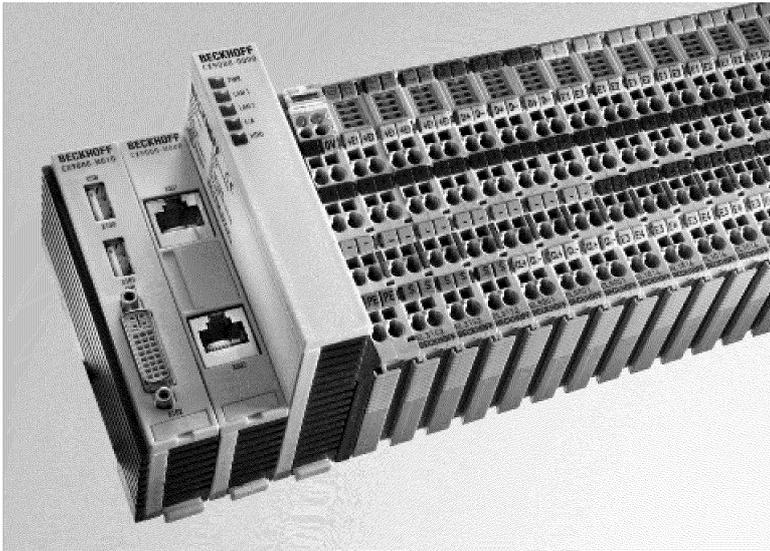


**TwinCAT IEC60870-5-103 control station interoperability****Interoperability list according to IEC 60870-5-103**

for TwinCAT PLC Library: IEC 870-5-103 control station (master).



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Here you can [open/save the protocol interoperability document \(zipped PDF\)](#).

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**General Information**

This compatibility list refers to functions supported within IEC 870-5-103.

Compatibility of the individual components has to be agreed for individual projects by all parties involved.

**Project information**

Projekt No.: \_\_\_\_\_

Project: \_\_\_\_\_

Responsible: \_\_\_\_\_

Date: \_\_\_\_\_

**Compatibility**

The selected parameters should be marked in the white control fields as follows:

<input type="checkbox"/>	Function or ASDU is not used
<input checked="" type="checkbox"/>	Function or ASDU is used as specified (preferred option)

**System or device**

<input type="checkbox"/>	System definition
<input checked="" type="checkbox"/>	Specifications for the control station
<input type="checkbox"/>	Specifications for the controlled station

**Physical layer**

Electrical interface

<input type="checkbox"/>	EIA RS-485
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<input type="checkbox"/>	Count of load	.....	for one protection direction
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REMARK: EIA RS-485 defines the unit loads in that way, that 32 of them can be operated at one line.  
Single information, see EIA RS 485, article 3

Optical interface

<input type="checkbox"/>	Fibre optics
<input type="checkbox"/>	plastic fibre
<input type="checkbox"/>	F-SMA plug
<input type="checkbox"/>	BFOC/2,5 plug

Transmission speed:

<input checked="" type="checkbox"/>	9600 bit/s
<input checked="" type="checkbox"/>	19200 bit/s

**Link layer**

No options for the link layer.

**Application layer**

**Transfer mode for application data**

According to this application-related standard, only mode 1 (octet with the lowest value first) according to 4.10 IEC 60870-5-4 is used.

**Common address of ASDU**

<input checked="" type="checkbox"/>	One COMMON ADDRESS of ASDU	<input checked="" type="checkbox"/>	Identical with station address	<input checked="" type="checkbox"/>	Not identical with station address
<input type="checkbox"/>	More than one COMMON ADDRESS of ASDU				

Selection of standardised ASDUs in monitoring direction

	<0> := not used	-
<input checked="" type="checkbox"/>	<1> := Time-tagged message	M_TTM_TA_3
<input checked="" type="checkbox"/>	<2> := Time-tagged message with relative time	M_TMR_TA_3
<input checked="" type="checkbox"/>	<3> := Measurands I	M_MEI_NA_3
<input checked="" type="checkbox"/>	<4> := Time-tagged measurands with relative time	M_TME_TA_3
<input checked="" type="checkbox"/>	<5> := Identification	M_IRC_NA_3
<input checked="" type="checkbox"/>	<6> := Time synchronisation	M_SYN_TA_3
<input checked="" type="checkbox"/>	<8> := Termination of general interrogation	M_TGI_NA_3
<input checked="" type="checkbox"/>	<9> := Measurands II	M_MEII_NA_3
<input checked="" type="checkbox"/>	<10> := Generic data	M_GD_XA_3
<input checked="" type="checkbox"/>	<11> := Generic identification	M_GI_XA_3
<input checked="" type="checkbox"/>	<23> := List of recorded disturbances	M_LRD_TA_3
<input checked="" type="checkbox"/>	<26> := Ready for transmission of disturbance data	M_RTD_TA_3
<input checked="" type="checkbox"/>	<27> := Ready for transmission of channel	M_RTC_NA_3
<input checked="" type="checkbox"/>	<28> := Ready for transmission of tags	M_RTT_NA_3
<input checked="" type="checkbox"/>	<29> := Transmission of tags	M_TOT_NA_3
<input checked="" type="checkbox"/>	<30> := Transmission of disturbance values	M_TOV_NA_3
<input checked="" type="checkbox"/>	<31> := End of transmission	M_EOT_NA_3

Selection of standardised information numbers in control direction

	<0> := not used	-
<input checked="" type="checkbox"/>	<6> := Time synchronisation	C_SYN_TA_3
<input checked="" type="checkbox"/>	<7> := General interrogation	C_IGI_NA_3
<input checked="" type="checkbox"/>	<10> := Generic data	C_GD_NA_3
<input checked="" type="checkbox"/>	<20> := General command	C_GRC_NA_3
<input checked="" type="checkbox"/>	<21> := Generic command	C_GC_NA_3
<input checked="" type="checkbox"/>	<24> := Order for disturbance data transmission	C_ODT_NA_3
<input checked="" type="checkbox"/>	<25> := Acknowledgement for disturbance data transmission	C_ADT_NA_3

**Selection of standardised ASDUs in monitoring direction**System functions in monitoring direction

	INF	Description
<input type="checkbox"/>	<0>	End of general interrogation
<input type="checkbox"/>	<1>	Time synchronisation
<input type="checkbox"/>	<2>	Reset FCB
<input type="checkbox"/>	<3>	Reset KE
<input type="checkbox"/>	<4>	Start / Restart
<input type="checkbox"/>	<5>	First start

Items describing the status in monitoring direction

	INF	Description
<input type="checkbox"/>	<16>	Automatic restart active
<input type="checkbox"/>	<17>	Protection signal transfer active
<input type="checkbox"/>	<18>	Protection active
<input type="checkbox"/>	<19>	Reset display
<input type="checkbox"/>	<20>	Latch of monitoring direction
<input type="checkbox"/>	<21>	Test operation

<input type="checkbox"/>	<22>	Parametrisation on site
<input type="checkbox"/>	<23>	Characteristic curve 1
<input type="checkbox"/>	<24>	Characteristic curve 2
<input type="checkbox"/>	<25>	Characteristic curve 3
<input type="checkbox"/>	<26>	Characteristic curve 4
<input type="checkbox"/>	<27>	Input 1
<input type="checkbox"/>	<28>	Input 2
<input type="checkbox"/>	<29>	Input 3
<input type="checkbox"/>	<30>	Input 4

## Monitoring messages in monitoring direction

	INF	Description
<input type="checkbox"/>	<32>	Measurement monitoring I
<input type="checkbox"/>	<33>	Measurement monitoring V
<input type="checkbox"/>	<35>	Rotating field monitoring
<input type="checkbox"/>	<36>	Trigger cycle monitoring
<input type="checkbox"/>	<37>	UMZ emergency operation
<input type="checkbox"/>	<38>	VT automatic case
<input type="checkbox"/>	<39>	Protection signal transfer defective
<input type="checkbox"/>	<46>	collective message caution
<input type="checkbox"/>	<47>	collective message error

## Earth leakage messages in monitoring direction

	INF	Description
<input type="checkbox"/>	<48>	Earth leakage L <sub>1</sub>
<input type="checkbox"/>	<49>	Earth leakage L <sub>2</sub>
<input type="checkbox"/>	<50>	Earth leakage L <sub>3</sub>
<input type="checkbox"/>	<51>	Earth leakage forwards, i.e. line
<input type="checkbox"/>	<52>	Earth leakage backwards, i.e. bus bar

## Störfall messages in monitoring direction

	INF	Description
<input type="checkbox"/>	<64>	Trigger L <sub>1</sub>
<input type="checkbox"/>	<65>	Trigger L <sub>2</sub>
<input type="checkbox"/>	<66>	Trigger L <sub>3</sub>
<input type="checkbox"/>	<67>	Trigger N
<input type="checkbox"/>	<68>	General Trigger
<input type="checkbox"/>	<69>	Trigger L <sub>1</sub>
<input type="checkbox"/>	<70>	Trigger L <sub>2</sub>
<input type="checkbox"/>	<71>	Trigger L <sub>3</sub>
<input type="checkbox"/>	<72>	Auslösung UMZ- emergency operation
<input type="checkbox"/>	<73>	Error place X in Ohm
<input type="checkbox"/>	<74>	Error forwards / Line
<input type="checkbox"/>	<75>	Error backwards / bus bar
<input type="checkbox"/>	<76>	Protection signal transfer signal sent
<input type="checkbox"/>	<77>	Protection signal transfer signal received
<input type="checkbox"/>	<78>	Step 1
<input type="checkbox"/>	<79>	Step 2
<input type="checkbox"/>	<80>	Step 3
<input type="checkbox"/>	<81>	Step 4

<input type="checkbox"/>	<82>	Step 5
<input type="checkbox"/>	<83>	Step 6
<input type="checkbox"/>	<84>	General excitation
<input type="checkbox"/>	<85>	Switch failure
<input type="checkbox"/>	<86>	Trigger measurement system L <sub>1</sub>
<input type="checkbox"/>	<87>	Trigger measurement system L <sub>2</sub>
<input type="checkbox"/>	<88>	Trigger measurement system L <sub>3</sub>
<input type="checkbox"/>	<89>	Trigger measurement system E
<input type="checkbox"/>	<90>	Trigger I>
<input type="checkbox"/>	<91>	Trigger I>>
<input type="checkbox"/>	<92>	Trigger IN>
<input type="checkbox"/>	<93>	Trigger IN>>

## AWE messages in monitoring direction

	INF	Description
<input type="checkbox"/>	<128>	LS EIN via AWE
<input type="checkbox"/>	<129>	LS EIN via long term AWE
<input type="checkbox"/>	<130>	AWE blocked

## Operating measurement in monitoring direction

	INF	Description
<input type="checkbox"/>	<144>	Operating measurement I
<input type="checkbox"/>	<145>	Operating measurements I, U
<input type="checkbox"/>	<146>	Operating measurements I, U, P, Q
<input type="checkbox"/>	<147>	Operating measurements I <sub>N</sub> , U <sub>EN</sub>
<input type="checkbox"/>	<148>	Operating measurements I <sub>L1,2,3</sub> , U <sub>L1,2,3</sub> , P, Q, f

## Generic function in monitoring direction

	INF	Description
<input type="checkbox"/>	<240>	Read description of all defined groups
<input type="checkbox"/>	<241>	Read values or attributes of all entries of a group
<input type="checkbox"/>	<242>	Read directory of a single entry
<input type="checkbox"/>	<243>	Read value or attribute of a single entry
<input type="checkbox"/>	<244>	End of general interrogation generic data
<input type="checkbox"/>	<249>	Write entry ( with acknowledge)
<input type="checkbox"/>	<250>	Write entry ( with execution)
<input type="checkbox"/>	<251>	Write entry ( with cancel)

## Selection of standardised information numbers in control direction

## System functions in control direction

	INF	Description
<input type="checkbox"/>	<0>	General interrogation disgust
<input type="checkbox"/>	<1>	Time synchronisation

## General commands in control direction

	INF	Description
<input type="checkbox"/>	<16>	Restart ON/OFF
<input type="checkbox"/>	<17>	Protection signal transfer ON/OFF

<input type="checkbox"/>	<18>	Protection ON/OFF
<input type="checkbox"/>	<19>	Reset displays
<input type="checkbox"/>	<23>	Activate characteristic curve 1
<input type="checkbox"/>	<24>	Activate characteristic curve 2
<input type="checkbox"/>	<25>	Activate characteristic curve 3
<input type="checkbox"/>	<26>	Activate characteristic curve 4

#### Generic functions in control direction

	INF	Description
<input type="checkbox"/>	<240>	Read description of all defined groups
<input type="checkbox"/>	<241>	Read value or attribute of all entries of one group
<input type="checkbox"/>	<243>	Read directory of single entry
<input type="checkbox"/>	<244>	Read value or attribute of a single entry
<input type="checkbox"/>	<245>	End of general interrogation generic data
<input type="checkbox"/>	<248>	Write entry
<input type="checkbox"/>	<249>	Write entry ( with acknowledge)
<input type="checkbox"/>	<250>	Write entry ( with execution)
<input type="checkbox"/>	<251>	Write entry ( with cancel)

#### Basic application functions

<input type="checkbox"/>	Test run
<input type="checkbox"/>	Latch of monitoring direction
<input type="checkbox"/>	Disturbance data
<input type="checkbox"/>	Generic services
<input type="checkbox"/>	Private data

#### Miscellaneous

Measured values are transferred with ASDU <3> and ASDU <9>. According to 7.2.6.8 the maximum of MVAL can be the nominal value multiplied by 1,2 or 2,4 .

In ASDU <3> and ASDU <9> no different (referring) factors can be used, i.e. for each measurement value is one selection allowed.

Measurement reading	Max. MVAL	
	rated value x ( 1 or 2 )	rated value x ( 2 or 4 )
Current L <sub>1</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Current L <sub>2</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Current L <sub>3</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Voltage L <sub>1-E</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Voltage L <sub>2-E</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Voltage L <sub>3-E</sub>	<input type="checkbox"/>	<input type="checkbox"/>
Real power Q	<input type="checkbox"/>	<input type="checkbox"/>
Frequency f	<input type="checkbox"/>	<input type="checkbox"/>
Voltage between L <sub>1</sub> and L <sub>2</sub>	<input type="checkbox"/>	<input type="checkbox"/>

## Appendix

### Beckhoff support and service

Beckhoff and their partners around the world offer comprehensive service and support, making available fast and competent assistance with all questions related to Beckhoff products and system solutions.

Beckhoff Support and Service is available to you wherever you are in the world, and can be reached by telephone, fax or e-mail. The contact addresses for your country may be found in the list of Beckhoff branches and partner firms.

### **Beckhoff support**

Support offers you comprehensive technical assistance, helping you not only with the application of individual Beckhoff products, but also with other, wide-ranging services:

- World-wide support;
- Design, programming and commissioning of complex automation systems;
- Extensive training program for Beckhoff system components

Please contact your Beckhoff branch office or representative for local support and service on Beckhoff products!

### **Beckhoff service**

The Beckhoff Service Center supports you in all matters of after-sales service:

- On-site service;
- Repair service;
- Spare parts service;
- Hotline service

Please contact your Beckhoff branch office or representative for local support and service on Beckhoff products!

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