



Deuschmann Automation

Cam Controls | Fieldbus Gateways | Industrial Ethernet Products

Instruction manual Universal Fieldbus-Gateway



UNIGATE[®] CX

V3792E

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Disclaimer of liability

We have checked the contents of the document for conformity with the hardware and software described. Nevertheless, we are unable to preclude the possibility of deviations so that we are unable to assume warranty for full compliance. The information given in the publication is, however, reviewed regularly. Necessary amendments are incorporated in the following editions. We would be pleased to receive any improvement proposals which you may have.

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1 Information on CE marking of the module

1.1 EU Directive EMC

The following applies to the module described in this User Manual:

Products which bear the CE mark comply with the requirements of EU Directive „Electromagnetic Compatibility“ and the harmonised European Standards (EN) listed therein.

The EU Declarations of Conformity are available at the following location for perusal by the responsible authorities in accordance with the EU Directive, Article 10:

Deutschmann Automation GmbH & Co. KG, Carl-Zeiss-Str. 8, 65520 Bad Camberg, Germany

1.2 Scope of application

The modules are designed for use in the industrial sector and comply with the following requirements

Scope of application	Requirement applicable to	
	Emitted interference	Interference immunity
Industry	EN 55011, cl. A (2007)	EN 61000-6-2 (2005)

1.3 Note installation guidelines

The module complies with the requirements if you

1. comply with the installation guidelines described in the User Manual when installing and operating the module.
2. also follow the rules below on installation of the equipment and on working on switch cabinets.

1.4 Installation of the unit

Modules must be installed in electrical equipment rooms/areas or in enclosed housings (e.g. switch boxes made of metal or plastic). Moreover, you must earth the unit and the switch box (metal box) or at least the top-hat rail (plastic box) onto which the module has been snapped.

1.5 Working on switch cabinets

In order to protect the modules against static electrical discharge, the personnel must discharge themselves electrostatically before opening switch cabinets or switch boxes.

2 Information for the machine manufacturer

2.1 Introduction

The UNIGATE® module does not constitute a machine as defined by the EU "Machinery" Directive. Consequently, the module does not have a Declaration of Conformity in relation to the EU Machinery Directive.

2.2 EU Machinery Directive

The EU Machinery Directive stipulates the requirements applicable to a machine. The term "machine" is taken to mean a totality of connected parts or fixtures (see also EN 292-1, Paragraph 3.1).

The module is a part of the electrical equipment of the machine and must thus be included by the machine manufacturer in the Declaration of Conformity process.

3 Introduction

In the field of automatic control many different Fieldbuses and Industrial Ethernet became established worldwide. Again and again the ask of interconnecting these incompatible networks comes up. The UNIGATE® CX-series was created exactly for that task. The series contains Fieldbus-Slave as well as Industrial Ethernet versions.

The UNIGATE® CX is designed as DIN-rail module and contains the selected Fieldbuses or Ethernet in the mechanical variant carried out in the respective standard. Internally the product is realized by using two UNIGATE® CL-modules that are mounted on a carrier motherboard. By this modular structure all Fieldbus- and Ethernet-versions can be supplied, provided that the respective CL-modules are available. The number of available versions is growing steadily by the continuous development of new CL-modules e. g. in the Industrial Ethernet field.

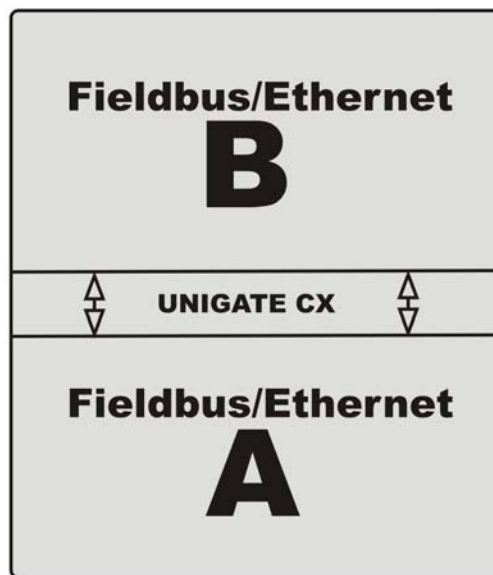
In case of the series UNIGATE® CX, the data exchange between the Fieldbuses or Ethernet is realized through a Script. With the free PC-tool "Protocol Developer" this Script is generated and optimally adjusted to the final product and the requirements.

4 Hardware-design

The UNIGATE® CX acts as gateway between two fieldbuses. Both fieldbus connections are realized as slave exclusively. Each fieldbus can be operated by a standard-compliant master.

4.1 Available types

UNIGATE® CX has a modular structure which makes any desired combination of fieldbuses possible. The following devive types can be realized:



Fieldbus / Ethernet B										
	CANopen®	DeviceNet	EtherCAT	Ethernet	Ethernet/IP	LONWorks	MPI	Powerlink	Profinet	Profibus
Fieldbus / Ethernet A	CANopen®	X	X	X	X	X	X	X	X	X
	DeviceNet	X	X	X	X	X	X	X	X	X
	EtherCAT	X	X	X	X	X	X	X	X	X
	Ethernet	X	X	X	X	X	X	X	X	X
	Ethernet/IP	X	X	X	X	X	X	X	X	X
	LONWorks	X	X	X	X	X	X	X	X	X
	MPI	X	X	X	X	X	X	X	X	X
	Powerlink	X	X	X	X	X	X	X	X	X
	Profibus	X	X	X	X	X	X	X	X	X
	Profinet	X	X	X	X	X	X	X	X	X

From the above table you can see that all types can be combined, such as DeviceNet to DeviceNet in order to interconnect two autonomous DeviceNet-networks.

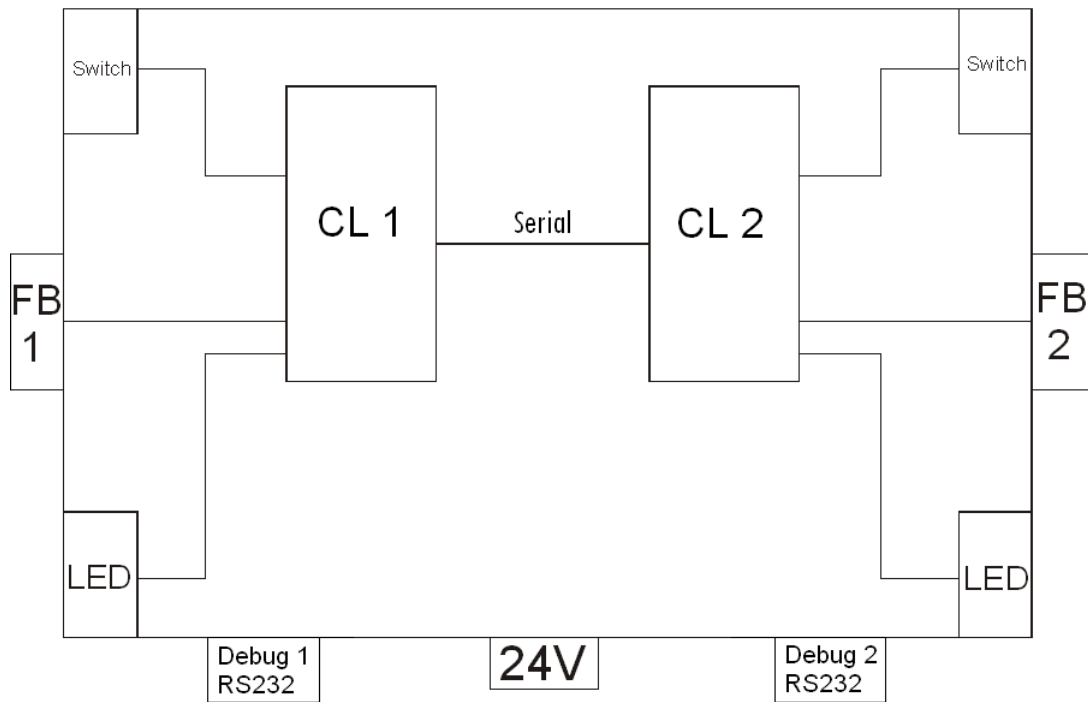
4.2 Hardware structure

In order to have the possibility to interconnect different fieldbuses UNIGATE® CX consists of single components that can be combined with each other. These components are in detail:

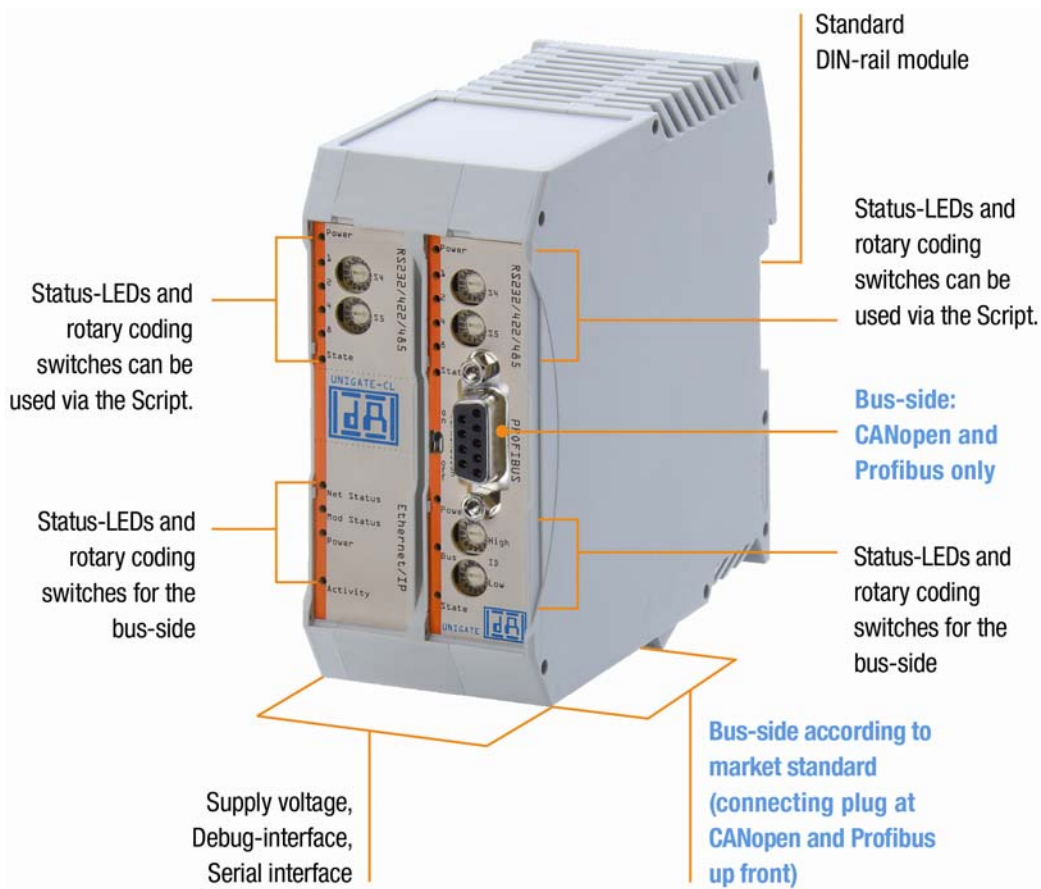
- UNIGATE® CL 1 for fieldbus side A
- UNIGATE® CL 2 for fieldbus side B
- Script

The exact internal structure is not relevant to the order since only the buses that are to be interconnected have to be mentioned and you will receive a complete device.

4.3 UNIGATE® CX block diagram



4.4 UNIGATE® CX design



4.5 Operation modes

4.5.1 RUN-operation (data exchange mode)

In the ex-works condition the device is set to RUN-operation.

In RUN-operation it is possible to use the Debug-interfaces of the CLs.

With these interfaces it is possible to execute a Script step-by-step and in a normal case they are only necessary for developing a Script. Furthermore the device can be configured through these interfaces. To do so, the software WINGATE is used ("Extras" -> "Upload_Config_Debug" or "Download_Config_Debug")

The Debug-interfaces are connected with X1 pin 3 + 4 or X2 pin 3 + 4.

Further information on how to use the Debug-interface can be found in the instruction manual UNIGATE® CL for the respective Fieldbus.

4.5.2 Test mode

Setting of the test mode

The test mode is set by bringing the switches S4 and S5 in position "E". All other switches will not be taken into consideration for the setting of the test mode. Now the Gateway has to be restarted with these settings (by a short disconnection from the power supply).

In the test mode the Gateway always operates with the settings 9600 baud, no parity, 8 databits and 1 stopbit.

The test mode may be helpful to integrate the Gateway in the relevant environment.

Mode of operation of the test mode

After the restart in the test mode the Gateway will be sending the values 0-15 in hexadecimal representation ("0".."F") in ASCII-coding on the serial side (Debug-interface) every second. Simultaneously the same values are issued binary on the fieldbus-interface.

In this mode the State-LED on the RS-side will be flashing red, the "Error No/Select ID" LEDs will be displaying the value in a binary way, that is issued that moment. Additionally each character that is received at one of the interfaces will also be output at the same interface as a local echo. On the fieldbus-side only the first byte will be used for the local echo, that means on receiving as well as on transmitting only the first byte of the bus data is looked at, the other bus data do not change compared to the last data.

5 Scripts

5.1 What is a script?

A script is a sequence of commands, that are executed in that exact order. Because of the fact that also mechanisms are given that control the program flow in the script it is also possible to assemble more complex processes from these simple commands.

The script is memory-oriented. It means that all variables always refer to one memory area. While developing a script you do not have to take care of the memory management though. The Protocol Developer takes on this responsibility for you.

5.1.1 Function of the scripts in UNIGATE® CL

The scripts handle the data exchange between the two UNIGATE® CLs. Here the data of fieldbus 1 is edited in the CL 1 and transmitted to the CL 2 via an RS-connection. On account of the fieldbuses' complexity and the multitude of resulting versions we are not going into details at this point. For further questions concerning scripts, please contact us directly.

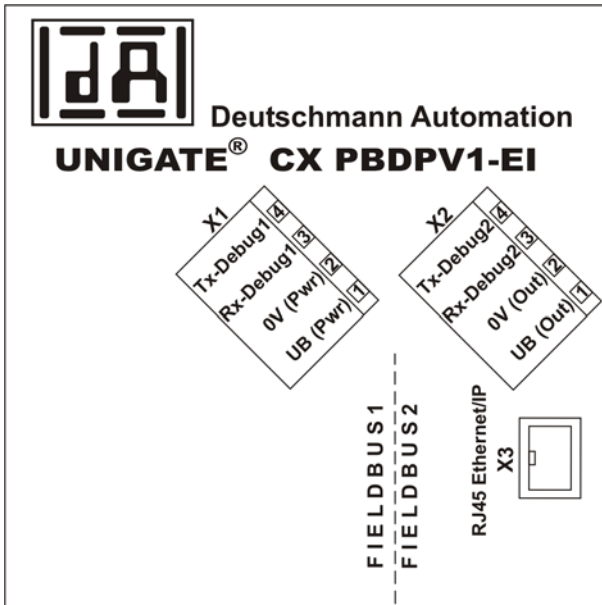
6 Fieldbus parameters / Ethernet parameters

The data of fieldbus A is passed on to fieldbus B depending on the handling of the scripts
Here the following basic requirements have to be considered:

	Bus connection	Bus data	Bus baud rates	Bus ID
CANopen	9 pin D-SUB connector	255 bytes I/O	Adjustable via DIP-switch	Adjustable via DIP-switch
DeviceNet	5 pin screw-pug connector	255 bytes I/O	Adjustable via DIP-switch	Adjustable via DIP-switch
EtherCAT	2xRJ45	1486 bytes I/O	100 MBaud	Permanent MAC-address, is automatically assigned
Ethernet/IP	RJ45	500 bytes I/O	10/100 Mbit	IP-address adjustable via WINGATE
Fast Ethernet Modbus TCP	RJ45	1024 bytes I/O	10/100 Mbit	IP-address via WINGATE or Script
LONWorks62	4 pin screw-plug connector	62 In and Out SNVTs, 1024 bytes I/O	FTT-10A, 78 kBit/s	Permanent Neuron ID
LONWorks512	4 pin screw-plug connector	512 bytes I/O, 256 In and 256 Out SNVTs	FTT-10A, 78 kBit/s	Permanent Neuron ID
MPI	9 pin D-SUB connector	240 bytes I/O	Adjustable via Script	Adjustable via rotary switch
Ethernet Powerlink	2xRJ45	1541 bytes I/O	100 Mbit	IP-address adjustable via rotary switch
Profibus	9 pin D-SUB connector	244 bytes I/O	Automatic detection	Adjustable via rotary switch
Profinet	RJ45	1440 bytes I/O	100 Mbit	Adjustable or is assigned by the Master

7 Hardware connections, switches and LEDs

7.1 Device label



Picture 1: Connection labelling taking UNIGATE® CX PBDPV1 - EI as an example



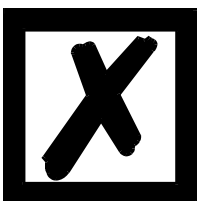
Note:
 X1 + X2 are always available.
 X3 and maybe X4 depend on the combination of the Fieldbuses.

7.2 Connectors

7.2.1 Connector supply voltage and DEBUG-interface 1

Pin assignment X1 (4-pole screw-plug connector, on the bottom side, right at the back)

Pin No.	Name	Function
1	UB (Pwr)	10..33 V supply voltage / DC
2	0 V (Pwr)	0 V supply voltage / DC
3	Rx-Debug 1	Receive signal Debug Fieldbus 1
4	Tx-Debug 1	Transmit signal Debug Fieldbus 1



Attention:
 Ground for the DEBUG-Interface must be connected with pin 2 0V (pwr)!

7.2.2 Connector output voltage and DEBUG-interface 2

Pin assignment X2 (4-pole screw-plug connector, on the bottom side, left at the back)

Pin No.	Name	Function
1	UB (Out)	10..33 V output (dependent on supply voltage X1)
2	0 V (Out)	0 V output
3	Rx-Debug 2	Receive signal Debug Fieldbus 2
4	Tx-Debug 2	Transmit signal Debug Fieldbus 2

7.3 Power supply

The device must be powered with 10-33 VDC. The voltage supply is made through the 4-pole screw-plug connector X1 at the device's bottom side.

Please note that the devices of the series UNIGATE® should not be operated with AC voltage.

7.4 LEDs, switches, bus connection



For a description of the LEDs, switches and the Fieldbus- or Industrial Ethernet-connectors please take a look at the instruction manual UNIGATE® CL for the relevant Fieldbus.

7.5 UNIGATE® CX connection cable

A pre-assembled connection cable is available as accessory. The cable connects the Gateway with the two Debug-interfaces and power supply.

8 Installation guidelines

8.1 Installation of the module

The module with the maximum dimension (46 x 100 x 117 mm W x H x D) has been developed for switch cabinet use (IP 20) and can thus be mounted only on a standard mounting channel (deep top-hat rail to EN 50022).

8.1.1 Mounting

- Engage the module from the top in the top-hat rail and swivel it down so that the module engages in position.
- Other modules may be rowed up to the left and right of the module.
- There must be at least 5 cm clearance for heat dissipation above and below the module.
- The standard mounting channel must be connected to the equipotential bonding strip of the switch cabinet. The connection wire must feature a cross-section of at least 10 mm².

8.1.2 Removal

- First disconnect the power supply and signal lines.
- Then push the module up and swivel it out of the DIN-rail.

Vertical installation

The standard mounting channel may also be mounted vertically so that the module is mounted turned through 90°.

8.2 Wiring

8.2.1 Connection systems

The following connection systems must resp. may be used when wiring the module:

- Standard screw-type/plug connection (power supply + RS)
- 9-pin SUB-D plug connectors (CANopen® and RS232 connection)

a) In the case of standard screw-type terminals, one lead can be clamped per connection point. It is best to then use a screwdriver with a blade width of 3.5 mm to firmly tighten the screw.

Permitted cross-sections of the line:

- Flexible line with wire-end ferrule: 1 x 0.25 ... 1.5 mm²
- Solid conductor: 1 x 0.25 ... 1.5 mm²
- Tightening torque: 0.5 ... 0.8 Nm

b) The plug-in connection terminal strip is a combination of standard screw-type terminal and plug connector. The plug connection section is coded and can thus not be plugged on the wrong way round.

c) The 9-pin SUB-D plug connectors are secured with two screws with "4-40-UNC" thread. It is best to use a screwdriver with a blade width of 3.5 mm to screw the screw tight.
Tightening torque: 0.2... 0.4 Nm

8.2.1.1 Power supply

The device must be powered with 10..33 V DC.

- Connect the supply voltage to the 4-pole plug-in screw terminal in accordance with the labelling on the device.

8.2.1.2 Equipotential bonding connection

The connection to the potential equalization automatically takes place it is put on the DIN-rail.

8.2.2 Communication interface

8.2.2.1 CANopen®

This interface is located on the module in the form of a 9-pin D-SUB plug on the front side of the housing.

- Plug the CANopen® connector onto the SUB-D plug labelled "CANopen®".
- Firmly screw the securing screws of the plug connector tight using a screwdriver.
- If the module is located at the start or end of the CANopen® line, you must connect the bus terminating resistor integrated in the gateway. In order to do this, slide the slide switch to the position labelled ...on...
- If the module is not located at the start or at the end, you must set the slide switch to position "off".

8.2.2.2 DeviceNet

This interface is located on the module in the form of a 5-pin screw-plug-connector on the lower side of the housing.

- Plug the DeviceNet connecting plug onto the socket labelled "DeviceNet".
- If the module is located at the start or end of the DeviceNet line, you must switch on the bus terminating resistor integrated in the gateway. In order to do this, slide the sliding switch to the position labelled ...on...
- If the module is not located at the start or at the end, you must set the sliding switch to position "off".

8.2.2.3 EtherCAT

This interface is located on the module in the form of two 8-pin RJ45 sockets on the bottom side of the housing.

- Plug the EtherCAT-connector onto one of the RJ45 sockets labeled "In" (cable from the Master) or "Out" (further cable to the next EtherCAT-Slave).
- Please make sure that the length of the line to the adjacent Ethernet participants does not fall below 0.6 m.

8.2.2.4 Ethernet/IP

This interface is located on the module in the form of a 8-pin RJ45 socket on the bottom side of the housing.

- Plug the Ethernet/IP-connector onto the RJ45 socket labeled "RJ45 Ethernet/IP" until it snaps in.
- Please make sure that the length of the line to the adjacent Ethernet participants does not fall below 0.6 m.

8.2.2.5 Ethernet

This interface is located on the module in the form of a 8-pin RJ45 socket on the bottom side of the housing.

- Plug the Ethernet-connector onto the RJ45 socket labeled "RJ45 Ethernet" until it snaps in.
- Please make sure that the length of the line to the adjacent Ethernet participants does not fall below 0.6 m.

8.2.2.6 LONWorks

This interface is located on the module in the form of a 4-pin screw-plug-connector on the lower side of the housing.

- Plug the LONWorks connecting plug onto the socket labelled "LONWorks".

8.2.2.7 MPI

This interface is located on the module in the form of a 9-pin D-SUB socket on the front side of the housing.

- Plug the MPI-bus connector onto the D-SUB socket labelled "MPI-bus".
- Firmly screw the securing screws of the plug connector tight using a screwdriver.
- If the module is located at the start or end of the MPI-bus line, you must connect the bus terminating resistor integrated in the Gateway. In order to do this, slide the slide switch to the position labelled ...on...
- If the module is not located at the start or at the end, you must set the slide switch to position "off".

8.2.2.8 Ethernet Powerlink

This interface is located on the module in the form of two 8-pin RJ45 sockets on the bottom side of the housing.

- Plug the Powerlink-connector onto one of the RJ45 sockets labeled "Powerlink '(Hub)".
- Please make sure that the length of the line to the adjacent Ethernet participants does not fall below 0.6 m.

8.2.2.9 ProfibusDP

This interface is located on the module in the form of a 9-pin D-SUB socket on the front side of the housing.

- Plug the Profibus connector onto the SUB-D socket labelled "ProfibusDP".
- Firmly screw the securing screws of the plug connector tight using a screwdriver.
- If the module is located at the start or end of the Profibus line, you must connect the bus terminating resistor integrated in the gateway. In order to do this, slide the slide switch to the position labelled ...on...
- If the module is not located at the start or at the end, you must set the slide switch to position "off".

8.2.2.10 Profinet-IO

This interface is located on the module in the form of a 8-pin RJ45 socket on the bottom side of the housing.

- Plug the Profinet-connector onto the RJ45 socket labelled "RJ45 Profinet-IO" until it snaps in.
- Please make sure that the length of the line to the adjacent Ethernet participants does not fall below 0.6 m.

8.2.3 Line routing, shield and measures to combat interference voltage

This chapter deals with line routing in the case of bus, signal and power supply lines, with the aim of ensuring an EMC-compliant design of your system.

8.2.4 General information on line routing

- Inside and outside of cabinets

In order to achieve EMC-compliant routing of the lines, it is advisable to split the lines into the following line groups and to lay these groups separately.

- ⇒ Group A:
 - shielded bus and data lines (e.g. for CANopen®, RS232C and printers etc.)
 - shielded analogue lines
 - unshielded lines for DC voltages ≥ 60 V
 - unshielded lines for AC voltage ≥ 25 V
 - coaxial lines for monitors
- ⇒ Group B:
 - unshielded lines for DC voltages ≥ 60 V and ≥ 400 V
 - unshielded lines for AC voltage ≥ 24 V and ≥ 400 V
- ⇒ Group C:
 - unshielded lines for DC voltages > 400 V

The table below allows you to read off the conditions for laying the line groups on the basis of the combination of the individual groups.

	Group A	Group B	Group C
Group A	1	2	3
Group B	2	1	3
Group C	3	3	1

Table: Line laying instructions as a function of the combination of line groups

- 1) Lines may be laid in common bunches or cable ducts.
- 2) Lines must be laid in separate bunches or cable ducts (without minimum clearance).
- 3) Lines must be laid in separate bunches or cable ducts inside cabinets but on separate cable racks with at least 10 cm clearance outside of cabinets but inside buildings .

8.2.4.1 Shielding of lines

Shielding is intended to weaken (attenuate) magnetic, electrical or electromagnetic interference fields.

Interference currents on cable shields are discharged to earth via the shielding bus which is connected conductively to the chassis or housing. A low-impedance connection to the PE wire is particularly important in order to prevent these interference currents themselves becoming an interference source.

Wherever possible, use only lines with braided shield. The coverage density of the shield should exceed 80 %. Avoid lines with foil shield since the foil can be damaged very easily as the result of tensile and compressive stress on attachment. The consequence is a reduction in the shielding effect.

In general, you should always connect the shields of cables at both ends. The only way of achieving good interference suppression in the higher frequency band is by connecting the shields at both ends.

The shield may also be connected at one end only in exceptional cases. However, this then achieves only an attenuation of the lower frequencies. Connecting the shield at one end may be more favourable if

- it is not possible to lay an equipotential bonding line
- analogue signals (a few mV resp. mA) are to be transmitted
- foil shields (static shields) are used.

In the case of data lines for serial couplings, always use metallic or metallised plugs and connectors. Attach the shield of the data line to the plug or connector housing.

If there are potential differences between the earthing points, a compensating current may flow via the shield connected at both ends. In this case, you should lay an additional equipotential bonding line.

Please note the following points when shielding:

- Use metal cable clips to secure the shield braiding. The clips must surround the shield over a large area and must have good contact.
- Downstream of the entry point of the line into the cabinet, connect the shield to a shielding bus. Continue the shield as far as the module, but do not connect it again at this point!

9 Technical data

9.1 Device data

The technical data of the module is given in the table below.

No.	Parameter	Data	Explanations
1	Location	Switch cabinet	DIN-rail mounting
2	Enclosure	IP20	Protection against foreign bodies and water to IEC 529 (DIN 40050)
3	Service life	10 years	
4	Housing size	46 x 100 x 117 mm (screw-plug connector not included) 46 x 106 x 117 mm (screw-plug-connector included)	W x H x D W x H x D (maximum including connector)
5	Installation position	Any	
6	Weight	Approx. 200g	
7	Operating temperature	0°C ... +55°C	The negative temperatures are only valid for the usual conditions (not condensing)
8	Storage/transport temperature	-40°C ... +70°C	
9	Atmospheric pressure during operation during transport	795 hPa ... 1080 hPa 660 hPa ... 1080 hPa	
10	Installation altitude	2000 m 4000 m	Unrestricted Restricted - Ambient temperature ≤ 40°C
11	Relative humidity	Max. 80 %	No condensation, no corrosive atmosphere
12	External power supply	10...33 V DC	Standard power supply unit to DIN 19240
13	Current consumption at 24 VDC	Typ. 120 mA max 150 mA	At 10.8V. typ. 350 mA
14	Reverse voltage protection	Yes	But does not function!
15	Short-circuit protection	Yes	
16	Overload protection	Poly-switch	Thermal fuse
17	Undervoltage detection (USP)	≤ 9 V DC	
18	Emergency power supply	≥ 5 ms	Device fully operable

Table: Technical data of the module



The interface data can be found in the instruction manual UNIGATE® CL for the relevant bus.

10 Commissioning guide

10.1 Note

Only trained personnel following the safety regulations may commission the UNIGATE®.

10.2 Components

You will require the following components to commission the UNIGATE®:

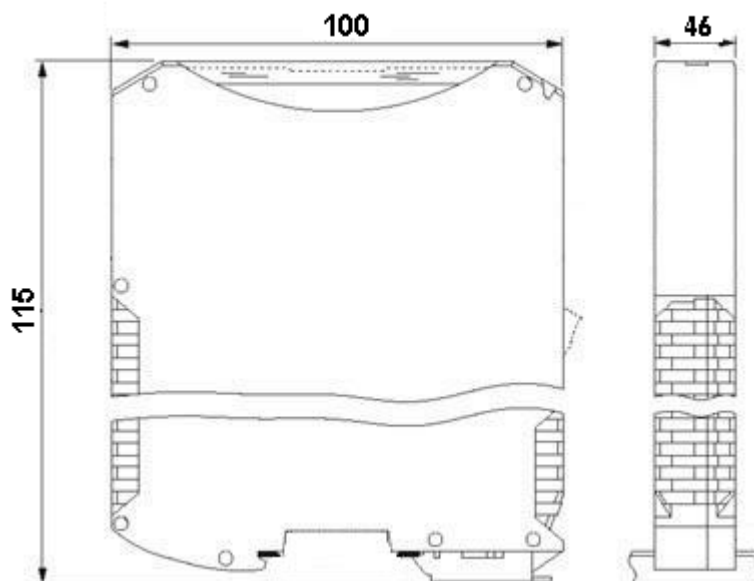
- UNIGATE®
- Connection cable from gateway to the process (Debug-interface)
- Connector for Fieldbus connection to the gateway
- Fieldbus cable (this cable is generally already installed on site!)
- 18..30 V DC power supply (DIN 19240)
- Device description file (e. g. GSD-file at PB) and operating instruction user manual, the instruction manual can be ordered separately or downloaded free of charge from our homepage at www.deutschmann.de.

10.3 Installation

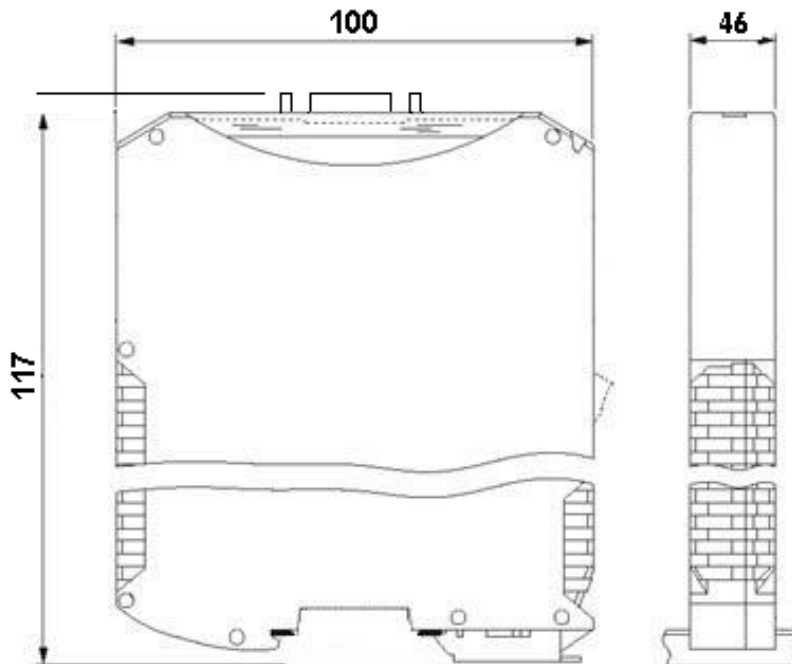
The UNIGATE® CX features protection class IP 20 and is thus suitable for switch cabinet use. The device is designed for snapping onto a 35 mm DIN-rail.

10.4 Dimensional drawings

10.4.1 UNIGATE® CX (all versions without CANopen® or ProfiBUSDP)



10.4.2 UNIGATE® CX (versions with CANopen® or ProfibusDP)



10.5 Commissioning

It is essential that you perform the following steps during commissioning in order to ensure that the module operates correctly:



Attention:

***The set Fieldbus-address must correspond to the planned address!
For more information on how to adjust the Fieldbus-address please take a look at the instruction manual UNIGATE® CL for the relevant Fieldbus!***

10.6 Fieldbus connection

Connect the device to the Fieldbuses at the corresponding interfaces.

10.7 Connecting the supply voltage

Please connect 10.8...30 DC voltage to the terminals provided for this.

10.8 Shield connection

Earth the DIN-rail onto which the module has been snapped.

11 Servicing

Should questions which are not covered in this Manual crop up, please contact us directly.

Please note down the following information before calling:

- Device designation
- Serial number (S/N)
- Article number
- Error number and error description

You can reach us during hotline hours which are as follows

Monday to Thursday from 8 am to midday and from 1 pm to 4 pm, Friday from 8 am to midday.

Deutschmann Automation GmbH & Co. KG
Carl-Zeiss-Str. 8
D-65520 Bad Camberg

Central office and sales department +49-(0)6434-9433-0
Technical hotline +49-(0)6434-9433-33

Fax sales department +49-(0)6434-9433-40
Fax technical hotline +49-(0)6434-9433-44

E-mail technical hotline hotline@deutschmann.de

11.1 Returning a device

If you return a device, we require as comprehensive a fault/error description as possible. We require the following information in particular:

- What error number was displayed?
- What is the supply voltage (± 0.5 V) with gateway connected?
- What were you last doing or what last happened on the device (programming, error on power-up, ...)?

The more precise information a fault/error description you provide, the more exactly we will be able to pinpoint the possible causes.

11.2 Downloading PC software

You can download the current version of WINGATE[®] free of charge from our Internet server.

<http://www.deutschmann.de>

12 Annex

12.1 Explanations of the abbreviations

General

CL	=	Product group CL (Compact Line)
CX	=	Product group CX
GT	=	Galvanic separation RS-side
GY	=	Housing color gray
RS	=	Product group RS
SC	=	Product group SC (Script)
232/485	=	Interface RS232 and RS485 switchable
232/422	=	Interface RS232 and RS422 switchable
DB	=	Additional RS232 DEBUG-interface
D9	=	Connection of the RS through 9-pin D-SUB instead of 5-pin screw-plug connector
PL	=	Board only without DIN-rail module and without housing cover
PD	=	Board only without DIN-rail module and with housing cover
AG	=	Gateway installed in a die-cast aluminum housing
EG	=	Gateway installed in a stainless steel housing
IC	=	Product group IC (IC-design DIL32)
16	=	Script memory expanded to 16KB
5V	=	Operating voltage 5V
3,.3V	=	Operating voltage 3.3V

Fieldbus

ASI	=	AS-Interface (AS-i)
CO	=	CANopen
C4	=	CANopen V4
C4X	=	CANopen V4-version X (see comparison table UNIGATE® IC for the respective product)
DN	=	DeviceNet
EC	=	EtherCAT
EI	=	Ethernet/IP
FE	=	Ethernet 10/100 MBit
FEX	=	Ethernet 10/100 MBit-version X (see comparison table UNIGATE® IC for the respective product)
IB	=	Interbus
IBL	=	Interbus
LN62	=	LONWorks62
LN512	=	LONWorks512
MPI	=	Siemens MPI®
PL	=	Powerlink
PN	=	Profinet-IO
PBDP	=	ProfibusDP
PBDPL	=	ProfibusDP-version L (see comparison table UNIGATE® IC for the respective product)
PBDPX	=	ProfibusDP-version X (see comparison table UNIGATE® IC for the respective product)
PBDPV0	=	ProfibusDPV0
PBDPV1	=	ProfibusDPV1
RS	=	Serial RS232/485/422

12.2 Hexadecimal table

Hex	Decimal	Binary
0	0	0000
1	1	0001
2	2	0010
3	3	0011
4	4	0100
5	5	0101
6	6	0110
7	7	0111
8	8	1000
9	9	1001
A	10	1010
B	11	1011
C	12	1100
D	13	1101
E	14	1110
F	15	1111

