

PROTOCOL CONVERTER UNIGATE® CL



- Easy installation
- Norm compliant
- Ready-to-use
- Configurable
- Programmable
- Designed & manufactured in Germany

THE INTELLIGENT
PROTOCOL CONVERTER
FOR



A SOLUTION FOR ALL DEVICES
WITH A SERIAL INTERFACE



Deutschmann
your ticket to all buses

The intelligent Protocol Converter

UNIGATE® CL – The solution for all devices with a serial interface

The Protocol Converter UNIGATE® CL connects devices such as automation components via their serial interfaces to the required fieldbus or industrial Ethernet standard. RS232, RS485 and RS422 interfaces are on Board as a standard feature.

The communication between the serial side and the bus takes place either through the device configuration and a selection of the commercially available protocol, such as Modbus ASCII, Modbus RTU (Master or slave), 3964 (R), RK512, DIN measuring bus, DIN 19244, or the device is controlled by a script.

This Script is created with the free PC tool, 'Protocol Developer'. You decide whether you want to program the Script yourself or hire Deutschmann Automation to do so.

A special feature of the UNIGATE® CL series is Brand labeling. With the customized design Deutschmann Automation not only gives you the opportunity to pre-configure the device and choose different housing colors, you can also apply your own logo.



Your Advantage

With the UNIGATE® CL modules from Deutschmann you bring existing components into modern networks. As a device manufacturer you save the self-development of the respective fieldbus or Ethernet based interfaces. The consistency of the Deutschmann UNIGATE® CL series allows once generated configurations and scripts to be used for other fieldbus and Ethernet based versions.

Advantage Deutschmann – This speaks for UNIGATE® CL

- ▼ Available for the most fieldbus and Industrial Ethernet versions
- ▼ RS232, RS485- and RS422 interfaces are on Board
- ▼ Same design on the serial side in all bus versions
- ▼ The fieldbus or Ethernet side meets the standards, respectively the standard market models.
- ▼ SSI protocol is supported e.g. for encoder
- ▼ Built-in isolation on the bus side, optionally on the serial side
- ▼ Configuration of the module via configuration tool WINGATE
- ▼ Free programming with Protocol Developer (Deutschmann Script language)
- ▼ No adjustment of the device firmware needed
- ▼ Additional debug interface on board
- ▼ Modern, slim, DIN rail
- ▼ Same Dimensions in all bus variants
- ▼ Brand labeling, pre-configured according to the customer
- ▼ Wide voltage range from 10 to 33 VDC
- ▼ When using the RS485 interface, multiple terminal devices can be used on a Protocol Converter (e.g. Modbus RTU).

Application example

Point-To-Point-Connection

Between the UNIGATE® and a component via one of the serial interfaces.

Component



BUS

PLC-Master

Master-Slave-Structure

When using the RS485-interface several terminal units can be linked and addressed specifically at the corresponding protocol (e. g. Modbus RTU-Master).

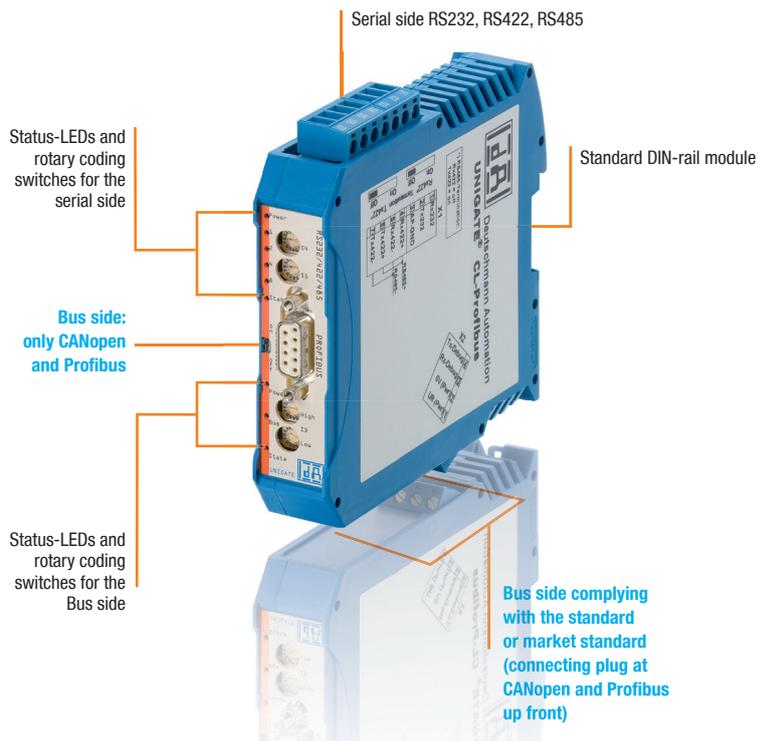
Components 1-n



BUS

PLC-Master

UNIGATE® CL design



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Point to point connection via any serial interface

SSI protocol is supported e.g. encoder

Master-slave structure, e.g. with Modbus RTU

The converter can operate as a master or a slave

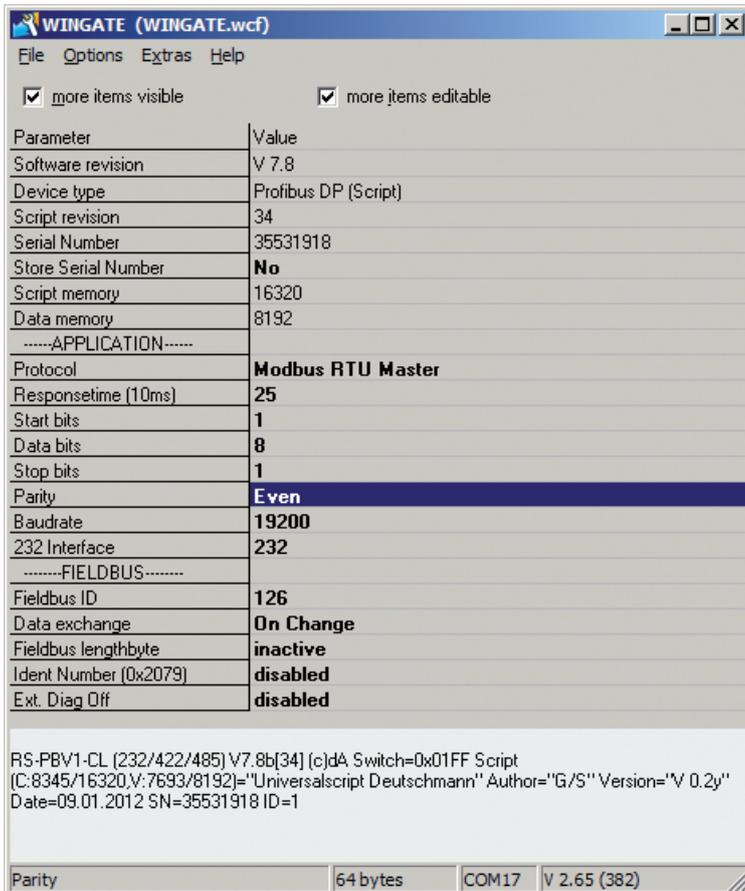
Same mechanical design of all bus versions

Space-saving housing

Wide voltage range

Brand labeling

- own logo
- own article description
- Pre-configuration, import your own script
- Neutral packaging
- Own front panel designed for your CI
- Own housing color



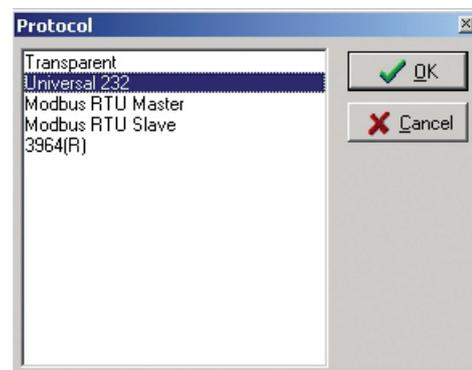
Picture 1: WINGATE® main window

The implementation of the serial interface onto the industrial network is configured with the configuration tool WINGATE®. WINGATE® is running on Windows. The configuration is loaded from the PC into the CL. A once created configuration can be saved and loaded in WINGATE® time and time again. It goes without saying that the created configuration can also be loaded from the UNIGATE® into the WINGATE®.

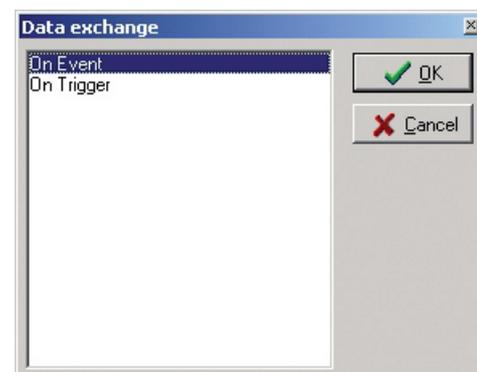
All CL models can handle the market standard protocols 3964(R), RK512, DIN 19244, DIN 66348-2 (measurement bus), Modbus ASCII and Modbus RTU (Master and Slave operation possible), and also a universal 232-protocol for a transparent data exchange.

The Technical Support of Deutschmann is by your side, whether you have any questions or need help generating your configuration.

The devices can be delivered pre-configured.



Picture 2: market standard protocols (extract)



Picture 3: subwindow parameter selection

- Comfortable configuration
- consistency for each bus
- Additional fieldbus mechanism



Protocol Developer

Deutschmann Script language



Deutschmann

your ticket to all buses

The heart of the Deutschmann UNIGATE® / Gateway series

- ▼ Flexible solutions are needed. With the usual configuration tools for protocol converters and gateways, the user has to work with the specifications of the manufacturer. To change this unfortunate condition Deutschmann developed its own script language as early as in 1999.
- ▼ The user only needs to process the data of the bus and barely has to look after the special characteristics of the fieldbus.
- ▼ The Protocol Developer supports a variety of functions to fit the received or to send data into the right “form”. Mathematics- or memory processing commands are known from other Script languages and are easy to understand implemented, even for laymen.
- ▼ Also the neatly arranged selection of examples enables a quick introduction to laymen.
- ▼ Another highlight is the included debug functionality. The common functionalities such as Single-step, running and stopping on breakpoint are available.
- ▼ Great emphasis is put on data security. You can activate special error detection routines on request.

▼ **Comfortable script commands**

▼ **Wide range of functions**

▼ **Marketable protocols are included as a script command**

▼ **Quick induction**

What exactly is a script?

A script is a sequence of commands executed in a given order. A command is always a small, firmly outlined task. The script language also knows commands that control the program flow in the script, which is why you can assemble even complex processes with these simple commands.

Command groups overview

Declarations	variable declaration
Flow Control	Subfunction calls, jumps, branches
Math	Mathematical functions, data conversions
Communication	Send and receive data
Device Control	Set and read parameters. For example the baud rate for the serial interface.
Bus Specific	bus-specific values



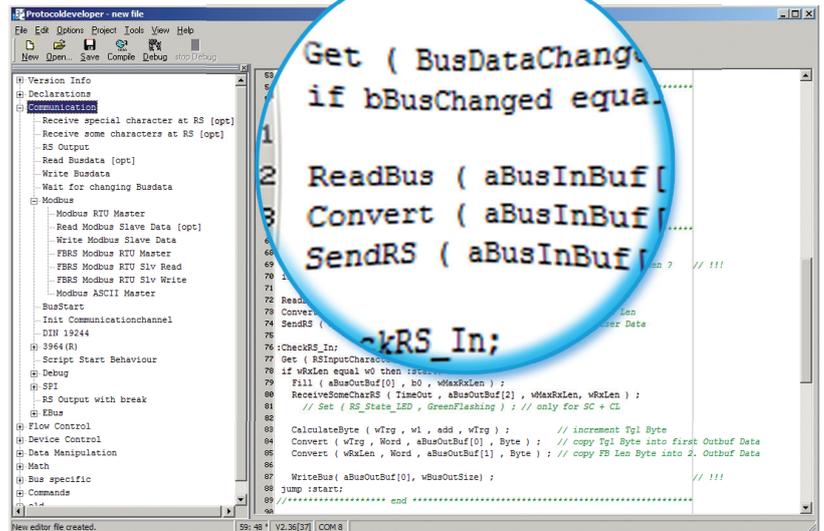


The amount of tasks which can be handled with a script is infinite.

Scripts are imaginable which

- automatically determine a participants data at the serial interface, edit this data and then outline it in the bus
- only carry out action if the bus data is altered
- carry out timed actions
- share communication states
- exchange the data between 2 serial participants (RS485) and present the state in the bus

The script programming gives you a flexible possibility to solve your communication task. On both sides, i.e., on the RS-side and on the bus side, data can be edited, converted and arranged.

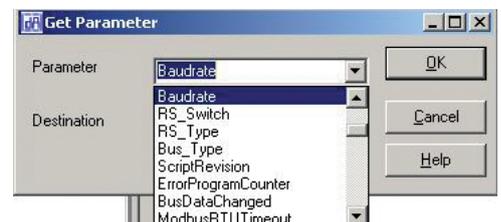


Picture 1: script example in the Protocol Developer

The 1x1 of the Protocol Developer

Picture one shows you an example script in the editor surface and the tree view of all available commands (Command-Tree). It is the tool for easy script generating for our script gateways, its operation is aimed on it.

In addition to programming via text commands, the Command-Tree also offers dialogue-based programming. If defined, and necessary for the correlating command, a dialogue goes through the command parameters (picture 2) and inserts the resulting command into the script.



Picture 2: command parameters

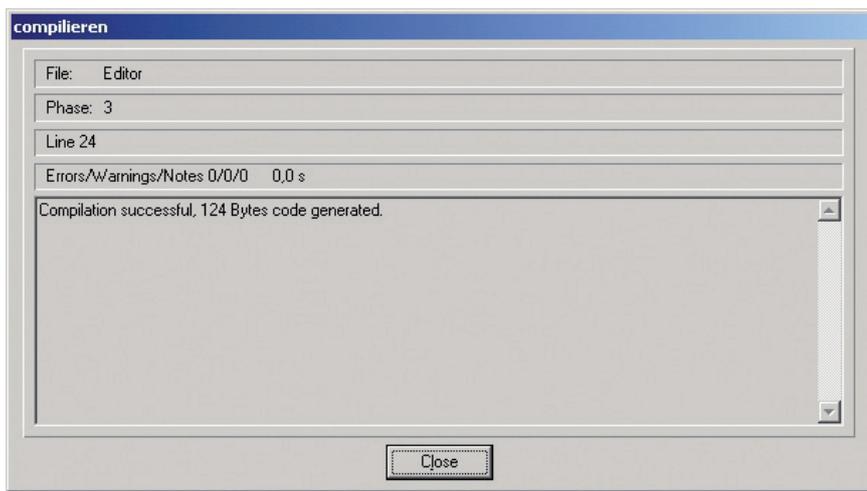


Compile

Before a script can be loaded into a UNIGATE®, it has to be compiled. The resulting code is very storage efficient. Even extensive scripts fit comfortably in the internal memory of the UNIGATE®.

The loading of a script into the device can be done directly from the PROTOCOL DEVELOPER. For serial programming a script-download tool is available.

- Integrated debug environment
- Convenient testing of the script
- Memory efficient compilation of script code
- Examples for each script command
- Templates for each bus variant
- Workshops
- Hotline by phone / E-Mail

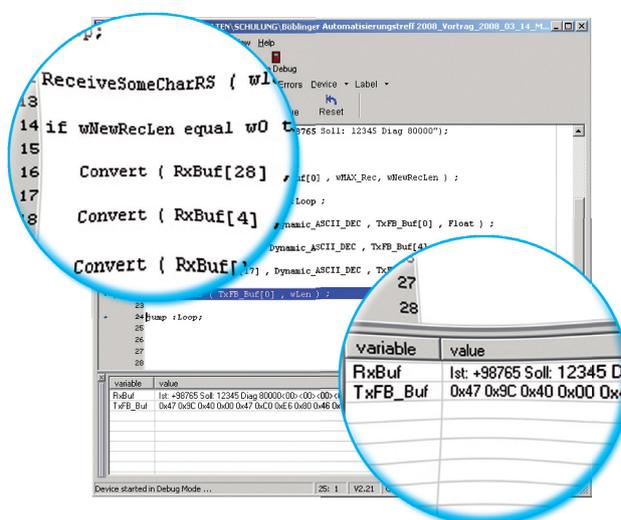


Picture 3: compilation

Debuggen

All UNIGATE® CL devices have a built-in debugging interface. A special debug software is not needed. To test even extensive scripts quickly you'll find many functions for comfortable debugging, such as

- Breakpoints
- Single-step
- Display of the variables and their values
- Error display



Picture 4: debug window with variables and their content



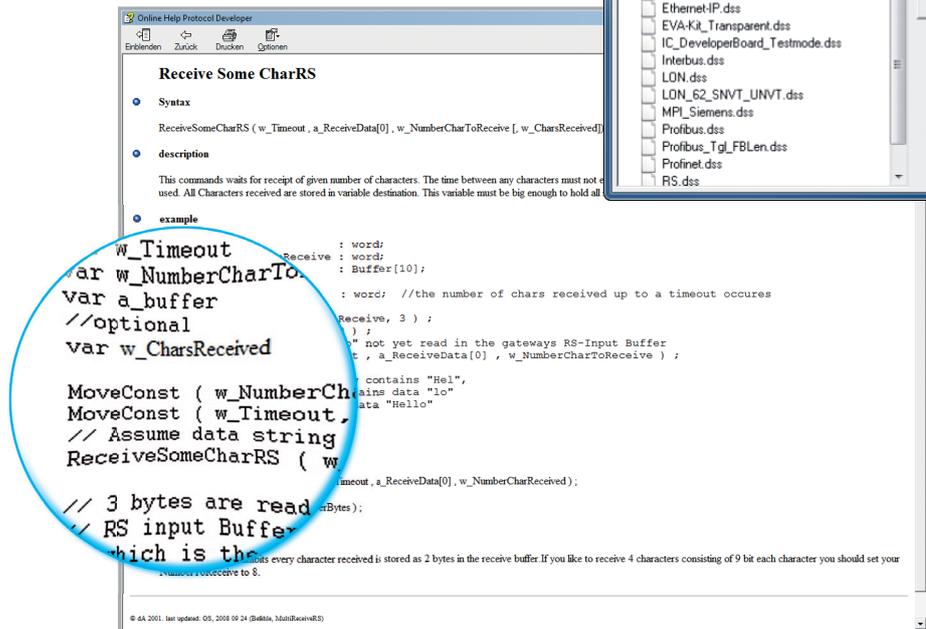
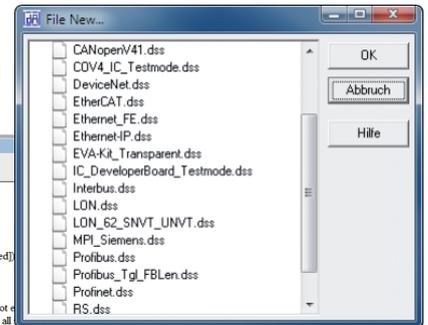


Support

The Protocol Developer contains a context-sensitive help function, in which a detailed description of all script commands is included.

Templates for different tasks and bus variants can be transferred directly and adapted to your own needs.

Picture 5: extract of the templates



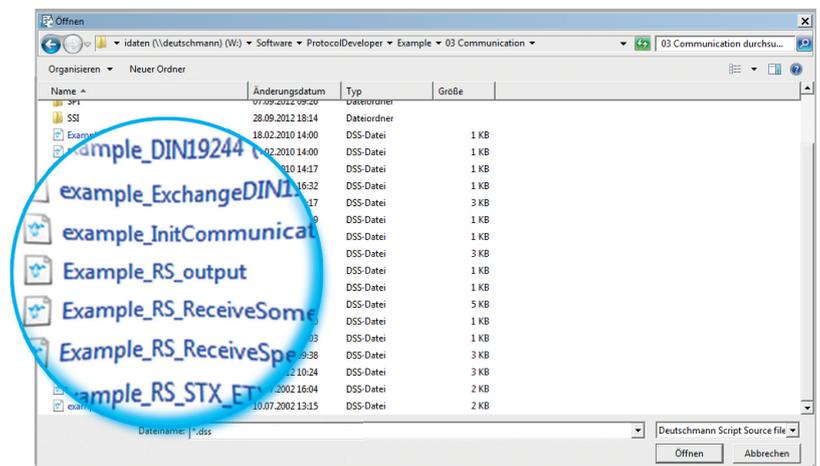
Picture 6: online help

Sample scripts

The free of cost Protocol Developer includes commented script examples for every script command.

In addition to our free hotline, you'll find further support in form of the latest versions of manuals and software tools available for free on our web page.

(www.deutschmann.com)



Picture 7: extensive library with example scripts



Protocol Developer

Advantage Deutschmann – Flexibility

- ▼ No changes in your own firmware necessary
- ▼ Flexible and powerful script language, specifically created for the bus communication
- ▼ Easy to handle
- ▼ Customized commands on demand. For example if functions are missing or an optimization for time critical application is needed.
- ▼ You can create your own script, or Deutschmann creates your script for you
- ▼ Extensive support through help function, templates, examples, hotline and Workshops
- ▼ Devices can also be factory fitted with your script
- ▼ Scripts run on the UNIGATE® CL, UNIGATE® IC and UNIGATE® FC series
- ▼ Easy adaption for existing scripts to more fieldbuses and industrial Ethernet.

UNIGATE® CL Starterkit – Affordable and compact

Deutschmann Starterkits are arranged in a way, which enables you to connect your product to the selected Fieldbus or Industrial Ethernet at the laboratory bench fast and low-priced. In order to meet the customers' requests our kits are split in two:

- ▼ The Starterkit contains the Gateway UNIGATE® CL in accordance with the selected Bus, the corresponding cables, the voltage supply as well as a CD with the software tools and a manual.
- ▼ The add-on has been designed to provide a simple master simulation. The add-on is quick to install and easy to handle. The included PC software allows to follow, the data exchange through a serial bus window and a bus windows. Depending on the bus versions there is technical literature included. Also you can use the existing bus master instead of the add-on.



Picture 1: Starterkit (Example PROFIBUS DP)



Picture 2: Add-On
(Example PROFIBUS DPV0)



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- ▼ **Integrated debug environment**
- ▼ **Convenient testing of the script**
- ▼ **Memory efficient compilation of script code**
- ▼ **Examples for each script command**
- ▼ **Templates for each bus variant**
- ▼ **Workshops**
- ▼ **Hotline by phone/ E-Mail**

Technical overview

BACnet/IP

since II/2017 Art.-No.

- V3910 V3913
- V3912 V3914



- › BACnet/IP interface (server)
- › Isolated BACnet/IP interface with 2x RJ 45 connector (integrated Switch)
- › 100 Mbit Full-Duplex transmission
- › 32-Bit microprocessor

EtherCAT®

Art.-No.

- V3573 V3860
- V3773 V3869



- › 100 Mbit/s Full-Duplex transmission
- › Isolated EtherCAT interface with 2x RJ45 connector
- › Supports CANopen communication objects, PDO and SDO
- › Generic EDS file

<http://deutschmann.de/qr/CLEC1/en/pd/>

CANopen

Art.-No.

- V3554 V3708
- V3771 V3867



- › Complete CANopen-Slave-interface
- › Max. 32 TPDO and max. 32 RPDO process data objects
- › Baud rate 10kbit/s to 1 Mbit/s
- › Isolated CANopen interface with 9-pin. D-Sub connector
- › CANopen peer-to-peer messaging
- › Generic EDS file

UNIGATE® CL CANopen Downloads



<http://deutschmann.de/qr/CLC01/en/pd/>

EtherNet/IP 2Port

Art.-No.

- V3819 V3861
- V3879 V3870



- › EtherNet/IP adapter function
- › Max. 512 byte input- and 512 byte output data
- › Baud rate 10 or 100 Mbit/s
- › Isolated EtherNet interface with 2x RJ45 connector
- › IT functions: Web server, FTP Server
- › Generic EDS file



<http://deutschmann.de/qr/CLEI1/en/pd/>

DeviceNet

Art.-No.

- V3555 V3686
- V3772 V3868



- › Complete DeviceNet interface
- › Max. 255 Byte input- and 255 Byte output data
- › Baud rate 125-500 kbit/s
- › Isolated DeviceNet interface with 5pin. terminal connection
- › DeviceNet functions: I/O Slave messaging, polling
- › Generic EDS file

UNIGATE® CL DeviceNet Downloads



<http://deutschmann.de/qr/CLDN1/en/pd/>

Ethernet Powerlink

Art.-No.

Since 2017

- V3558 V3865
- V3780 V3875



- › Ethernet Powerlink adapter function
- › Max. 1541 byte input- and output data
- › Baud rate 100 Mbit
- › Isolated Ethernet Powerlink interface with 2x RJ45-connector
- › IP address adjustable via rotary switch

UNIGATE® CL Ethernet Powerlink Downloads



<http://deutschmann.de/qr/CLPL1/en/pd/>



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Fast Ethernet

Art.-No. ● V3611 ● ⚡ V3643
● V3775 ● ⚡ V3871



UNIGATE® CL
Fast Ethernet
Downloads



- › Complete Fast Ethernet Slave interface
- › Max. 1024 Byte input- and 1024 Byte output data
- › Baud rate 10 or 100 Mbit/s
- › Isolated Fast Ethernet interface with 1x RJ45 connector
- › IT-functions: Web server, FTP Server

<http://deuschmann.de/qr/CLFE1/en/pd/>

LONWorks62

Art.-No. ● V3623 ● ⚡ V3863
● V3776 ● ⚡ V3873



UNIGATE® CL LONWorks
Downloads



- › Complete LONWorks slave interface
- › Max. 512 Byte input- and 512 Byte output data, 62 In and Out SNVTs
- › Baud rate FTT-10A, 78 kBit/s
- › Isolated LONWorks interface with 4pin. Screw connector
- › Fixed Neuron ID

<http://deuschmann.de/qr/CLLN6/en/pd/>

MPI

Art.-No. ● V3556 ● ⚡ V3864
● V3779 ● ⚡ V3874



UNIGATE® CL MPI
Downloads



- › Complete MPI slave interface
- › Max. 92 Byte input- and output data
- › Baud rate adjustable via script
- › Isolated MPI interface with 9-pin. D-sub connector

<http://deuschmann.de/qr/CLMPI/en/pd/>

General specifications:

- serial interfaces
RS232, RS485, RS422
- Baud rates: 110 bps to 625 KBAud
- Debug interface
- 2 rotary coding switches on the serial side for free use of the customer
- Operating voltage: 10 to 33Volts
- Dimensions: 23 x 115 x 100 mm (W x D x H), without connector
- Weight approx. 140 g
- DIN rail IP20
- Storage temperature: -40°C to +85°C
- Operating temperature: -40°C to +85°C, variants with RJ45 socket -25°C to +85°C
- Humidity 0% to 95% / non condensing
- CE and bus-specific certifications
- RoHS
- Reach

Delivery

- Each unit is supplied in a single pack
- Each delivery has a DVD with current documents and tools
- Bulkpacks and special designs on request

● Deuschmann standard
● Grey housing

● ⚡ with galvanic isolation
● ⚡ with galvanic isolation

Technical overview

Modbus-TCP

Art.-No. ● V3681 ● ↗ V3862
● V3778 ● ↗ V3872



- › Complete Modbus-TCP slave interface
- › Max. 252 Byte input- and 252 Byte output data
- › Isolated Ethernet interface

<http://deutschmann.de/qr/CLMB1/en/pd/>

RS

Art.-No. ● V3546 ● ↗ V3839
● V3783 ● ↗ V3878



- › Complex/proprietary protocol implementation based on RS-interface (232/485/422)
- › Max. 1024 Bytes input and max. 1024 Bytes output data
- › Modbus RTU/ASCII (master or slave, 3964 oder 3964R and RK512)
- › Galvanic isolation of the fieldbus RS-side

UNIGATE® CL RS
Downloads



<http://deutschmann.de/qr/CLRS1/en/pd/>

PROFIBUS

Art.-No. ● V3553 ● ↗ V3649
● V3781 ● ↗ V3876



- › Complete PROFIBUS-DP slave interface
- › Max. 244 Byte input- and 244 output data, max. 488 Byte total
- › PROFIBUS address adjustable via rotary switch
- › Automatical Baud rate recognition (9600 bit/s – 12 Mbit/s)
- › Isolated PROFIBUS interface with 9-pin. D-sub connector
- › Generic GSD file

UNIGATE® CL
PROFIBUS
Downloads



<http://deutschmann.de/qr/CLPBD/en/pd/>

PROFINET

Art.-No. ● V3818 ● ↗ V3866
● V3859 ● ↗ V3877



- › Complete PROFINET-IO-Device interface (slave)
- › Max. 1440 Byte input and max. 1440 output data
- › Isolated PROFINET interface with 2x RJ45 connector (integrated switch)
- › 100 Mbit Full-Duplex transmission
- › 32-Bit microprocessor for fast response time
- › Generic GSD file

UNIGATE® CL
PROFINET
Downloads



<http://deutschmann.de/qr/CLPN1/en/pd/>

● Deutschmann standard
● Grey housing

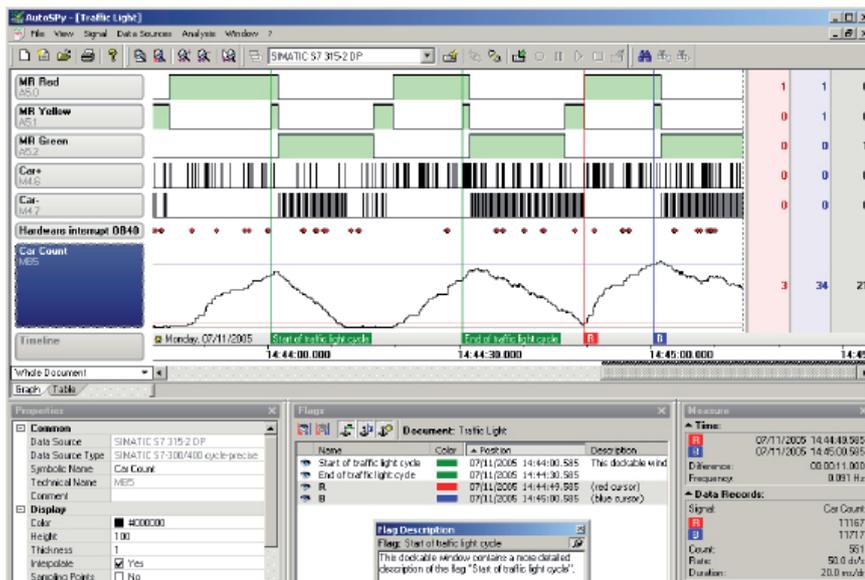
● ↗ with galvanic isolation
● ↗ with galvanic isolation

AutoSPy diagnostic tool

AutoSPy - Signal Recording, Analysis and Error diagnosis for PLC Applications

With the AutoSPy software, any variable from the Protocol Converter UNIGATE® CL can be read and analyzed via the debug interface.

- Online monitoring
- long-term records
- Analysis of processes
- Reference track comparisons
- Measuring times



The GWT-TUD GmbH from Dresden, Germany developed the tool and it can be downloaded free of charge via our homepage as a demo version with two channels.



Deutschmann
your ticket to all buses

General specifications UNIGATE® CL:

- serial interfaces RS232, RS485, RS422
- Baud rates: 110 bps to 625 Kbaud
- Debug interface
- 2 rotary coding switches on the serial side for free use of the customer
- Operating voltage: 10 to 33Volts
- Dimensions: 23 x 115 x 100 mm (W x D x H), without connector
- Weight approx. 140 g
- DIN rail IP20
- Storage temperature: -40°C to +85°C
- Operating temperature: -40°C to +85°C, variants with RJ45 socket -25°C to + 85°C
- Humidity 0% to 95% / non condensing
- CE and bus-specific certifications
- RoHS
- Reach

Delivery

- Each unit is supplied in a single pack
- Each delivery has a DVD with current documents and tools
- Bulkpacks and special designs on request

Deutschmann - product line overview

ALL-IN-ONE-BUS NODE UNIGATE® IC – Ready-to-install



- › Easy integration into your own electronics
- › Module consists of standard components
- › Connection to your host processor via UART or SPI
- › Flexible protocol adaption via Deutschmann script language
- › Standard protocols like Modbus, 3964R, etc. included
- › Designed and manufactured in Germany

UNIGATE® FC - The connectable Multi-Protocol-Module



- › Easy integration into your own electronics
- › Module consists of standard components
- › Connection to your host processor via UART or SPI
- › Flexible protocol adaption via Deutschmann script language
- › Standard protocols like Modbus, 3964R, etc. included
- › Designed and manufactured in Germany

UNIGATE® CM – CANopen to all Fieldbuses and Ethernet



- › Application-side: CANopen, RS232, RS485, RS422, SSI (encoder interface) on board
- › Transport protocols can be configured (e.g.: CANopen mapping, Universal (L2 11Bit) COB-ID, Universal (L2 11/29Bit) COB-ID, L2 11Bit (Tgl+FBlen))
- › Flexible protocol adaption via Deutschmann script language
- › Module consists of standard components
- › Designed and manufactured in Germany

UNIGATE® EL – Fast Ethernet to all Fieldbuses



- › Application-side: Fast Ethernet, RS232, RS485, RS422, SSI (encoder interface) on board
- › Transport protocols can be configured (e.g. TCP server (port23) default, UDP, TCP server, TCP client, Modbus TCP server, Modbus TCP client)
- › Flexible protocol adaption via Deutschmann script language
- › Module consists of standard components
- › Designed and manufactured in Germany

UNIGATE® CX - The flexible Gateway to make incompatible networks compatible



- › Modular Gateway concept
- › Currently approx. 120 versions available
- › Easy configuration
- › Wide voltage and temperature range
- › Designed and manufactured in Germany



Deuschmann
your ticket to all buses

Option I/O 8



- > 24V / 0,7 mA (short term 1A) at max. 3A for all 8 Outputs
- > Short circuit protection
- > Available for the UNIGATE® CL, CM, EL series
- > Designed and manufactured in Germany

ELECTRONIC CAM CONTROLS - Still an essential tool



- > Diverse devices
- > Logic functionalities
- > Dynamic idle time compensation
- > Short, constant cycle times and a high number of outputs

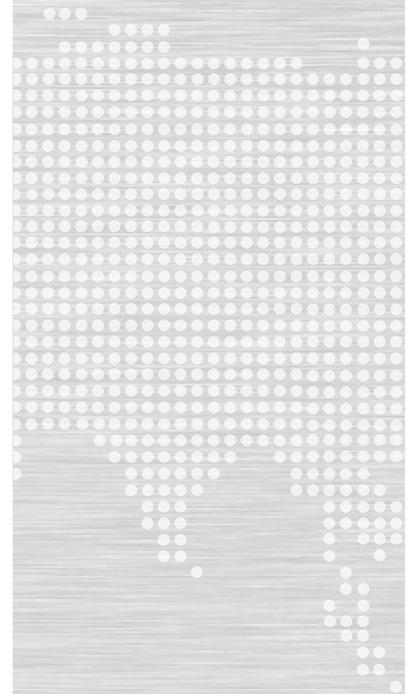
Protocol Converter

Embedded systems

Gateways

Electronic Cam Controls

Option I/O 8



PriorityChannel

UNIGATE® CL now with



What is PriorityChannel?

PriorityChannel eliminates the effects of network traffic loading on the device – ensuring accurate cycle-time response and safeguarding against unwanted disconnects. Industrial Ethernet has many network traffic components. In addition to the time critical cyclic messages, there are standard Ethernet messages being routed, Network Management protocols running, and Application Layer sending messages. All of these other components can interfere with the cyclic messages causing them to be delay and introducing jitter.

PriorityChannel is a combination of software optimized on the unique, patented architecture of the fido1100 communication controller to separate non real-time Ethernet traffic from real-time Industrial Ethernet traffic. This is not just a special queue or sophisticated filtering. The silicon provides a separate data pathway and a separate on-chip execution environment for real-time messages to tunnel straight to the device application. Non real-time messages can never interrupt real-time messages making it possible to stay well within 160 µs of the desired EtherNet/IP cycle time, and within 10 µs of the desired Profinet cycle time.

Why do you need PriorityChannel?

Conventional Industrial Ethernet solutions have difficulty dealing with critical messages when network traffic increases, resulting in unpredictable packet delays, excessive latency, or even connection failure. You can't rely on the fact that factory networks will be properly segmented to keep traffic well behaved. Given the flexibility and myriad of capabilities Industrial Ethernet brings to the factory, you don't know how the network will morph over time. How do you know your device will survive?

You need PriorityChannel to protect your device from the uncertainties on the factory floor. Regardless of the network condition or load, PriorityChannel to eliminate the effects of network traffic now and in the future. Critical messages are delivered on-time, every time without packet delays or excessive latency. The bottom line is, Priority Channel ensures your device will never disconnect from the network.

PriorityChannel is a feature of the FIDO products from Innovasic.

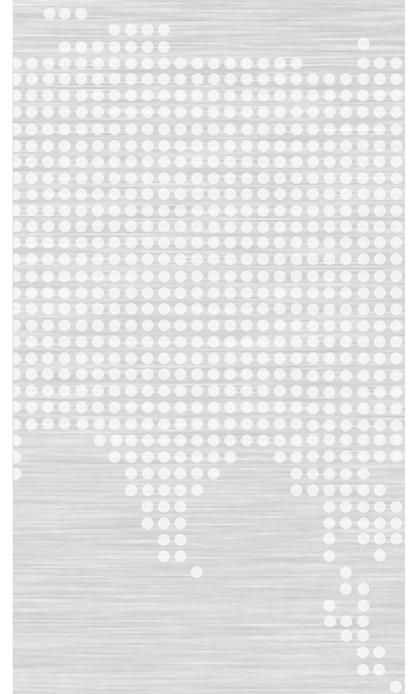
➤ **PriorityChannel™ is integrated in all Deutschmann PROFINET & EtherNet/IP products.**



Your notes



Deuschmann
your ticket to all buses

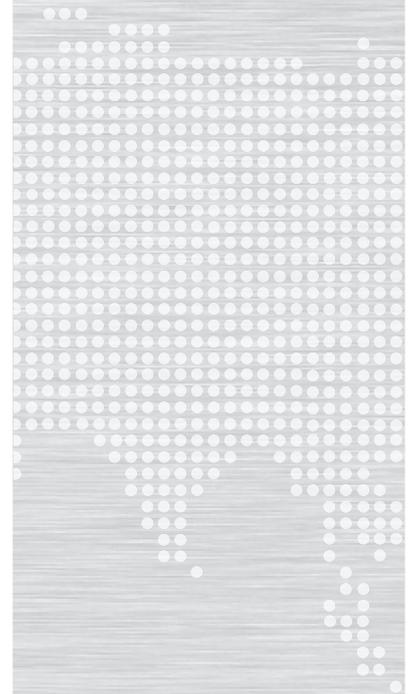


Your notes

Your notes



Deuschmann
your ticket to all buses



Global availability



The company

Deutschmann Automation, a German company based in Bad Camberg is working in the automation technology since 1976 and became known with cam controls in the 1980s.

In 1989 Deutschmann Automation started operating in the fieldbus technology. The development of one's first own bus system DICNET was an essential step. Since 1996 different fieldbus and Industrial Ethernet products are offered under the brand name UNIGATE®.

Thanks to a competent quality management and continuous enhancement Deutschmann became one of the leading suppliers in the automation industry. The entire development and manufacturing takes place in Germany.

We offer workshops for our All-In-One Bus nodes of the UNIGATE® IC series and the Software tool Protocol Developer. In these workshops you will learn everything you need to know about our products and how you can easily realize your projects with Deutschmann.

For all products the necessary documents and tools can be found, free of cost, on www.deutschmann.com. Furthermore on the Deutschmann Technology Wiki, wiki.deutschmann.de, technological information is easily accessible for our customers and users, cross-linking application know-how and ensuring that the information is up to date.

Our experts in development, sales and support have the right solution for your demands.



Deutschmann
your ticket to all buses



UNIGATE® CL

■ Protocol Converter for all devices with a serial interface



UNIGATE® IC

■ Easy integration into your own electronics



UNIGATE® FC

■ Connectable Multi-Protocol-Module



UNIGATE® CX

■ Making incompatible networks compatible



UNIGATE® EL

■ Fast Ethernet to all Fieldbuses



UNIGATE® CM

■ CANopen to all Fieldbuses and Ethernet



ELECTRONIC

■ CAM CONTROLS

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