THE RESULT MUST AGREE – BUS-TECHNOLOGY MADE BY DEUTSCHMANN!

UNIGATE® CL

A solution for all devices with serial interface

The intelligent protocol converter for:

CANopen EtherNet/IP™ EtherCAT® DeviceNet™

ETHERNET TCP/IP LONWorks MODBUS TCP

MPI ETHERNET POWERLINK PROFIBUS® PROCESS FIELD BUS PROFINET® INDUSTRIAL ETHERNET


Deutschmann Automation

The intelligent
Protocol converter UNIGATE® CL

A solution for all devices with serial interface

The UNIGATE® Gateway by Deutschmann connects devices, such as automation components via their serial interface to Fieldbuses and Ethernet. Here UNIGATE® takes on the task of a protocol converter and converts the different interfaces.

UNIGATE® CL features the interfaces RS232, RS485 and RS422 (also the SSI-protocol is supported). With the type series UNIGATE® CL you can either configure the adaptation to your product or to the protocol or the capability of the UNIGATE® CL protocol converter can be expanded considerably through the generation of a Script. Our approved configuration tool WINGATE can be used for the configuration or you can generate your intelligent Script by means of the PC-tool "Protocol Developer", which is available free of charge. In both cases changes in the terminal equipment's Firmware are not necessary.
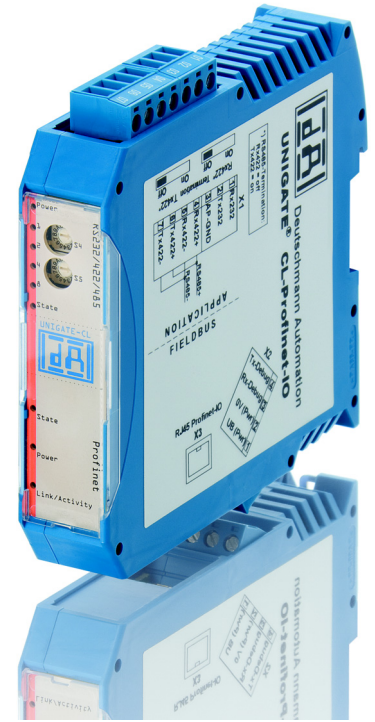
The Deutschmann Gateway UNIGATE® CL uses the complete data capacity of the respective Bus and supports all speeds. The design of the series UNIGATE® CL is meeting the standards. The Bus connection for Profibus + CAN is made via a D-SUB socket at the front, for all other Buses from the bottom side in accordance with the respective standard. The connection of the serial side is made through a screw-plug connector on the upper side. Numerous diagnosis LEDs signalize the state of the device on the Bus side as well as on the serial side.
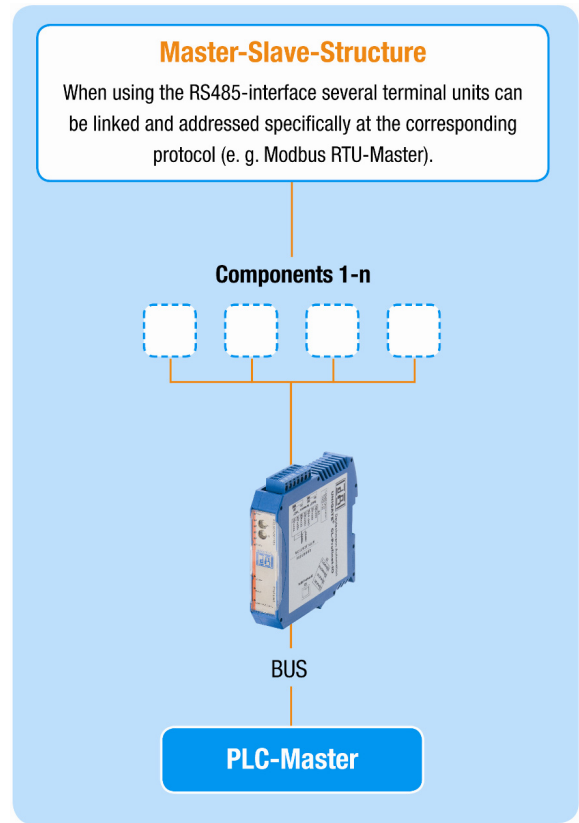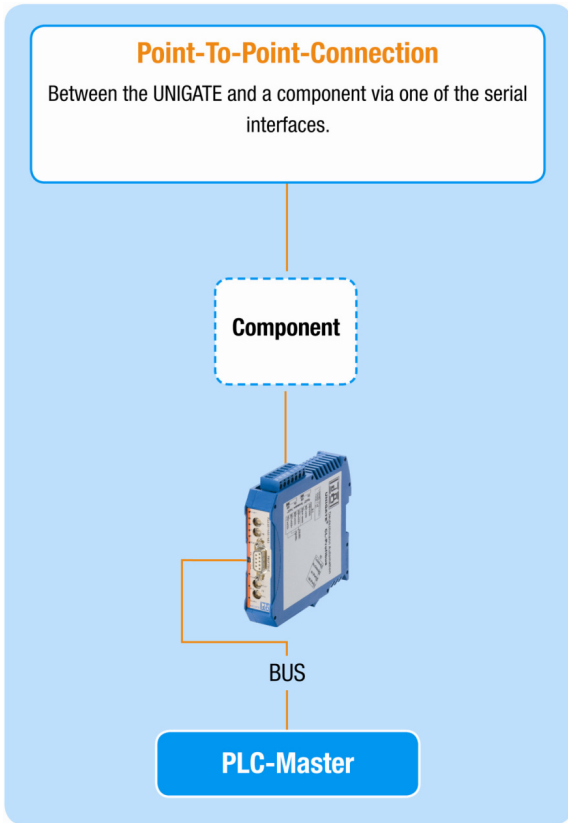
Your advantage

With Deutschmann UNIGATE® CL-modules you bring existing components (also older devices) into modern networks. As device manufacturer you save the development of the interfaces based on the corresponding Fieldbus or Ethernet. Due to the standardization of the Deutschmann UNIGATE® CL-series configurations and Scripts that have been generated once can be used practically without changes for other Fieldbuses or versions based on Ethernet from the UNIGATE® CL-series. The Firmware adaptation of your own terminal-units becomes unnecessary.
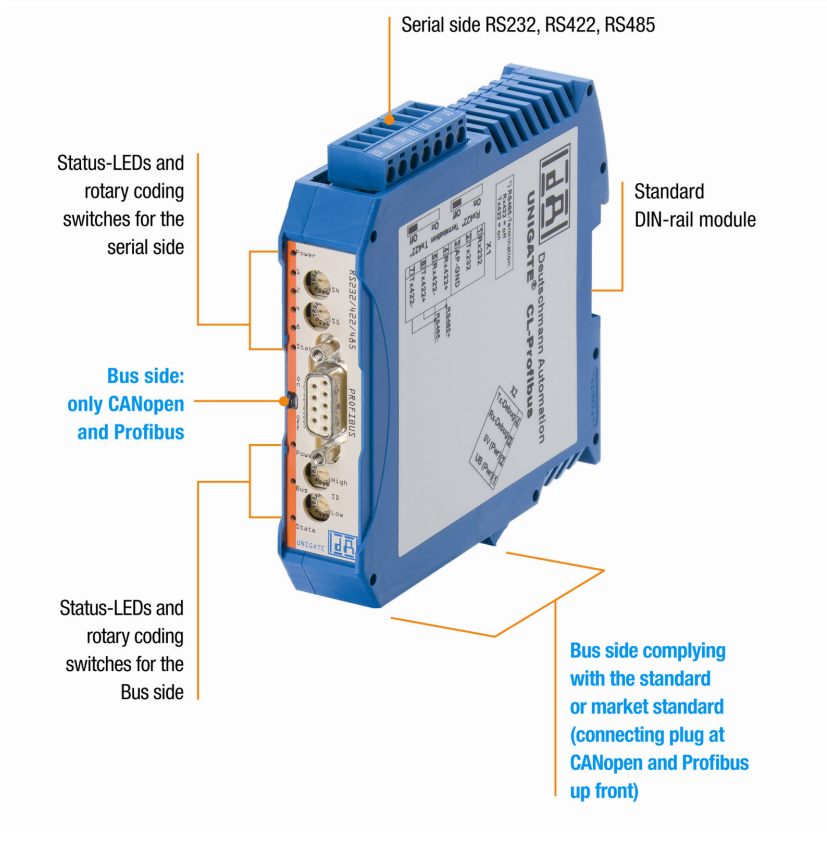
Facts that speak for the protocol converters UNIGATE® CL by Deutschmann:

- Available for most Fieldbuses and Industrial Ethernet-versions
- RS232, RS485- and RS485-interface on board
- Same structure on the serial side in all Bus-versions
- The Fieldbus- or Ethernet-side corresponds to the standards or the commercially available versions
- SSI-protocol is supported
- Integrated isolation on the Bus side; optionally also on the serial side
- Configuration of the module via configuration tool WINGATE®
- Free programming by means of the PROTOCOL DEVELOPER and the Deutschmann Script-language
- Adaptation to your Firmware not required
- Additional Debug-interface on board – of interest in case the Script language is used
- Modern, slim DIN-rail module
- Identical dimensions for all Bus-versions
- Customized design possible, e. g. your own logo
- Extensive voltage range from 10.0 to 33.0 Volt
- If the RS485-interface is used, several terminal units can be operated in an own network (such as 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

Serial side RS232, RS422, RS485

Status-LEDs and rotary coding switches for the serial side

Bus side: only CANopen and Profibus

Status-LEDs and rotary coding switches for the Bus side

Standard DIN-rail module

Bus side complying with the standard or market standard (connecting plug at CANopen and Profibus up front)

CANopen

DeviceNet™

EtherCAT®

EtherNet/IP™

ETHERNET
POWERLINK

ETHERNET TCP/IP

LONWorks

MODBUS ASCII

MODBUS RTU

MODBUS TCP

MPI

PROFIBUS
PROCESS FIELD BUS

PROFINET
INDUSTRIAL ETHERNET

RS 232
RS 485/422

RK512

3964R

Configuration tool

WINGATE

The UNIGATE® CL-series can be configured with the comfortable configuration tool WINGATE. All models have the standard protocols 3964R and 3964, Modbus ASCII and Modbus RTU (Master- and Slave-operation possible) as well as a Universal 232-protocol for transparent data exchange available. The selection and configuration of the protocols is carried out via the WINGATE-software.
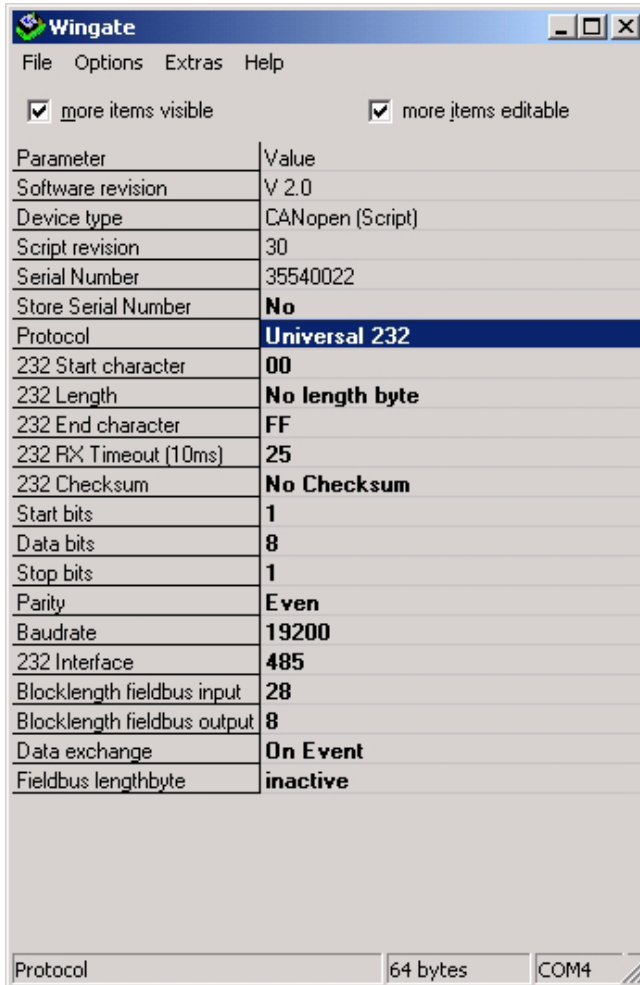
Picture 1: WINGATE main window
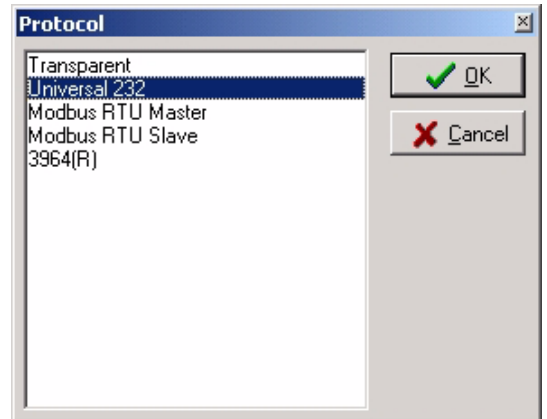
Picture 2: Standard protocols
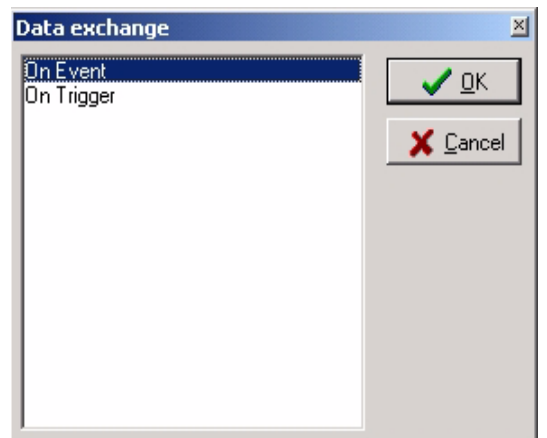
Picture 3: Sub-window: parameter selection

Protocol Developer

Our customers are looking for flexible solutions: With good reason.

You are rather inflexible with the usual configuration tools for Protocol Converters and Gateways and you have to stick to standard specifications. Adapting the Firmware to a certain protocol or observing a fixed way of proceeding is unwanted or too extensive, particularly in case of an existing software. Subsequent changes and customized adaptations are hardly possible. A profound knowledge of the buses is partially expected.

For that reason the Deutschmann Script language came into being in the year 1999 already. Our customer only has to process the data of the bus and he does not have to take care of the specific features of the Fieldbuses and Industrial Ethernet buses. For this programming he does not have to possess knowledge of programming languages, but he generates a Script by means of a Windows-tool 'PROTOCOL DEVELOPER'.

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 Deutschmann Script language is strongly based upon tools, such as C++. In case you do not want to generate the Script yourself, we are also offering this service.

What can be done with a Script device?

Our Script devices are in the position to process a lot of commands. In this case a command is always a small firmly outlined task. All commands can be put into classes or groups. A group of commands deals with the communication in general. This group's commands enable the Gateway to send and receive data on the serial side as well as on the Bus side.
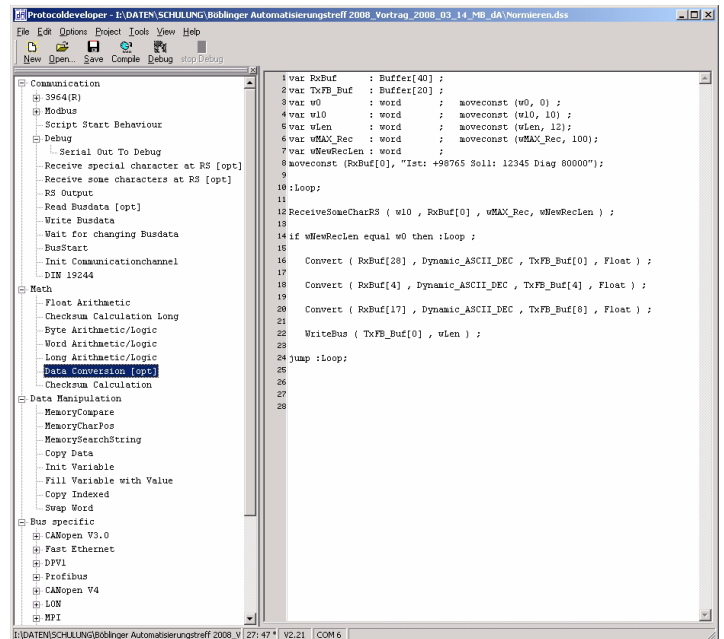
Following please find the explanation of some command groups on the left side of the adjacent example window:

|	
Declarations	Variable declaration
FlowControl	Subfunction calls, jumps, branches
Math	Mathematical functions, data conversions
Communication	Send and receive data
Device control	Set and read parameters. Exemplary the baud rate for the serial interface is mentioned here.
Bus specific	Here commands are placed that enter bus-specific values.

The amount of tasks, that can be processed with a Script is virtually unlimited. Scripts, that are conceivable:

• automatically acquire data from one participant at the serial interface, edit this data and then present the edited data in the bus over and over again

• carry out actions only in case the bus data changes

• carry out time-controlled actions

• inform of communication states

• exchange data between 2 serial participants (RS485) and present the state in the bus

Picture 1: Protocol Developer main window

By means of this short enumeration it becomes clear that the Scripts are a flexible solution for your problems. Data can be processed, converted and arranged on both sides (on the RS-side and the Bus side as well). That way the Script basically offers the chance to cope with almost all requirements.
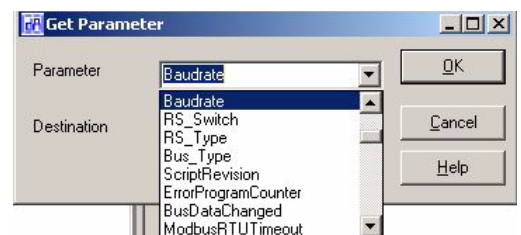
Picture 2: Function selection window

The use of the Protocol Developer

On the right side of the window (picture 1) you see a Script, that shows the simple structure of the syntax.

The Protocol Developer is meant as a tool for an easy generation of a Script for our Script Gateways. Its operation is exactly aimed at this use.

Typical for Windows Script commands can be added by means of the mouse or the keyboard. As far as defined and required for the corresponding command, the dialog to the corresponding command is displayed, and after entering the values the right text is automatically added to the Script.

Compiling

After the Script was generated it is compiled. The resulting code is loaded into the device afterwards. This can be carried out with the PROTOCOL DEVELOPER. A Script download tool is also available. The compiled code is very small and because of the large Script memory of the UNIGATE® products also extensive Scripts are possible.
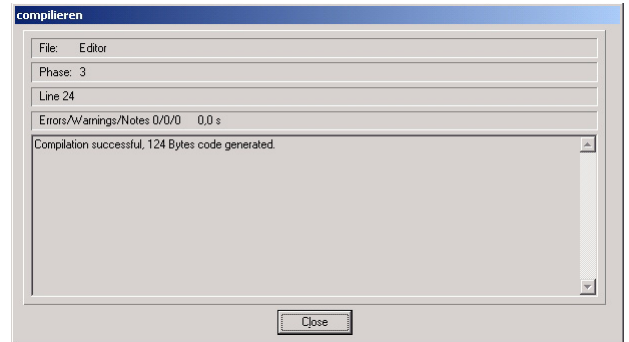

Picture 3: Compilation window with error message and file size

Debugging

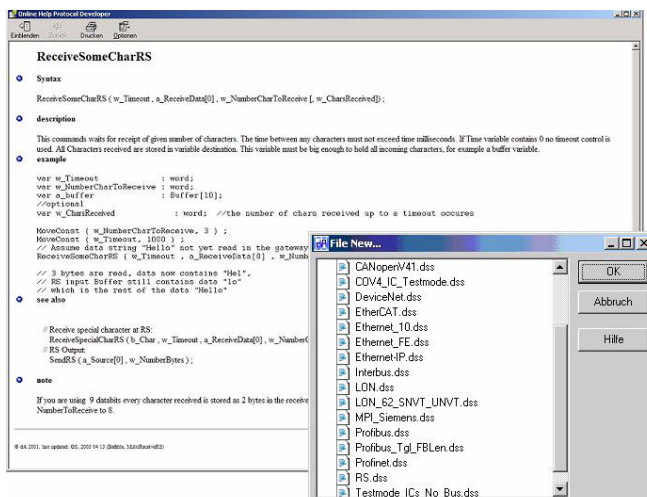The Debugger enables the control of a UNIGATE® Gateway that is in the Debug-mode. For convenient Debugging further functions, such as

• Break point
• Single-step
• Display of the variables and their values
• Error indication

are made available. That way also extensive Scripts can be checked quickly.
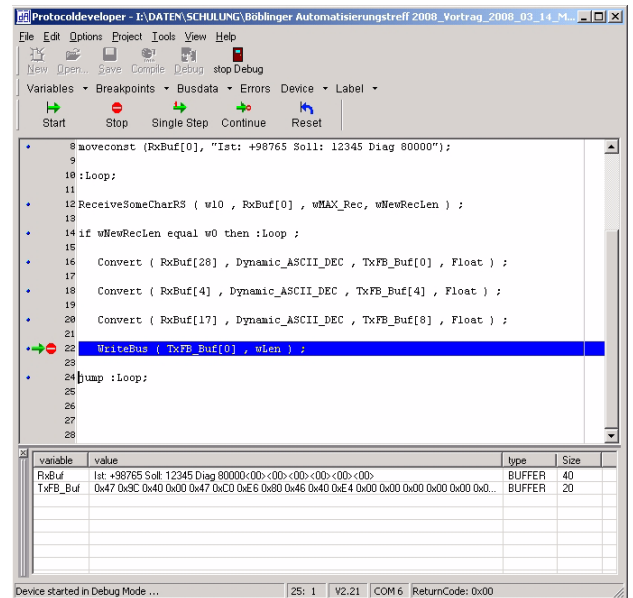
Picture 4: Debug window with variables and their contents

Picture 5: Online help

Support

The PROTOCOL DEVELOPER has a context-sensitive help function, that provides an extensive description of each Script command.

Templates for different tasks and bus versions can directly be taken over and adjusted to your requirements.

Picture 6: Extract from the templates

Example Scripts

For each Script command the scope of delivery of the free PROTOCOL DEVELOPER also includes a commented example Script.

More support is available from our free Hotline and on our website the current versions of our instruction manuals and the software tools are also available free of charge (www.deutschmann.de).
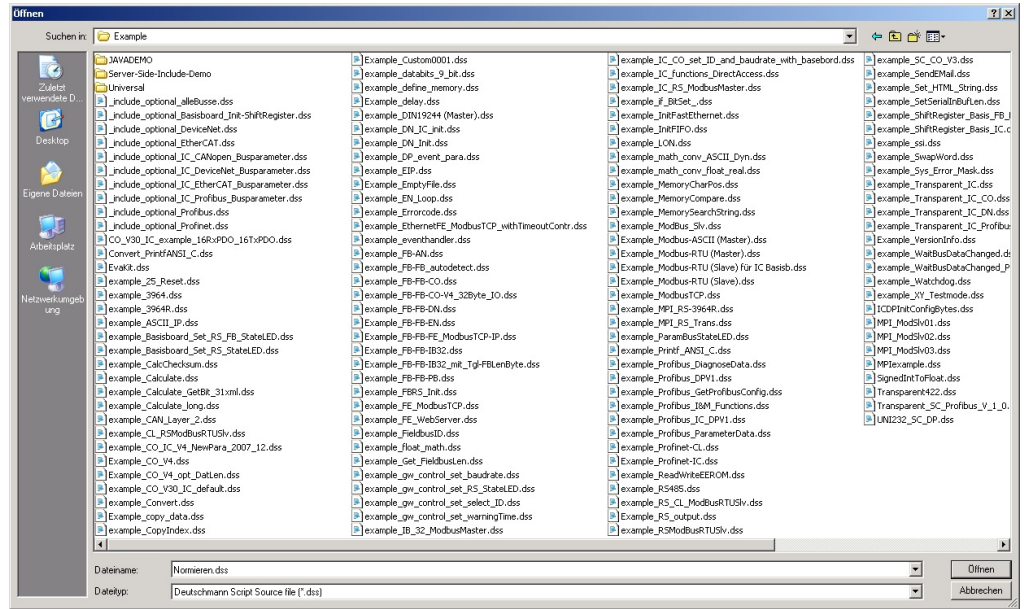
Picture 7: Extensive library for example Scripts

That speaks for the Script language by Deutschmann:

- No changes required in your own Firmware
- Flexible and powerful Script language; especially generated for the bus communication
- Easy to handle. Based upon current tools, such as C++
- On request customized commands, e. g. in case functions are missing or an optimization is required for time-critical applications
- You can generate the Scripts yourself or Deutschmann is also offering the Script-generation as service
- Extensive support by means of help functions, templates, examples, hotline and workshops
- In the initial state devices can already be equipped with your Script

UNIGATE® CL Starterkit

Deutschmann Starterkits are arranged in a way, that 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** contains a Master simulation, so that the Bus side can also be tested in a fast and cost-saving way. Depending on the Bus technical literature on the selected Bus might also be included in the package (deviations are possible). Certainly already existing Buses can be used instead of the Add-On.

Picture 1: Starterkit (example ProfibusDP)

Picture 2: Add-On (example ProfibusDPV0)

General technical data for all versions

• Fixing	DIN-rail module with integrated grounding
• Interfaces	RS232, RS422, RS485 and SSI on board
• Baud rates of the serial interfaces	110 Baud up to 625 KBaud (partially up to 2 MBaud)
• RS-connection and supply voltage	Through screw-plug connector
• Input buffer RS-Seite	1024 bytes input- and output-buffer each
• Diagnosis	6 LEDs for diagnosis of the serial application interface
• Bus ID	Adjustable
• Operating voltage	10 to 33 Volt
• Protection type	DIN-rail module IP24
• Dimensions	23 x 100 x 115 (B x H x D), connector not included
• Temperature range	0°C to +55°C (-20°C to +75°C on request)
• Certificates	CE and bus-specific certifications
• Galvanic division	Optional for the serial side of all versions available, standard on the bus side
• Bus termination resistor	Connectable for the Fieldbuses and RS

Bus-specific technical data

UNIGATE® CL	Bus connection	Bus data	Bus baud rates	Bus ID	UNIGATE® CL	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	MPI	9 pin D-SUB connector	240 bytes I/O	Adjustable via Script	Adjustable via rotary switch
DeviceNet	5 pin screw-plug connector	255 bytes I/O	Adjustable via DIP-switch	Adjustable via DIP-switch	Ethernet Powerlink	2xRJ45	1541 bytes I/O	100 Mbit	IP-address adjustable via rotary switch
EtherCAT	2xRJ45	1486 bytes I/O	100 MBaud	Permanent MAC-address, is automatically assigned	Profibus	9 pin D-SUB connector	244 bytes I/O	Automatic detection	Adjustable via rotary switch
Ethernet/IP	2xRJ45	500 bytes I/O	10/100 Mbit	IP-address adjustable via WINGATE	Profinet	2xRJ45	1500 bytes I/O	100 MBaud	IP-address is automatically assigned via the device's name
Fast Ethernet Modbus TCP	RJ45	1024 Byte I/O	10/100 Mbit	IP-address via WINGATE or Script	RS (Modbus, 3964R, RK512)	7 pin screw-plug connector	512 bytes I/O	Adjustable via Script	Adjustable via DIP-switch
LONWorks62	4 pin screw-plug connector	62 In und 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

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