

DE-VX 4608

High-powered control system for sophisticated processes

regulation • control • recording • visualization • easy to use

freely configurable • integrated PLC • telemaintenance • network-compatible • Gigabit-Ethernet



Compact controller DE-VX 4608

Our experience of more than 35 years of developing process control systems together with modern hardware technology lead to a compact high-performance process system. We retained the existing structure of the process controllers' series DE-VR 4008 and DE-VX 4100. That means all projects can be created with the same configuration software and existing projects can be used directly after modifications of the digital and analog I/O's and slight changings of the process views.

Despite its compact structure, the DE-VX 4608 is equipped with sufficient analog and digital inputs and outputs and can be used in a wide field of applications in the process engineering. High-performance Intel Atom processors (Multi-Threading able) are able to regulate even fast processes and complex calculations. Thus, the advantages of modern high-performance process systems are available even for small plants.

The combination with the integrated PLC allows the application in all cases where sophisticated and complex problems of control and automation call for a solution, e.g. in the heat treatment of metals, glass and ceramics and in the chemical and foodstuff industries.

Operation

- Easy menu-driven operation by keyboard and freely configurable special keys
- Process orientated programming
- Menu selectable operating language
- Individual configuration possibilities for the OEM

Technical Facts

- Comfortable process visualization by 7" color display (800X480 Pixel)
- Fast regulation and reaction time for screen refresh by Intel Atom processor
- Network-compatible by Gigabit Ethernet
- Profibus (Slave/Master) connection possible
- Telemaintenance via modem for supervisory functions and maintenance
- Hardware-Watchdog for digital and analog outputs as well as for the complete system
- Switch panel housing with sealing according to IP protection 65

Data Recording

- Recording of all process variables
- Integrated recording functions
- Graphic and numeric data output
- Print functions
- Quality proof according to DIN ISO 9000

Regulation

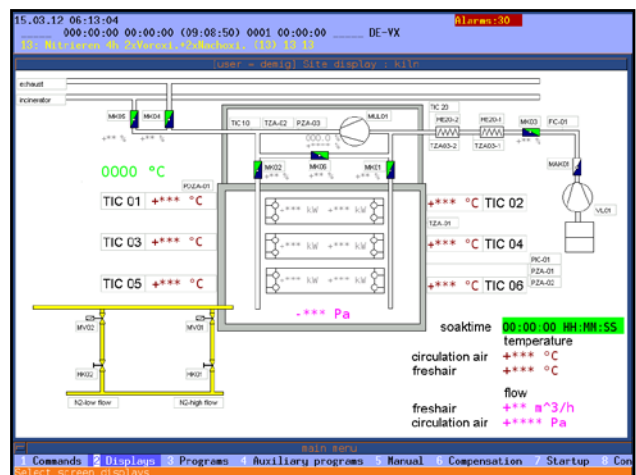
- All standard regulation algorithms with parameter switch-over and set-point correction
- Special functions (e.g. diffusion control, F-value calculation)

Control

- Integrated PLC (S5 and S7 compatible)
- Manual operation mode
- Step sequence control
- Special functions (e.g. impulse firing system)

Visualization

- Process view(s) with status display
- Alarms and messages with help function
- Online presentation of process variables (numerical or trend display)



System visualization

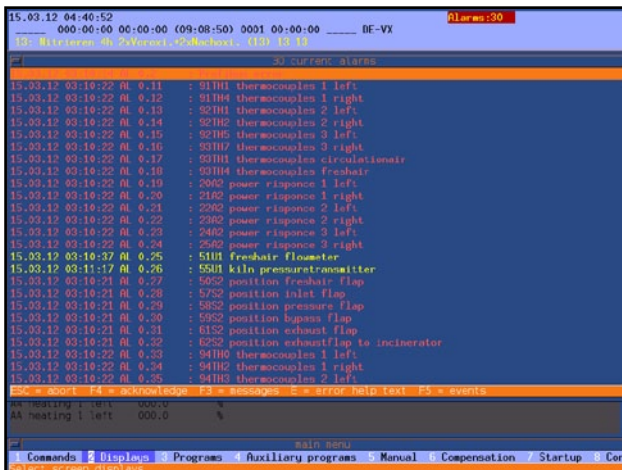
A great number of site views may be integrated, in order to display the process progress and the process state. By the configuration of display elements and function objects (to be modified by the user) the user has a general and current view of the system.



Program display

Progress of the handling programs (process set points) in a time diagram

Functions



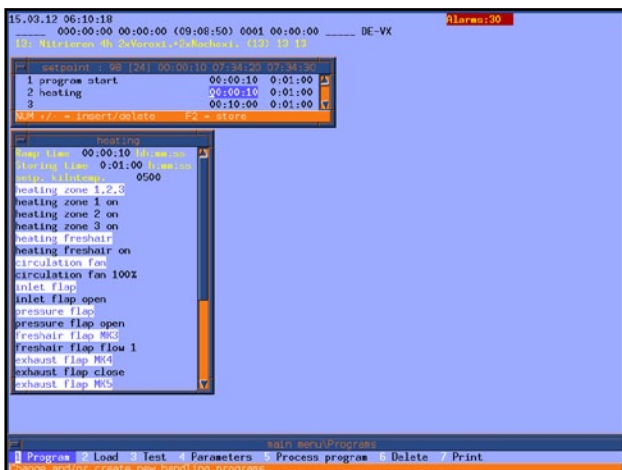
Alarm display

Certain situations according to the process or to the system lead to alarms or messages, triggered by the internal PLC. Alarms which are relevant for the system are to be confirmed. Messages are automatically deleted.



Numeric display

Numeric display of selected current process variables in tabular form.



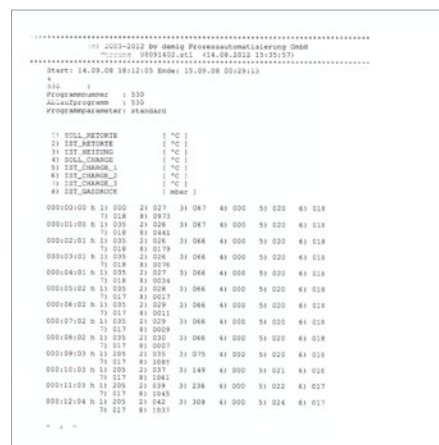
Process orientated programming

The programming of handling programs is done by pre-configured process phases. The user is automatically lead to the necessary inputs of the variable data. The range limits are shown in the footer and the entries are supervised on this. Phase-dependent settings, e.g. supervisory or safety functions are already defined in the system configuration. Hereby, misentries are reduced and illogical combinations are not possible.



Measurement display

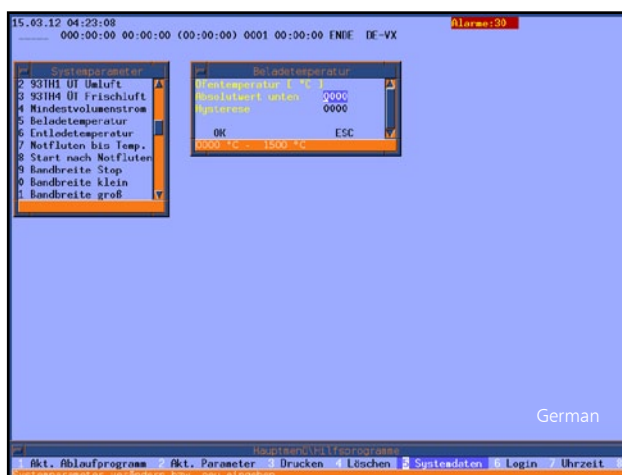
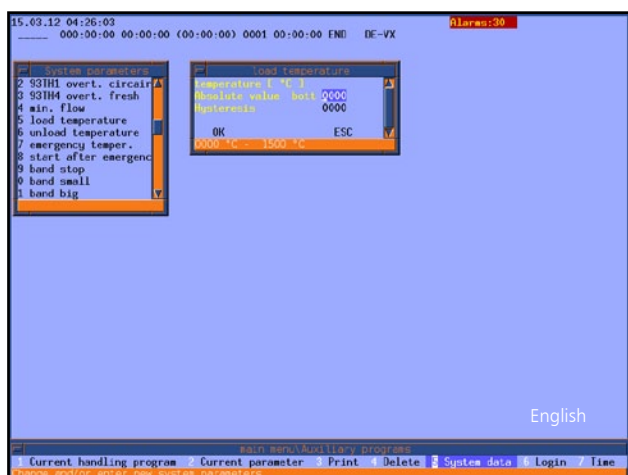
Finished processes are archived and may be displayed in a zoom able line chart (zoom function). The measurement files may be printed numerically as a quality proof and the may be converted in list to be read in Excel.



Printing of a measurement list

Language switchover

The language definition for the menu and the project will be automatically assigned according to the user login. The switchover to another language is also possible during runtime.



Technical Data System

System computer unit:

- Industrial computer system with high-capacity 32-Bit-processor (Intel Atom processor 1,6 GHz)
- Integrated PLC , S5 and S7 compatible instruction set, max. PLC program length: 60.000 instructions with time requirement for 1.000 Bit-instructions at < 0,2 ms
- Up to 256 Timer, 1024 messages, 1024 alarms (optional on delay)

Memory:

- 512 MB operating store
- 2 GB Flash for operating program and configuration storage
- 4 MB SRAM (battery-buffered for current process status store, treatment programs and measurement recording)

Interfaces/Connections:

All interfaces (incl. USB) are electrically isolated from the system potential

- 1 X DIN-RS232
- 1 X serial switchable DIN-RS232/RS422/RS485
- 1 X Gigabit Ethernet, TCP/IP protocol configuration, remote control, supervisory system connection, Modbus/TCP
- Protocols e.g. RK 512, Modbus, 3964R
- 3 X USB 2.0 for external keyboard or printer
- Supply voltage 24V DC +/- 15%, max. 50 W
- 1 X Profibus-DP-Slave/Master (EN 50 170/DIN 19245 part 1) 9,6Kbit/s -12Mbit/s, automatic bit rate recognition, EIA RS 485 cabling, DSUB-9-plug connector, electrically isolated. Max. each 244 Bytes input and output data (optional)

Operation:

- Membrane keyboard (according to DIN EN 60529, IP protection 65) with alpha-key function
- External USB-keyboard
- External USB-mouse
- Unicode-language support

Security:

- Dual security functions by global and local watchdog functions
- Power failure monitoring
- Copy and know-how protection

Display:

- 7" color display, resolution 800 x 480 pixel

Installation:

- Front panel with integrated sealing IP protection 65
- Ambient temperature 0...+45°C
- Relative humidity 0...90% non condensing at +40°C and below 3000m
- Storing temperature -20...+60°C
- Overvoltage category III (according to DIN EN 60664-1)
- Soiling stage 2 (according to EN 60664-1)

Assembly measurements:

- Controller: 280mm x 185mm x 210mm (WxHxD)

Measurements of rack-housing:

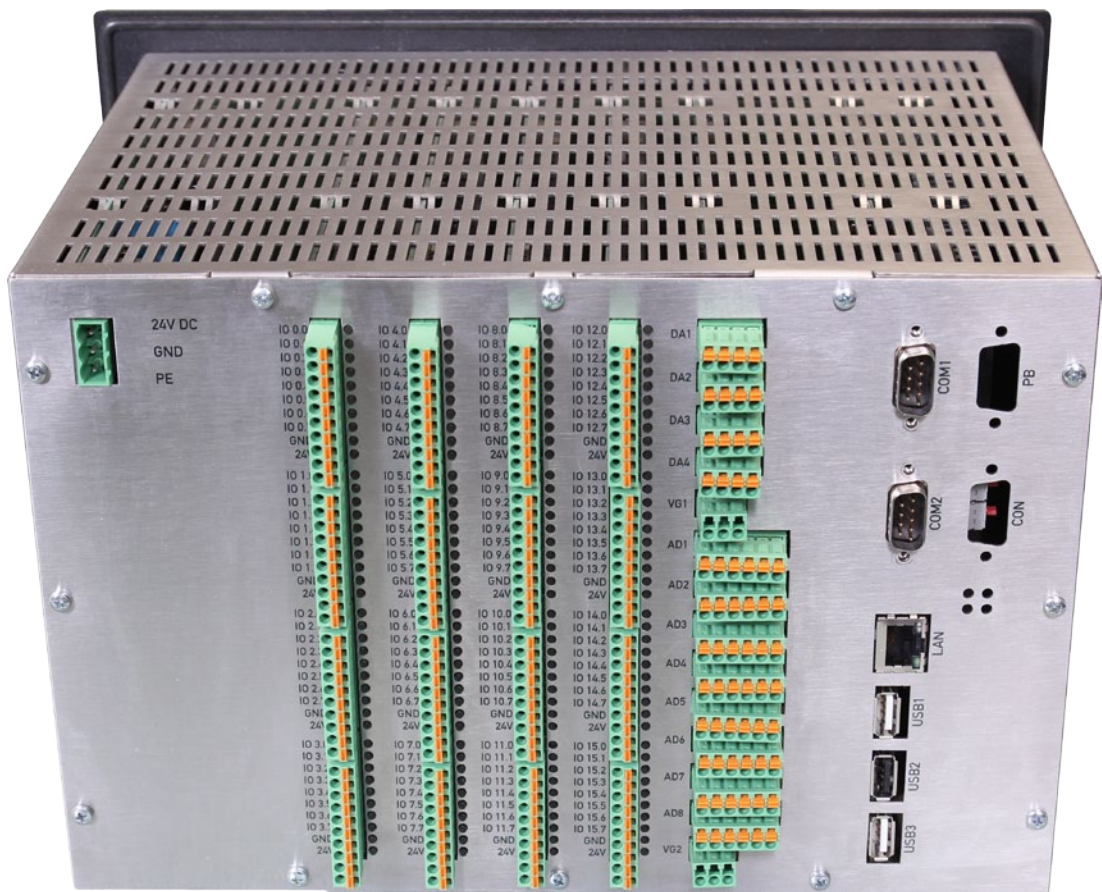
- 310mm x 210mm (WxH), assembly distance min. 150mm

Inputs/Outputs:

- 8 analog inputs
- 4 analog outputs
- 128 digital inputs/outputs

Programmer/Controller:

- Set points: 192
- Control tracks: 512
- Control loops: 1.024
- Limit values: 1.024
- Alarms: 1.024 (on delay) with alarm history
- Recorder: 64 process variables recordable



Technical data I/O

Analog inputs (8):

- All inputs are electrically isolated from the system potential
- 20 Bit resolution
- DC current measurement
- Inputs configurable: 0...100mV 0...500mV
- 0...2V 0...10V
- 0/4...20mA
- 0...400 Ω (2/3/4-wire technique)
- (error < 0.1% from measurement range)
- Free combination of inputs with the configuration software
- Min. measurement duration per channel 20ms
- Cold junction temperature measurement in connector

For the following thermocouples a linearization is included:

- Cu-CuNi Typ U (-200 ... +600 °C)
- Fe-CuNi Typ L (-200 ... +900 °C)
- NiCr-CuNi Typ E (0 ... +1000 °C)
- Ni-CrNi Typ K (-200 ... +1370 °C)
- PtRh-AuPdPt (-100 ... +1300 °C)
- PtRh13-Pt Typ R (0 ... +1740 °C)
- PtRh10-Pt Typ S (0 ... +1760 °C)
- PtRh30-PtRh6 Typ B (0 ... +1800 °C)
- WRe3-WRe25 (0 ... +2400 °C)
- WRe3-WRe26 (0 ... +2500 °C)
- NiCrSi-NiSi Typ N (-270 ... +1400 °C)
- Pt 100 (-200 ... +800 °C)
- Individual linearization and calculations configurable

Analog outputs (4):

- All outputs are electrically isolated from the system potential
- Outputs: 0...10V load $\geq 1k\ \Omega$
- 0(4)...20mA burden $\leq 500\ \Omega$
- Resolution 12 Bit/ 0.025%
- Output rate depending on configuration (min. every 100ms)
- Local watchdog function integrated

Digital I/O (128):

- 128 digital I/O 24VDC; data direction free configurable
- In groups of 32 isolated from each other and from the system potential
- Status display for each channel per LED
- Integrated counting function with incremental encoder evaluation
- Hardware debouncing of all inputs, variable debouncing time
- All outputs with max. load 0,5A (ohmic load), fused in groups of 8
- 20 – 30 V external supply for outputs with low voltage indication

Subject to technical modifications.

Project Configuration

Configuration

- Windows based configuration software
- Copy protection against unauthorized access to the process controller
- Import of existing S5/S7 PLC programs
- Compatibility with existing configurations (DE-VR 4001/4008, DE-VX 4100)
- Data transmission via RS232, modem or TCP/IP
- Integrated help functions
- Project translation even for Asiatic character sets

Control via integrated PLC

The internal PLC offers all functions of a modern PLC and has an instruction set compatible with S5 and S7. For special applications extended instruction sets are available. The PLC will be programmed in the well-known AWL-structure. An online debugger shows the state of the currently running PLC program. Process variables may be inspected and modified.

I/O configuration

Any analog input and digital output may be of type voltage, current or resistance in any combination. The functions of the I/O are also determined in the configuration. It will be programmed in an AWL-like language. That means modifications and extension are possible at any time and low costs.

Block configuration

The controller configuration is built from pre-defined mathematical function blocks. This function blocks directly communicate with the integrated PLC. Integrated check functions serve the fault location and the optimizing.

Visualization

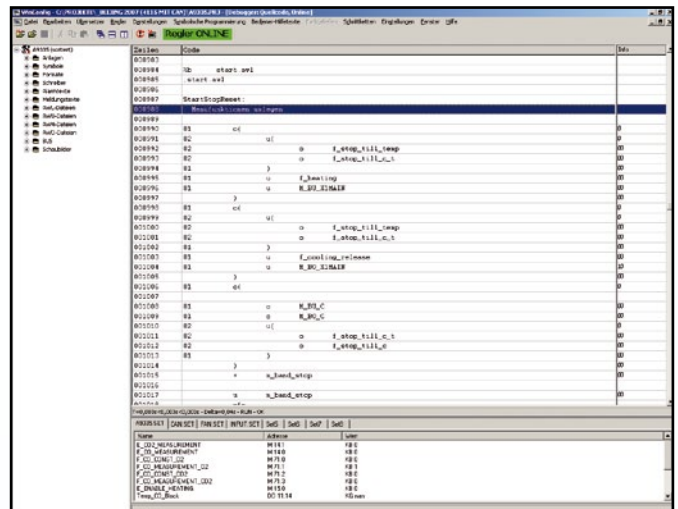
For a better supervision of the process, presentations like line diagrams or trend diagrams may be configured. The current progress state is displayed by means of process and site views where numeric displays; trend displays, fault lamps or colored marks may be integrated. By interactive objects with access right, a direct influence on the process is possible.

Alarm and message system

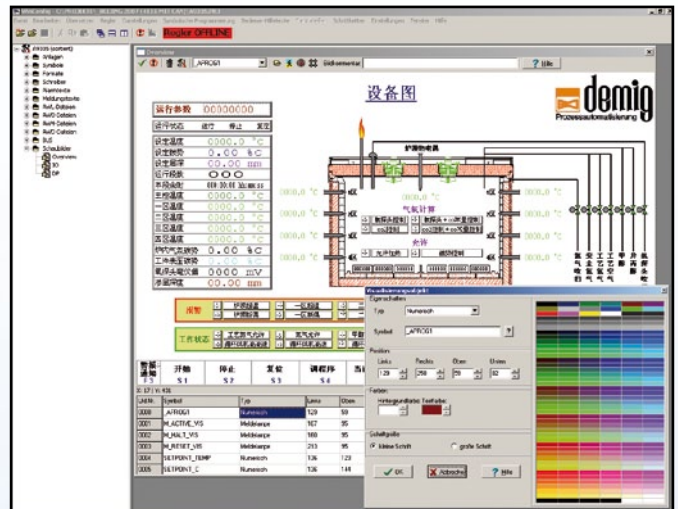
Short error messages and alarms, which may be supplemented by help texts, may be configured for the display in the process system. By means of corresponding links in the PLC an automatic reaction of the control system is possible.

Process orientated programming

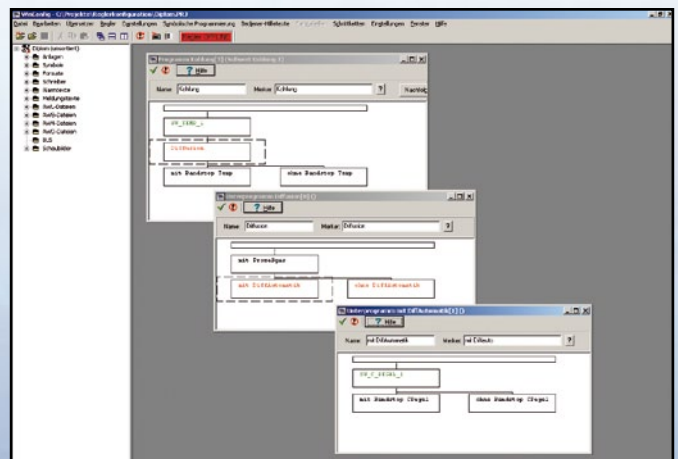
By means of the configuration of process phases the manufacturer offers the special know-how – including an individual and optimized control and regulation system – to the end-user. All necessary control functions are set back automatically. Illogic entries by the user are avoided by the decision tree principle.



Control via integrated PLC



System visualization



Process orientated programming



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