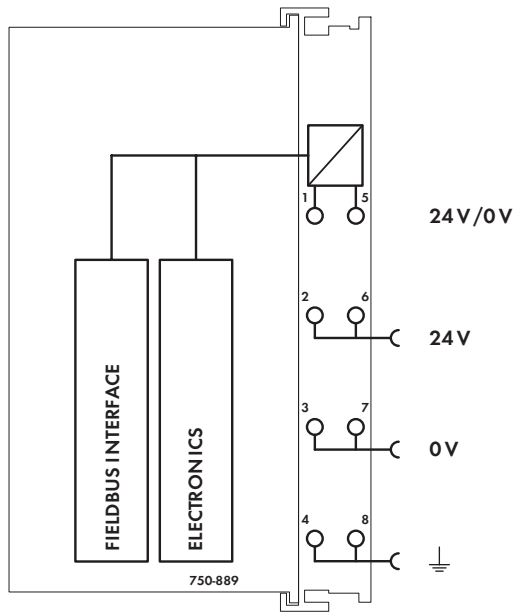


- This controller can accommodate up to two KNX logic devices at the same time.
- 1. In conjunction with the WAGO-I/O-SYSTEM, the KNX IP Controller is used as a user-programmable application controller within KNX IP networks. The controller supports all digital, analog and specialty modules found within the 750/753 Series. The IEC 61131-3 programmable controller is capable of 10/100 Mbit/s data rates. KNX objects of any type (EIS/DPT) can be created using the programming tool. Libraries including pre-made function blocks are readily available on the WAGO Web site for programming. The controller supports a maximum of 253 communication objects, as well as 254 group addresses and associations.
  - 2. Combined with the KNX/EIB/TP1 Module, the 750-889 KNX IP Controller can operate as a router on an IP backbone (ETHERNET). No IEC application is required for router functionality.

Both devices are commissioned and configured within the ETS software using the WAGO product database. The software includes a plug-in that automatically installs and opens for configuration. The KNX IP controller features an integrated 2-port 10/100 Mbit/s switch and allows easy line structure creation without additional network components. The maximum number of controllers that can be wired in series is 20. An internal server is available for Web-based applications. The controller provides 1024 KB program memory, 1024 KB data memory and 32 KB retain memory. It is capable of multitasking, has a battery-backed, real-time clock and is based on a 32-bit CPU. The controller offers many different application protocols for control tasks (MODBUS, KNXnet/IP) or for system management and diagnostics (HTTP, BootP, DHCP, DNS, AutoIP, SNTP, FTP, SNMP and SMTP). The number of KNX/EIB/TP1 Modules (750-646) supported by the KNX IP Controller does not depend on the application.

Description	Item No.	Pack. Unit
KNX IP Controller	750-889	1
<b>Accessories</b>		
SD memory card, 2 GB	758-879/000-001	1
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
WAGO ETS3/4 plug-in (included in WAGO ETS3 product database)	see Section 1	
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
KNX certified	IP controller: 61/8316/08; IP router: 61/8317/08	
Conformity marking	CE	

System Data	
No. of controllers	limited by network topology
Transmission medium	S-UTP 100 Ω Cat. 5
Max. length of fieldbus segment	100 m limited by IEEE 802.3
Max. length of network	≤ 2000 m; max. 20 controllers in series
Baud rate	10/100 Mbit/s
Buscoupler connection	2 x RJ-45 (linked via 2-port switch)
Protocols	KNXnet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, AutoIP, SNTP, FTP, SNMP V3, SMTP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
SD card slot	Push-push mechanism, sealing lid
Type of memory card	SD and SDHC up to 32 GB (All guaranteed properties are only valid in connection with the WAGO 758-879/000-001 memory card.)
<b>KNX-specific</b>	
KNX/TP1 bus specification	1.0
Commissioning (KNX side)	with ETS3/4 plug-in, 2 programming buttons
<b>Device mode:</b>	
Number of communication objects	253
Number of group addresses	254
Max. number of KNX logic devices, simultaneous	2; 1. device, 2. router (with 1. KNX/EIB/TP1 module)



### Technical Data

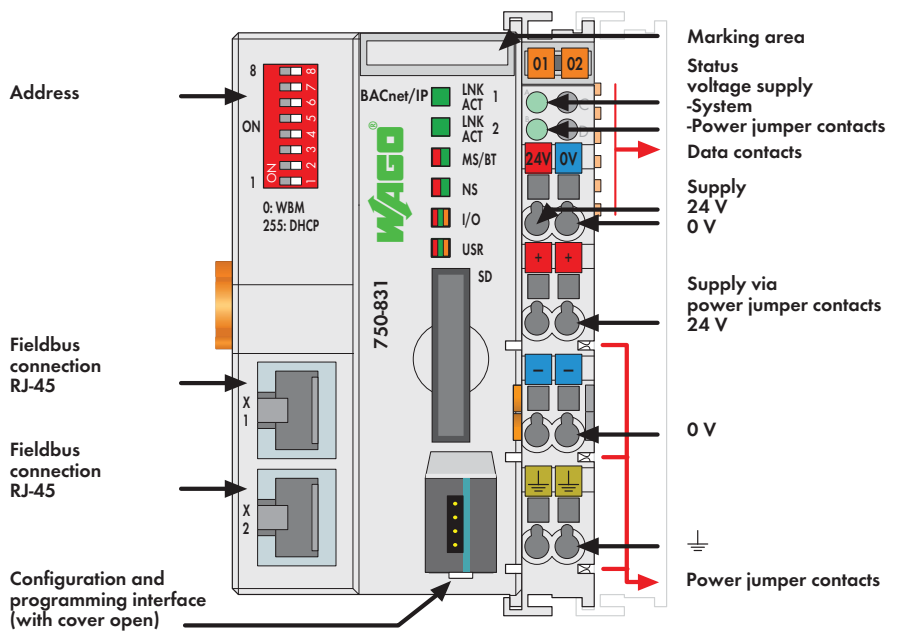
Number of I/O modules	64
with bus extension	250
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	32 Kbytes
Power supply	24 VDC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500 V system/supply
Fieldbus (Modbus/TCP)	
Max. input process image	2 Kbytes
Max. output process image	2 Kbytes
Max. input variables	512 bytes
Max. output variables	512 bytes

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	193.9 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-3

# BACnet/IP Programmable Fieldbus Controller

32-bit CPU, multitasking



The 750-831 BACnet/IP Controller connects the WAGO-I/O-SYSTEM to the BACnet protocol. The 750-831 Controller supports the B-BC BACnet device profile according to DIN EN ISO 16484-5. It communicates with other BACnet devices via BACnet/IP.

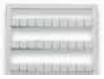
The controller provides the three following functionalities:

- 1. Native server: For each channel, appropriate BACnet objects are generated automatically for the digital/analog input and output modules that are connected to the controller.
- 2. Application server: Other supported BACnet objects can be created via IEC 61131-3 programming environment and made available to a BACnet network.
- 3. Application client: Using the client functionality, objects and their properties can be accessed by other BACnet devices.

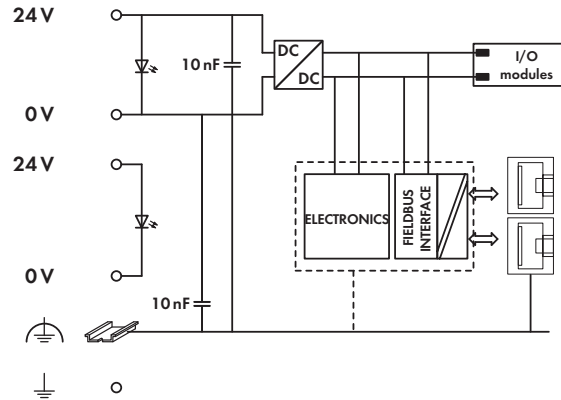
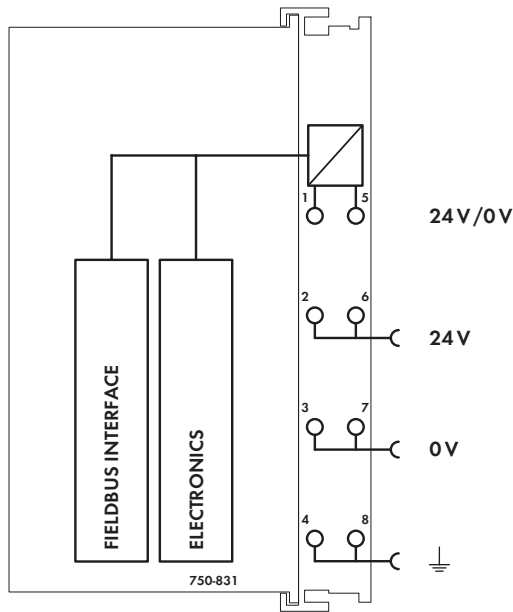
Two ETHERNET interfaces and an integrated switch allow the fieldbus to be wired in a line topology. This eliminates additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X). The DIP switch configures the last byte of the IP address and may be used for IP address assignment.

An integrated Web server provides configuration options to the user, while displaying controller's status information.

The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC. A data memory of 1 MB is available. The 750-831 Controller has a slot for a removable memory card, allowing device parameters or files (e.g., boot files) to be transferred from one controller to another. The memory card can be accessed via FTP and be used as an additional drive. Start-up and configuration of the BACnet networks is performed using the Windows-compliant WAGO BACnet Configurator.

Description	Item No.	Pack. Unit
BACnet/IP Controller	750-831	1
<b>Accessories</b>		
WAGO BACnet configurator	see Section 1	
SD memory card, 2 GB	758-879/000-001	1
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
 plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
BACnet approvals		
WSPCert certification	ISO 16484-5:2012	
BTL listing	BTL (BACnet® Testing Labs Product Listing)	
AMEV-Testat	AMEV profile AS-A	
Conformity marking	CE	
UL 508		

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP
	100 Ω, Cat 5;
	Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	BACnet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNMP, FTP, SNMP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
SD card slot	Push-push mechanism, sealable cover lid
Type of memory card	SD and SDHC up to 32 GB (All guaranteed properties are only valid in connection with the WAGO 758-879/000-001 memory card.)
BACnet device profile	B-BC (BACnet Building Controller)
BACnet version	1.7



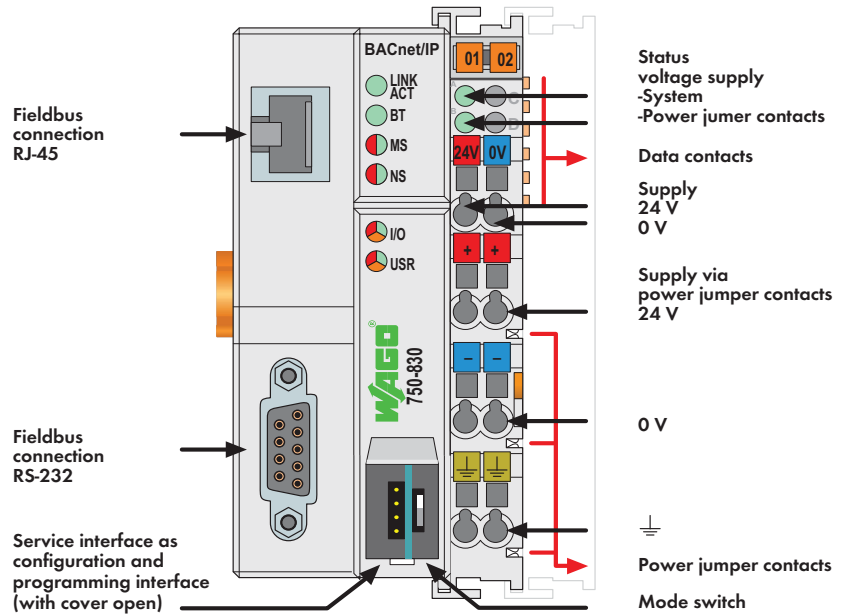
Technical Data	
Number of I/O modules	64
with bus extension	99
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	28 Kbytes
Flash	4.5 Mbytes
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500V system/supply

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	161.8 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-3



# BACnet/IP Programmable Fieldbus Controller

32-bit CPU, multitasking



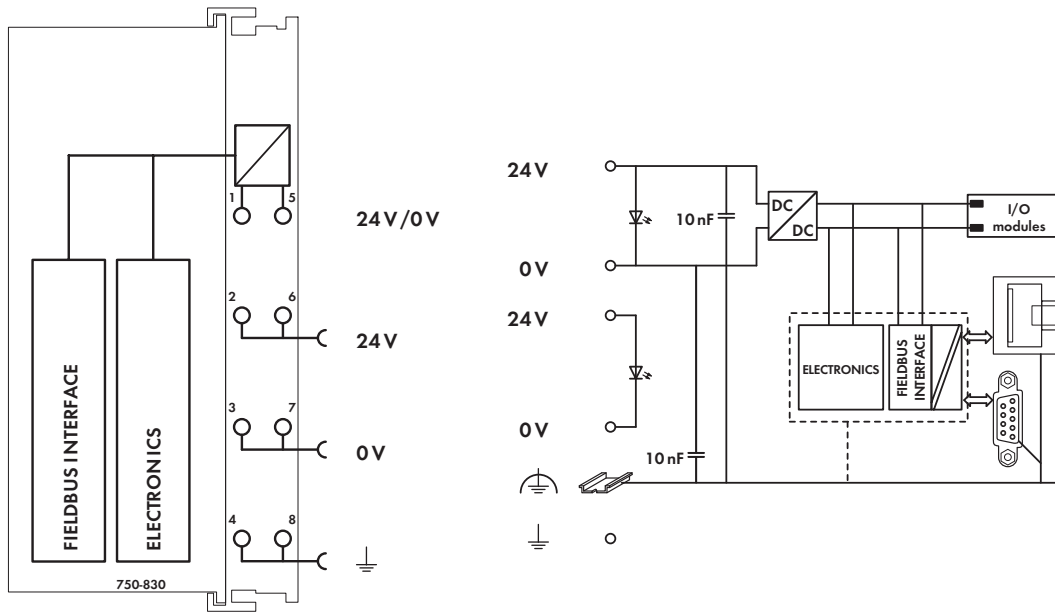
The 750-830 BACnet PLC connects the WAGO-I/O-SYSTEM to the BACnet protocol. The 750-830 Controller corresponds to BACnet B-BC device profile according to DIN EN ISO 16484-5. The controller provides the three following functionalities:

- 1. Native server: For each channel, appropriate BACnet objects are generated automatically for the digital, analog input and output modules that are connected to the controller.
- 2. Application server: Other supported BACnet objects can be created via IEC -61131-3 programming environment.
- 3. Application client: Using the client functionality, objects and their properties can be accessed by other BACnet devices.

Access to BACnet/IP networks is provided by the controller's RJ-45 interface. The integrated RS-232 interface communicates with external devices. The controller can also be addressed as Modbus RTU slave via RS-232 interface. Programming PLC applications is performed in compliance with IEC 61131-3. It is capable of multitasking, has a battery-backed, real-time clock and is based on a 32-bit CPU. For Web-based applications, HTML pages can be generated on an internal server. Start-up and configuration of the BACnet networks is performed using the Windows-compliant WAGO BACnet Configurator.

Description	Item No.	Pack. Unit
BACnet/IP Controller	750-830	1
<b>Accessories</b>		
WAGO BACnet configurator	see Section 1	
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
BACnet approvals		
WSPCert certification	ISO 16484-5:2010	
BTL listing	BTL (BACnet® Testing Laboratories)	
Conformity marking	CE	
Korea Certification		
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		

System Data	
<b>System data ETHERNET:</b>	
No. of controllers	limited by network topology
Transmission medium	S-UTP 100 Ω Cat 5
Max. length of fieldbus segment	100 m limited by IEEE 802.3
Max. length of network	acc. to IEEE 802.3 standard
Baud rate	10/100 Mbit/s
Buscoupler connection	RJ-45
Protocols	BACnet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNTP, FTP, SNMP V1, SMTP
<b>System data Serial:</b>	
Transmission medium	Shielded Cu cable 2 (4) x 0.25 mm <sup>2</sup>
Max. length of fieldbus segment	15 m depending on baud rate/cable (at 19200 baud)
Baud rate	9600 baud ... 115 200 baud
Buscoupler connection	1 x D-Sub 9; socket
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
BACnet device profile	B-BC (BACnet Building Controller)
BACnet version	1.7

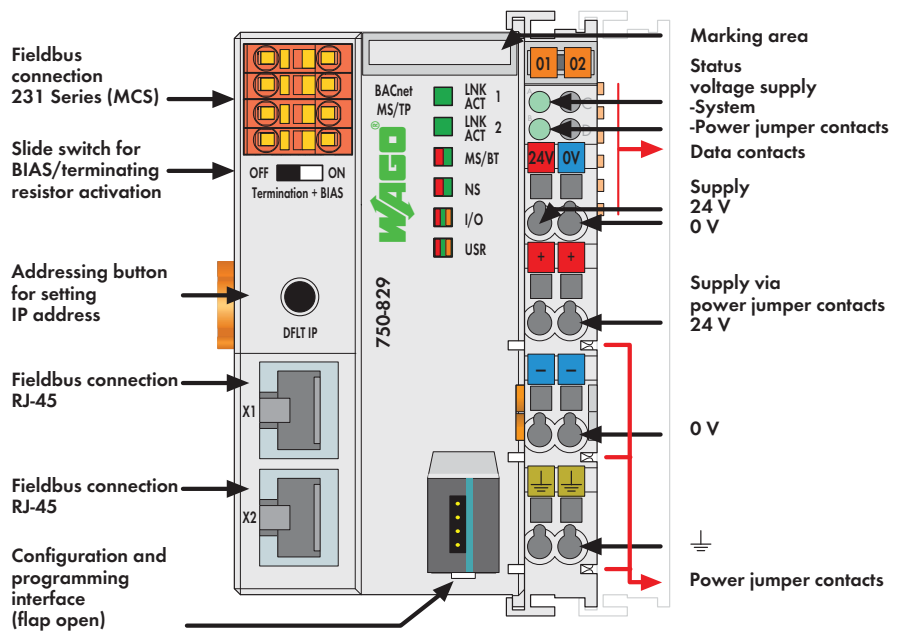


Technical Data	
Number of I/O modules	64
with bus extension	250
Configuration	via PC
Program memory	512 Kbytes
Data memory	256 Kbytes
Non-volatile memory (retain)	24 Kbytes (16 Kbytes retain, 8 Kbytes flag)
Flash	4.5 Mbytes
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	300 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500 V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC
BACnet implementation acc. to	EN ISO 16484-5 =ANSI/ASHRAE 135-2004
<b>Fieldbus (Modbus/TCP):</b>	
Max. input process image	2 Kbytes
Max. output process image	2 Kbytes
Max. input variables	512 bytes
Max. output variables	512 bytes

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	192.4 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-3, marine applications

# PLC – BACnet MS/TP Programmable Fieldbus Controller

32-bit CPU, multitasking



The BACnet MS/TP Controller (750-829) connects the WAGO I/O-SYSTEM with the BACnet protocol. The 750-829 Controller supports the B-BC BACnet device profile according to DIN EN ISO 16484-5. It communicates with other BACnet devices via BACnet MS/TP.

The controller provides the three following functionalities:

- 1. Native server: For each channel, appropriate BACnet objects are generated automatically for the digital and analog I/O modules that are connected to the controller.
- 2. Application server: Other supported BACnet objects can be created via the IEC 61131-3 programming environment and made available to a BACnet network.
- 3. Application client: Using the client functionality, objects and their properties can be accessed by other BACnet devices.

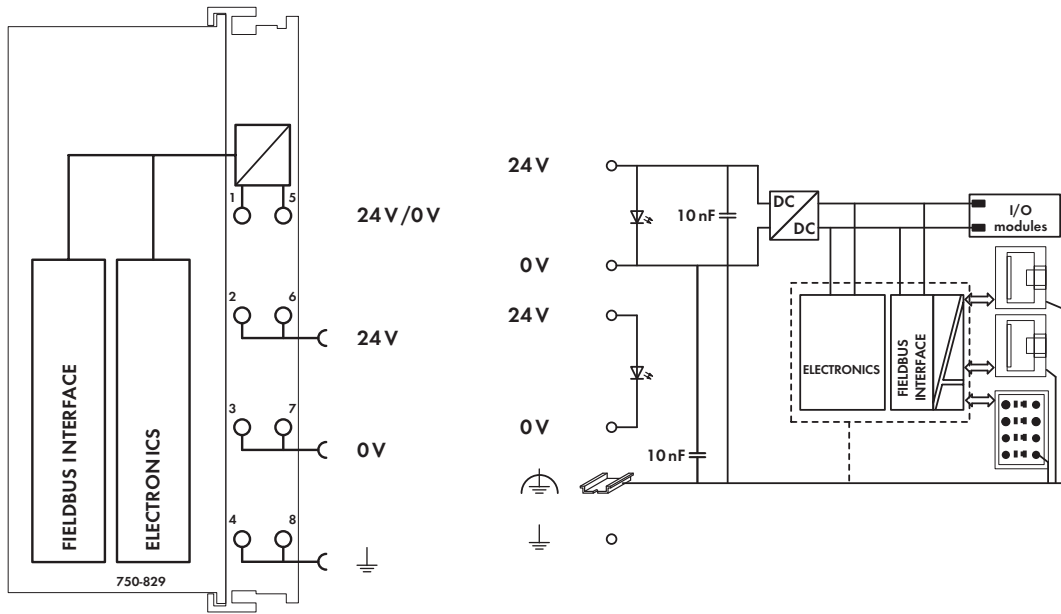
The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC.

The ETHERNET service interfaces can be used for IEC downloads, for example. Furthermore, two ETHERNET interfaces and an integrated switch allow the ETHERNET fieldbus to be wired in a line topology. This eliminates the need for additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X). An integrated Web server provides configuration options to the user, while displaying controller's status information. The Web server cannot be used via BACnet MS/TP.

For initial start-up, access to the Web-based Management (WBM) via standard Web browser is required to set the baud rate and activate the MS/TP fieldbus. Further configuration and commissioning is performed via a Windows-compliant WAGO BACnet Configurator (V1.8 or higher) and requires an additional BACnet router within the network. The Protocol Implementation Statement (PICS) contains all supported objects, services and properties. The controller supports a maximum of 250 BACnet objects. A slide switch enables the switching on of a terminating resistor together with the BIAS network on the RS-485 interface.

Description	Item No.	Pack. Unit
<b>BACnet MS/TP Controller</b>	<b>750-829</b>	<b>1</b>
<b>Accessories</b>		
<b>WAGO BACnet configurator</b>	see Section 1	
<b>WAGO I/O-PRO V2.3</b>	<b>759-333</b>	<b>1</b>
<b>Miniature WSB Quick marking system</b>		
plain	<b>248-501</b>	<b>5</b>
with marking	see Section 11	
<b>female connector; 4-pole</b>	<b>231-2304</b>	
<b>Approvals</b>		
BACnet approvals		
WSPCert certification	pending	
BTL listing	pending	
Conformity marking	<b>CE</b>	

System Data	
Programming	WAGO I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
<b>System data BACnet MS/TP</b>	
Baud rate	9600, 19200, 38400*, 57600, 76800, 115200 Baud (per BACnet standard); *Factory default setting
Max. length of fieldbus segment	Depends on baud rate/cable (per BACnet standard) 1200 m at ≤ 76800 baud; 1000 m at > 76800 baud
Buscoupler connection	1 x 4-pole male connector; 231 Series MCS (MULTI CONNECTION SYSTEM), female connector 231-2304 (included)
Protocols	BACnet MS/TP
BACnet device profile	B-BC (BACnet Building Controller)
BACnet version	1.7
<b>System data ETHERNET</b>	
No. of controllers	limited by network topology
Transmission medium	Twisted Pair S-UTP, STP 100 Ω Cat 5e
Max. length of fieldbus segment	100 m limited by IEEE 802.3
Max. length of network	acc. to IEEE 802.3 standard
Baud rate	10/100 Mbit/s
Buscoupler connection	2 x RJ-45 (2-port switch)
Protocols	MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNMP, FTP, SNMP, SMTP



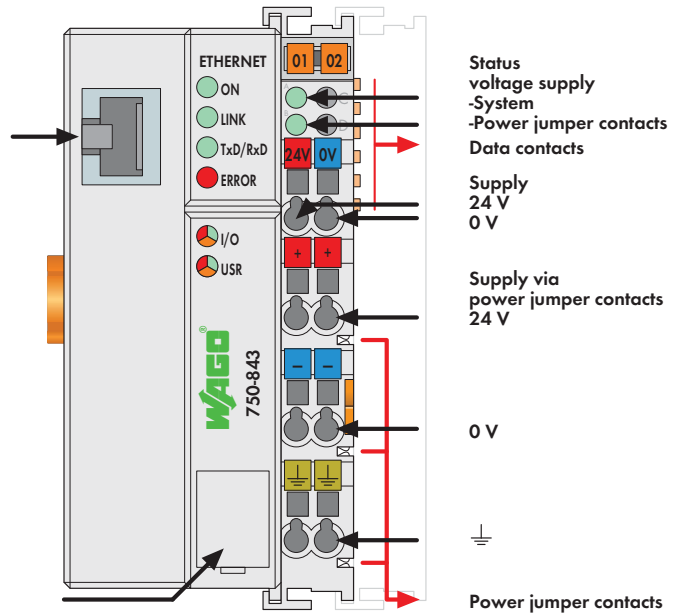
Technical Data	
Number of I/O modules	64
with bus extension	99
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	32 Kbytes (16 Kbytes retain, 8 Kbytes flag)
Powerfail RTC buffer	Min. six days
Power supply	24 V DC (-25 % ... +30 %)
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
Isolation	500 V system/supply
	BACnet MS/TP:
	1500 V (per BACnet standard)
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC
Fieldbus (Modbus/TCP)	
Max. input process image	2 Kbytes
Max. output process image	2 Kbytes
Max. input variables	512 bytes
Max. output variables	512 bytes

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm² ... 2.5 mm² / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Wire connection	MCS (MULTI CONNECTION SYSTEM)
Cross sections	0.2 mm² ... 2.5 mm² / AWG 24 ... 12
Strip length	9 ... 10 mm / 0.35 ... 0.39 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	188 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity to interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-3



Fieldbus connection RJ-45

Configuration and programming interface



The ETHERNET PLC combines control functionality, I/O interface and ETHERNET in one device.

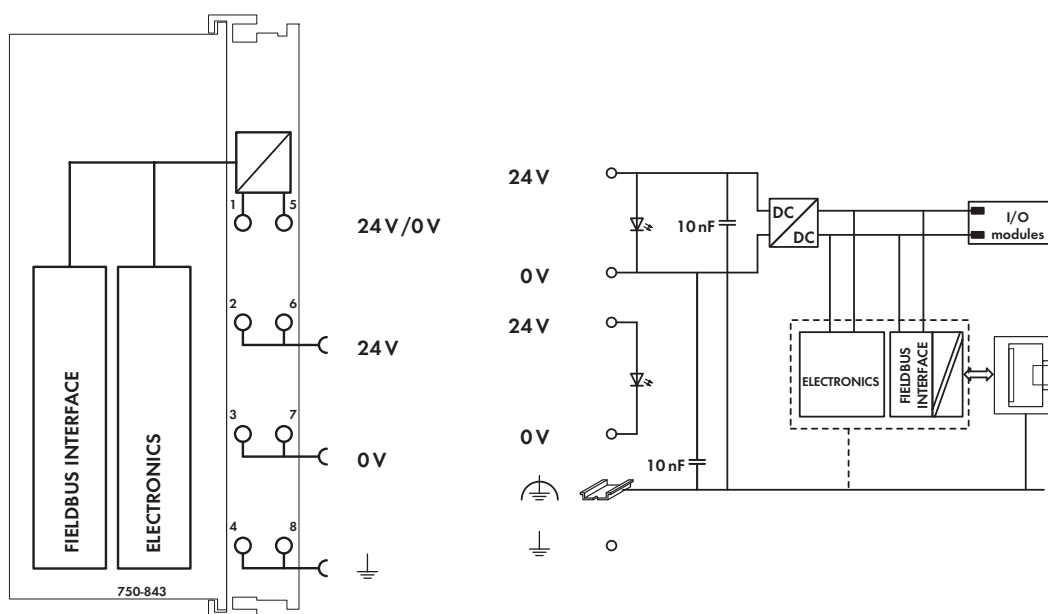
Programming of the application is done in accordance with IEC 61131-3. Function blocks allow both clients and servers to be programmed via socket APIs for all transport protocols (e.g., TCP, UDP).

Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

Description	Item No.	Pack. Unit
ETHERNET Controller 10 MBit	750-843	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω cat. 5
Max. length of fieldbus segment	100 m between hub station and 750-843; max. length of network limited by ETHERNET specification
Baud rate	10 Mbit/s
Buscoupler connection	RJ-45
Protocols	MODBUS/TCP, HTTP, BootP, MODBUS/UDP
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



### Technical Data

Number of I/O modules	64
Max. input process image	512 bytes
Max. output process image	512 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	automatic
Program memory	64 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3ms for 1,000 statements / 256 dig. I/Os
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	200 mA
Total current for I/O modules (5 V)	1800 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	197 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications

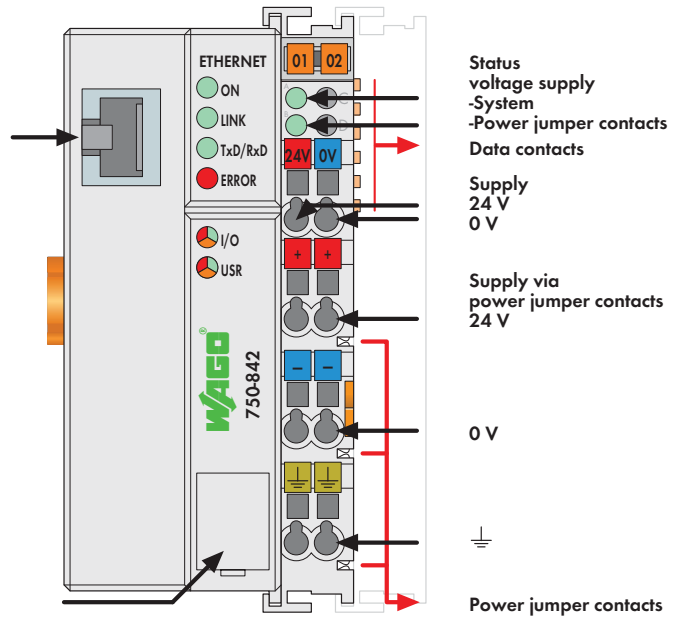
# PLC - ETHERNET TCP/IP Programmable Fieldbus Controller

16-bit CPU



Fieldbus connection RJ-45

Configuration and programming interface



The ETHERNET PLC combines control functionality, I/O interface and ETHERNET in one device.

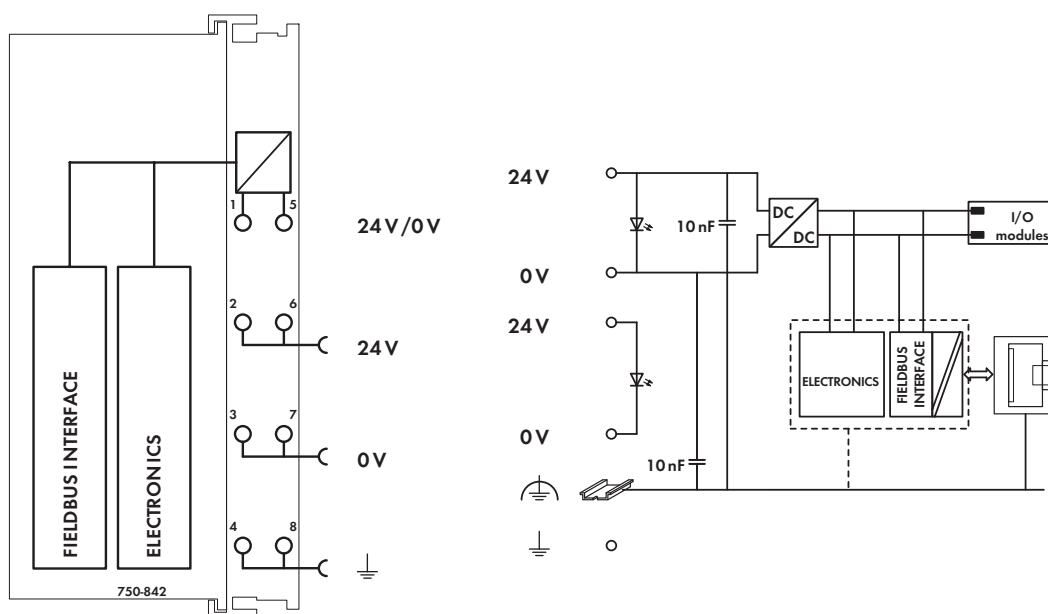
Programming PLC applications is performed in compliance with IEC 61131-3. Function blocks allow both clients and servers to be programmed via socket APIs for all transport protocols (e.g., TCP, UDP).

Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

Description	Item No.	Pack. Unit
ETHERNET Controller 10 MBit	750-842	1
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KCC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 12.1297 X (Brasilien)	Ex nA IIC T4 Gc	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω cat. 5
Max. length of fieldbus segment	100 m between hub station and 750-842; max. length of network limited by ETHERNET specification
Baud rate	10 Mbit/s
Buscoupler connection	RJ-45
Protocols	MODBUS/TCP, HTTP, BootP, MODBUS/UDP
Programming	WAGO-I/O-PRO 32, from firmware version SW 15, also programmable with WAGO- I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



### Technical Data

Number of I/O modules	64
Max. input process image	512 bytes
Max. output process image	512 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	automatic
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3ms for 1,000 statements / 256 dig. I/Os
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	200 mA
Total current for I/O modules (5 V)	1800 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

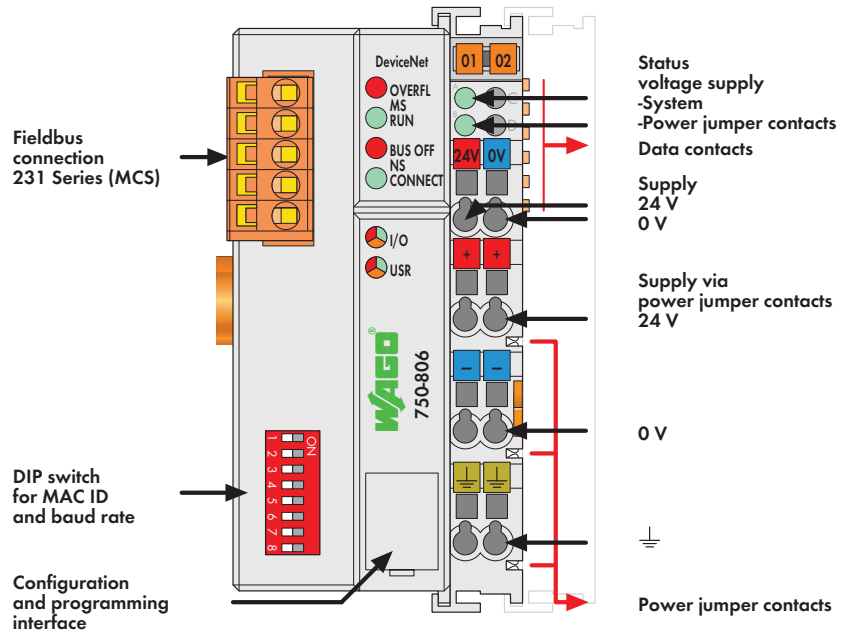
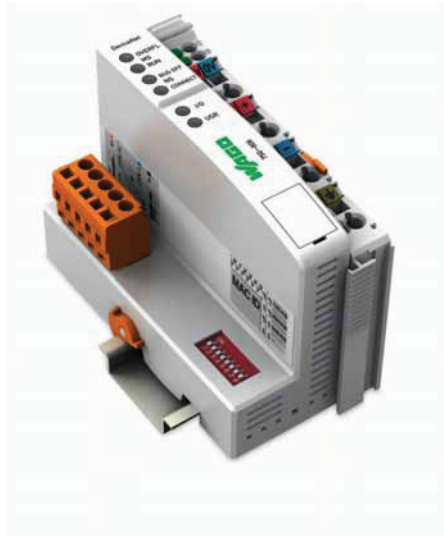
### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	197 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications



# PLC - DeviceNet Programmable Fieldbus Controller

16-bit CPU



The DeviceNet PLC combines control functionality, I/O interface and fieldbus in one device.

Programming of the application is done in accordance with IEC 61131-3. The programmer can access all fieldbus and I/O data.

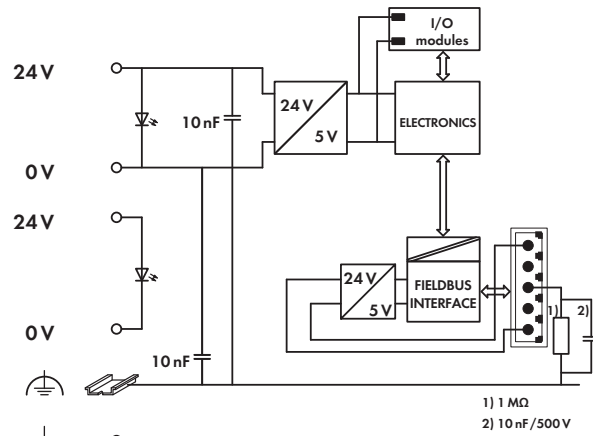
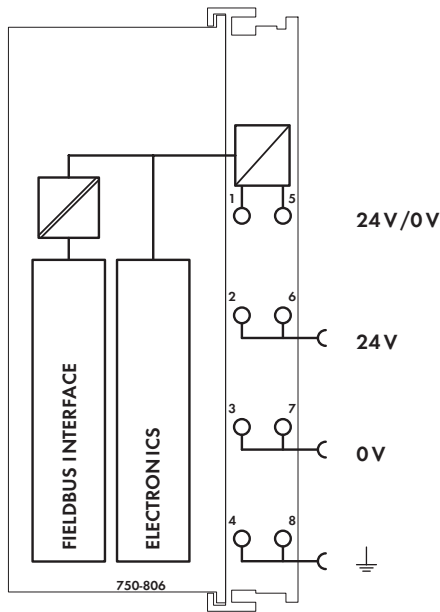
Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

**Notice: EDS files required**

Description	Item No.	Pack. Unit
<b>Contr. DeviceNet</b>	<b>750-806</b>	<b>1</b>
<b>Accessories</b>		
<b>EDS files</b> Download: <a href="http://www.wago.com">www.wago.com</a>		
<b>WAGO I/O-PRO V2.3, RS-232 kit</b>	<b>759-333</b>	<b>1</b>
<b>Miniature WSB Quick marking system</b>		
plain	<b>248-501</b>	<b>5</b>
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	UL 508	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 12.1297 X (Brasilien)	Ex nA IIC T4 Gc	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	64 with scanner
Max. no. of I/O points	approx. 6000 (depends on master)
Transmission medium	Shielded Cu cable Trunk line: 2 x 0.82 mm <sup>2</sup> + 2 x 1.7 mm <sup>2</sup> Drop line: 2 x 0.2 mm <sup>2</sup> + 2 x 0.32 mm <sup>2</sup>
Max. length of bus line	100 m ... 500 m (depends on baud rate/ cable)
Baud rate	125 Kbaud, 250 Kbaud, 500 Kbaud
Buscoupler connection	5-pole male connector, 231 Series (MCS), female connector 231-305/ 010-000/ 050-000 (included)
Programming	WAGO I/O-PRO 32, from firmware version SW 08, also programmable with WAGO- I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC


 1) 1 MΩ  
2) 10 nF/500 V

Technical Data	
Number of I/O modules	64
Max. input process image	1024 bytes
Max. output process image	1024 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	via PC or PLC
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
DeviceNet features	Polled I/O message connection
	Strobed I/O message connection
	Change of state
	Cyclic message connection
	UCMM
	DeviceNet master can be programmed using function blocks
Power supply	24 V DC (-25 % ... +30 %)
Current consumption	
via power supply terminal	< 500 mA / 24 V
via DeviceNet interface	< 120 mA / 11 V
Power supply efficiency	87 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	200 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications

# PLC - MODBUS Programmable Fieldbus Controller

16-bit CPU

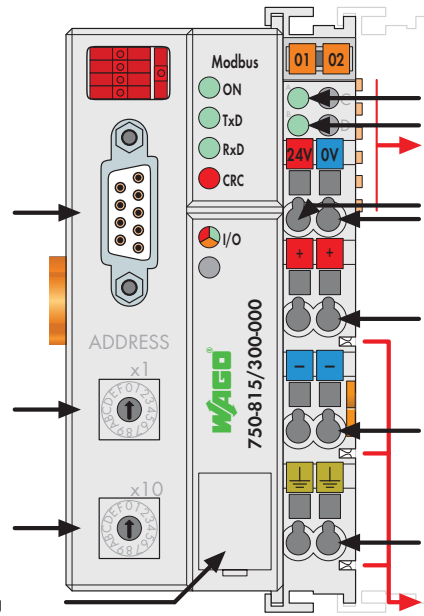


Fieldbus connection D-Sub

Address

Address

Configuration and programming interface



Status voltage supply  
-System  
-Power jumper contacts

Data contacts

Supply  
24 V  
0 V

Supply via power jumper contacts  
24 V

0 V

⊥

Power jumper contacts

The MODBUS PLC is an extension of the WAGO-I/O-SYSTEM.

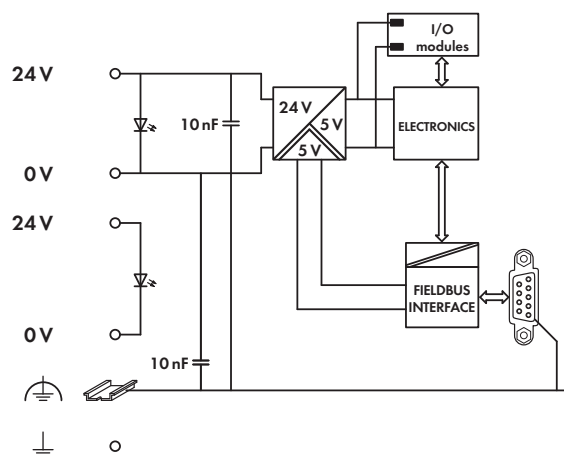
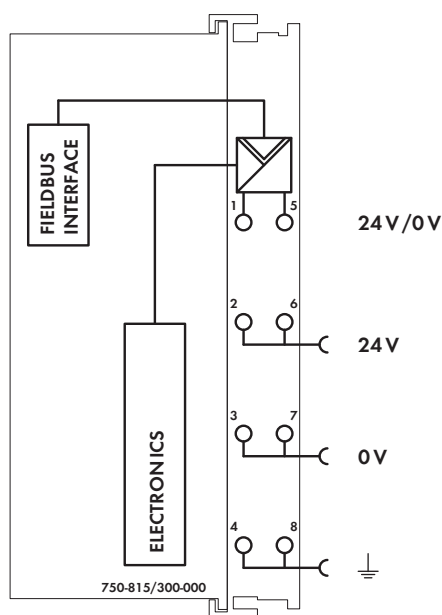
This controller combines a WAGO MODBUS fieldbus coupler with PLC functionality. Application PLC programming is IEC 61131-3 compliant. The programmer can access all fieldbus and I/O data.

Features and applications:

- Decentralized control to optimize support for a PLC or PC
- Devide complex applications into individually testable units
- Programmable fault response in the event of fieldbus failure
- Signal pre-processing to reduce fieldbus transmissions
- Directly control peripheral equipment for faster system response times
- Stand-alone, compact controller

Description	Item No.	Pack. Unit
Contr. MODBUS / RS-485 / 150 Bd ... 115.2 kBd	750-815/300-000	1
Contr. MODBUS / RS-485 / 150 Bd ... 115.2 kBd/T	750-815/325-000	1
Extended temperature range: -20 °C ... +60 °C		
<b>Accessories</b>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Marine applications (versions upon request)	BV, DNV, GL, KR, NKK, PRS, RINA	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature 0 °C ... +60 °C		

System Data	
No. of controllers connected to Master	247 with repeater
Max. no. of I/O points	approx. 6000 (depends on master)
Transmission medium	Shielded Cu cable 2 (4) x 0.25 mm <sup>2</sup>
Max. length of fieldbus segment	1200 m (depends on baud rate/cable)
Baud rate	150 baud ... 115.2 Kbaud
Buscoupler connection	1 x D-Sub 9; socket
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



### Technical Data

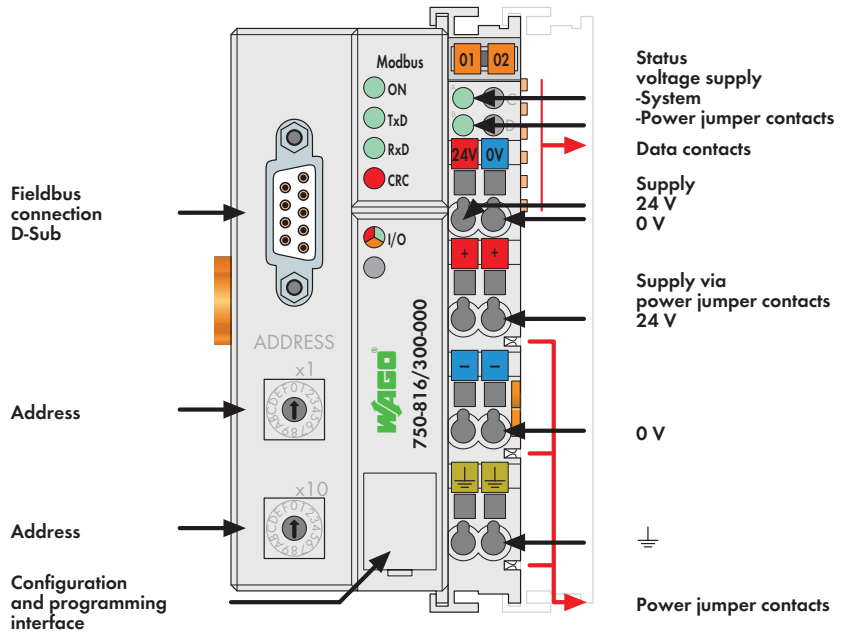
Number of I/O modules	64
Max. input process image	1024 bytes
Max. output process image	1024 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	Via PC, function block or rotary encoder switch
Program memory	32 Kbytes
Data memory	32 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
Isolation	500 V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	215.6 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications

# PLC - MODBUS Programmable Fieldbus Controller

16-bit CPU



The MODBUS PLC is an extension of the WAGO-I/O-SYSTEM.

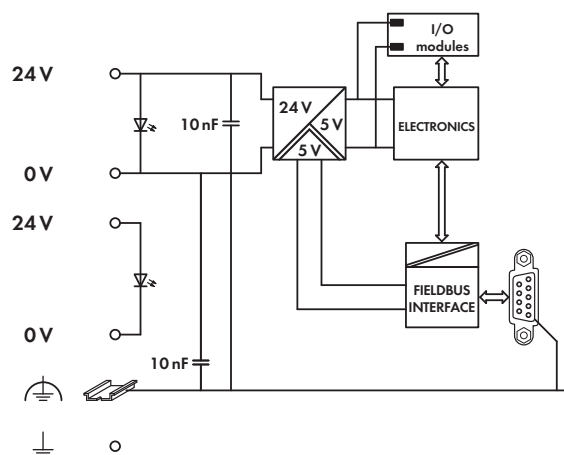
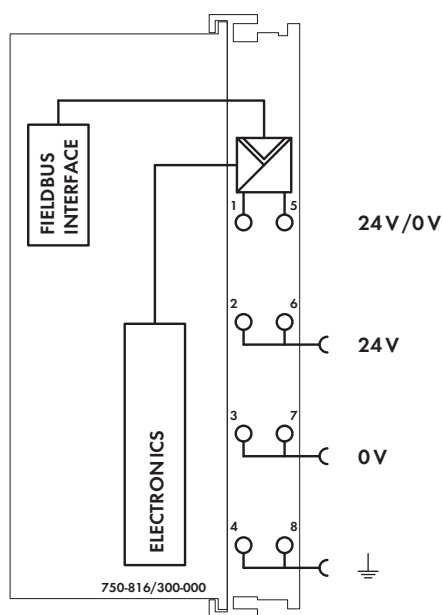
This controller combines a WAGO MODBUS fieldbus coupler with PLC functionality. Application PLC programming is IEC 61131-3 compliant. The programmer can access all fieldbus and I/O data.

Features and applications:

- Decentralized control to optimize support for a PLC or PC
- Devide complex applications into individually testable units
- Programmable fault response in the event of fieldbus failure
- Signal pre-processing to reduce fieldbus transmissions
- Directly control peripheral equipment for faster system response times
- Stand-alone, compact controller

Description	Item No.	Pack. Unit
<b>Contr. MODBUS / RS-232 / 150 Bd ... 115.2 kBd</b>	<b>750-816/300-000</b>	<b>1</b>
<b>Accessories</b>		
<b>WAGO-I/O-PRO V2.3, RS-232 kit</b>	<b>759-333</b>	<b>1</b>
<b>Miniature WSB Quick marking system</b>		
plain	<b>248-501</b>	<b>5</b>
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Marine applications	BV, DNV, GL, KR, NKK, PRS, RINA	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	247 with repeater
Max. no. of I/O points	approx. 6000 (depends on master)
Transmission medium	Shielded Cu cable 2 (4) x 0.25 mm <sup>2</sup>
Max. length of fieldbus segment	1200 m (depends on baud rate/cable)
Baud rate	150 baud ... 115.2 Kbaud
Buscoupler connection	1 x D-Sub 9; socket
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



### Technical Data

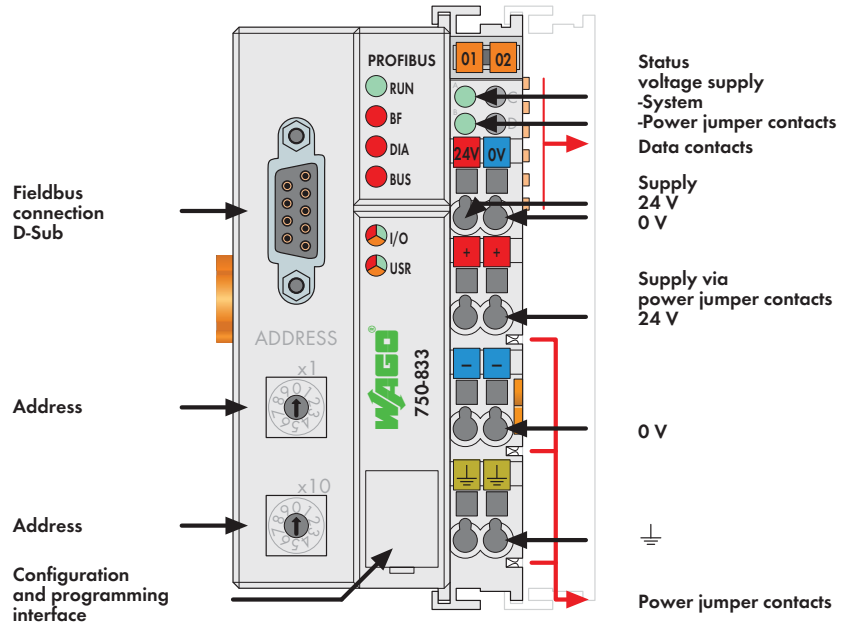
Number of I/O modules	64
Max. input process image	1024 bytes
Max. output process image	1024 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	Via PC, function block or rotary encoder switch
Program memory	32 Kbytes
Data memory	32 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
Isolation	500 V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

### General Specifications

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	215 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications

# PLC - PROFIBUS DP/V1 Programmable Fieldbus Controller

16-bit CPU



The PROFIBUS DP/V1 PLC combines control functionality, I/O interface and fieldbus in one device. Programming PLC applications is performed in compliance with IEC 61131-3. The programmer can access all fieldbus and I/O data.

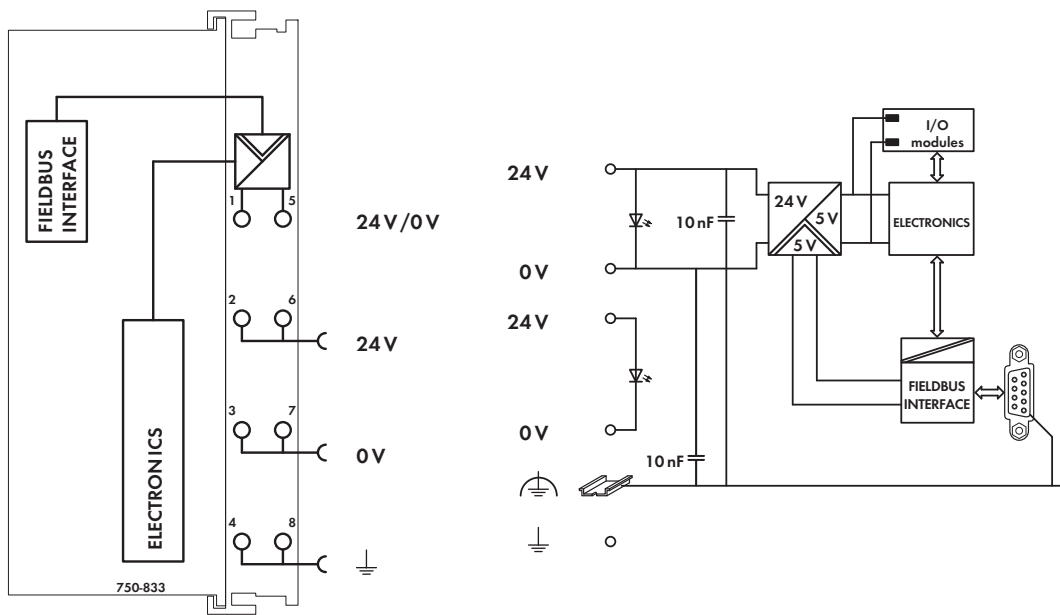
Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

**Notice: GSD files required**

Description	Item No.	Pack. Unit
Contr. PROFIBUS DP/V1 12 MBd	750-833	1
Contr. PROFIBUS DP/V1 12 MBd/T	750-833/025-000	1
Extended temperature range: -20 °C ... +60 °C		
Accessories	Item No.	Pack. Unit
GSD files Download: <a href="http://www.wago.com">www.wago.com</a>		
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
Miniature WSB Quick marking system		
plain	248-501	5
with marking	see Section 11	
Standards and Approvals		
Standard	EN 50170	
Conformity marking	CE	
Korea Certification	KC	
Marine applications (versions upon request)	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508	Class I, Div. 2, Grp. ABCD, T4	
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 12.1297 X (Brasilien)	Ex nA IIC T4 Gc	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	96 with repeater
Max. no. of I/O points	approx. 6000 (depends on master)
Transmission medium	Cu cable acc. to EN 50170
Max. length of fieldbus segment	100 m ... 1200 m (depends on baud rate/cable)
Baud rate	9.6 Kbaud ... 12 Mbaud
Transmission time	typ. 1 ms (10 controller; 32 digital I/Os per controller at 12 Mbaud) max. 3.3 ms
Buscoupler connection	1 x D-Sub 9; socket
Programming	WAGO-I/O-PRO 32, from firmware version SW 07, also programmable with WAGO- I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



**Technical Data**

Number of I/O modules	63
Max. input process image	244 bytes
Max. output process image	244 bytes
Max. input variables	244 bytes
Max. output variables	244 bytes
Configuration	automatic
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	200 mA
Total current for I/O modules (5 V)	1800 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

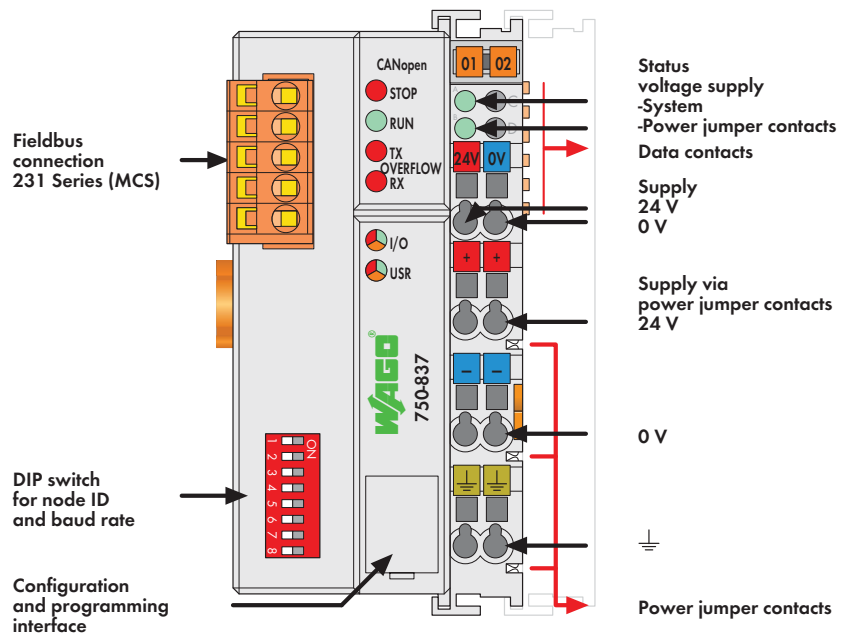
**General Specifications**

Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	184 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications



# PLC - CANopen Programmable Fieldbus Controller, MCS

16-bit CPU



The CANopen PLC combines control functionality, I/O interface and fieldbus in one device.

Programming of the application is done in accordance with IEC 61131-3. The programmer can access all fieldbus and I/O data.

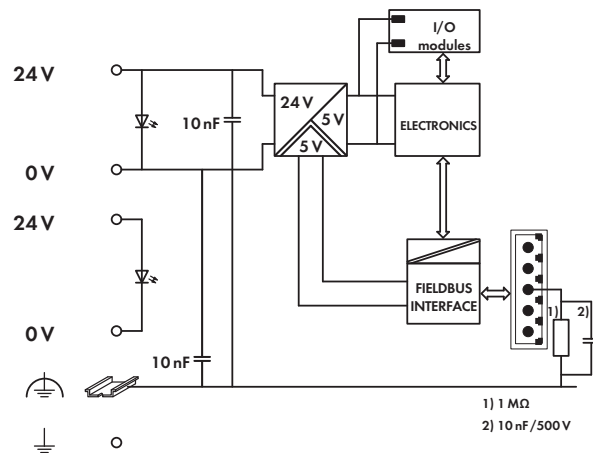
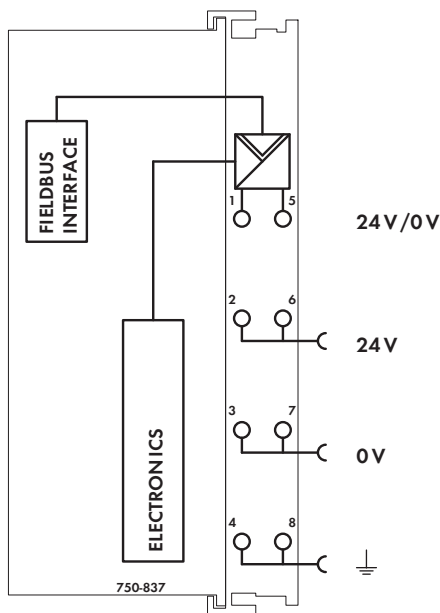
Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

**Notice: EDS files required**

Description	Item No.	Pack. Unit
<b>CANopen Controller MCS</b>	<b>750-837</b>	1
<b>CANopen Controller MCS</b>	<b>750-837/020-000</b>	1
Program memory 256 Kbytes; Data memory 192 Kbytes		
<b>CANopen Controller MCS</b>	<b>750-837/021-000</b>	1
Program memory 640 Kbytes; Data memory 832 Kbytes		
<b>Accessories</b>		
<b>EDS files</b>	Download: <a href="http://www.wago.com">www.wago.com</a>	
<b>WAGO-I/O-PRO V2.3, RS-232 kit</b>	<b>759-333</b>	1
<b>Miniature WSB Quick marking system</b>		
plain	<b>248-501</b>	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KCC	
Marine applications (versions upon request)	ABS, BV, DNV, GL, KR, LR, NKK, PRS, RINA	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 12.1297 X (Brasilien)	Ex nA IIC T4 Gc	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

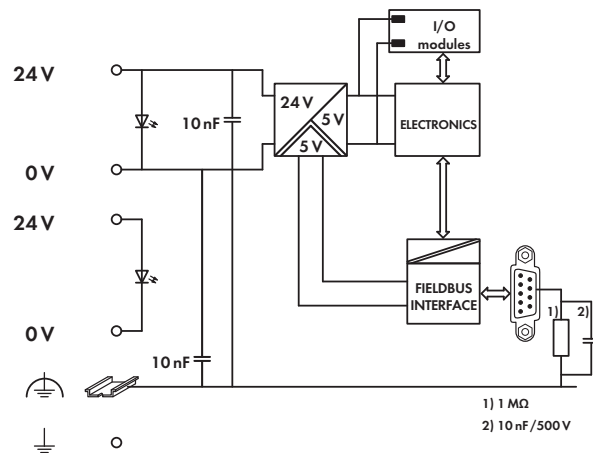
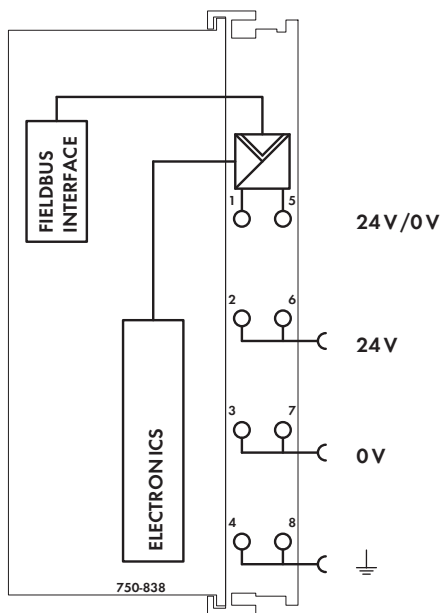
System Data	
No. of controllers connected to Master	110
Transmission medium	Shielded Cu cable 3 x 0.25 mm <sup>2</sup>
Max. length of bus line	30 m ... 1000 m (depends on baud rate/cable)
Baud rate	10 Kbaud ... 1 Mbaud
Buscoupler connection	5-pole male connector, 231 Series (MCS), female connector 231-305/ 010-000 (included)
Programming	WAGO-I/O-PRO 32, from firmware version SW 11, also programmable with WAGO- I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



Technical Data	
Number of I/O modules	64
Max. input process image	512 bytes
Max. output process image	512 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	automatic
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
No. of PDOs	32 Tx / 32 Rx
No. of SDOs	2 server SDOs / 16 client SDOs
Communication profile	DS-301 V4.01
Device profile	DS-401 V 2.0
	Marginal check
	Edge-triggered PDOs
	Programmable error response
	DSP 405
	using function blocks NMT master can be programmed
COB ID distribution	SDO, standard
Node ID distribution	DIP switches
Other CANopen features	NMT slave
	Minimum boot-up
	Variable PDO mapping
	Emergency message
	Life guarding / heartbeat
	Configuration of virtual modules
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	200 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications





Technical Data	
Number of I/O modules	64
Max. input process image	512 bytes
Max. output process image	512 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	via PC or PLC
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
No. of PDOs	32 Tx / 32 Rx
No. of SDOs	2 server SDOs / 16 client SDOs
Communication profile	DS-301 V4.01
Device profile	DS-401 V 2.0
	Marginal check
	Edge-triggered PDOs
	Programmable error response
	DSP 405
	using function blocks NMT master can be programmed
COB ID distribution	SDO, standard
Node ID distribution	DIP switches
Other CANopen features	NMT slave
	Minimum boot-up
	Variable PDO mapping
	Emergency message
	Life guarding / heartbeat
	Configuration of virtual modules
Power supply	24 V DC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
Isolation	500V system/supply
Voltage via power jumper contacts	24 V DC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	181.7 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2, marine applications
EMC emission of interference	acc. to EN 61000-6-4, marine applications

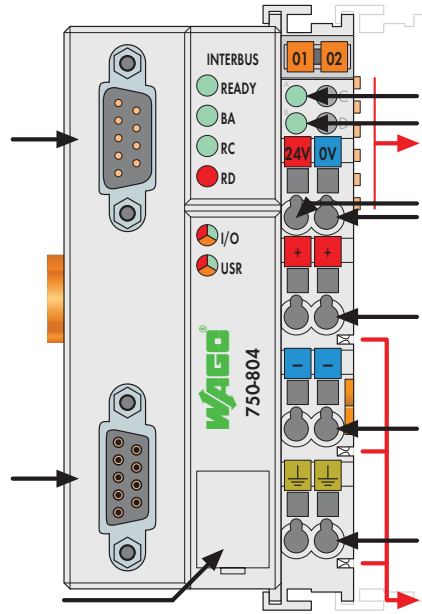
# 3 PLC - INTERBUS Programmable Fieldbus Controller



Fieldbus connection D-Sub Input

Fieldbus connection D-Sub Output

Configuration and programming interface



Status voltage supply  
-System  
-Power jumper contacts  
Data contacts

Supply  
24 V  
0 V

Supply via power jumper contacts  
24 V

0 V

⊥



Power jumper contacts

The INTERBUS PLC is an expansion for the WAGO-I/O-SYSTEM.

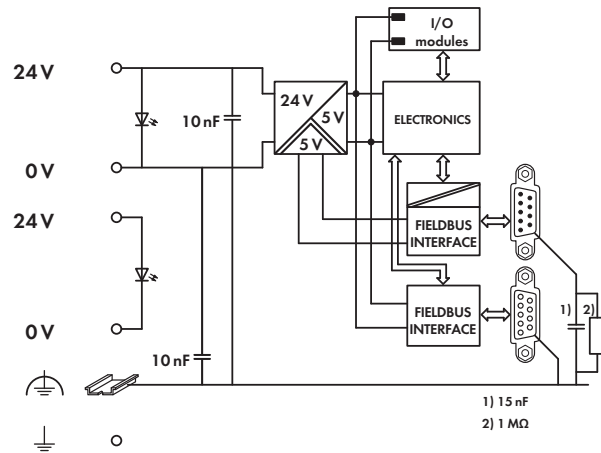
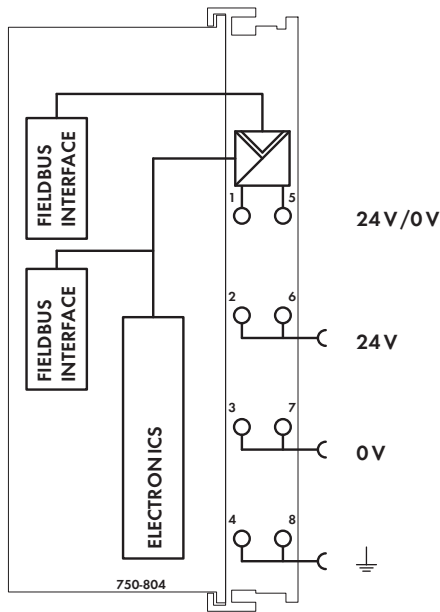
This controller combines the WAGO fieldbus coupler for INTERBUS with the functionality of a PLC. Programming of the application is done in accordance with IEC 61131-3. The programmer can access all fieldbus and I/O data.

Features and applications:

- Use of decentralized control can better support a PLC or PC
- Complex applications can be divided into individually testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Stand-alone, compact controller

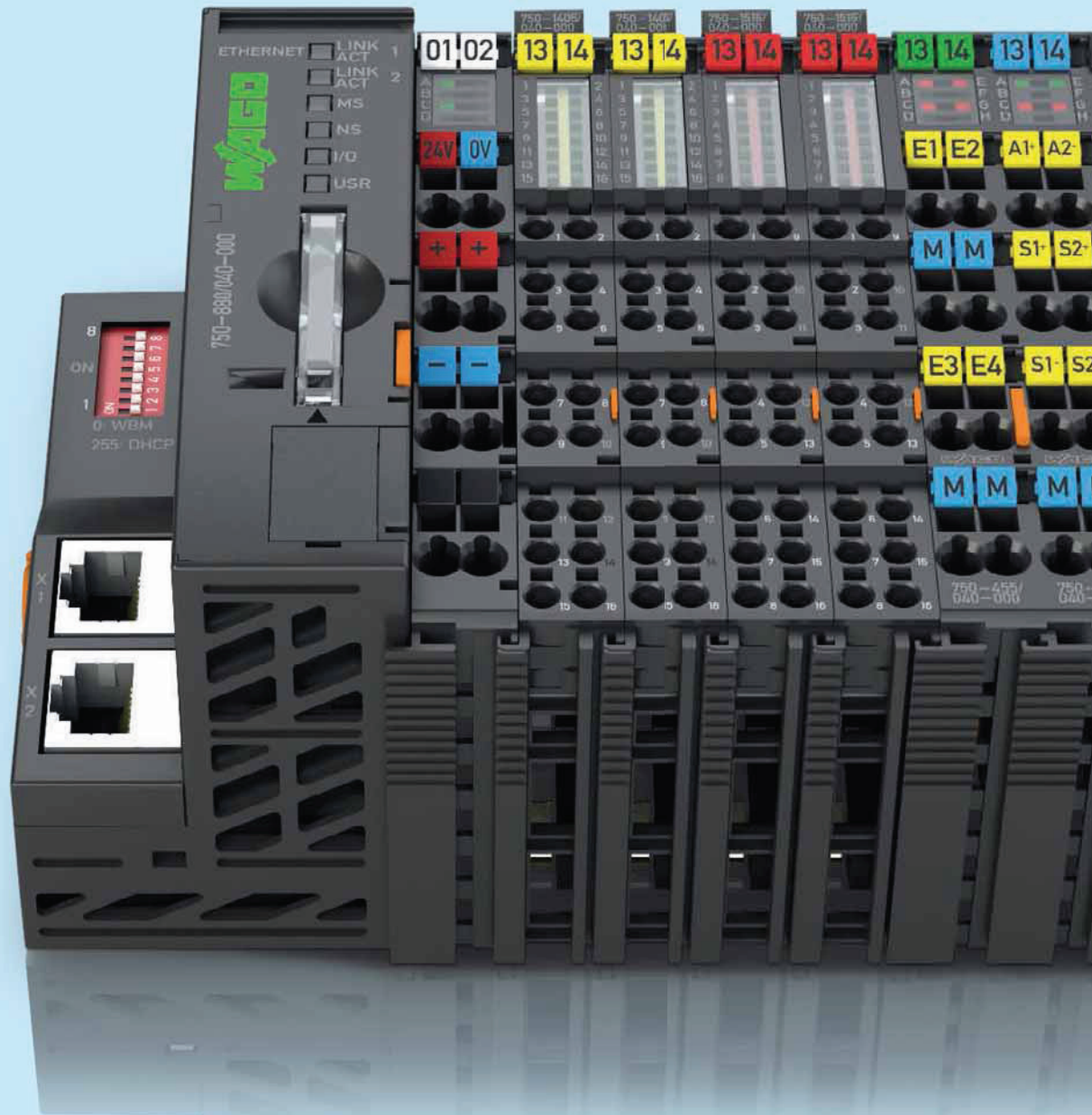
Description	Item No.	Pack. Unit
<b>Contr. INTERBUS</b>	<b>750-804</b>	<b>1</b>
<b>Accessories</b>		
<b>INTERBUS files</b>	Download: <a href="http://www.wago.com">www.wago.com</a>	
<b>Miniature WSB Quick marking system</b>		
 plain	<b>248-501</b>	<b>5</b>
with marking	see Section 11	
<b>Standards and Approvals</b>		
Standard	EN 50254	
Conformity marking	CE	
Korea Certification		
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	
TÜV 12.1297 X (Brasilien)	Ex nA IIC T4 Gc	
TÜV 07 ATEX 554086 X	I M2 Ex d I Mb, II 3 G Ex nA IIC T4 Gc, II 3 D Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	
IECEx TUN 09.0001 X	Ex d I Mb, Ex nA IIC T4 Gc, Ex tc IIIC T135°C Dc	
Permissible ambient temperature	0 °C ... +60 °C	

System Data	
No. of controllers connected to Master	256
Max. no. of I/O points	4096 (depends on master)
Transmission medium	Certified Cu cable
Max. length of fieldbus segment	400 m
Baud rate	500 Kbaud
Transmission time	typ. 1.43 ms (10 couplers; 32 digital I/Os per coupler)
Buscoupler connection	1 x D-Sub 9; plug for input interface 1 x D-Sub 9; socket for output interface
Programming	WAGO-I/O-PRO 32
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



Technical Data	
Number of I/O modules	64
Max. input process image	64 bytes
Max. output process image	64 bytes
Max. input variables	64 bytes
Max. output variables	64 bytes
Configuration	automatic
Program memory	128 Kbytes
Data memory	64 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
Power supply	24 VDC (-25 % ... +30 %)
Max. input current (24 V)	500 mA
Power supply efficiency	87 %
Internal current consumption (5 V)	400 mA
Total current for I/O modules (5 V)	1600 mA
Isolation	500 V system/supply
Voltage via power jumper contacts	24 VDC (-25 % ... +30 %)
Current via power jumper contacts (max.)	10 A DC

General Specifications	
Operating temperature	0 °C ... +55 °C
Wire connection	CAGE CLAMP®
Cross sections	0.08 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 28 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	200 g
Storage temperature	-25 °C ... +85 °C
Relative air humidity (no condensation)	95 %
Vibration resistance	acc. to IEC 60068-2-6
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-2
EMC emission of interference	acc. to EN 61000-6-4



# Programmable Fieldbus Controller XTR

## ◀◀◀ Section 2

### PERSPECTO® Control Panels

- Merging control and visualization
- 8.9 cm ... 38.1 cm (3.5" ... 15")

## ◀◀ Section 3.1

### PFC200

- Maximum performance in a minimum space
- High processing speed
- Additional operating controls (e.g., start/stop switch)
- Based on Linux® also in high-level language

## ◀ Section 3.2

### Programmable Fieldbus Controllers

- Decentralized intelligence based on fieldbus couplers
- Programmable to IEC 61131-3
- WAGO-I/O-SYSTEM 750, modular

### Programmable Fieldbus Controller XTR

For demanding applications where the following are critical:

- Extreme temperature stability
- Immunity to interference and impulse-voltage withstand
- Vibration and shock resistance

# Controllers

## Programmable Fieldbus Controller XTR

<b>General Product Information</b>	<b>Page</b> 108
<b>Interfaces and Configurations</b>	109
<b>Item Number Keys</b>	109
<b>Installation Instructions</b>	110
<b>Standards and Rated Conditions</b>	111



CPU	ETHERNET		PROFIBUS	CANopen	Others	Description	Item No.	
	MODBUS TCP	EtherNet/IP						
32-bit	x	x				ETHERNET Controller/XTR	750-880/040-000	112
32-bit	x	x			IEC 60870-5 IEC 61850 IEC 61400-25	ETHERNET Telecontroller/XTR	750-880/040-001	112
32-bit				M/S		CANopen Controller/XTR	750-838/040-000	114

M: Master, S: Slave



### Programmable Fieldbus Controller XTR:

#### Taking it to the eXTReme – The standard for 750 XTR

Programmable XTR fieldbus controllers are easily recognized by their dark gray housings. The WAGO-I/O-SYSTEM 750 XTR's unique features make it ideal for extreme environment applications.

The WAGO-I/O-SYSTEM 750 XTR is extremely weather-resistant, immune to electromagnetic interference, as well as insensitive to vibrations and impulse voltages. This is what makes 750 XTR the first choice for demanding applications including:

- Marine systems and onshore/offshore installations
- Renewable energy systems (wind turbines, solar systems and biogas plants)
- Transformer stations and power distribution systems
- Petrochemical manufacturing systems
- Water and wastewater treatment systems
- Custom machines
- Railway applications

#### Marine Systems and Onshore/Offshore Industry

International approvals coupled with industry-specific features permit use in shipbuilding and other harsh sectors. Meeting stringent criteria permits operation on marine diesels and in the EMC-sensitive area of a vessel's bridge. Because WAGO meets the marine industry's significantly greater requirements for immunity to interference or emission of interference and mechanical performance, WAGO I/O is well-suited to other industries.

#### Telecontrol technology

Standardized telecontrol protocols according to IEC 60870-5, IEC 61850 and IEC 61400-25 permit the use of programmable fieldbus controllers in telecontrol technology. In addition, increased requirements for dielectric strength according to EN 60870-2-1 are met. The result is a tailor-made solution for demanding telecontrol applications that exceeds all requirements.

#### Link between Process Data and IT Application – Even under eXTReme Conditions

The controllers ideally combine real-time requirements with IT functionality. They support both MODBUS/TCP and ETHERNET/IP for use in industrial environments. HTTP, SNMP, FTP, BootP, DHCP, DNS and other protocols simplify integration into IT environments. Integrated Web pages and Web-based visualization provide IT applications with real-time process data. Furthermore, the PLC incorporates library functions for email, SOAP, ASP, IP configuration, ETHERNET sockets and file system.

#### Modular Expandability

With the WAGO-I/O-SYSTEM 750 XTR, the programmable fieldbus controllers can be expanded to almost any input/output interface. Using the same standard platform has given the XTR the same proven advantages.

#### Worldwide Approvals

International approvals for industrial automation, building automation, shipbuilding and onshore/offshore applications guarantee worldwide use even under harsh operating conditions, e.g., Germanischer Lloyd, Det Norske Veritas, American Bureau of Shipping, Korean Register of Shipping, Nippon Kaiji Kyokai, Registro Italiano Navale and Polski Rejestr Stratkow.

#### Superior reliability in extreme climates

Regardless of freezing cold, extreme heat and high humidity, the WAGO-I/O-SYSTEM 750 XTR is engineered for absolute dependability in all climatic conditions. The XTR version of the programmable fieldbus coupler is unfazed by both freezing cold down to -40 °C and scorching heat up to +70 °C. And this applies to both initial start-up and daily operation. Another highlight is that the XTR functions at elevations up to 5,000 m, opening up these applications to new highs for safety, reliability and performance – even in the thin air of a mountain top station.

#### Additional protection against interference pulses

The WAGO-I/O-SYSTEM 750 XTR provides greater isolation up to 5 kV of impulse voltage, lower EMC emission of interference and higher insensitivity against EMC interference. These strengths add up to trouble-free operation.

#### High Mechanical Performance

Automation systems must be particularly vibration-resistant, especially when installed close to vibration-prone and shock-generating system components. Powerful motors and power circuit breakers are just two examples of common disturbance-creating components. The WAGO-I/O-SYSTEM 750 XTR continues to set new standards here. Count on long-lasting, trouble-free operation and industry-topping levels of safety – even in the most torturous applications, such as tunnel boring machines.

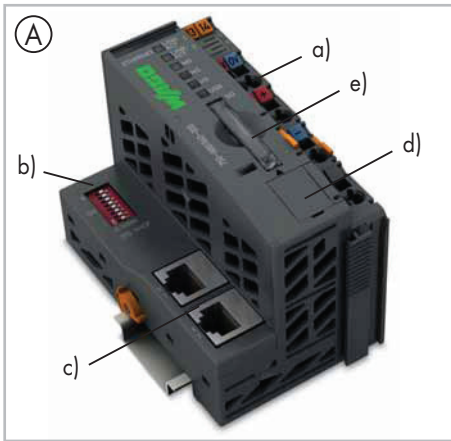


- Controllers for eXTReme conditions
  - No air conditioning required
  - Can be used in unshielded areas
  - Install close to vibrating and shock-generating system components
- Extensive IT integration opportunities
- Expandable with the WAGO-I/O-SYSTEM 750 XTR's extensive portfolio
- Maintenance-free
- CAGE CLAMP® spring connection technology for vibration-proof, fast and maintenance-free connections



# Programmable Fieldbus Controller XTR

## Interfaces and Configurations



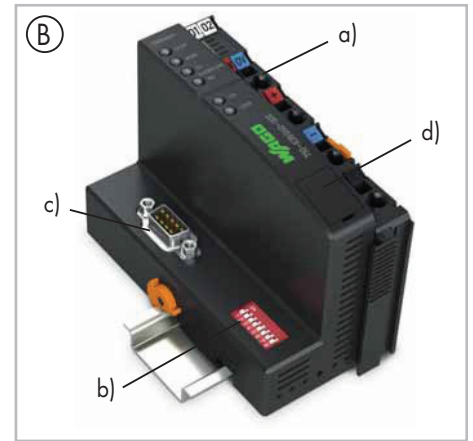
- Includes supply module (a)
- Technical differences on the connection level. Address switch (b) and fieldbus interface (c)
- Service port (d)

### Housing design (A)

- SD card slot for external storage media (e)
- W x H\* x L (mm) 62 x 65 x 100

### Housing design (B)

- W x H\* x L (mm) 51 x 65 x 100



\*Height from upper edge of the DIN-rail

## Item Number Keys

Explanation of the components for the item number key

**Item No. : 750-8xx/040-00y**

3x: 16-bit	CANopen
8x: 32-bit multitasking	ETHERNET
001:	Telecontrol

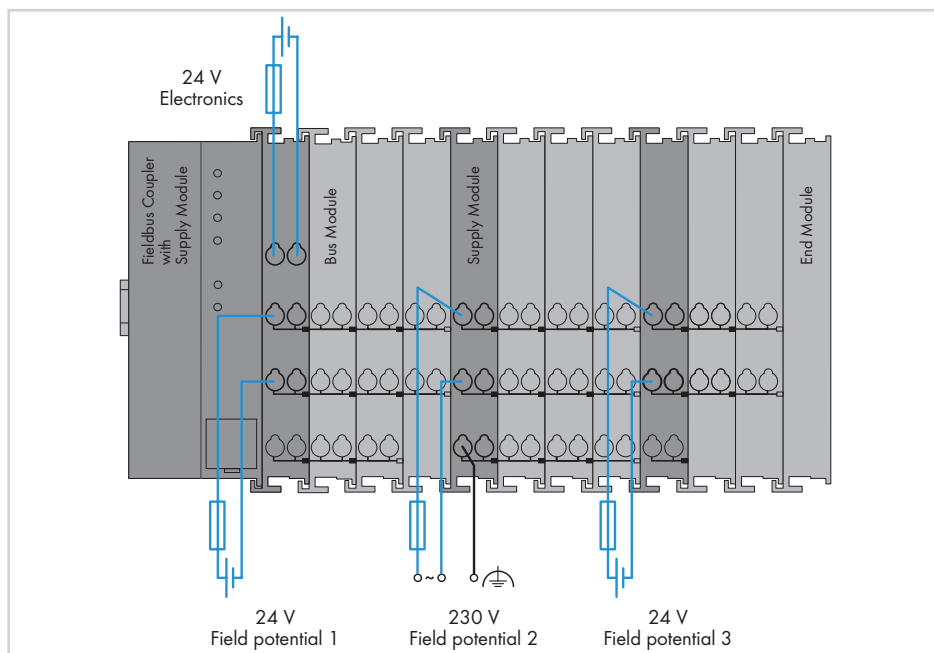
# 3 Programmable Fieldbus Controller XTR

## 110 Installation Instructions

### Power Supply

Power is always channeled to the internal electronics power supply by the fieldbus coupler. The power supply to the field-side supply is electrically isolated. The division enables a separate supply for sensors and actuators. The I/O modules' connections automatically lead to transferring the supply voltages. Supply modules with diagnostics enable additional power supply monitoring. This ensures a flexible, user-specific supply design for a station.

The current supply to the electronics is limited by a maximum value. This value is dependent on the coupler used. If the sum of the internal current demand of all the I/O modules should exceed this value, an additional bus supply module is necessary. Even in this case, power supply to the field-side supply of 10 A may not be exceeded. However, different power supply modules allow a new power supply, formation of potential groups and the implementation of emergency stops.



### Notes

Additional steps must be implemented based on where the I/O-System is installed:

- As part of **shipbuilding** or in the onshore/off-shore sector, as well as in telecontrol applications, specific power and field-side power supply filters must be provided (750-624/040-001 or 750-626/040-000).

### Mixed Operation

Mixed operation (standard/XTR modules) within a node is possible when groups of modules are electrically isolated on the field side (i.e., electrically isolated power supply). The combination may be useful, for example, when there are only increased requirements for dielectric strength and immunity to interference, but the ambient temperature is not critical.

### Interference-Free in Safety-Related Applications

To safely and easily perform cost-effective, centralized deactivation of complete actuator groups, the actuator's power supply can be switched off using a safety switching device. This can either be performed for each individual actuator or by turning off the power supply to a group of control outputs.

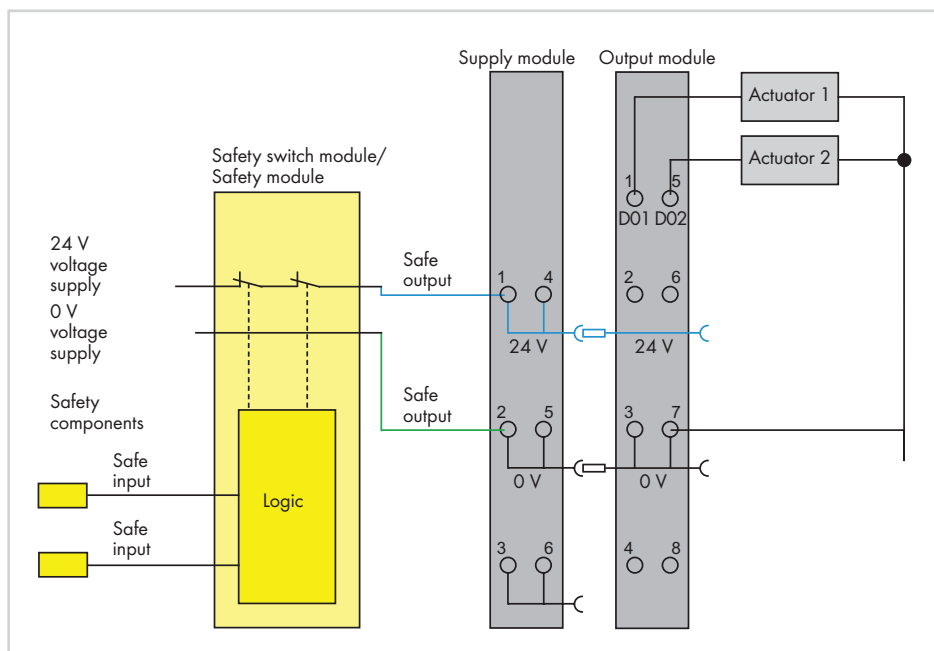
In the event of failure, ensure that no interference from other current or power circuits occurs – even when the control voltage is switched off – so the defined safety function properties (logic and time response) remain unchanged.

All modules are designed to provide interference-free safety functionality. These modules comply with safety requirements up to Category 4 of DIN EN ISO 13849-1:2007. Safety category and performance level depend solely on the safety components and their wiring.

### Notice:

Interference-free WAGO I/O modules have no active influence on the safety function, they are not an active part of the safety application and are not a substitute for the safety switching device! When using the components in safety functions, the corresponding notes must be observed in the relevant manual.

Please refer to the manual for details about the power supply's design.



### General Specifications

Operating voltage	24 VDC under laboratory conditions +15 °C ... +35 °C: 18 V ... 31.2 V (17.4 V ... 31.2 V) <sup>1)</sup> for -40 °C ... +55 °C: 18 V ... 28.8 V (17.4 V ... 28.8 V) <sup>1)</sup> for +55 °C ... +70 °C: 18 V ... 26.4 V (17.4 V ... 26.4 V) <sup>1)</sup> <sup>1)</sup> Including residual ripple of 15 %
Operating temperature	-40 °C ... +70 °C
Storage temperature	-40 °C ... +85 °C
Relative humidity	Max. 95 % short-term condensation acc. to class 3K7 / IEC EN 60721-3-3 (excluding wind-driven precipitation, water and ice formation)
Operating altitude	without temperature derating: 0 m ... 2000 m; with temperature derating: 2000 m ... 5000 m (0.5 K/100 m); max.: 5000 m
Degree of contamination	II acc. to IEC 61131-2
Dielectric strength	acc. (EN 60870-2-1) Modules ≤ 50 V: 510 VAC/775 VDC; Modules > 50 V: 2.5 kVAC/3.5 VDC Isolation: Rated surge voltage Modules ≤ 50 V: 1 kV (class VW1 acc. to EN 60870-2-1) Modules > 50 V: 5 kV (class VW3 acc. to EN 60870-2-1) Surge: Modules ≤ 50 V: 1 kV (L - L) / 2 kV (L - E) Modules > 50 V: 2 kV (L - L) / 4 kV (L - E) Overvoltage category: III
Vibration resistance	5g acc. to IEC 60068-2-6, EN 60870-2-2, IEC 60721-3-1, IEC 60721-3-3, EN 61131-2
Shock resistance	15g/11 ms/half-sine/1000 shocks acc. to IEC 60068-2-27 25g/6 ms/1000 shocks acc. to IEC 60068-2-27
EMC immunity to interference	EN 61000-6-1, EN 61000-6-2, EN 61131-2 Marine applications, EN 50121-3-2, EN 50121-4 EN 50121-5, EN 60255-26, EN 60870-2-1 EN 61850-3, IEC 61000-6-5, IEEE 1613, VDEW: 1994
EMC emission of interference	EN 61000-6-3 and EN 61000-6-4, EN 61131-2 EN 60255-26, marine applications EN 60870-2-1 (industrial and residential areas) EN 61850-3 (industrial and residential areas) EN 50121-3-2, EN 50121-4, EN 50121-5
Protection type	IP20
Mounting position	standing horizontal/lying, vertical
Type of mounting	DIN-rail
Housing material	Polycarbonate, polyamide 6.6
Stress due to contaminants	acc. to IEC 60068-2-42 and IEC 60068-2-43
Maximum pollutant concentration with a relative humidity < 75 %	SO <sub>2</sub> ≤ 25 ppm; H <sub>2</sub> S ≤ 10 ppm
Connection technology	CAGE CLAMP®
Conductor cross-section; stripped lengths	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> /24 ... 14 AWG; 8 ... 9 mm/0.33 in.
Current via power jumper contacts	max. 10 A

# PLC - ETHERNET Programmable Fieldbus Controller

for eXTReme environmental conditions; 32-bit CPU, multitasking

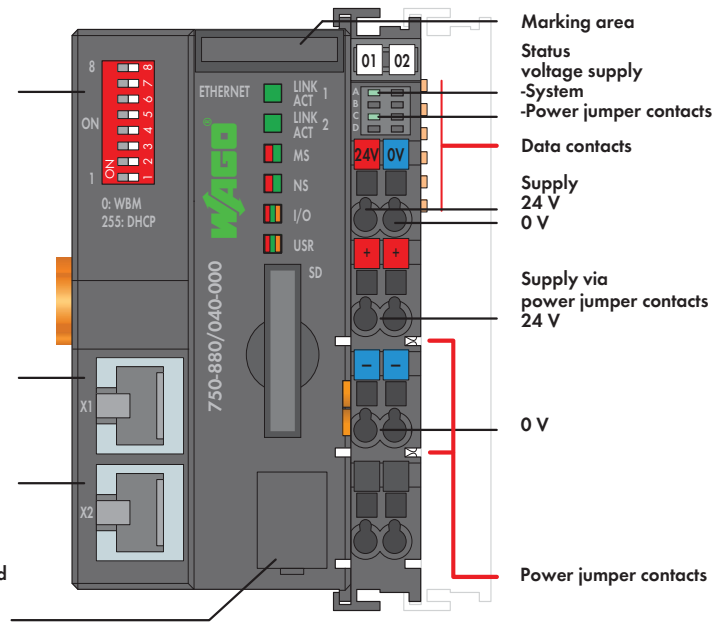


Address

Fieldbus connection RJ-45

Fieldbus connection RJ-45

Configuration and programming interface




In conjunction with the WAGO-I/O-SYSTEM, the ETHERNET PLC is used as a programmable controller within ETHERNET networks. The PLC supports all digital, analog, and specialty modules found within the 750/753 Series, and is suitable for data rates of 10/100 Mbit/s. Two ETHERNET interfaces and an integrated switch enable fieldbus wiring in a line topology. This eliminates additional network devices, such as switches or hubs. Both interfaces support Auto-Negotiation and Auto-MDI(X). The DIP switch configures the last byte of the IP address and may be used for IP address assignment. The PLC supports both MODBUS/TCP and ETHERNET/IP for use in industrial environments. It also supports a wide variety of standard ETHERNET protocols for easy integration into IT environments (e.g., HTTP, BootP, DHCP, DNS, SNMP, SNMP, FTP). For telecontrol applications, the 750-880/040-001 Controller supports the IEC 60870-5-101/-103-104, IEC 61850-7 and IEC 61400-25 communication protocols.

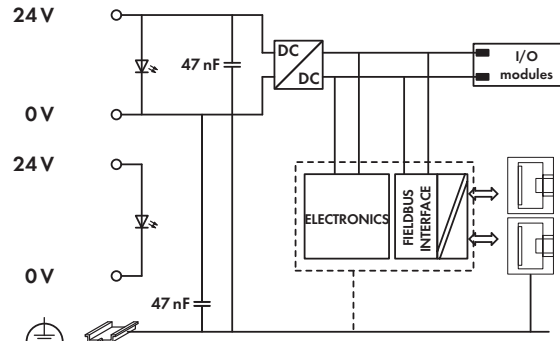
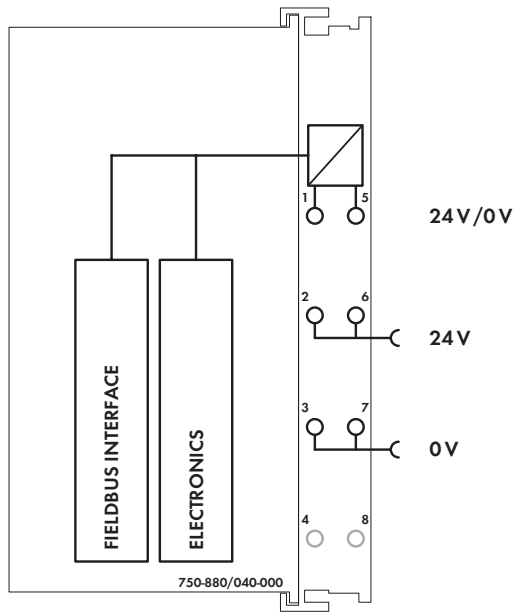
An integrated Web server provides the user with configuration options and status information from the controller. The IEC 61131-3 programmable controller is multitasking-capable and features a battery-backed RTC. A data memory of 1 MB is available. The 750-880 PLC has a slot for a removable memory card, allowing device parameters or files (e.g., boot files) to be transferred from one controller to another. The memory card can be accessed via FTP and be used as an additional drive.

**The module is ideally suited for operation in harsh environmental conditions:**

- strongly extended temperature range
- higher dielectric strength and EMC resistance
- higher vibration and shock resistance

Description	Item No.	Pack. Unit
ETHERNET Controller /XTR	750-880/040-000	1
ETHERNET Telecontroller /XTR	750-880/040-001	1
<b>Accessories</b>		
SD memory card, 2 GB	758-879/000-001	1
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
WAGO-I/O-PRO V2.3, USB kit	759-333/000-923	1
<b>Miniature WSB Quick marking system</b>		
 plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	GL	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	

System Data	
No. of controllers connected to Master	limited by ETHERNET specification
Transmission medium	Twisted Pair S-UTP 100 Ω, Cat 5; Max. line length: 100 m
Baud rate	10/100 Mbit/s
Transmission performance	Class D acc. to EN 50173
Buscoupler connection	2 x RJ-45
Protocols	EtherNet/IP, MODBUS/TCP (UDP), HTTP, BootP, DHCP, DNS, SNMP, FTP, SNMP
750-880/040-001	IEC 60870-5-101/-103/-104, IEC 61850, IEC 61400-25
Programming	WAGO-I/O-PRO
IEC 61131-3	IL, LD, FBD (CFC), ST, FC
SD card slot	Push-push mechanism, sealable cover lid
Type of memory card	SD and SDHC up to 32 GB (All guaranteed properties are only valid in connection with the WAGO 758-879/000-001 memory card.)

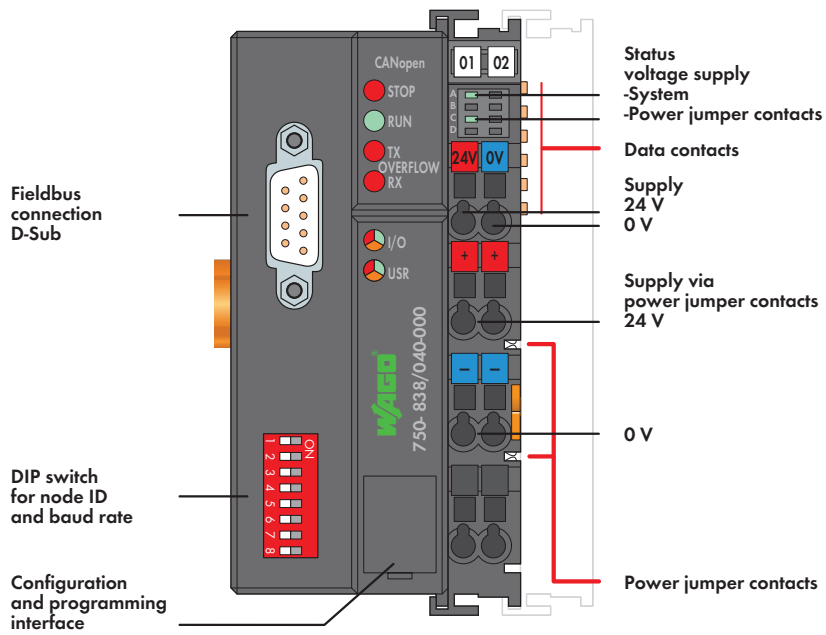


Technical Data	
Number of I/O modules	64
Fieldbus	
Max. input process image	1020 words
Max. output process image	1020 words
Configuration	via PC
Program memory	1024 Kbytes
Data memory	1024 Kbytes
Non-volatile memory (retain)	32 Kbytes
Power supply	via CAGE CLAMP® connections, 24 VDC
Input current typ. at rated load (24 V)	500 mA
Efficiency of the power supply (typ.) at nominal load (24 V)	90 %
Internal current consumption (5 V)	450 mA
Total current for I/O modules (5 V)	1700 mA
	up to 60°C operating temperature;
	1500 mA > 60°C operating temperature
Voltage via power jumper contacts	24 V DC
under laboratory conditions +15 °C ... +35 °C	18 V ... 31.2 V (17.4 V ... 31.2 V) <sup>1)</sup>
for -40 °C ... +55 °C	18 V ... 28.8 V (17.4 V ... 28.8 V) <sup>1)</sup>
for +55 °C ... +70 °C	18 V ... 26.4 V (17.4 V ... 26.4 V) <sup>1)</sup>
	<sup>1)</sup> including residual ripple of 15 %
Isolation (peak value)	510 VAC or 775 VDC
	power supply/DIN rail
Rated surge voltage	1 kV
Oversvoltage category	III

General Specifications	
Operating temperature	-40 °C ... +70 °C
Wire connection	CAGE CLAMP®
Cross sections	0.25 mm <sup>2</sup> ... 2.5 mm <sup>2</sup> / AWG 24 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	62 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	164 g
Storage temperature	-40 °C ... +85 °C
Relative humidity	95 %, short-term condensation acc. to class 3K7 / IEC EN 60721-3-3 (except wind-driven precipitation, water and ice formation)
Vibration resistance	acc. to IEC 60068-2-6 (acceleration: 5g), EN 60870-2-2, IEC 60721-3-1, -3, EN 61131-2
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-1, -2, EN 61131-2, marine applications, EN 50121-3-2, -4, -5, EN 60255-26, EN 60870-2-1, EN 61850-3, IEC 61000-6-5, IEEE 1613, VDEW: 1994
EMC emission of interference	acc. to EN 61000-6-3, -4, EN 61131-2, EN 60255-26, marine applications, EN 60870-2-1, EN 61850-3, EN 50121-3-2, -4, -5
Operating altitude	without temperature derating: 0 m ... 2000 m; with temperature derating: 2000 m ... 5000 m (0.5 K/100 m); max.: 5000 m

# PLC - CANopen Programmable Fieldbus Controller, D-Sub

for eXTReme environmental conditions; 16-bit CPU



The CANopen PLC combines control functionality, I/O interface and fieldbus in one device.

Programming PLC applications is performed in compliance with IEC 61131-3. The programmer can access all fieldbus and I/O data.


Features and applications:

- Central control system is assisted by decentralized processing units
- Complex applications are divided into independent, testable units
- Programmable fault response in the event of a fieldbus failure
- Signal pre-processing reduces fieldbus transmissions
- Peripheral equipment can be controlled directly, resulting in faster system response times
- Compact, self-sufficient controller

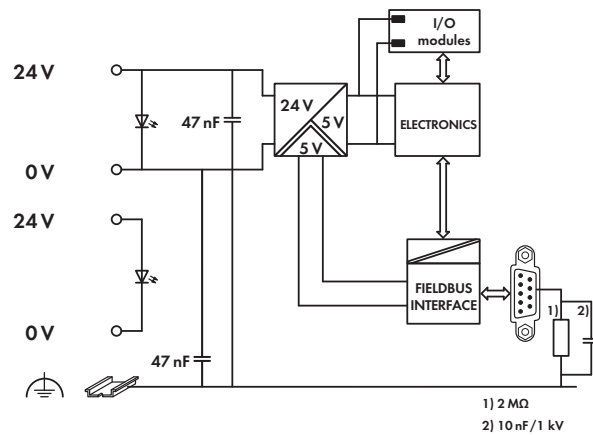
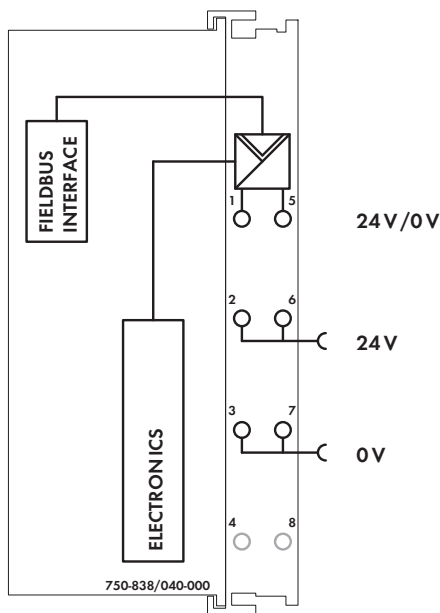
The module is ideally suited for operation in harsh environmental conditions:

- strongly extended temperature range
- higher dielectric strength and EMC resistance
- higher vibration and shock resistance

Notice: EDS files required

Description	Item No.	Pack. Unit
CANopen Controller /XTR	750-838/040-000	1
<b>Accessories</b>		
EDS files	Download: <a href="http://www.wago.com">www.wago.com</a>	
WAGO-I/O-PRO V2.3, RS-232 kit	759-333	1
WAGO-I/O-PRO V2.3, USB kit	759-333/000-923	1
Miniature WSB Quick marking system		
 plain	248-501	5
with marking	see Section 11	
<b>Approvals</b>		
Conformity marking	CE	
Korea Certification	KC	
Marine applications	GL	
UL 508		
ANSI/ISA 12.12.01	Class I, Div. 2, Grp. ABCD, T4	

System Data	
No. of controllers connected to Master	110
Transmission medium	Shielded Cu cable 3 x 0.25 mm <sup>2</sup>
Max. length of bus line	30 m ... 1000 m (depends on baud rate/cable)
Baud rate	10 Kbaud ... 1 Mbaud
Buscoupler connection	1 x D-Sub 9; plug
Programming	WAGO-I/O-PRO V2.3
IEC 61131-3	IL, LD, FBD (CFC), ST, FC



Technical Data	
Number of I/O modules	64
Fieldbus	
Max. input process image	512 bytes
Max. output process image	512 bytes
Max. input variables	512 bytes
Max. output variables	512 bytes
Configuration	via PC or PLC
Program memory	640 Kbytes
Data memory	832 Kbytes
Non-volatile memory (retain)	8 Kbytes
Cycle time	< 3 ms for 1,000 statements / 256 dig. I/Os
No. of PDOs	32 Tx / 32 Rx
No. of SDOs	2 server SDOs / 16 client SDOs
Communication profile	DS-301 V4.01
Device profile	DS-401 V 2.0
	Marginal check
	Edge-triggered PDOs
	Programmable error response
	DSP 405
	using function blocks NMT master can be programmed
COB ID distribution	SDO, standard
Node ID distribution	DIP switches
Other CANopen features	NMT slave
	Minimum boot-up
	Variable PDO mapping
	Emergency message
	Life guarding / heartbeat
	Configuration of virtual modules
Power supply	via CAGE CLAMP® connections, 24 VDC
Max. input current (24 V)	500 mA
Power supply efficiency	90 %
Internal current consumption (5 V)	350 mA
Total current for I/O modules (5 V)	1650 mA
	up to 60°C operating temperature;
	1250 mA > 60°C operating temperature
Voltage via power jumper contacts	24 V DC
under laboratory conditions +15 °C ... +35 °C	18 V ... 31.2 V (17.4 V ... 31.2 V) <sup>1)</sup>
for -40 °C ... +55 °C	18 V ... 28.8 V (17.4 V ... 28.8 V) <sup>1)</sup>
for +55 °C ... +70 °C	18 V ... 26.4 V (17.4 V ... 26.4 V) <sup>1)</sup>
	<sup>1)</sup> including residual ripple of 15 %

General Specifications	
Current via power jumper contacts (max.)	10 A DC
Isolation (peak value)	510 VAC or 775 VDC power supply/DIN rail
Rated surge voltage	1 kV
Overvoltage category	III
Operating temperature	-40 °C ... +70 °C
Wire connection	CAGE CLAMP®
Cross sections	0.25 mm² ... 2.5 mm² / AWG 24 ... 14
Strip lengths	8 ... 9 mm / 0.33 in
Dimensions (mm) W x H x L	51 x 65 x 100
	Height from upper-edge of DIN 35 rail
Weight	200 g
Storage temperature	-40 °C ... +85 °C
Relative humidity	95 %, short-term condensation acc. to class 3K7 / IEC EN 60721-3-3 (except wind- driven precipitation, water and ice formation)
Vibration resistance	acc. to IEC 60068-2-6 (acceleration: 5g), EN 60870-2-2, IEC 60721-3-1, -3, EN 61131-2
Shock resistance	acc. to IEC 60068-2-27
Degree of protection	IP20
EMC immunity of interference	acc. to EN 61000-6-1, -2, EN 61131-2, marine applications, EN 50121-3-2, -4, -5, EN 60255-26
EMC emission of interference	acc. to EN 61000-6-3, -4, EN 61131-2, EN 60255-26, marine applications, EN 60870-2-1, EN 61850-3, EN 50121-3-2, -4, -5
Operating altitude	without temperature derating: 0 m ... 2000 m; with temperature derating: 2000 m ... 5000 m (0.5 K/100 m); max.: 5000 m