

Control panels use off-the-shelf CANopen components

Introduction

Switches from Schlegel Elektrokontakt are used in all kinds of machines, in lifts, ships, and special-purpose vehicles. Additionally, the company configures control panels according to customer requirements. For control panels connected via a CANopen interface or other industrial communication protocols, Schlegel uses Deutschmann Automation's ready-to-install Unigate IC bus nodes.

At its headquarters in Dürmentingen, Germany, Schlegel has been developing and manufacturing control units, signal lamps, and terminal blocks for more than 60 years. Membrane and short stroke keyboards, enclosures, limit switches, control panels, and function blocks have also been part of the product portfolio for a long time. The products are primarily used in machine tools, test rigs, instrument panels for lifts, ships and special-purpose vehicles. However, they are not limited to industrial applications: The company's products ensure reliable switching in any location, e.g. in control panels of public swimming pools, department stores, or office buildings.

Since control panels are used in a wide range of applications for various purposes, they must fulfill different requirements concerning form factor, integrated control units, and interfaces to connect them to controllers. By adopting a modular approach for all operating solutions, Schlegel provides and designs panels that fit into their surroundings even in small quantities. Thus, customers can choose the material, shape, and size of the panel, and can also have them labeled and engraved in their corporate design. The company equips the control panels with standard contact elements or with Industrial Ethernet or serial bus system communication interfaces as required.

Serial bus system equipment

Operating solutions with a serial bus system or Industrial Ethernet interface are mainly



Figure 1: Control panel from Schlegel

used when a large number of control and signaling devices must be connected with minimal wiring effort. Schlegel offers modular control panels and keypads with CANopen interfaces and other industrial communication systems. A carrier board is configured according to the customer-specific design of the complete solution, located behind the front panel, which houses the control units. The

carrier board is populated with contactors for the control units and physical interfaces for the desired network. If required, the manufacturer also adds I/O interfaces, allowing for peripheral sensors to be connected to the network or the controller via the control panel. Moreover, the carrier board contains a socket to connect the network module, which organizes all data traffic between the

CANopen gateway program

With the ready-to-install, all-in-one Unigate IC CANopen network nodes, the Unigate CL CANopen protocol converters, and the Unigate CX modules that are interoperable with CANopen, Deutschmann provides gateway solutions for applications. They allow users to equip new units with CANopen interfaces and to connect existing devices without a suitable interface. In order to connect AS-i devices and networks in CANopen environments, the company also offers the Unigate AS-i module, which features an AS-i master board with the M-4 profile and fulfills the AS-Interface Power24V specification.

CANopen gateways from the CX series connect all types of automation networks with CANopen networks. With their modular design based on two CL units, the DIN rail devices are available for all serial bus systems and Ethernet variants with CL devices. In all Unigate series, a script converts the protocol of the terminal device or the network protocol, thus enabling adaptation to CANopen requirements. By default, the devices are delivered with scripts for transparent data transfer. The free-of-charge PC tool, which requires no special programming or CANopen knowledge, can be used to create customer-specific scripts.



DC2007

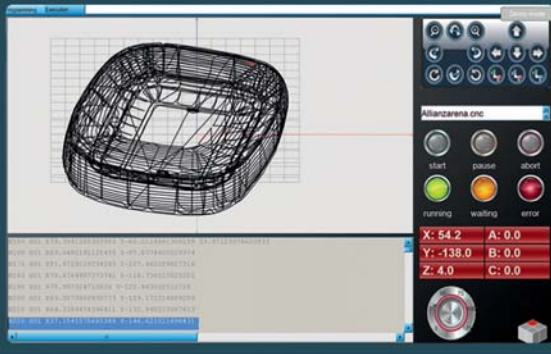
CONTROLS | NEW PRODUCT 2013

DC2000 Dialog Controller

Powerful CODESYS V3 Display-Controller with Multi-Axis-Function



DC2004



Basic system features CAN Bus and EtherCAT

The DC2000: An extremely strong CODESYS V3.5 display controller. The powerful 800 MHz ARM controller allows multi axis motion applications controlled by a CODESYS SoftMotion library.

Advanced interfaces, Ethernet and EtherCAT are just some highlights of the controller. CAN Bus combines proven and affordable technique with the latest technologies.

More features:

- realtime controller with minimal cycle times
- multi-axis controller with CODESYS SoftMotion
- 4,3 inch touch display | 7 inch glass display with capacitive touch
- communication: Ethernet, EtherCAT, PROFINET, CANopen, RS 485, RS232

sps ipc drives



Elektrische Automatisierung
Systeme und Komponenten
Internationale Fachmesse und Kongress
Nürnberg, 26.-28.11.2013

Visit us in hall 7 | stand 491

Berghof Automationstechnik GmbH
Harretstrasse 1
72800 Eningen | Germany
controls@berghof.com
www.berghof.com



Companies

Deutschmann Automation GmbH & Co. KG
 Carl-Zeiss-Str. 8
 DE-65520 Bad Camberg
 Tel.: +49-6434-9433-0
 Fax: +49-6434-9433-40
 info@deutschmann.de

Georg Schlegel GmbH & Co. KG
 Kapellenweg 4
 DE-88525 Dürmentingen
 Tel.: +49-7371-502-0
 Fax: +49-7371-502-49
 info@schlegel.biz

Links

www.deutschmann.de



www.schlegel.biz

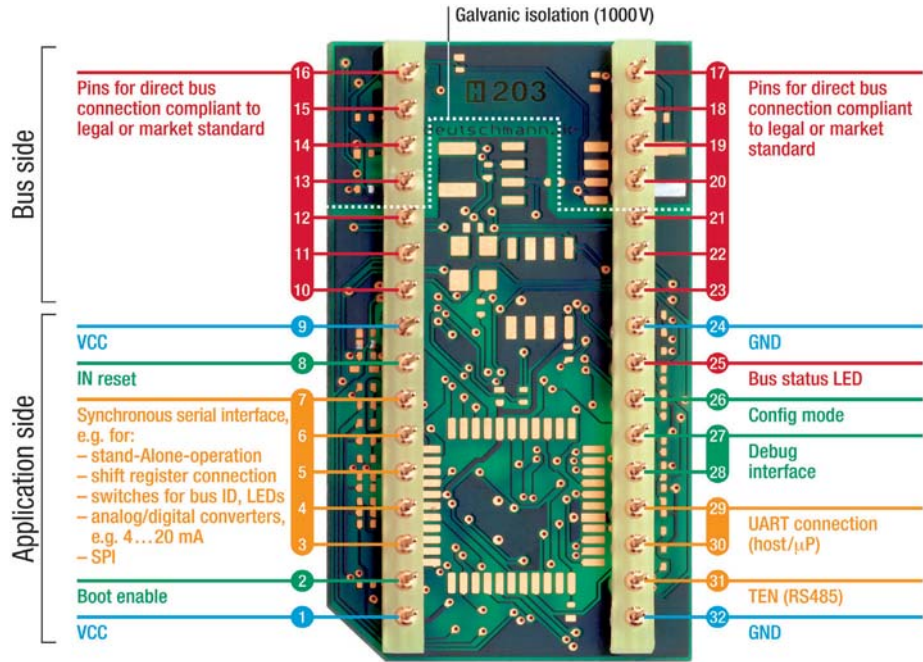


Figure 2: Unigate IC standardized pin assignment

control panel and the controller through the CANopen protocol. For these network modules, Schlegel uses Deutschmann Automation's ready-to-install Unigate IC network nodes.

Economic factor

"Primarily, we are a manufacturer of control units, terminal blocks, and signal lamps", explained Georg Selig, Project Manager at Schlegel. "Developing serial bus system components is a separate field that requires specific know-how and considerable additional efforts for maintenance, documentation, and certifications." Therefore, Schlegel chose an economically viable solution, cooperating with an external network module specialist who has relevant experience and know-how. "Using Deutschmann's Unigate IC interfaces, we are no longer faced with the costly efforts of proprietary developments", said Selig. "Especially small to medium quantities, which we often deal with when producing customer-specific operating solutions, benefit from using Deutschmann products compared with developing our own solution. This way, we can supply

our customers with mature products within a very short time and at an attractive price. Thanks to the interfaces, we can present the prototype of an operating solution merely three days after receiving an order."

The fact that Schlegel no longer needs staff to maintain and update the network module software is another advantage of the cooperation with Deutschmann: since Deutschmann constantly adapts the nodes to current network-specific standards and requirements, Schlegel's solutions automatically remain up to date.

Multiprotocol solution

Featuring hardware and software interfaces with the same standardized functionalities, Unigate ICs enable the implementation of multiprotocol solutions. Manufacturers merely need to integrate the adaptation board, which holds a socket for the nodes or implement a socket directly on the device board. Thereby, Schlegel can, for instance, offer an operating solution for various protocol types. They are based on a carrier plate design, e.g. adapting a carrier plate with Ethernet connections for a ▶

Unigate IC

Unigate ICs are complete, ready-to-install network nodes that combine a microcontroller, Flash, RAM, and a network controller on a 45 mm x 25 mm footprint in a 32 DIL housing. The miniature interfaces handle the complete communication on the network side, thus significantly relieving the application's microprocessor. The devices are connected to the host processor via a UART interface. In addition to CANopen, the series also covers all standard serial bus systems, Industrial Ethernet protocols and building automation systems such as LonWorks and BACnet/IP. Deutschmann also offers variants with EIA-232 or EIA-485 interfaces for RS-based protocols like Modbus RTU and Modbus ASCII.

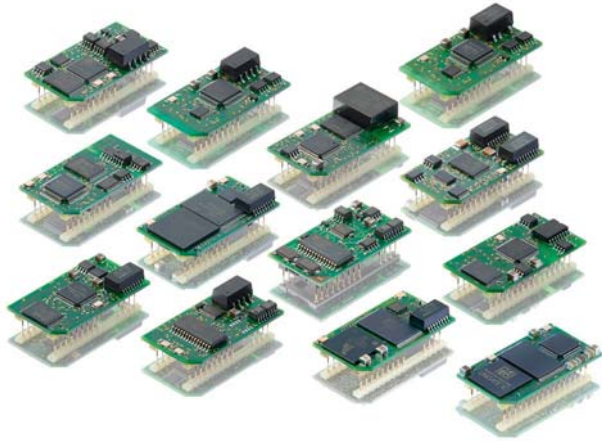


Figure 3: The ready-to-install network nodes are available for all standard Industrial Ethernet variants and serial bus systems



Figure 4: The Unigate CANopen range includes AS-i-CANopen, CX, the integrated IC CANopen type (front), and CL CANopen (from left to right)

different Ethernet standard by simply exchanging the network module for another model.

Protocol conversion via a script

Schlegel chose this network node for a variety of reasons. "In the end, the key factor for our decision was that Unigate ICs can be easily adapted to the protocol of our devices via a script. We therefore no longer need to make laborious changes to our firmware", said Selig. The concise, C++-based script language, which can be programmed by means of the free-of-charge Protocol Developer Windows tool, enables users to emulate applications as well as buffer and further process

data. The script also allows for the integration of customer-specific commands, for linking actions with time and event-based triggers, and for displaying all data and statuses within the network. Since the compiled code comprises only a small amount of data and Unigate ICs feature a large script memory, even extensive scripts can be stored. The Protocol Developer tool features functions for debugging of large-scale scripts, such as breakpoint, single-step, display of variables and their values as well as error display. Since the series features standardized hardware interfaces, generated scripts can be used for all serial bus systems and Ethernet-based models of the series. ◀

Pioneering new technologies
Pioneering new technologies



Sensor-Technik Wiedemann GmbH
Mobile Controllers and Measurement Technologies

32 bit electronic control unit ESX®-3XL



- 32 bit controller with max. 136 I/Os and 4 × CAN
- Freely programmable in „C“ and CODESYS
- Certified for safety applications (SIL2, PLd)
- Including Memory Protection

Pressure transmitter with thin-film measuring element



- pressure ranges from 0 ... 10 bar to 0 ... 2000 bar (Overall accuracy in the temperature compensated range: 1%)
- max. media temperature 150°C / max. ambient temperature 125°C
- wetted parts and case in stainless-steel
- CAN-Bus interface

Exhibitions

 Agritechnica, Hanover
10. – 16.11.2013
Hall 17, Both A34

 SPS/IPC/DRIVES, Nuremberg
26. – 28.11.2013
Hall 7, Both 7-169

Sensor-Technik Wiedemann GmbH
Am Bärenwald 6 · 87600 Kaufbeuren
Germany
Telephone +49 (0) 83 41-95 05-0