19. Connection cables

VIGOR PLC	19-257

All of the ITs communicate with the other appliances by serial communication. This chapter contains all cables and notions necessary for the connection to the various devices and order codes.

The cables that have NOT CODED as order code are not supplied by ESA elettronica, but are stated to ease construction of the cable by the user.

General notes

As serial communications are greatly affected by interference, top-quality shielded cables must be used in order to limit the influence of interference to a maximum.

The table below shows the features of the cable that is recommended for use for the serial connection.

Features of the serial connection cable	
Resistance in direct current	Max. 151 Ohm/Km
Capacitive coupling	Max. 29pF/m
Shielding	> 80% or Total

Great attention must be paid in the choice and laying of the cables, especially regarding the connection cable between IT and Device.

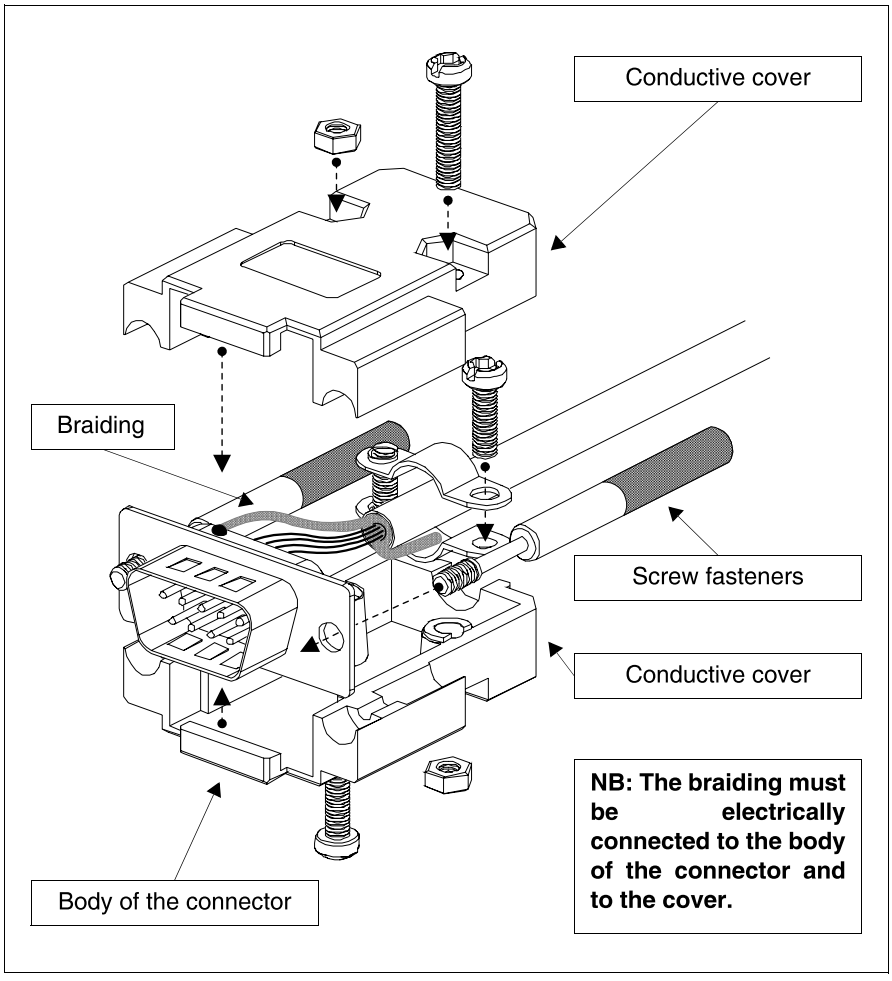
In all cases:
- **Look for the shortest route**
- **Lay disturbed cables separately**

Disconnect the power supplies before connecting or disconnecting the communication cables to prevent any damage to the IT and/or he device connected.

Connection of the cable shield

The correct shielding of the interface cables between IT and Device is indispensable in order to guarantee a serial communication without any type of external interference, therefore, all cables stated in this manual must be the shielded type and tank containers on the IT and Device side must have a metal conductive plastic case.

The correct method of connecting the shielding is shown in the lay-out below.



The interface cable shield must be electrically connected to the case and to the body of the connector itself from both sides of the cable.

If it is not possible to connect the Device side shield due to the type of particular serial connector, the shielding itself must be taken externally to the connector and connected to the earth clamp.

The same operation must also be performed if the body of the Device serial connector, even if standard, is not electrically connected to the earth clamp of the PLC itself.

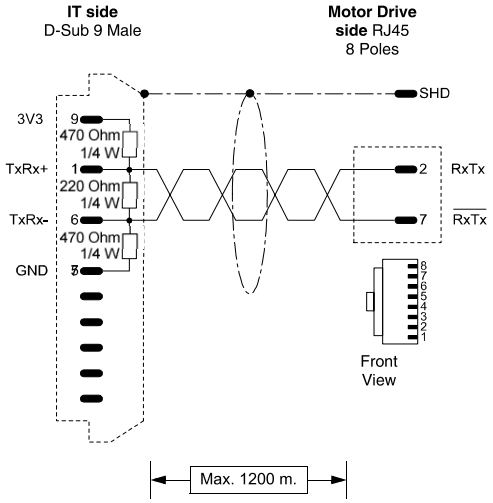
It is, however, intended that also in this condition the shield must be connected to the case and the body of the connector.

Some cable shields have the pin configuration of the Device side shielding signals: in these cases, considering the above, the shield must also be connected.
In all cases the connection of the IT side shield (pin 1) must never be carried out.

Earth potentials obtained from DIN guides, machine framework, doors of the electric control boards etc. are not allowed and it is a good ides to avoid equipotential earth bars where earths converge coming from inverter, drive, step-by-step motor type loads and all those loads that generally can be a source of great interference..

The failure to comply with these indications can jeopardise the compatibility of the IT-PLC system with EMC regulations in force.

MOTOR DRIVE CONTROL TECHNIQUES



Order code:
CVIT33102

SE - CTNET Commander

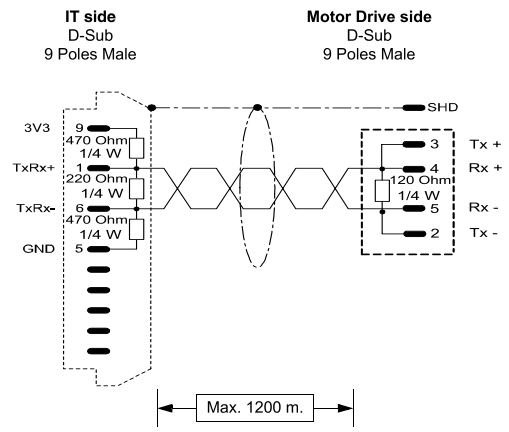
(RS485)

Set the parameter 41 = ANSI
Set the parameter 42 = (Communication speed)
Set the parameter 43 = (Address)

(See "Chapter -> Connection of the cable shield")

NOTE:
Register addressed with Menu 0 Parameter 0 cannot be accessed by the panel both in read and write mode.

MOTOR DRIVE ELAU PACDRIVE C-400



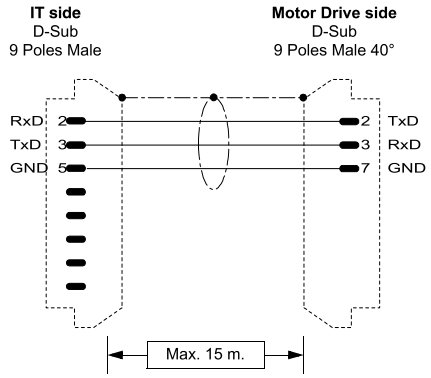
Order code:
CVIT37102

ELAU Packcrive C-400

(RS485)

(See "Chapter -> Connection of the cable shield")

MOTOR DRIVE KEB

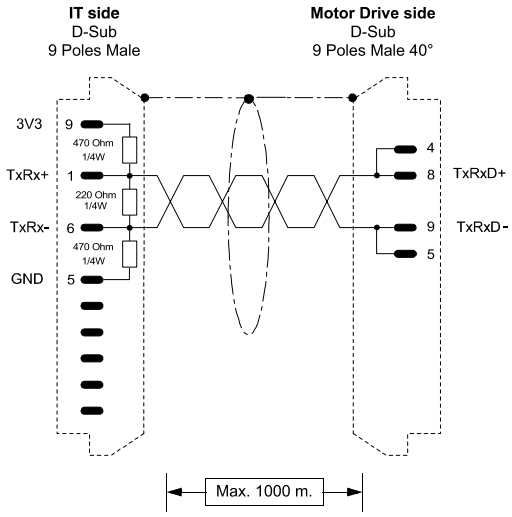


Order code:
CVIT34112

Combivert F4C - F4S - F5

(RS232)

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT34212

Combivert F4C - F4S - F5

(RS485)

(See “Chapter -> Connection of the cable shield“)

GENERIC RTU MODBUS

Devices supported by the IT:

- All devices that communicate in STANDARD RTU MODBUS

This type of protocol is recommended when devices for which ESA does not have a dedicated protocol must be connected to the ITs.

RTU Modbus Master

Protocol	RTU Master (fast peripherals)	
Controllers/CPU	All devices that support them	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	500 - 5000
	Character nil before TX	0 - 100
	Further attempt time (sec)	1 - 60
PLC Parameters	Device address	1 - 255
Notes:	The FAST protocol Peripherals must be used with devices that dedicate an amount of resources to the serial communication such to consent high-priority management with respect to other functions; typically the PLCs.	

All values are expressed in Decimal format.

Protocol	RTU Master (slow peripherals)
Controllers/CPU	All devices that support them
IT Port	SP1, SP2
Type	Network

All values are expressed in Decimal format.

IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	500 - 5000
	Character nil before TX	0 - 100
	Further attempt time (sec)	1 - 60
PLC Parameters	Device address	1 - 255
Notes:	The SLOW protocol Peripherals must be used with devices that do not manage the serial communication at high-priority with respect to other functions; typically the Heat adjusters, Drives, Inverters, Dedicated electronics.	

All values are expressed in Decimal format.

Cable

The type of cable to use depends on the type of device connected, therefore refer to the manufacturer's manual.

Areas accessible to the IT

Table 0.1: RTU Master Protocols

Name	Type	Mode	Fields	Interval	Format
FC 01-05: read/write coil	Bit	RW	Address	0-65535 (FFFF)	Hex
FC 03-16: read/write registers	Word Dword String	RW	Address	0-65535 (FFFF)	Hex
FC 04: read input registers	Word Dword String	R	Address	0-65535 (FFFF)	Hex
FC 03-06: read/write registers	Word String	RW	Address	0-65535 (FFFF)	Hex
FC 02: read input status	Bit	R	Address	0-65535 (FFFF)	Hex

RW: reading/writing, R: reading only

Warnings

- The Baud rate defined in the device must coincide with that assigned in the POLYMATH.
- For the devices with two ports ensure that the baud rate is assigned to the door where the IT will be connected.
- The address of the device and the address of the IT must be different
- The address defined in the device must coincide with the address assigned in the POLYMATH.
- For the devices with two ports ensure that the address is assigned to the door where the IT will be connected.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses declared in the IT program are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used.

RTU Modbus Slave

Protocol	**RTU Slave**
Controllers/CPU	All devices that support them
IT Port	SP1, SP2
Type	Network
IT mode	Slave
Network type	Master-Slave

All values are expressed in Decimal format.

Communication	Baud rate	1200 - 57600 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Protocol timeout (ms)	0 - 100
	Character nil before	0 - 15
PLC Parameters	Device address	1 - 255

All values are expressed in Decimal format.

Cable

The type of cable to use depends on the type of device connected, therefore refer to the manufacturer's manual.

Areas accessible to theIT

Table 0.2: RTU Slave Protocol

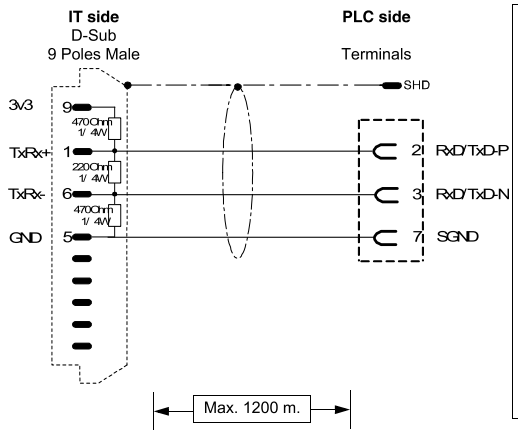
Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	B	0-2047 (7FF)	Hex
Word	Word	RW	W	0-2047 (7FF)	Hex

RW: reading/writing, R: reading only

Notes:

Regarding the notes, see Pag. -215 -> RTU Modbus Master

ABB PLC

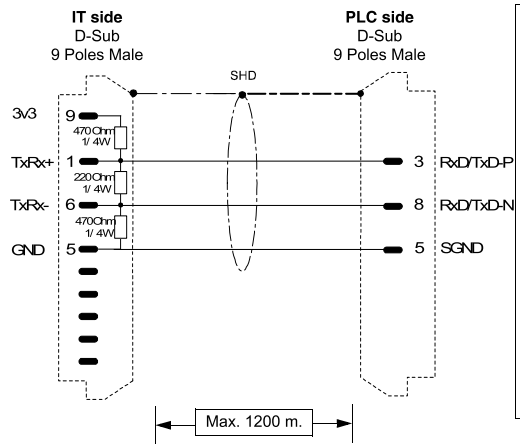


Order code:
CVIT14102

ac500-PM5xx

(RS485)

(See “Chapter -> Connection of the cable shield“)



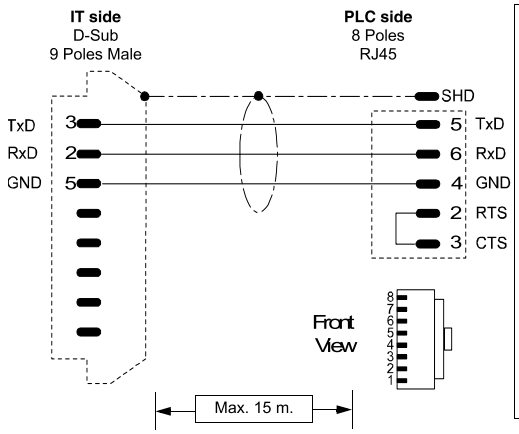
Order code:
CVIT14202

ac500-PM5xx

(RS485)

(See “Chapter -> Connection of the cable shield“)

AEG PLC



Order code:
CVIT36102

MICRO

(RS232)

(See “Chapter -> Connection of the cable shield“)

ALLEN-BRADLEY PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
ControlLogix	Logix 5550	--
	Logix 5555	--
MicroLogix	MicroLogix 1000	--
	MicroLogix 1200	--
	MicroLogix 1500	--
PLC 5	ControlLogix	--
Series 5	SLC 500	5/00, /01, /02, /03, /04, /05

ControlLogix

Protocol	ControlLogix 5 series	
Controllers/CPU	5550, 5555	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	19200 bit/s
	Parity	None
	Date	8
	Stop	1

All values are expressed in Decimal format.

Cable

Order code:
CVIT07102

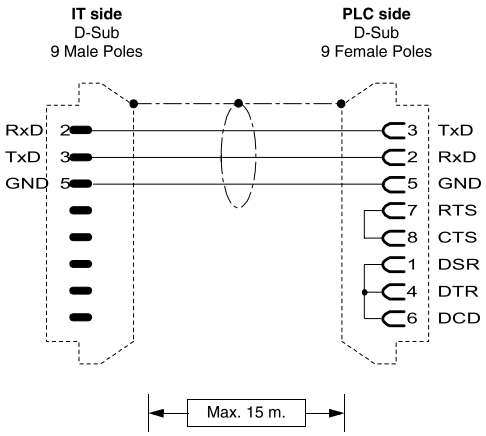
(RS232)

SET "CH0" System SERIAL PORT
DF1 mode full duplex (Point to point)

Baud rate	: 19200
ACK timeout	: 50
Stop Bits	: 1
Parity	: NONE
Control Line	: NO HANDSHAKING
Error detect	: BCC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate Detect	: DISABLED

N.B. Allen-Bradley V7.00 programming SW onwards is necessary

(See “Chapter -> Connection of the cable shield“)



Areas accessible to the IT

Table 0.3: PLC5 Protocol/ControlLogix 5 series (Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 10-255 0-999	Dec

RW: reading/writing, R: reading only

Table 0.3: PLC5 Protocol/ControlLogix 5 series (Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Counter Acc	Counter Acc	R	File Element	5, 10-255 0-999	Dec
Counter Pre	Counter Pre	R	File Element	5, 10-255 0-999	Dec
Input	Input	R	File Element	1, 10-255 0-999	Dec
Integer	Word Dword String	RW	File Element	7, 10-255 0-999	Dec
Output	Output	RW	File Element	0, 10-255 0-999	Dec
Timer Acc	Timer Acc	R	File Element	4, 10-255 0-999	Dec
Timer Pre	Timer Pre	R	File Element	4, 10-255 0-999	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the RSLogix programming pack) the correct communication driver into the device.
- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -221 -> CVIT07102).
- When configuring the device port (using the RSLogix programming pack) confirm using "YES" when the configuration change warning is displayed during parameter transfer.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220).

MicroLogix

Protocol	**MicroLogix 1000**	
Controllers/CPU	1000,1200	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600 bit/s
	Parity	None
	Date	8
	Stop	1
PLC Parameters	Device address	1 - 31

All values are expressed in Decimal format.

Protocol	**MicroLogix 1500**
Controllers/CPU	1500
IT Port	SP1, SP2

All values are expressed in Decimal format.

Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600-38400 bit/s
	Parity	None
	Date	8
	Stop	1
PLC Parameters	Device address	1 - 31

All values are expressed in Decimal format.

Cable

Order code:
CVIT07202

MicoLogix - All devices

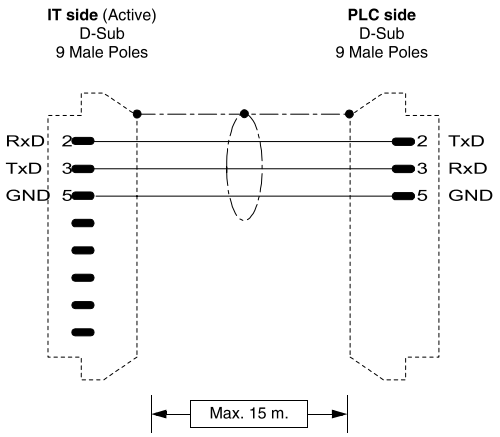
(RS232)

SET MICROLOGIX SERIAL DOOR
DF1 mode full duplex (MICRO)
Baud rate : 9600 - 38400*
ACK timeout : 50
Parity : NONE
Error detect : CRC
NAK retries : 3
ENQ retries : 3
Embedded responses : ENABLED
Duplicate packed detect : NO

(*only for CPU1500)

The Db 9 male poles connector must be connected to the A-B 1761-CBL-PM02, SER cable, A of the MICROLOGIX PLC.

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT07302

MicoLogix - All devices

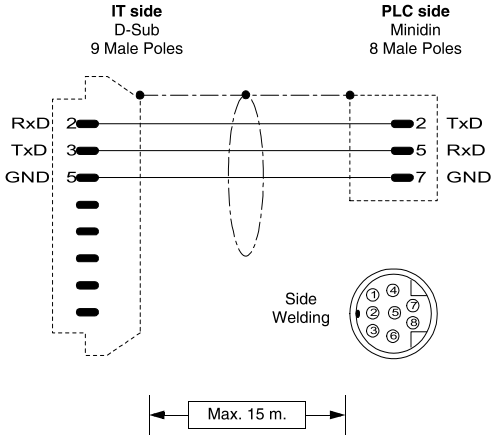
(RS232)

SET MICROLOGIX SERIAL DOOR
DF1 mode full duplex (MICRO)

Baud rate	: 9600 - 38400*
ACK timeout	: 50
Parity	: NONE
Error detect	: CRC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate packed detect	: NO

(*only for CPU1500)

(See “Chapter -> Connection of the cable shield“)



Areas accessible to theIT

Table 0.4: Protocollo MicroLogix 1000

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	Element	0-254	Dec
Counter Acc	Counter Acc	R	Element	0-254	Dec
Counter Pre	Counter Pre	RW	Element	0-254	Dec
Input	Input	R	Element	0-254	Dec
Integer	Word Dword String	RW	Element	0-254	Dec
Output	Output	RW	Element	0-254	Dec
Timer Acc	Timer Acc	R	Element	0-254	Dec
Timer Pre	Timer Pre	RW	Element	0-254	Dec

RW: reading/writing, R: reading only

Table 0.5: MicroLogix 1500 protocol

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 8-254 0-254	Dec
Counter Acc	Counter Acc	RW	File Element	5, 8-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 8-254 0-254	Dec
Floating	Floating point	RW	File Element	8-254 0-254	Dec
Input	Input	R	File Element	1, 8-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 8-254 0-254	Dec
Long	Dword String	RW	File Element	9-254 0-254	Dec
Output	Output	RW	File Element	0, 8-254 0-254	Dec
Timer Acc	Timer Acc	RW	File Element	4, 8-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 8-254 0-254	Dec

RW: reading/writing, R: reading only

Warnings

- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -224 -> CVIT07202).
- When configuring the device port (using the RSLogix programming pack) confirm using "YES" when the configuration change warning is displayed during parameter transfer.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.

- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220).

PL5

Order code:
CVIT07402

ControlLogix PLC 5

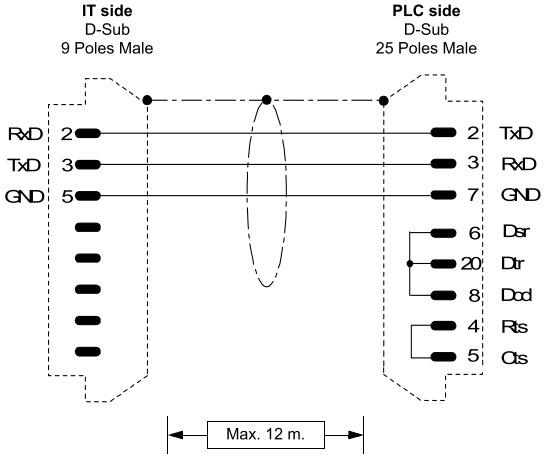
(RS232)

"CH0" SERIAL PORT SETChannel 0: SYSTEM
DF1 full duplex Mode (Point to point)

Baud rate	: 19200
ACK timeout	: 50
Stop Bits	: 1
Parity	: NONE
Control Line	: NO HANDSHAKING
Error detect	: BCC
NAK retries	: 3
ENQ retries	: 3
Embedded responses	: ENABLED
Duplicate Detect	: DISABLED

N.B. : Allen-Bradley V7.00 or higher programming software needed

(See “Chapter -> Connection of the cable shield“)



Slc 500

Protocol	SLC500 5/03-5/04 DF1	
Controllers/CPU	5/03, 5/04, 5/05	
IT Port	SP1, SP2	
Type	Point-to-point	
IT mode	--	
Network type	--	
Communication	Baud rate	9600-19200 bit/s
	Parity	None
	Date	8
	Stop	1

All values are expressed in Decimal format.

Protocol	DH485	
Controllers/CPU	500, 5/01, 5/02, 5/03	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600-19200 bit/s
	Parity	None
	Date	8
	Stop	1
IT Parameters	Terminal address	1 - 31
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT07102 cable (see Pag. -221) or

Areas accessible to theIT

Table 0.6: SLC500 5/03-5/04 DF1 Protocol(Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Ascii	String	RW	File Element	10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.6: SLC500 5/03-5/04 DF1 Protocol(Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Bit	Bit	RW	File Element	3, 10-254 0-254	Dec
Counter Acc	Counter Acc	R	File Element	5, 10-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 10-254 0-254	Dec
Floating	Dword Floating point	RW	File Element	8, 10-254 0-254	Dec
Input	Input	R	File Element	1, 10-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 10-254 0-254	Dec
Output	Output	RW	File Element	0, 10-254 0-254	Dec
Timer Acc	Timer Acc	R	File Element	4, 10-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.7: Protocol DH485

Name	Type	Mode	Fields	Interval	Format
Ascii	String	RW	File Element	10-254 0-254	Dec
Bit	Bit	RW	File Element	3, 10-254 0-254	Dec
Counter Acc	Counter Acc	R	File Element	5, 10-254 0-254	Dec
Counter Pre	Counter Pre	RW	File Element	5, 10-254 0-254	Dec
Floating	Dword Floating point	RW	File Element	8, 10-254 0-254	Dec
Input	Input	R	File Element	1, 10-254 0-254	Dec
Integer	Word Dword String	RW	File Element	7, 10-254 0-254	Dec
Output	Output	RW	File Element	0, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Table 0.7: Protocol DH485

Name	Type	Mode	Fields	Interval	Format
Timer Acc	Timer Acc	R	File Element	4, 10-254 0-254	Dec
Timer Pre	Timer Pre	RW	File Element	4, 10-254 0-254	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the RSLogix programming pack) the correct communication driver into the device.
- File N7 must be open in the device for at least one element (E.g. N7:0), otherwise the IT does not communicate. The file must be opened independently from the type of area to be used.
- Set the parameters as stated in the connection cable figure (Pag. -217).
- When configuring the device port (using the RSLogix programming pack) confirm using "APPLY" when the configuration change warning is displayed during parameter transfer (Pay attention, the pre-setting is "DO NOT APPLY" do not confirm using the "Enter" key of the PC).Notes:
- The device does not have to be in RUN in order to communicate with the IT.IT-Device Connection
- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

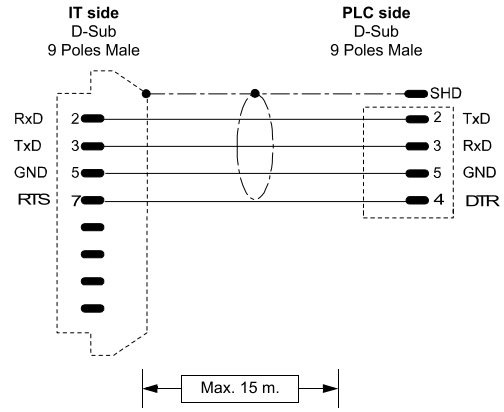
The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The device does not contain the V7 file open for at least one element.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -220)

CROUZET PLC



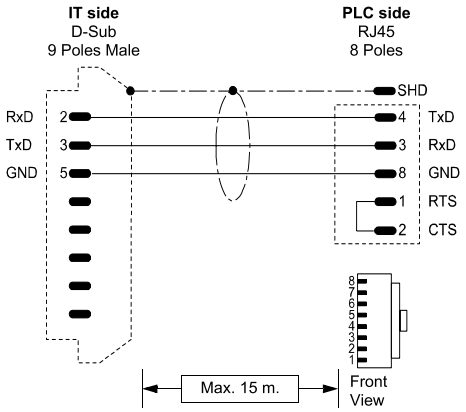
Order code:
CVIT20102

MILLENIUM 3
With Adapter Telemecanique SR2 CBL01

(RS232)

(See “Chapter -> Connection of the cable shield“)

GE FANUC PLC



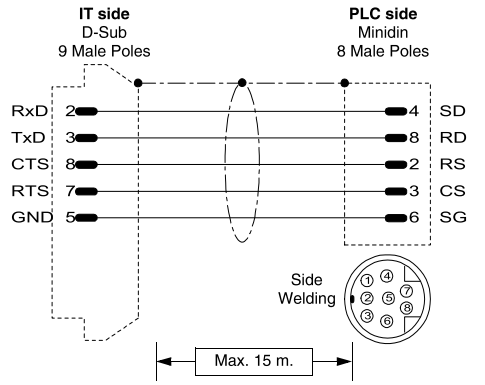
Order code:
CVIT09102

VERSAMAX
Use port 1

(RS232)

(See “Chapter -> Connection of the cable shield“)

HITACHI PLC



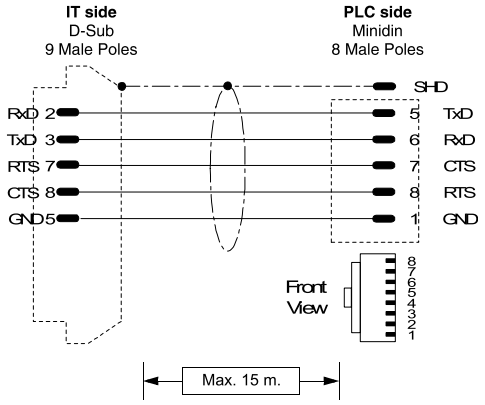
Order code:
CVIT03102

EC Series

(RS232)

ATTENTION!!
Ext. switch on COM2
Areas T, C (time, counters) reading only mode

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT03202

EH150 Series

(RS232)

NOTES:
127 PLC connectable to Hitachi network with 2 Link (0-63 stations for Link).

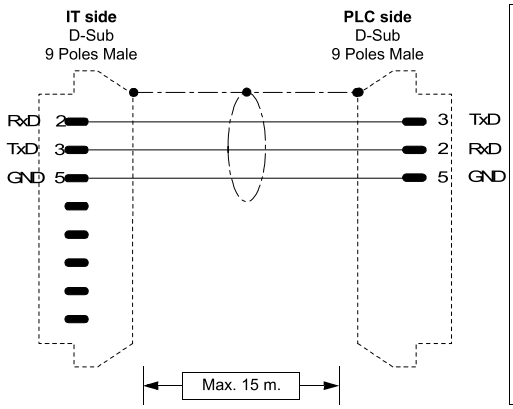
LUMP:

Parameter	Default	Values	Notes:
L	FF	01,02 or FF	Link number address.
U	FF	00-63 or FF	Network node address (as per selectors on the network board).
M	00	00-63	Address of the node in the network with connection from additional serial.
P	00	00-63	Address of the node in the network with connection from additional serial.

TM:

Parameter	Default	Values	Notes:
TM	4	4-F	Timeout for the response to an interrogation.

KERNEL system PLC

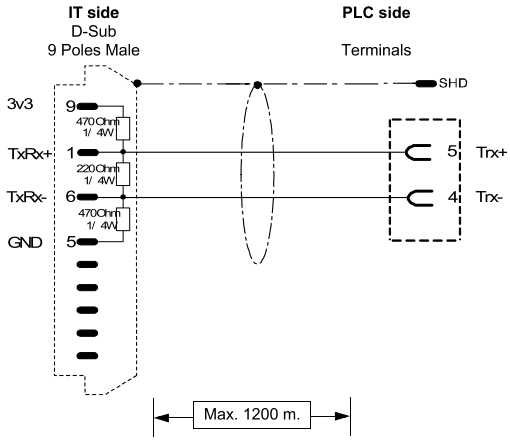


Order code:
CVIT39102

DMX 16/19/20/30/32

(RS232) --Port COM 1

(See “Chapter -> Connection of the cable shield“)



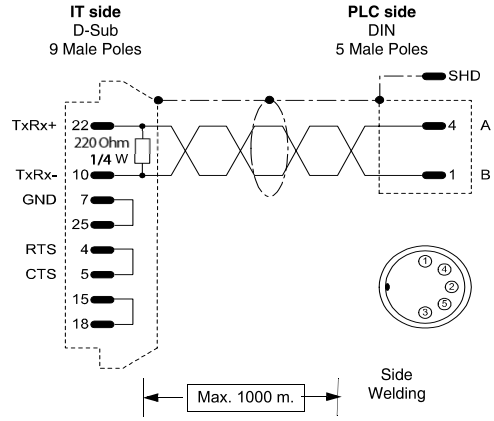
Order code:
CVIT39202

DMX 16/19/20/30/32

(RS485) - - Port COM 0

(See “Chapter -> Connection of the cable shield“)

KLÖCKNER MOELLER PLC



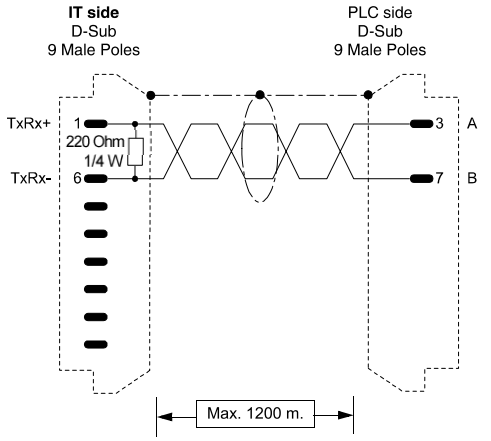
Order code:
CVIT12102

PS306

(RS485)

N.B. Ensure that the two insertion jumpers of the interface termination resistances positipned in window RS485 (visible on the front of the PLC) are attached (see PLC manual).

(See “Chapter -> Connection of the cable shield“)



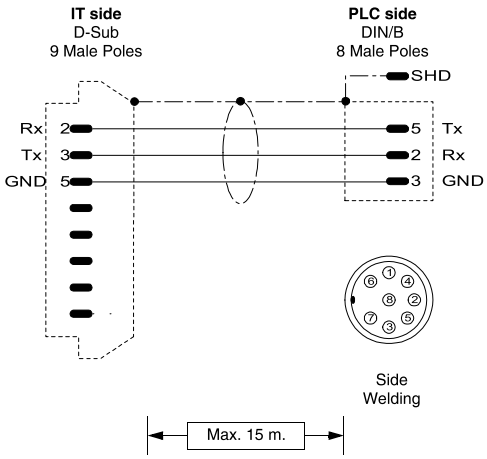
Order code:
CVIT12202

PS316/PS416-CPU400

(RS485)

N.B. Ensure that the two insertion jumpers of the interface termination resistances positioned in window RS485 (visible on the front of the PLC) are attached (see PLC manual).

(See “Chapter -> Connection of the cable shield“)

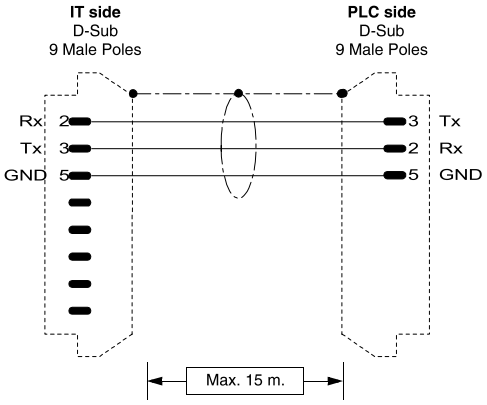


Order code:
CVIT12302

PS4-141-MM1
PS4-201-MM1
PS4-341-MM1

(RS232)

(See “Chapter -> Connection of the cable shield“)



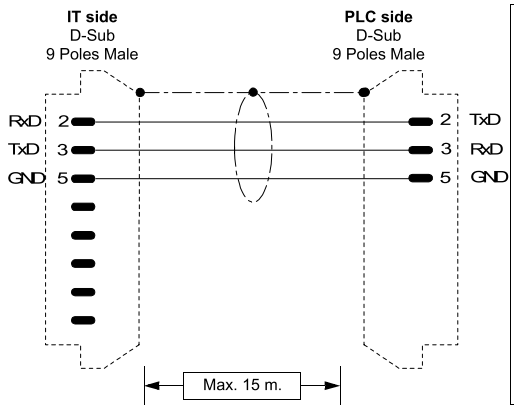
Order code:
CVIT12402

PS416-CPU400

(RS232)

(See “Chapter -> Connection of the cable shield“)

KUHNKE PLC



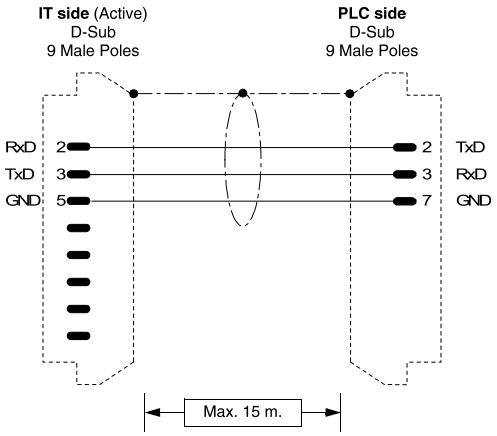
Order code:
CVIT38102

Kubes

(RS232)

(See “Chapter -> Connection of the cable shield“)

MATSUSHITA-NAIS PLC



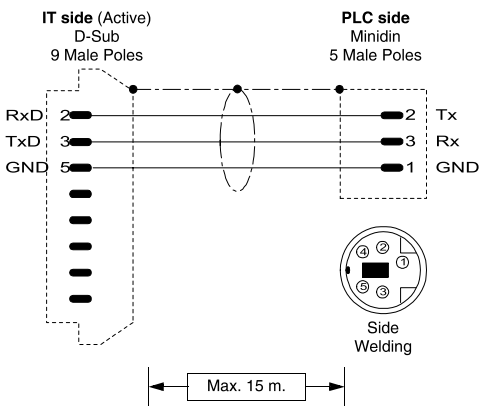
Order code:
CVIT16102

FP-1 / FP-M Series
By means of the PLC optional serial interface

(RS232)

SET RS232C SERIAL DOOR: RS232C
Port Selection : COMPTR LNK
RS232C Send Form
Data Length : 8 BIT
Parity CHK : WITH, ODD
Stop Bit : 1 BIT
Terminator : CR
Header : NO STX
RS232C Baud rate : 1(9600 bps)
RS232C Modem
Connection : DISABLED
Computer Link Station
number (1-32) : 1

(See “Chapter -> Connection of the cable shield“)



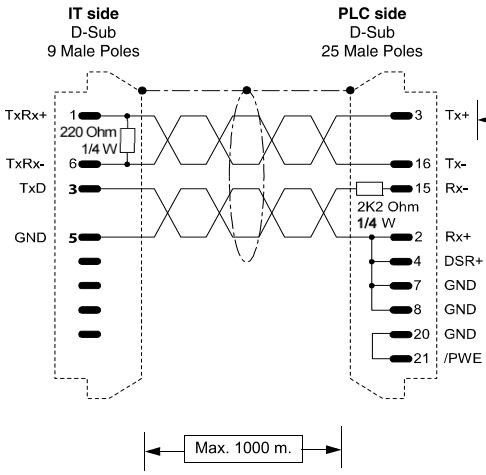
Order code:
CVIT16202

FP-M/FP-0/FP-2 Series
In the CPU programming connector (Programmer's Port).

(RS-232)

(See “Chapter -> Connection of the cable shield“)

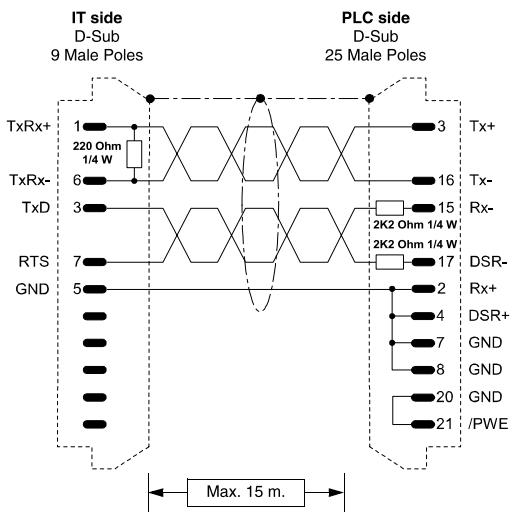
MITSUBISHI PLC



Order code:
CVIT05102

Fx Series

(See “Chapter -> Connection of the cable shield“)



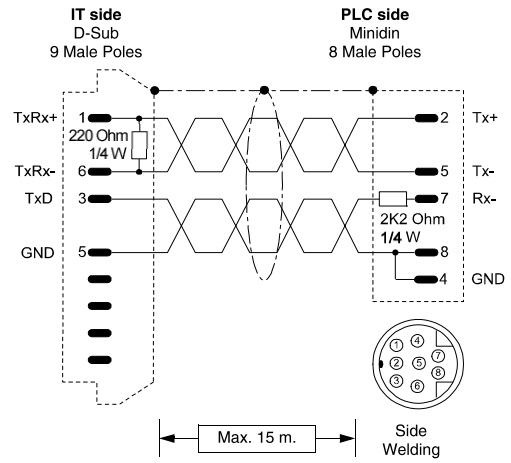
Order code:
CVIT05202

A Series

(RS232)
Directly in the CPU programming connector

Bridge the**LG** and **GF** clamps on the PLC terminal board.

(See “Chapter -> Connection of the cable shield“)



Order code:
CVIT05302

Fx0 - Fx0 N - Fx2 N Series
In the CPU programming connector (Programmer's Port).

(RS-232/422 Inbrido)

(See “Chapter -> Connection of the cable shield“)

OMRON PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
C200H	xx	xx
CJ1	xx	xx
CPM	xx	xx
CQM	xx	xx
CS1	xx	xx
CVM	xx	xx
H	xx	xx

H, C200H, CPM, CQM, CVM Series

Protocol	H series / HOST LINK	
Controllers/CPU	All	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	1200 - 19200 bit/s
	Parity	Even
	Date	7
	Stop	2
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Order code:
CVIT02102

H series, CS1
CQM1 CPU 21-E and above
CVM1 and C200HS/HE/HG/HX/Hα (integrated serial)
CPM1 through CPM1-CIF01 interface
CPM2A/2C

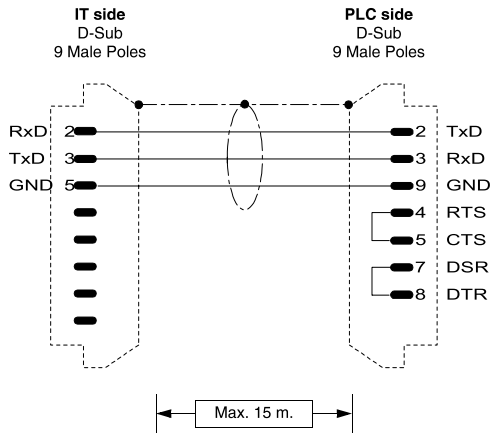
(RS232)

Bridge the**GR** and **LG** clamps on the PLC terminal board.

(See “Chapter -> Connection of the cable shield“)

SETTING JUMPERS CPM1-CIF01

HOST
NT



Interfaces

Table 0.8: OMRON 3G2A6-LK201-EV1 interface parameterisation

Interface	**3G2A6-LK201-EV1**
Machine N.	0 - 31
Syn	INT
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
CTS	0V

Parameterisation to carry out using Dip-Switch on the interface

Table 0.9: OMRON C200H-LK201 interface parameterisation

Interface	**C200H-LK201**
Machine N.	0 - 31
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
5V	Not supplied
CTS	0V

Parameterisation to carry out using Dip-Switch on the interface

Table 0.10: OMRON C200H-LK202 interface parameterisation

Interface	C200H-LK202
Machine N.	0 - 31
Baud Rate	300 - 19200 bit/s
Procedure	N
Command Level	1, 2 and 3 Valid
Termination Resistor Connection	ON

Parameterisation to carry out using Dip-Switch on the interface

Switch the PLC off and back on again every time parameters are changed

Areas accessible to theIT

Table 0.11: Protocol H series / HOST LINK

Name	Type	Mode	Fields	Interval	Format
DM	Word Dword String	RW	DM	0-9999	Dec
Timer	Timer Timer Preset Timer TMS Preset Timer TIMW Preset Timer TMHW Preset Speed Timer Preset	RW	T	0-4095	Dec
Counter	Counter Counter Preset Rev. Counter Preset Counter CNTW Preset	RW	C	0-4095	Dec
Relay	Word	RW	R	0-511	Dec
Holding relay	Word	RW	HR	0-511	Dec
Auxiliary	Word	RW	AR	0-959	Dec
Link relay	Word	RW	LR	0-63	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the programming pack) the correct communication driver into the device.
- Set the parameters (if requested) as stated in the figure of the connection cable to be used.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses declared in the IT program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -238).

CS1, CJ1 Series

Protocol	**CS1, CJ1 series**	
Controllers/CPU	All	
IT Port	SP1, SP2	
Type	Network	
IT mode	Master	
Network type	Master-Slave	
Communication	Baud rate	9600 / 115000 bit/s
	Parity	Even
	Date	7
	Stop	2

All values are expressed in Decimal format.

PLC Parameters	Device address	0 - 31
	Network address	0 - 127
	Node number	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT02102 cable (see Pag. -240) or

Areas accessible to theIT

Table 0.12: CS1, CJ1 series protocol

Name	Type	Mode	Fields	Interval	Format
Work area word (W)	Word Dword String Floating point	RW	W	0-511	Dec
Holding area bit (H)	Bit	RW	H Bit	0-511 0-15	Dec
Holding area word	Word Dword String Floating point	RW	H	0-511	Dec
Auxiliary area bit read only (A)	Bit	R	A Bit	0-447 0-15	Dec
Core Input/Output bit (CIO)	Bit	RW	CIO Bit	0-1899, 2000-2961, 3200-6143 0-15	Dec
Auxiliary area wordreadonly (A)	Word	R	A	0-447	Dec
Core Input/Output word (CIO)	Word Dword String	RW	CIO	0-1899, 2000-2961, 3200-6143	Dec
Auxiliary area bit (A)	Bit	RW	A Bit	448-959 0-15	Dec
Work area bit (W)	Bit	RW	W Bit	0-511 0-15	Dec
Auxiliary area word (A)	Word Dword String Floating point	RW	A	448-959	Dec

RW: reading/writing, R: reading only

Table 0.12: CS1, CJ1 series protocol

Name	Type	Mode	Fields	Interval	Format
Data memory area (D)	Word Dword String Floating point	RW	D	0-32767	Dec
Timer completion flag (T)	Bit	R	T	0-4095	Dec
Timer current value (T)	Word	RW	T	0-4095	Dec
Counter completion flag (C)	Bit	R	C	0-4095	Dec
Counter current value	Word	RW	T	0-4095	Dec
Task flag area (TK)	Bit	R	TK	0-31	Dec
Index register (IR)	Dword	R	IR	0-15	Dec
Data register (DR)	Word	RW	DR	0-15	Dec

RW: reading/writing, R: reading only

Warnings

- Load (using the programming pack) the correct communication driver into the device.
- Set the parameters (if requested) as stated in the figure of the connection cable to be used.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using the relevant cable.
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The addresses in the program are not correct or do not exist.
- The parameters or the communication driver have not been set correctly or have not been transferred into the device.
- A communication protocol is being used in the IT that is not suitable for the device used (see Pag. -238).

SAIA PLC

SAIA PCD1, PCD2, PCD4 (S-BUS RS485)

Order code:
CVIT04102

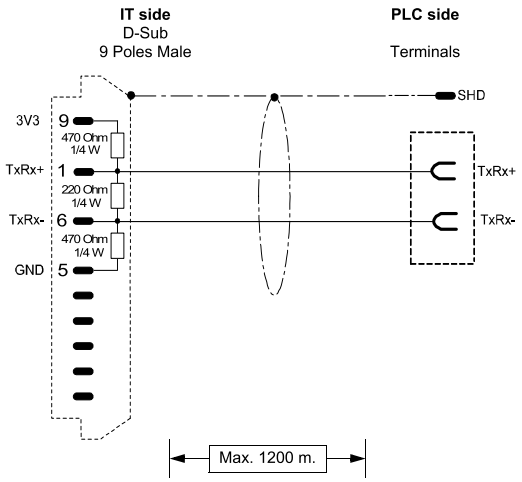
S-BUS series PCD1 / 2 / 4
Connection to terminal block

(RS-485)

IPLC Address: 0..255

(See "Chapter -> Connection of the cable shield")

Note: configure the number of the S-BUS station inside the PLC using the SAIA programming Software



SAIA S-BUS RS232 (PGU port)

Order code:
CVIT04202

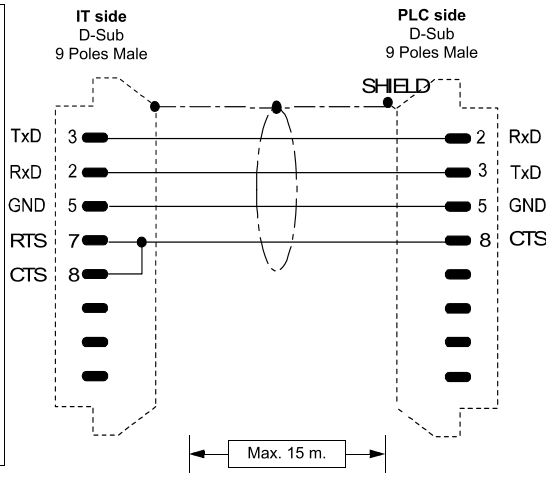
S-BUS series PCD1 / 2 / 4
In the programming connector of the CPU (PGU port)

(RS-232)

IPLC Address: 0..255

(See “Chapter -> Connection of the cable shield“)

Note: configure the number of the S-BUS station inside the PLC using the SAIA programming Software



SAIA PCD2 with PCD7/F120 module

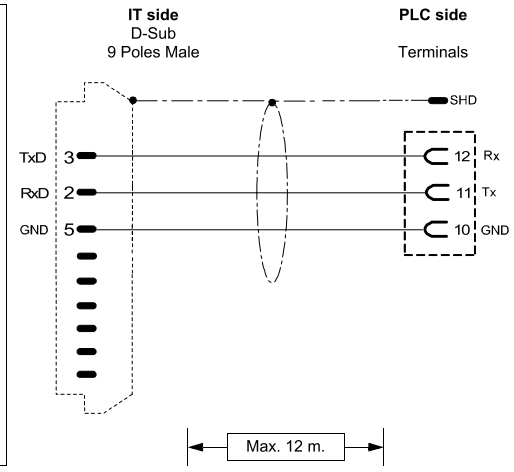
Order code:
CVIT04302

PCD 2 Serial Interface 1 module PCD7/F120

Connection to terminal block

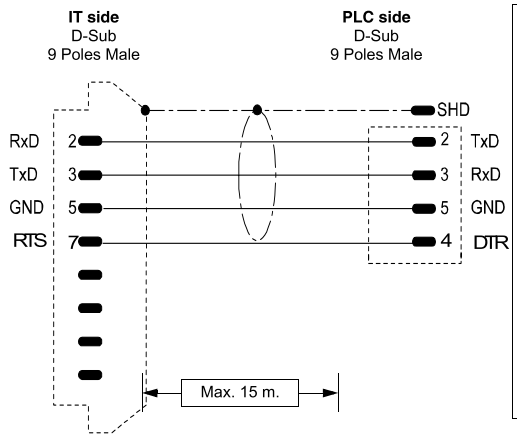
(RS-232)

NB: To make the terminal fuction with the additional interface of the PLC SAIA
PCD, the following setting must be observered.
SASI 1 (1=first interf., 2=second interf., ecc.)
999
;TEXT 999
"UART:9600,7,E,1;MODE:SD0;DIAG:F260,R500;
RBUF:255;TBUF:255"



SCHNEIDER TELEMECANIQUE PLC

Zelio



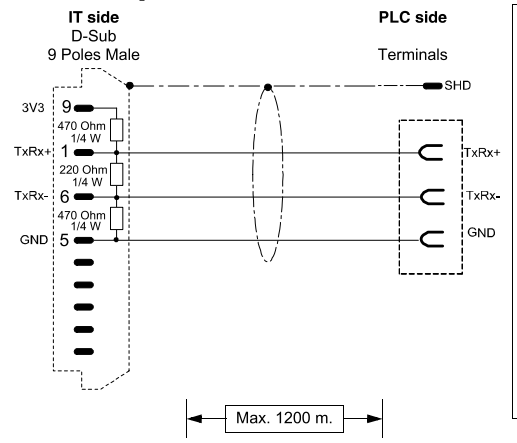
Order code:
CVIT11302

ZELIO
With Telemecanique SR2 CBL01 adapter

(RS232)

(See “Chapter -> Connection of the cable shield“)

Unitelway



Order code:
CVIT11202

UNITELWAY TSX 07-87

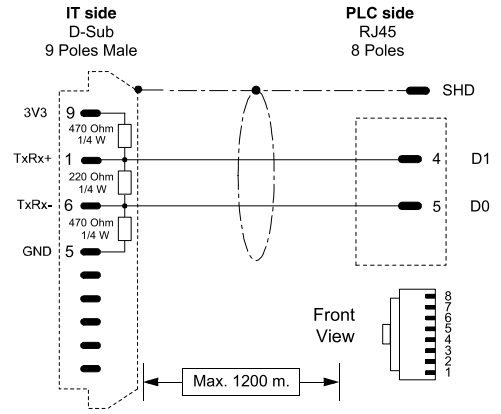
(RS485)

(See “Chapter -> Connection of the cable shield“)

Note :
If the connection with the IT you are using the built-in port PLC should be used as the number of Form 254.
If you use other communication cards, the number Module is given by the position in the slot (see the manufacturer's documentation).

Connecting terminals

MODICON



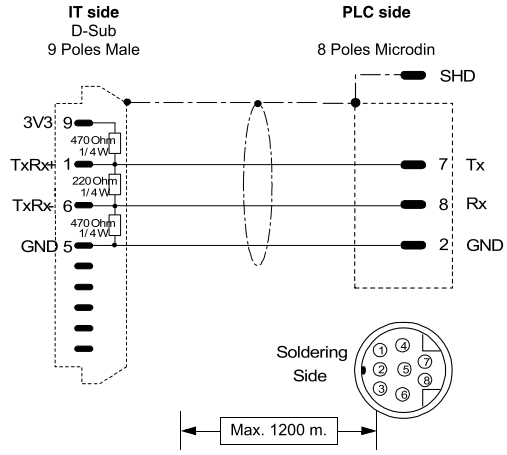
Order code:
CVIT17102

MODICON M340

(RS485)

(See “Chapter -> Connection of the cable shield“)

Twido



Order code:
CVIT11102

TELEMECANIQUE
UNITELWAY SERIE TSX 07, 17, 37, 47 TWIDO.

(RS485)

(See “Chapter -> Connection of the cable shield“)

Note
If the connection with the IT you are using the built-in port PLC should be used as the number of Form 254.
If you use other communication cards, the number Module is given by the position in the slot (see the manufacturer's documentation).

SIEMENS PLC

Devices supported by the IT:

Series	Central controller/Unit	CPU
Simatic S7	S7-200	210, 212, 214, 215, 216, 221, 222, 224, 226, 226XM
	S7-300	312, 313, 314, 315, 316, 318, 388, 614
	S7-400	412, 413, 416, 417, 488

Simatic S7-200

Protocol	**S7 200 CPU 214, 215, 216**	
Controllers/CPU	214, 215, 216	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600 / 19200 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	1 - 31
PLC Parameters	Device address	0 - 126
Notes:	The protocol is network, but does not support all typical functions of a network communication, therefore it is only recommended for point-to-point connections, (just one IT connected to one device).	

All values are expressed in Decimal format.

Protocol	**S7 200 PPI Network**
Controllers/CPU	210,212,214,215,216,221,222,224,226,226XM
IT Port	MSP
Type	Network

All values are expressed in Decimal format.

IT mode	Master	
Network type	Master/Slave	
Communication	Baud rate	9600 / 19200 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 126
	Max search address	1 - 126
	Protocol timeout	500 - 10000
PLC Parameters	Device address	0 - 126
	Max number of attempts	3 - 30

All values are expressed in Decimal format.

Protocol	**S7 200 PPI Network 187500**	
Controllers/CPU	210,212,214,215,216,221, 222,224,226,226XM	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Token pass	
Communication	Baud rate	187500 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 126
	Max search address	0 - 126
	Protocol timeout	500 - 10000
PLC Parameters	Device address	0 - 126
	Max number of attempts	3 - 30
Notes:	Check that the port of the device used to connect the It supports the communication speed (typically Port 1).	

All values are expressed in Decimal format.

Cable

Order code:
CVIT01102

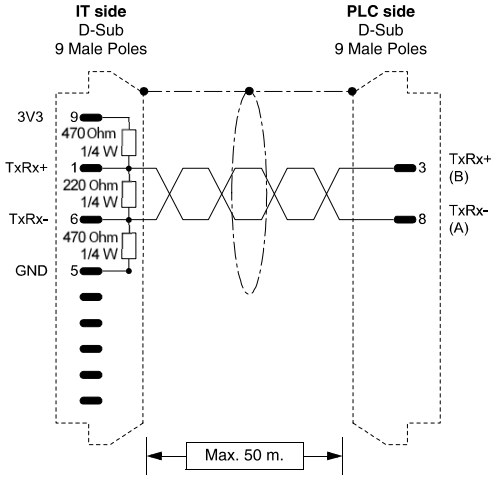
SIMATIC S7

(RS485)

For contemporary communications between programming suitcase PLC S7 and IT, it is recommended to use the SIEMENS 6ES7972-OBB20-OXAO passing connector.

N.B.: Max. length 50m without repeater

(See “Chapter -> Connection of the cable shield“)



Areas accessible to theIT

Table 0.13: All Siemens S7-200 protocols

Name	Type	Mode	Fields	Interval	Format
Counter	Word	RW	C	0-255	Dec
High speed counter	Word	RW	HC	0-5	Dec
Input	Bit	R	Bit Byte	0-16 0-16	Dec
Merker	Bit	RW	Bit Byte	0-7 0-31	Dec
Output	Bit	RW	Bit Byte	0-16 0-16	Dec
Register	Byte (VB) Word (VW) Dword (VD) String (VB) Floating point (VD)	RW	VB	0-10238	Dec
Special Merker	Bit	RW	Bit Byte	0-7 0-194	Dec
Timer	Word	R	T	0-255	Dec

RW: reading/writing, R: reading only

Warnings

- The Baud rate defined in the device must coincide with that assigned in the POLYMATH.
- For the devices with two ports ensure that the baud rate is

assigned to the door where the IT will be connected.
- The address of the device and the address of the IT must be different
- The address defined in the device must coincide with the address assigned in the POLYMATH.
- For the devices with two ports ensure that the address is assigned to the door where the IT will be connected.

Notes:

- The IT can be connected indifferently onto the serial Port 0 or Port 1 of the device (as long as they support the set/desired communication speed - See device manual).
- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program paying attention to respect that mentioned in Pag. -217 -> Warnings.
- Connect the IT to the device using he arelevant cable, paying attention to the port used (it must be that set with the correct speed parameters ans address).
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The network addresses and/or the communication speed is not set correctly.
- The addresses declared in the IT program, regarding the fields on the display, are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used (see Pag. -249).
- The maximum number of addresses to search for in the network is less than the address declared (see IT parameters of the relative driver).

Simatic S7-300, S7-400

Protocol	S7 300, 400	
Controllers/CPU	312, 313, 314, 315, 316, 318, 388, 614, 412, 413, 416, 417, 488	
IT Port	MSP	
Type	Network	
IT mode	Master	
Network type	Token pass	
Communication	Baud rate	187500 bit/s
	Parity	Even
	Date	8
	Stop	1
IT Parameters	Terminal address	0 - 31
PLC Parameters	Device address	0 - 31

All values are expressed in Decimal format.

Cable

Use CVIT01402 cable (see Pag. -251) or

Areas accessible to theIT

Table 0.14: All Siemens S7-300/400 protocols(Parte 1 di 2)

Name	Type	Mode	Fields	Interval	Format
Counter	Counter	RW	Z	0-511	Dec
DBW	Byte Word Dword String Floating point Timer 1/100 Sec. Timer 1/10 Sec. Timer 1 Sec. Timer 10 Sec.	RW	DB DW	1-65535 0-65533	Dec
Input	Byte Word Dword	R	E	0-16383	Dec
Merker	Byte Word Dword	RW	M	0-2047	Dec

RW: reading/writing, R: reading only

Table 0.14: All Siemens S7-300/400 protocols(Parte 2 di 2)

Name	Type	Mode	Fields	Interval	Format
Output	Byte Word Dword	RW	A	0-16383	Dec
Timer	Timer	R	T	0-511	Dec

RW: reading/writing, R: reading only

Warnings

- The address of the device and the address of the IT must be different.
- The address defined in the device must coincide with the address assigned in the POLYMATH.

Notes:

- The device does not have to be in RUN in order to communicate with the IT.

IT-Device Connection

- Feed the IT and load the user program.
- Switch the IT off.
- Feed the device and load the user program.
- Connect the IT to the device using the relevant cable, paying attention to the port used (it must be that set with the correct speed parameters and address).
- Feed the IT.

The IT is in communication with the device when the question marks [???] are NOT shown on the display inside the data fields.

Troubleshooting

If the display inside the data field show question marks [???] it means that the IT and the device are not communicating directly, therefore check the following points again:

- Incorrect or incorrectly connected connection cable.
- The network addresses and/or the communication speed is not set correctly.
- The addresses declared in the IT program, regarding the fields on the display, are not correct or do not exist.
- A communication protocol is being used that is not suitable for the device used (see Pag. -249).
- The accepted number of MPI connections has been exceeded (see device manual).

Cable for multiple connection with MPI

Order code:
NOT CODED

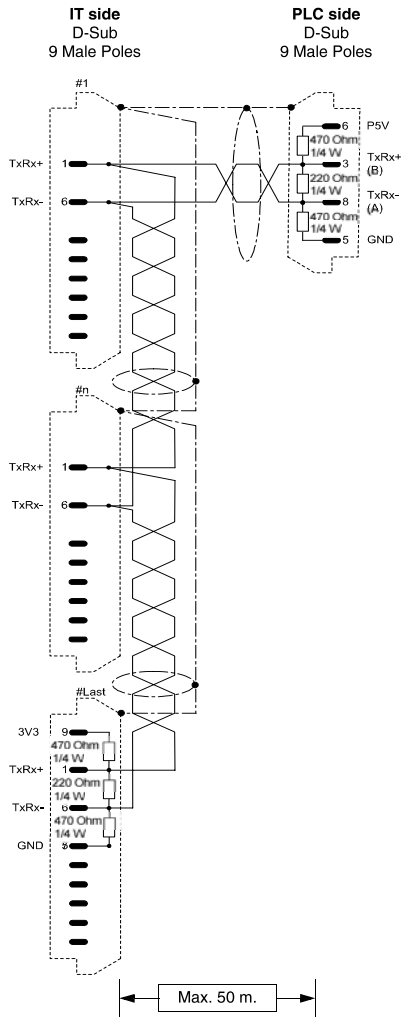
SIMATIC S7

(RS485)

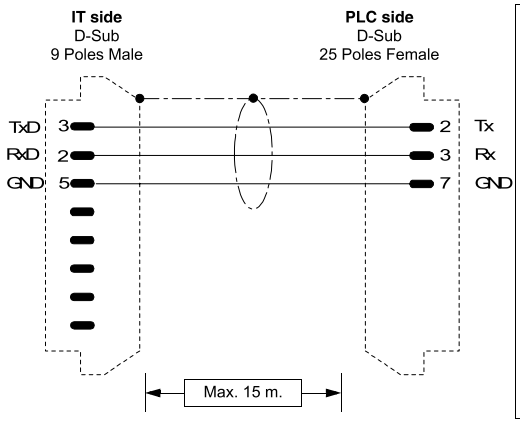
In replacement of the 9 pin connector and resistances to integrate it is possible to use the following Siemens connectors with integrated resistances that can be inserted with a running switch:
SIEMENS 6ES7972-0BA10-0XA0
SIEMENS 6ES7972-0BA40-0XA0
SIEMENS 6GK1500-0EA00

For contemporary communications between the programming suitcase, PLC S7 and IT, it is recommended to use the following Siemens passing connectors, with integrated resistances that can be inserted with a running switch:
SIEMENS 6ES7972-0BB10-0XA0
SIEMENS 6ES7972-0BB40-0XA0

N.B.: Maximum length without repeater 50m



Siemens S5



Order code:
CVIT01202

SIMATIC S5

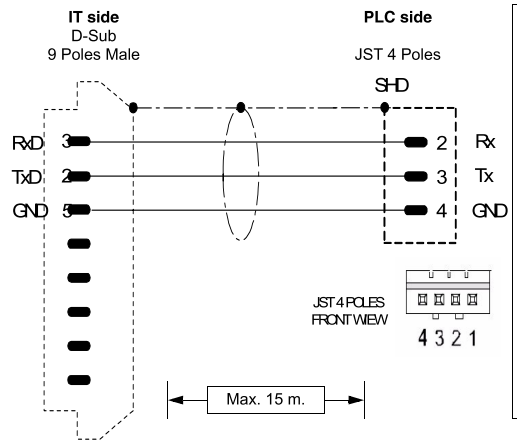
SIEMENS PLC ADAPTER S5 6ES5 734-1BD20.
MAX. CABLE LENGHT : 15 mt.

(RS232)

(See “Chapter -> Connection of the cable shield“)

VIGOR PLC

M/VB 232



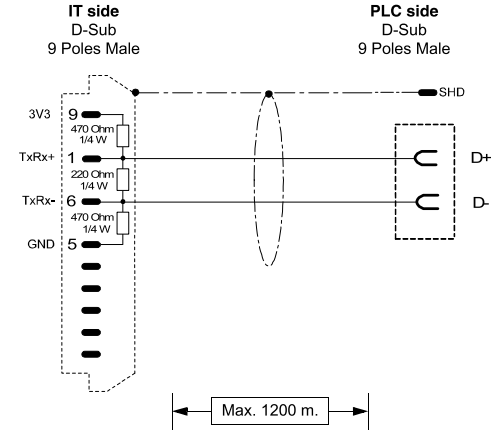
Order code:
CVIT35102

M/VB 232

(RS232)

(See “Chapter -> Connection of the cable shield“)

M/VB 485



Order code:
CVIT35202

M/VB 485

(RS485)

(See “Chapter -> Connection of the cable shield“)

Connecting terminals