



CD AUTOMATION **CD VAR-IO**
MODULAR CONTROLLER SYSTEM

Highly modular system with 4 to 30 loops: bus coupler, controller unit, any I/O modules. Required components are simply plugged together: the interconnections are made automatically.
Open for all interfaces: Ethernet, Profibus DP, CANopen, DeviceNet, Modbus.
Digital and analog I/O modules in different modularities: 2, 4, 6, 8 or 16 channels.
Separate RS232-interface for BlueControl Engineering Tool Latest control technology with complete functional range for the most varied applications.

APPLICATIONS

- **Machine and systems engineering**
- **Automotive industry**
- **Process technology**
- **Energy generation**
- **Traffic control**
- **Building automation**

DESCRIPTION

The **CD VAR-io** I/O modules offer maximum flexibility for decentralized installation of I/O circuits as well as high adaptability to the most varied applications.

The central component is an arbitrary bus coupler module, which also provides the supply voltage for the entire system.

Open bus standards permit the unproblematic connection of the **CD VAR-io** system to various PLC or PC-based automation solutions.

Any number of digital and analog I/O modules, each with 2 to 16 channels, can be connected to the bus coupler, thus providing optimum modularity.

Apart from the standard **CD VAR-io** I/O modules, other dedicated units are also available, such as the stand-alone multiloop controller units (see data sheet **CD VAR-io**).

When putting a system together, the connections for bus and power supply are made automatically by means of contact pins as soon as a module is clipped to the mounting rail. Thus, no separate interconnections are necessary.

Moreover, the provision of segments with different voltage potentials is made possible by means of supply terminals.

All I/O modules are galvanically isolated on the bus side, and analog modules are also separated from each other (without additional supply terminals). Electrical process connections are made using the 2, 3, or 4-wire technique. Screened connectors provide suitable EMC protection of sensitive analog signals. All I/O wiring is done with plug-in spring clamp connector strips. In this way, tedious connection/disconnection of individual signal leads is omitted.

Diagnostic and status LEDs on each module provide an immediate indication of the system's operating condition.

Clip-on inscription strips and individual terminal numbering provide clear and unambiguous signal identification.

CD VAR-IO BK CAN



CANOPEN BUS COUPLER

- Central coupler module with CANopen interface for
- CD VAR-IO I/O system
- Baudrate up to 1 MBd, configurable
- Until 32 receive and 32 transmit-PDOs
- Connectable up to 63 CD VAR-IO modules
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the CD VAR-IO-system
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Stored I/O-configuration
addresses 1... 127 via DIP switches
Up to 510 digital points, IN and OUT
Up to 244 analog inputs, IN and OUT
Trigger modes: event, timer, remote request
Baudrates 10 ... 1000 kBd/s
LED indicators: 9 x status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals
2 x 5-poliger TWIN-COMBICON-Bus-Stecker

Dimensions: 90 x 119,8 x 71,5 mm (W x H x D)
Power supply: 24V DC
Communication: CANopen

CD VAR-IO BK DN



DEVICENET BUS COUPLER

- Central coupler module with DeviceNet interface for
- CD VAR-IO I/O system
- Baudrate up to 500 KBd, configurable
- Cyclic messaging, polling, change of state, bit strobe
- Connectable up to 63 CD VAR-IO modules
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the CD VAR-IO-system
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Stored I/O-configuration
Addresses 1... 127 via DIP switches
Trigger modes: event, timer, remote request
Baudrates 10 ... 1000 kBd/s
LED indicators: 5 x status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals
2 x 5-poliger TWIN-COMBICON-Bus-Stecker

Dimensions: 90 x 71,5 x 119,8 mm (W x H x D)
Power supply: 24V DC
Communication: CAN/DEVICENET

CD VAR-IO BK DP/V1



PROFIBUS-DP/V1 BUS COUPLER

- Central coupler module with PROFIBUS-DP interface
- Only for CD VAR-IO Closed-Loop-Control-System
- Baudrate up to 12 MBd, configurable
- DP/V1 for class 1 and class 2 masters
- Connectable up to 21 CD VAR-IO modules
- Internal freely configurable process-data-caches
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the modular closed-loop-control-system CD VAR-IO

For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

I/O and controller module parameterization
CD VAR-ious diagnostic formats
Sub-D connector
Baudrates 9.6 ... 12000 kBd/s
Addresses 1... 127 via DIP switches
LED indicators: 5x status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals

Dimensions: 91 x 120 x 71,5 mm (W x H x D)

Power supply: 24V DC

Communication: PROFIBUS-DP/V1

CD VAR-IO BK ETH



ETHERNET BUS COUPLER

- Central coupler module with Ethernet TCP/IP interface
- Only for CD VAR-IO Closed-Loop-Control-System
- Baudrate up to 100 MBd, configurable
- 10/100 BASE-T(X)
- Connectable up to 21 CD VAR-IO modules
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the modular closed-loop-control-system CD VAR-IO

For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

ETHERNET: Endgerät, conformable IEEE 802.3
Protocol: Modbus/TCP, TCP/UDP, BootP
IP-parameter setting via BootP or configuration tool
RJ 45-connector
LED indicators: 7 x status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals

Dimensions: 90 x 116 x 72 mm (W x H x D)

Power supply: 24V DC

Communication: Ethernet TCP/IP

CD VAR-IO BK MOD



MODBUS BUS COUPLER

- Central coupler module with Modbus interface
- Only for CD VAR-IO Closed-Loop-Control-System
- Baudrate up to 38,4 kBd, configurable via CD VAR-io
- Connectable up to 21 CD VAR-IO modules
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the modular closed-loop-control-system CD VAR-IO

For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Modbus RTU-protocol
addresses 1... 127 via CD VAR-IO selectable
2 LED indicators for status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals
2 x 9-poliger Sub-D connector for Modbus

Dimensions: 90 x 119,8 x 71,5 mm (W x H x D)

Power supply: 24V DC

Communication: Modbus RTU

CD VAR-IO BK IP



ETHERNET IP BUS COUPLER

- Central coupler module with Ethernet IP interface
- Only for CD VAR-IO Closed-Loop-Control-System
- Baudrate up to 100 MBd, configurable
- 10/100 BASE-T(X)
- Connectable up to 21 CD VAR-IO modules
- Integrated 24V-DC-power supply for total CD VAR-IO-System

APPLICATIONS

Head of the modular closed-loop-control-system CD VAR-IO

For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

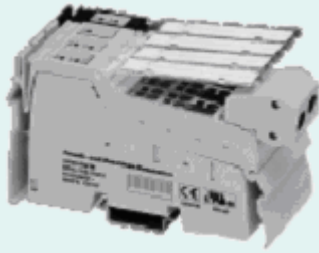
ETHERNET: Endgerät, conformable IEEE 802.3
Protocol :IP for Rockwell PLCs, BootP
IP-parameter setting via BootP or configuration tool
RJ 45-connector
LED indicators: 7 x status and diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals

Dimensions: 90 x 116 x 72 mm (W x H x D)

Power supply: 24V DC

Communication: Ethernet TCP/IP

CD VAR-IO RM TX



BUS BRANCH MODULE FOR REMOTE BUS

- Construction of de-central controller systems
- AnyCD VAR-IO- input and output can be connected via remote bus
- Max. overall length per remote bus: 400 m
- Several CD VAR-IO RM TX modules in one system possible
- I/Os are connected via bus receiver module CD VAR-IO RM BK
- BK

APPLICATIONS

Controller and I/Os are located at different places/cabinets
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 5x status and bus-diagnostics
Spring clamp-/plug-in terminals with shield

Dimensions: 12,2 x 120 x 71,5 mm (W x H x D)

Power supply: 24 V DC through potential routing

Communication: Remotebus

CD VAR-IO RM BK



BUSRECEIVER MODULE FOR REMOTE BUS I/Os

- Bus receiver for external CD VAR-IO-I/Os at remote bus
- Max. overall length per remote bus: 400 m
- Several CD VAR-IO RM BK modules at one remote bus possible
- Connection at CD VAR-io-system: via bus branch module CD VAR-IO RM TX

APPLICATIONS

Controller and I/Os are located at different places/cabinets
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 7x status and bus-diagnostics
Incoming 24V-DC supply for segment and main-circuit
Spring clamp-/plug-in terminals with shield

Dimensions: 48,8 x 120 x 71,5 mm (W x H x D)

Power supply: 24 V DC

Communication: Remotebus

CD VAR-IO DI 2/24



DIGITAL INPUTS

- **2 digital inputs**
- **Connections for sensors in 2-, 3- and 4-wire technology**
- **Floating / non-floating contacts**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Maximum load current per sensor: 250mA
LED indicators: 3x status and diagnostics
Inputs optically isolated

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Inputs: 2 digital inputs
Nominal input current: 5 mA

CD VAR-IO DI 4/24



DIGITAL INPUTS

- **4 digital inputs**
- **Connections for sensors in 2- and 3-wire technology**
- **Floating / non-floating contacts**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Maximum load current per sensor: 250mA
LED indicators: 5x status and diagnostics
Inputs optically isolated

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Inputs: 4 digital inputs
Nominal input current: 5 mA



CD VAR-IO DI 8/24



DIGITAL INPUTS

- **8 digital inputs**
- **Connections for sensors in 2-, 3- and 4-wire technology**
- **Floating / non-floating contacts**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Maximum load current per sensor: 250mA
LED indicators: 9x status and diagnostics
Inputs optically isolated

Dimensions: 48,8 x 120 mm x 71,5 (B x H x T)
Power supply: 24 V DC through potential routing
Inputs: 8 digital inputs
Nominal input current: 5 mA

CD VAR-IO DI 16/24



DIGITAL INPUTS

- **16 digital inputs**
- **Connections for sensors in 2- and 3-wire technology**
- **Floating / non-floating contacts**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Maximum load current per sensor: 250mA
LED indicators: 17 x status and diagnostics
Inputs optically isolated

Dimensions: 48,8 x 120 mm x 71,5 (B x H x T)
Power supply: 24 V DC through potential routing
Inputs: 16 digital inputs
Nominal input current: 5 mA

CD VAR-IO DO 2/24



DIGITAL OUTPUTS

- **2 digital outputs**
- **Connections of actuators in 2-, 3- and 4-wire technology**
- **Nominal current per output: 0,5 A**
- **Short circuit and overload protected outputs**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Total current of the module: 1 A
LED indicators: 3x status and diagnostics
Outputs optically isolated

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 2 digital outputs, each 0,5 A, 24 V DC

CD VAR-IO DO 4/24



DIGITAL OUTPUTS

- **4 digital outputs**
- **Connections of actuators in 2- and 3-wire technology**
- **Nominal current per output: 0,5 A**
- **Short circuit and overload protected outputs**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Total current of the module: 2 A
LED indicators: 5x status and diagnostics
Outputs optically isolated

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 4 digital outputs, each 0,5 A, 24 V DC

CD VAR-IO DO 8/24



DIGITAL OUTPUTS

- **8 digital outputs**
- **Connections of actuators in 2-, 3- and 4-wire technology**
- **Nominal current per output: 0,5 A**
- **Short circuit and overload protected outputs**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Total current of the module: 4 A
LED indicators: 9x status and diagnostics
Outputs optically isolated

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 8 digital outputs, each 0,5 A, 24 V DC

CD VAR-IO DO 16/24



DIGITAL OUTPUTS

- **16 digital outputs**
- **Connections of actuators in 2- and 3-wire technology**
- **Nominal current per output: 0,5 A**
- **Short circuit and overload protected outputs**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Total current of the module: 8 A
LED indicators: 17 x status and diagnostics
Outputs optically isolated

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 16 digital outputs, each 0,5 A, 24 V DC

CD VAR-IO DO 1/230



RELAY OUTPUT

- **1 relay changeover contact (hard gold plated)**
- **Voltage: 5 - 253 V AC**
- **Max. current: 3 A**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 2 x status and diagnostics
Safe isolation according EN 50178

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 1 relay changeover contact
5 - 253 V AC, 3 A

CD VAR-IO DO 4/230



RELAY OUTPUT

- **4 relay changeover contacts (hard gold plated)**
- **Voltage: 5 - 253 V AC**
- **Max. current: 3 A each relay**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 5 x status and diagnostics
Safe isolation according EN 50178

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC through potential routing
Outputs: 4 relay changeover contacts
5 - 253 V AC, 3 A

CD VAR-IO AI 2/SF



ANALOG INPUTS STANDARD SIGNALS

- 2 analog inputs (single ended with shield)
- Connections for sensors in 2- and 3-wire technology
- 16-Bit resolution
- Current ranges: 0/4..20mA, +/-20mA
- Voltage ranges: 10V, +/-10V

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Process data update: 1,5 ms
Diagnostic LED
Inputs optically isolated
Several input formats
Measuring ranges and representing formats soft configurable

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC and 7,5 V DC through potential routing
Inputs: 2 analog inputs (single ended with shield)

CD VAR-IO AI 8/SF



ANALOG INPUTS STANDARD SIGNALS

- 8 analog inputs (single ended with shield)
- Connections for sensors in 2-wire technology
- 16-Bit resolution
- Current ranges: 0/4..20mA, ±20mA, (±)40mA
- Voltage ranges: 10V, ±10V, (±)5V, (±)25 V, (±)50V

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Diagnostic LED
Inputs optically isolated
Several input formats
Measuring ranges and representing formats soft configurable

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)
Power supply: 24 V DC and 7,5 V DC through potential routing
Inputs: 8 analog inputs (single ended with shield)

CD VAR-IO UTH 2



ANALOG INPUTS THERMOCOUPLE

- **2 analog inputs, differential inputs with shield**
- **Internal or external detection of cold junction temperature**
- **16-Bit resolution**
- **Types: B, C, E, J, K, L, N, R, S, T, U, W, HK**
- **Voltage range: -15..+85 mV**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Absolute or differential temperature measurement
Process data update: max. 30 ms
Diagnostic LED
Inputs optically isolated
Several input formats
Measuring ranges and representing formats soft configurable

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 2 analog inputs, differential inputs with shield

CD VAR-IO RTD 2



ANALOG INPUTS TEMPERATURE SHUNTS

- **2 analog inputs**
- **Connections for sensors in 2-, 3- and 4-wire technology**
- **16-Bit resolution**
- **Types: a.o. Pt DIN, PT SAMA, Ni DIN, CUxx, KTY**
- **Potentiometer, Linear R: 400, 4000 Ohm**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

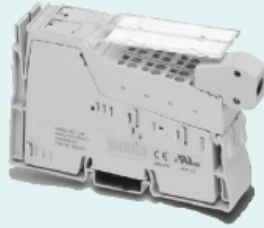
Diagnostic LED
Process data update: max. 32 ms
Inputs optically isolated
Several input formats
Measuring ranges and representing formats soft configurable

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 2 analog inputs

CD VAR-IO AO 1/SF



ANALOG OUTPUT STANDARD SIGNALS

- **1 analog output**
- **2-wire technology with shield**
- **16-Bit resolution**
- **Current ranges: 0..20mA, 4..20mA**
- **Voltage range: 10V**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Process data update: 1 ms
2 diagnostic LEDs
Output optically isolated
Several output formats
Measuring ranges and representing formats soft configurable

Dimensions: 24,4 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 1 analog output

CD VAR-IO AO 2/U/BP



ANALOG OUTPUTS VOLTAGE

- **2 analog outputs**
- **2-wire technology with shield**
- **13-Bit resolution**
- **Voltage ranges: 10V, ±10V**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Process data update: 1 ms
2 diagnostic LEDs
Outputs optically isolated
Several output formats
Measuring ranges and representing formats soft configurable

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 2 analog outputs

CD VAR-IO UTH 4-DO8



ANALOG / DIGITAL I/O-MODUL

- 4 analog thermocouple inputs
- differential inputs with shield
- 8 digital outputs, 24V DC
- 1 heating current input
- 14-Bit resolution
- Types: B, C, D, E, J, K, L, N, R, S, T, W

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 3x status and diagnostics
Process data update: max. 125 ms
Inputs and outputs optically isolated
Measuring ranges and input formats soft configurable
Voltage range: 0..70 mV

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 4 analog inputs, differential inputs with shield

1 heating current input (50 mA)

Outputs: 8 digital outputs, each 70mA, 24 V DC

CD VAR-IO RTD 6-DO6



ANALOG / DIGITAL I/O-MODUL

- 6 analog inputs, differential inputs with shield
- Connections of actuators in 2- and 3-wire technology
- 8 digital outputs, 24V DC
- 1 heating current input
- 14-Bit resolution
- Types: B, C, D, E, J, K, L, N, R, S, T, W

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 3x status and diagnostics
Process data update: max. 175 ms
Inputs and outputs optically isolated
Measuring ranges and representing formats soft configurable
Range for Linear R: 450 Ohm

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 6 analog inputs (2-, 3- wire, shield)

1 heating current input (50 mA)

Outputs: 6 digital outputs, each 70mA, 24 V DC

CD VAR-IO UTH 8-DO8



ANALOG / DIGITAL I/O-MODUL

- **8 analog thermocouple inputs**
- **differential inputs with shield**
- **8 digital outputs, 24V DC**
- **1 heating current input**
- **14-Bit resolution**
- **Types: B, C, D, E, J, K, L, N, R, S, T, W**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

LED indicators: 3x status and diagnostics
Process data update: max. 225 ms
Inputs and outputs optically isolated
Measuring ranges and input formats soft configurable
Voltage range: 0..70 mV

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 8 analog inputs, differential inputs with shield

1 heating current input (50 mA)

Outputs: 8 digital outputs, each 70mA, 24 V DC

CD VAR-IO CO 2/U



POWER SUPPLY FOR SENSORS

- **2 analog outputs**
- **2-wire technology with shield**
- **10 V DC, constant voltage**

APPLICATIONS

I/O module of the CD VAR-IO-system
I/O-extension of the modular closed-loop-control-system CD VAR-IO
For process automation, extrusion
Supply for melt pressure sensors

MAIN ATTRIBUTES

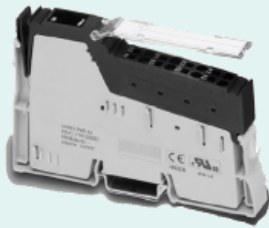
1 diagnostic LED
Outputs optically isolated
10V DC, max. 2 x 30 mA or 1 x 60 mA
Accuracy: 0,3% drift typ.
Short circuit proofed

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 2 analog outputs

CD VAR-IO PWR IN/24



CD VAR-IO POWER TERMINAL

- **Supply of the main power 24 V DC**
- **Supply of the segment power 24 V DC**

APPLICATIONS

Supply of 24 V DC for CD VAR-IO-systems with a high number of modules
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Diagnostic LED

Dimensions: 12,2 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC

CD VAR-IO T4/RTD



MODULAR CONTROLLER SYSTEM

- **4 Channel Closed Loop Controller**
- **I/O extensible via CD VAR-IO-modules**
- **4 analog inputs for resistance thermometer and R**
- **linear**
- **6 digital outputs, 24V DC**
- **Heating current monitoring for all outputs**

APPLICATIONS

Intelligent closed loop controller module of the CD VAR-IO-system
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Latest control technology with complete functional range for the most varied applications
Free wiring of all inputs & outputs
Scanning rate adjustable per channel: from 100 ms
2 automatic self-tuning procedures
Heating current monitor with compensation of mains voltage variations
Separate RS232-interface for BlueControl Engineering Tool
Software update in Flash EPROM via the Engineering Tool

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 4 analog inputs, 2- or 3-wire technology and additional screen
1 heating current input (50 mA)

Outputs: 6 digital outputs, each 70mA, 24 V DC

Communication: All fieldbusses via CD VAR-IO-buscoupler

CD VAR-IO T4/UTH



MODULAR CONTROLLER SYSTEM

- **4 Channel Closed Loop Controller**
- **I/O extensible via CD VAR-IO-modules**
- **4 analog thermocouple inputs (11 types, mV)**
- **8 digital outputs, 24V DC**
- **Heating current monitoring for all outputs**

APPLICATIONS

Intelligent closed loop controller module of the CD VAR-IO-system
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Latest control technology with complete functional range for the most varied applications
Free wiring of all inputs & outputs
Scanning rate adjustable per channel: from 100 ms
2 automatic self-tuning procedures
Heating current monitor with compensation of mains voltage variations
Separate RS232-interface for BlueControl Engineering Tool
Software update in Flash EPROM via the Engineering Tool

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 4 analog inputs, differential inputs with shield

1 heating current input (50 mA)

Outputs: 8 digital outputs, each 70mA, 24 V DC

Communication: All fieldbusses via CD VAR-IO-buscoupler

CD VAR-IO T6/RTD



MODULAR CONTROLLER SYSTEM

- **6 Channel Closed Loop Controller**
- **Extensible via any CD VAR-IO-I/O-modul up to 30 control loops**
- **6 analog inputs for resistance thermometer and R linear**
- **6 digital outputs, 24V DC**
- **Heating current monitoring for all outputs**

APPLICATIONS

Intelligent closed loop controller module of the CD VAR-IO-system
For process automation, machinery automation, installations, factory automation

MAIN ATTRIBUTES

Latest control technology with complete functional range for the most varied applications
Free wiring of all inputs & outputs
Scanning rate adjustable per channel: from 100 ms
2 automatic self-tuning procedures
Heating current monitor with compensation of mains voltage variations
Separate RS232-interface for BlueControl Engineering Tool
Software update in Flash EPROM via the Engineering Tool

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 6 analog inputs, 2- or 3-wire technology and additional screen

1 heating current input (50 mA)

Outputs: 6 digital outputs, each 70mA, 24 V DC

Communication: All fieldbusses via CD VAR-IO-buscoupler

CD VAR-IO T8/UTH



MODULAR CONTROLLER SYSTEM

- **8 Channel Closed Loop Controller**
- **Extensible via any CD VAR-IO-I/O-modul up to 30 control loops**
- **8 analog thermocouple inputs (11 different types, mV)**
- **8 digital outputs, 24V DC**
- **Heating current monitoring for all outputs**

APPLICATIONS

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2 automatic self-tuning procedures
Heating current monitor with compensation of mains voltage variations
Separate RS232-interface for BlueControl Engineering Tool
Software update in Flash EPROM via the Engineering Tool

Dimensions: 48,8 x 120 x 71,5 mm (B x H x T)

Power supply: 24 V DC and 7,5 V DC through potential routing

Inputs: 8 analog inputs, differential inputs with shield

1 heating current input (50 mA)

Outputs: 8 digital outputs, each 70mA, 24 V DC

Communication: All fieldbusses via CD VAR-IO-buscoupler

TECHN. SYSTEM

GENERAL

Number of devices in an CD VAR-io-station
63, maximum

Maximum current carrying capacity of the
voltage jumpers:

- 8 A for 24 V DC Main- and segment
circuit
- 0,5 A for power supply of analog
circuits

AMBIENT CONDITIONS

Regulations

Developed according to **VDE 0160, UL 508**

Permissible Temperatures

Ambient temperature

(operation): -25...55 °C

Ambient temperature

(storage/transport): -25...85 °C

Maximum permissible temperature
inside the terminal during operation: 85 °C

Humidity

Humidity (operation):

75 % on average; 85 % occasionally; no
condensation

Humidity (storage/transport)

75%, on average; 85%, occasionally; no
condensation

Air pressure

Air pressure (operation):

80 kPa to 106 kPa (up to 2000 m [6562 ft.]
above
sea level)

Air pressure (storage/transport):

70 kPa to 106 kPa (up to 3000 m [9843 ft.]
above
sea level)

Protection modes

Degree of protection according to DIN
40050,
IEC 60529
IP 20

Protection class

Degree of protection according to DIN
57106-1 Class 3

Air and creepage distances

Air and creepage distances According to IEC
60644/IEC 60664A/
DIN VDE 0110: 1989-01 and
DIN VDE 0160: 1988-05

Housing material

Plastic, PVC-free, PA6.6, self-extinguishing
(V0)

Degree of pollution

according to EN 50178 2; condensation not
permissible in operation

Environmental compatibility

Not resistant to chloroform

Gases that may endanger functions
according

to DIN 40046-36, DIN 40046-37

Sulfur dioxide (SO₂)

Concentration 10 ± 0.3 ppm

Ambient conditions

- Temperature: 25°C (77°F) (± 2°C)

- Humidity: 75% (± 5%)

- Test duration: 10 days

Hydrogen sulfide (H₂S)

Concentration 1 ± 0.3 ppm

Ambient conditions

- Temperature: 25°C (77°F) (± 2°C)

- Humidity: 75% (± 5%)

- Test duration: 4 days

Resistance of the housing

material to termites resistant
material to fungi resistant

MECHANICAL DEMANDS

Vibration test

sinusoidal vibrations according to

IEC 60068-2-6; EN 60068-2-6

5g load, 2 hours for each space direction

Shock test

according to IEC 60068-2-27; EN 60068-
2-27

25g load for 11 ms, half sinusoidal wave,
three

shocks in each space direction and
orientation

Broadband noise

according to IEC 60068-2-64; EN 60068-
2-64

0.78g load, 2.5 hours for each space
direction

CONFORMANCE WITH EMC DIRECTIVE 89/336/EEC

This table provides standard data. For
different
values, please refer to the terminal-
specific
data sheets.

Noise Immunity Test according to EN 50082-2

Electrostatic discharge (ESD) according

To EN 61000-4-2 / IEC 61000-4-2

- Criterion B

- 6 kV contact discharge

- 8 kV air discharge

Electromagnetic fields according EN 61000-4-3, IEC 61000-4-3

- Criterion A

- Field strength: 10 V/m

Fast transients (burst) according EN 61000-4-4 / IEC 61000-4-4

- Criterion B

- Remote bus: 2 kV

- Voltage supply 2 kV

- I/O cables: 2 kV

- Criterion A

- All interfaces: 1 kV

Surge voltage according EN 61000-4-5/ IEC 61000-4-5

- Criterion B

- AC supply lines: 2.0 kV/4.0 kV
(symmetrical/asymmetrical)

- DC supply lines: 0.5 kV/0.5 kV
(symmetrical/asymmetrical)

CD VAR-IO survey

- Signal lines: 1.0 kV/2.0 kV
(symmetrical/asymmetrical)

Conducted interference according EN 61000-4-6, IEC 61000-4-6

- Criterion A

- Test voltage 10 V

Noise Emission Test According to EN 50081-2

Noise emission of housing: EN 55011
Class A

POWER SUPPLY

24 V Supply of the Bus Terminal

Nominal voltage: 24 V DC

Ripple: ± 5 %

Permissible voltage range:

19,2 V DC to 30,0 V DC, ripple
included

Connection Spring-clamp terminals

7.5 V Bus Logic Supply (UL)

Nominal voltage: 7,5 V

ripple: ± 5 %

Load current: 2 A, maximum

Connection Voltage jumpers on the
sides

Remark:

Voltage is produced in the bus

terminal by a DC/DC converter from
the 24 V supply voltage.

UL is not electrically isolated from

the 24 V bus terminal voltage.

UL is not electrically isolated from
the I/O

voltages UM and US.

Communications power UL is

electronically short-circuit protected.

Supply of Terminals for Analog Signals (UANA)

Nominal voltage: 24 V DC

Tolerance : - 15 % / + 20 %

Ripple: ± 5 %

Permissible voltage range:

19,2 V DC to 30,0 V DC, ripple
included

Load current: 500 mA, maximum

Connection Voltage jumpers on the
sides

Remark:

Isolation of the 24 V input voltage by
means of a diode. Smoothing

through _—filter;

corner frequency: 9.8 kHz and

attenuation of 40 dB/decade.

UANA is not electrically isolated from

the 24V bus terminal supply and the
7.5 V communications power.

Supply of Terminals for Digital Signals

(UM, US)

in the 24 V Area

Nominal voltage: 24 V DC

Tolerance : - 15 % / + 20 %

Ripple: ± 5 %

Permissible voltage range:

19,2 V DC to 30,0 V DC, ripple
included

Load current: 8 A, maximum

Connection Voltage jumpers on the
sides

| | | |
|--|--|--|
| <p><i>Remark</i> Segment circuit US All digital outputs and initiator supplies without individual short-circuit protection are connected to the segment circuit US. Main circuit UM Initiator supplies with individual short-circuit protection are connected to the main circuit UM.</p> <p>Voltage Dips and Interruptions to the I/O Supply Intensity PS1: Interruption time < 1 ms Time interval between voltage dips < 1 s Behavior: Evaluation criterion 1. A < 1 ms supply voltage dip is not registered by the bus. Intensity PS2: Interruption time < 10ms Time interval between voltage dips < 1 s Behavior: Evaluation criterion 3. Bus disconnection; all outputs of the system are reset..</p> | <p>AIR AND CREEPAGE DISTANCES (ACCORDING TO EN 50178, VDE 0109, VDE 0110)</p> <p>Isolating Distance: – Incoming bus / bus logic – Outgoing bus / bus logic – Incoming bus / outgoing bus – Bus logic / I/O Air distance: 0,3 mm Creepage distance: 0,3 mm Impulse Voltage Withstand Level: 0,5 kV</p> <p>TEST VOLTAGES The following isolating distances are tested by 500 V AC test voltage, 50 Hz, 1 min 5 V supply incoming remote bus / 5 V supply of outgoing remote bus 5 V supply incoming remote bus/ 7.5 V communications power, 24 V bus terminal supply</p> | <p>5 V supply incoming remote bus/ 24 V main supply, 24 V segment supply 5 V supply incoming remote bus/ functional earth ground 5 V supply outgoing remote bus/ 7.5 V communications power, 24 V bus terminal supply 5 V supply outgoing remote bus/ 24 V main supply, 24 V segment supply 5 V supply outgoing remote bus/ functional earth ground 7.5 V communications power, 24 V bus terminal supply/ functional earth ground 7.5 V communications power, 24 V bus terminal supply/ 24 V main supply, 24 V segment supply 24 V main supply, 24 V segment supply/ functional earth ground</p> |
|--|--|--|

| ORDERING CODE | | |
|-----------------------------------|-----------------|--|
| FIELDBUS BUSCOUPLER | | |
| CD VARIO BK DP/V1 | KS VC-101-00111 | CD vario buscoupler Profibus, Profibus-DP with DP/V1 extension, 24V DC, spring-clamp connection, labeling field |
| CD VARIO BK CAN | KS VC-101-00121 | CDvario buscoupler CANopen, 24 V DC, spring-clamp connection, labeling field |
| CD VARIO BK ETH | KS VC-101-00131 | CDvario buscoupler ETHERNET, 24 V DC, spring-clamp connection, labeling field |
| CD VARIO BK IP | KS VC-101-00181 | CDvario buscoupler ETHERNET IP, 24 V DC, spring-clamp connection, labeling field |
| CD VARIO BK DN | KS VC-101-00141 | CDvario buscoupler DeviceNet, 24 V DC, spring-clamp connection, labeling field |
| CD VARIO BK MOD | KS VC-101-00151 | CDvario buscoupler Modbus RTU, 24 V DC, spring-clamp connection, labeling field |
| MODULI DI TERMOREGOLAZIONE | | |
| CD VARIO T4/RTD | KS VC-104-00331 | Vario-temperatur-controller, 4-channel, spring-clamp connection, labeling field, 4 inputs, RTD (resistance element), 3 wire connection + shield, 6 outputs 24 V DC, 1 heating current input, I/O extensible |
| CD VARIO T4/UTH | KS VC-104-00431 | Vario-temperatur-controller, 4-channel, spring-clamp connection, labeling field, 4 inputs, TC (thermocouples), 2 wire connection + shield, 8 outputs 24 V DC, 1 heating current input, I/O extensible |
| CD VARIO T6/RTD | KS VC-104-00341 | Vario-temperatur-controller, until 30-channel, spring-clamp connection, labeling field, 6 inputs, RTD (resistance element), 3 wire connection + shield, 6 outputs 24 V DC, 1 heating current input, I/O extensible until 30 channels |
| CD VARIO T8/UTH | KS VC-104-00441 | Vario-temperatur-controller, until 30-channel, spring-clamp connection, labeling field, 8 inputs, TC (thermocouples), 2 wire connection + shield, 8 outputs 24 V DC, 1 heating current input, I/O extensible until 30 channels |
| | | |

| ESTENSIONE AI MODULI DI REGOLAZIONE | | |
|-------------------------------------|----------------|--|
| VARIO UTH 4-DO8 | KSVC-103-00431 | Vario-I/O-module, spring-clamp connection, labeling field, 4 inputs, TC (thermocouples), 2 wire connection + shield, 8 outputs 24 V DC, 1 heating current input |
| VARIO RTD 6-DO6 | KSVC-103-00341 | Vario-I/O-module, spring-clamp connection, labeling field, 6 inputs, RTD (resistance element), 3 wire connection + shield, 6 outputs 24 V DC, 1 heating current input |
| VARIO UTH 8-DO8 | KSVC-103-00441 | Vario-I/O-module, spring-clamp connection, labeling field, 8 inputs, TC (thermocouples), 2 wire connection + shield, 8 outputs 24 V DC, 1 heating current input |
| DIGITAL INPUTS | | |
| VARIO DI 2/24 | KSVC-102-00121 | Vario digital input module, terminal block for spring-clamp connection, labeling field, 2 inputs, 24 V DC, 4-wire connection |
| VARIO DI 4/24 | KSVC-102-00131 | Vario digital input module, terminal block for spring-clamp connection, labeling field, 4 inputs, 24 V DC, 3-wire connection |
| VARIO DI 8/24 | KSVC-102-00141 | Vario digital input module, terminal block for spring-clamp connection, labeling field, 8 inputs, 24 V DC, 4-wire connection |
| VARIO DI 16/24 | KSVC-102-00151 | Vario digital input module, terminal block for spring-clamp connection, labeling field, 16 inputs, 24 V DC, 4-wire connection |
| DIGITAL OUTPUTS | | |
| VARIO DO 2/24 | KSVC-102-00221 | Vario digital output module, terminal block for spring-clamp connection, labeling field, 2 outputs, 24 V DC, 500 mA, 4-wire connection |
| VARIO DO 4/24 | KSVC-102-00231 | Vario digital output module, terminal block for spring-clamp connection, labeling field, 4 outputs, 24 V DC, 500 mA, 3-wire connection |
| VARIO DO 8/24 | KSVC-102-00241 | Vario digital output module, terminal block for spring-clamp connection, labeling field, 8 outputs, 24 V DC, 500 mA, 4-wire connection |
| VARIO DO 16/24 | KSVC-102-00251 | Vario digital output module, terminal block for spring-clamp connection, labeling field, 16 outputs, 24 V DC, 500 mA, 3-wire connection |
| ANALOG INPUTS | | |
| VARIO AI 2/SF | KSVC-103-00121 | Vario analog input module, terminal block for spring-clamp connection, labeling field, 2 inputs, 0-20 mA, 4-20 mA, ± 20 mA, 0-10 V, ± 10 V, 2-wire connection |
| VARIO AI 8/SF | KSVC-103-00141 | Vario analog input module, terminal block for spring-clamp connection, labeling field, 8 inputs, 0-20 mA, 4-20 mA, ± 20 mA, 0-10 V, ± 10 V, (additional 0-40 mA, ± 40 mA, 0-5 V, ± 5 V, 0-25 V, ± 25 V, 0-50 V), 2-wire connection |
| VARIO RTD 2 | KSVC-103-00321 | Vario analog input module, terminal block for spring-clamp connection, labeling field, 2 inputs, RTD (resistance element), 2-, 3-, 4-wire connection |
| VARIO UTH 2 | KSVC-103-00421 | Vario analog input module, terminal block for spring-clamp connection, labeling field, 2 inputs, TC (thermocouples), 2-wire connection |
| ANALOG OUTPUTS | | |
| VARIO AO 1/SF | KSVC-103-00211 | Vario-analog output module, terminal block for spring-clamp connection, labeling field, 1 output 0-20mA, 4-20 mA, 0-10 V, 2-wire connection |
| VARIO AO 2/U/BP | KSVC-103-00221 | Vario-analog output module, terminal block for spring-clamp connection, labeling field, 2 outputs 0-10 V, ± 10 V, 2-wire connection |
| SUPPLY MODULE | | |
| VARIO PWR IN/24 | KSVC-105-00001 | Vario segment circuit supply module, spring-clamp connection, labeling field, 24V DC, without fuse |

