

HE 5825 DO

HIMOD® function module



Operating instructions

(English)

LEGAL NOTICE

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1 General

The HE5825 function module is an output module for the HIMOD® system. Eight digital outputs are made available to the HIMOD® fieldbus device. The outputs with high-side drivers switch 24 V DC, which are applied externally. The output logic can be inverted for each output. A fail-safe value can be specified individually for each channel.

The outputs can be operated in a predefined pulse mode. This allows relays to be supplied with pick-up and hold power, for example.

The outputs are short-circuit-proof, overvoltage-proof, current-limited, temperature-protected and protected against polarity reversal.

The module is supplied with power via the T-Bus connector from the coupler or from a power module.

1.1 Features

- 8 digital outputs 24 V DC
- External power supply
- Galvanic isolation
- Logic invertible
- Pulse operation can be parameterised
- Fail-safe value can be set separately for each output
- Protection against short circuit, overvoltage, polarity reversal, over temperature

1.2 HIMOD System



Fig. 1 HIMOD-module diagram

HIMOD is an intelligent I/O system for all common fieldbus standards. Each function module provides the fieldbus coupler with process values. The built-in module processor relieves the fieldbus coupler of measured value calculations.

The 'SmartControl' system software is used to parameterise the outputs and inputs of a module, as well as to configure the module within a fieldbus device, i.e. a fieldbus coupler and the plugged-in function modules.

2 Safety Information

This device has been built and tested in accordance with VDE 0411-1 / EN 61010-1 and has left the factory in a technically safe condition. The device complies with the European Directive 89/336/EEC (EMC) and is labelled with the CE mark.

The device was tested before delivery and has passed the tests specified in the test plan. To maintain this condition and ensure safe operation, the user must observe the instructions and warnings contained in these operating instructions and operate the device in accordance with the operating instructions.



The device is intended exclusively for use as a measuring and control device in technical installations.



Warning

If the device shows signs of damage that indicate that it cannot be operated safely, it must not be put into operation.

ELECTRICAL CONNECTION

The electrical cables must be laid according to the respective national regulations (in Germany VDE 0100). The measuring cables must be laid separately from the signal and mains cables.

A switch or circuit breaker must be provided for the device in the installation and labelled as such. The switch or circuit breaker must be located near the appliance and be easily accessible to the user.

COMMISSIONING

Before switching on the appliance, ensure that the following points have been observed:

- Ensure that the supply voltage corresponds to the specification on the type plate.
- All covers required for protection against accidental contact must be in place.
- If the device is interconnected with other devices and/or equipment, the effects must be considered before switching on and appropriate precautions taken.
- The unit may only be operated when installed.
- The temperature limitations specified for the use of the device must be complied with before and during operation.



Warning

The ventilation slots of the housing must not be covered during operation. The measurement inputs are designed for measurement from circuits that are not directly connected to the mains supply (CAT I). The measuring inputs are designed for transient overvoltage up to 800V against PE.

DECOMMISSIONING

If the device is to be decommissioned, all poles of the power supply must be switched off. The device must be secured against unintentional operation. If the device is interconnected with other devices and/or equipment, the effects must be considered before switching off and appropriate precautions taken.

2.1 Maintenance, Repair, Retrofitting

The appliances do not require any special maintenance. There are no operable elements inside the appliance, so the user must not open the appliance. Retrofitting, maintenance and repair work may only be carried out by trained, specialised and competent persons.



Warning

When opening the appliances or removing covers and parts, live parts that are dangerous to touch may be exposed. Connection points may also be live.



Caution

When opening the appliances, components that are sensitive to electrostatic discharge (ESD) may be exposed.

2.2 Cleaning



The housing and the front of the appliance can be cleaned with a dry, lint-free cloth.

3 Assembly

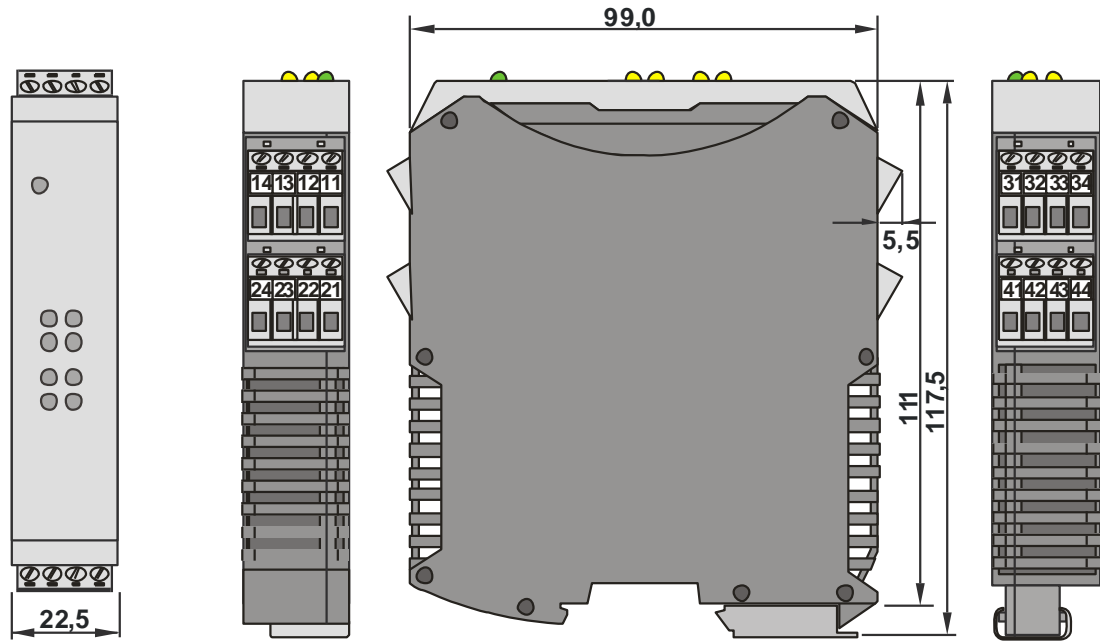


Fig. 2 Dimensions

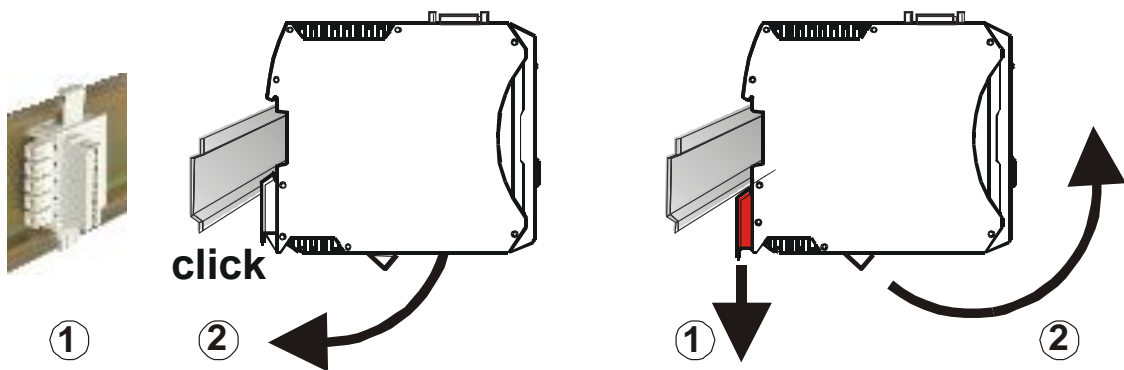


Fig. 3 Assembly / disassembly

The device is designed for vertical mounting on 35 mm top-hat rails in accordance with EN 50022. Devices of the HIMOD family can be mounted directly next to each other. A clearance of at least 8 cm must be maintained above and below the device for installation and removal.

To mount the device, simply swivel it onto the top-hat rail from above and audibly snap it into place. To remove, pull the foot latch downwards with a screwdriver and swivel the device upwards to remove it.

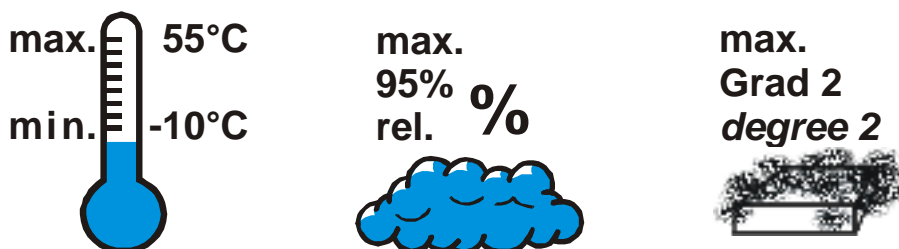


Fig. 4 Environmental conditions

The installation location should be as free as possible from vibrations, aggressive media (such as acids, alkalis), liquids, dust or other suspended matter.



The module does not contain any parts that require maintenance and does not need to be opened by the customer.



The device may only be used in environments with the approved degree of protection.



The ventilation slots of the housing must not be covered.



In systems in which transient overvoltages can occur, the devices must be equipped with additional overvoltage filters or limiters for protection!



Attention! The device contains ESD-sensitive components.



Please observe the safety instructions (section 2).



In order to maintain pollution degree 2 in accordance with EN 61010-1, the appliance must not be installed under contactors or similar devices from which conductive dust or parts could trickle out.

3.1 Connection plugs

The up to four device connection terminals are pluggable. They must be plugged into the housing from above or below (audible click). The plugs are released by levering them out with a screwdriver. Two types are available:

- Screw terminals for conductor cross-sections up to 2.5 mm²
- Spring-loaded terminals for conductor cross-sections up to 2.5 mm²



The plugs can only be operated without power.

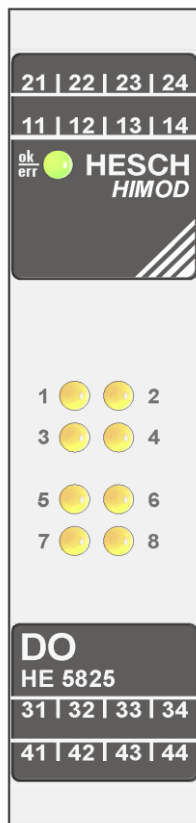
Screw terminals must be tightened with a tightening torque of 0.5 - 0.6 Nm.

With spring-loaded terminals, rigid conductors and flexible conductors with ferrules can be inserted directly into the clamping point. To release, press the (orange) lever opener.



Protection against accidental contact: Terminal blocks that are not connected must be left in the slot.

3.2 Front view and displays



LED ok/err On green Flashing green Flashing red Off	Module OK Configuration error No power supply to the outputs Power supply interrupted
LED 1-8 yellow On Flashing Off	Output 'ON'* Short circuit or open circuit Output 'OFF'*

* lights up for 'logical' 'ON'.
If the outputs have been inverted,
the outputs are not switched.

Fig. 5 HE 5825 front view

4 Power Connection

4.1 Connection diagram

The 4-pin device connectors are used for the module function.

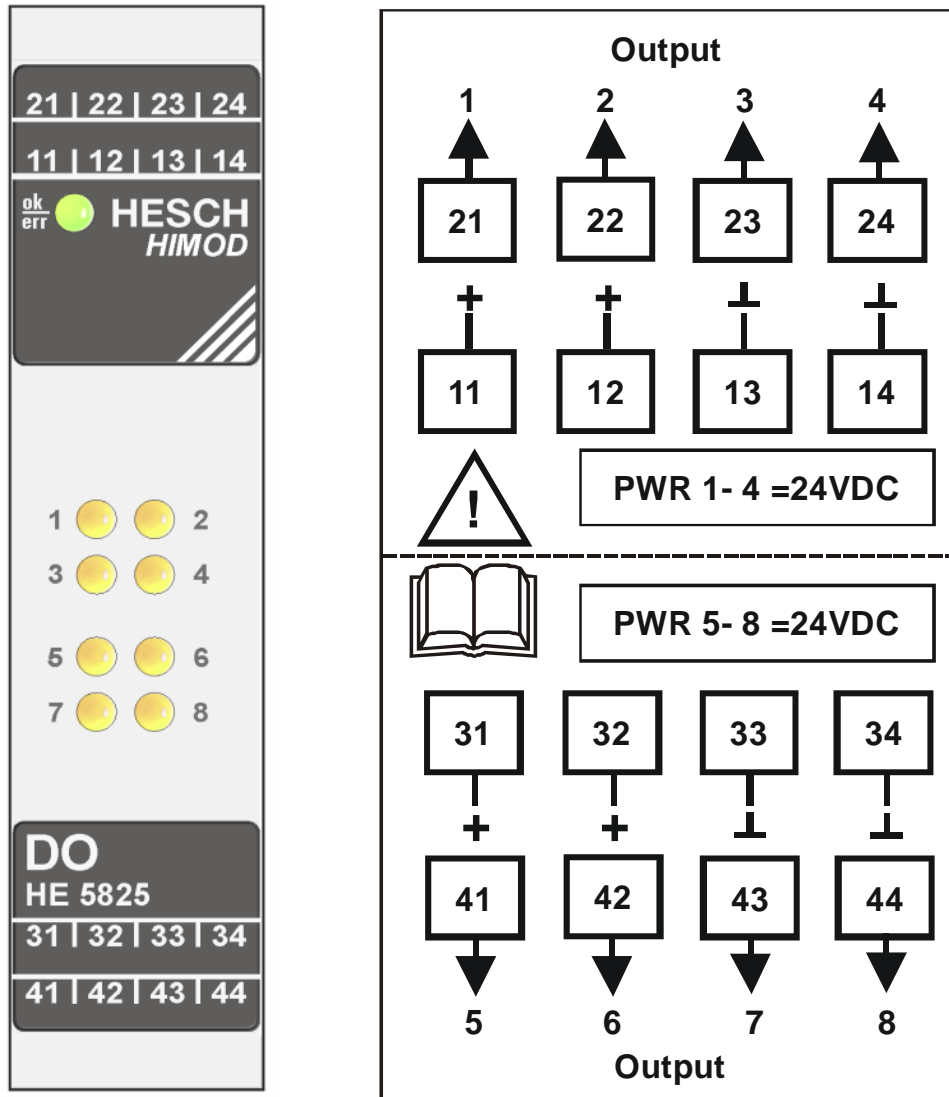


Fig. 6 Front view and pin assignment



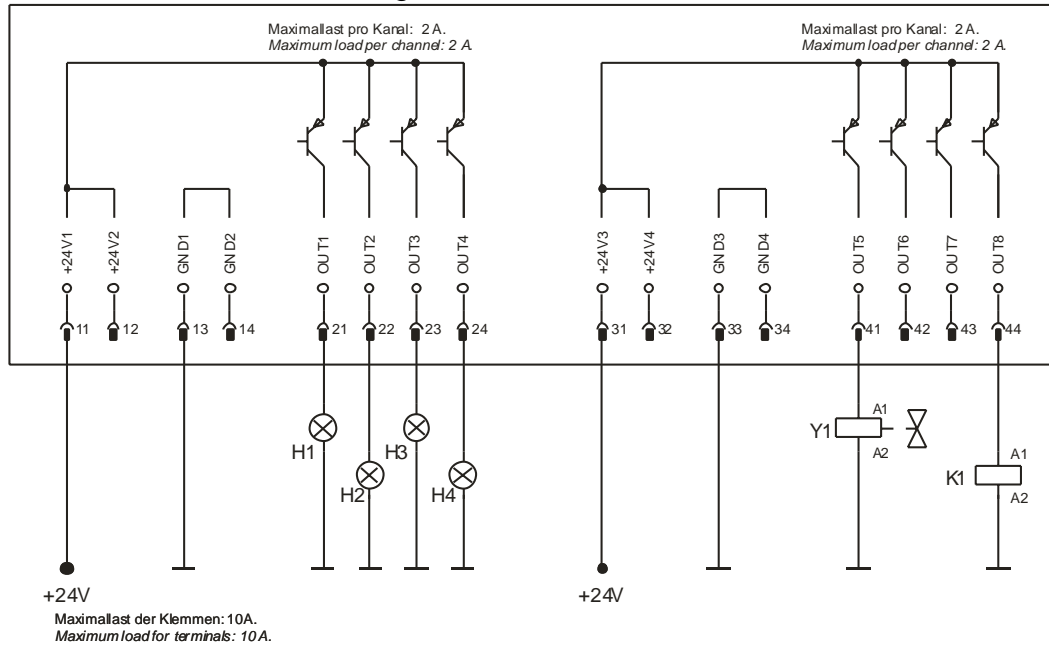
Incorrect connection can lead to destruction of the device!

4.2 Connection specification

The outputs are supplied with 18 ... 32 V DC from an external voltage source. Four outputs are interconnected into a group by the common supply. The outputs may be individually loaded with up to 1.5 A if all outputs are used. 2 A is the maximum load if only one output per group is switched.

4.3 Connection examples

Module without freewheeling diodes



Module with freewheeling diodes

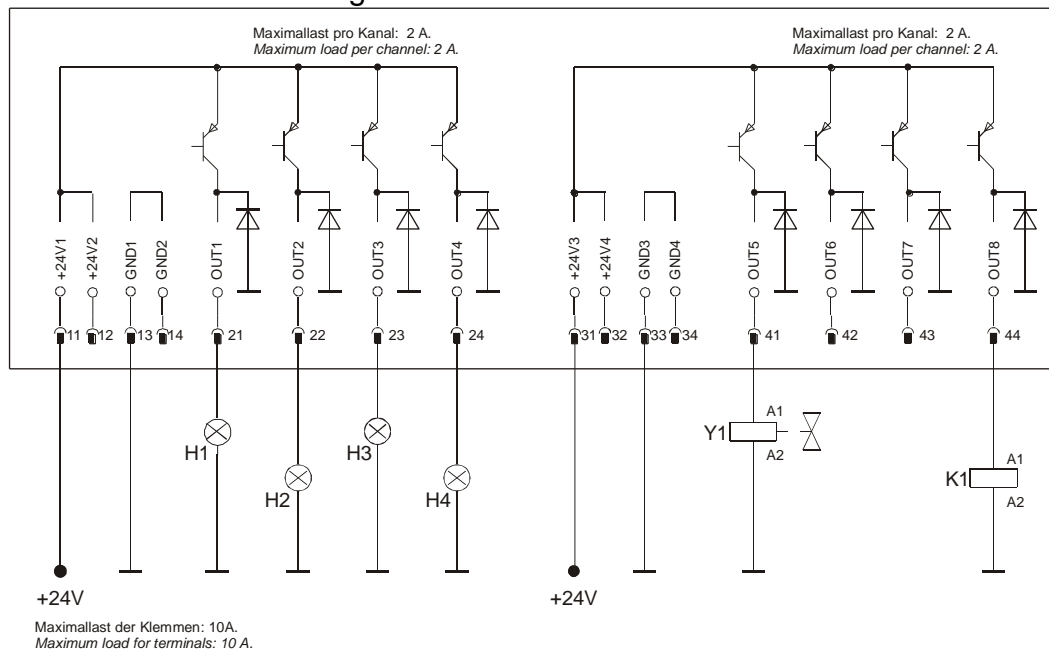


Fig. 8 Connection examples

5 Functional description

The HE 5825 module provides the HIMOD bus coupler with four outputs. The functions of the module are parameterised in the device using the 'SmartControl' software tool.

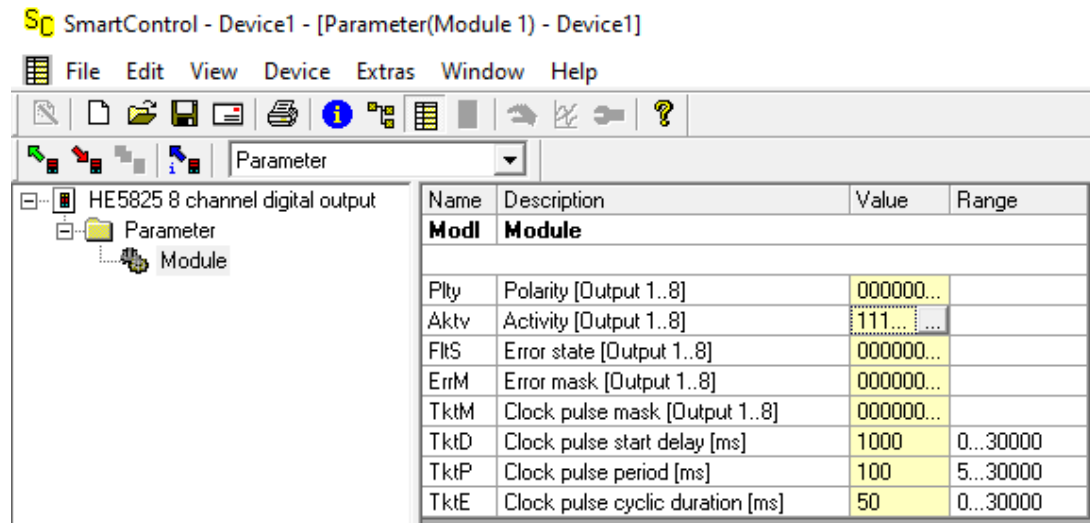


Fig. 9 Screen Parameterisation Module functions

5.1 Table Parameterisation of module functions

Abbreviation	Name	Mod Adr	Value default	Meaning	Range
Ply	Polarity [Output 1 ..8]	32	00000000	0 Normal logic	1 bit per output
				1 inverted logic	1 bit per output
Actv	Activity [Output 1 ..8]	33	11111111	1 active	1 bit per output
				0 inactive	1 bit per output
FltS	Error status [Output 1 ..8]	34	00000000	0 on bus failure	1 bit per output
				1 on bus failure	1 bit per output
ErrM	Error mask	35	00000000	0 Output is not monitored	1 bit per output
				1 output is monitored	1 bit per output
TktM	Pulse mask	36	00000000	0: static	1 bit per output
				1: pulsing	1 bit per output
TktD	Pulse delay	37	1000		0 .. 30000 ms
TktP	Pulse period	38	100		0 .. 30000 ms
TktE	Pulse duty cycle	39	50		0 .. 30000 ms

The Mod. addresses are given as HEX numbers.

5.1.1 Activate, invert

Individual outputs can be switched off and removed from operation. Parameter **Actv**.

The display is a byte value in which each bit is assigned to an output. The selection is made with clickable checkboxes.

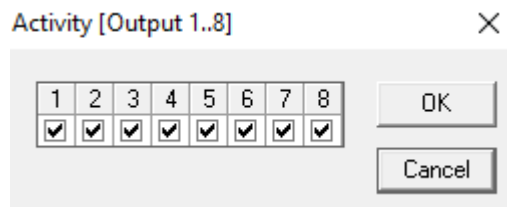


Fig. 10 Channel selection checkboxes screen



The parameter **Pity**, 'Polarity' is used to assign inverted logic to individual outputs. This means that if the process value is 'On', the channel LED lights up but the output is not switched.

5.1.2 Error handling

The parameter **FItS** 'Error state' defines the behaviour in the event of a bus failure, but depending on the error behaviour defined at device level for this module.

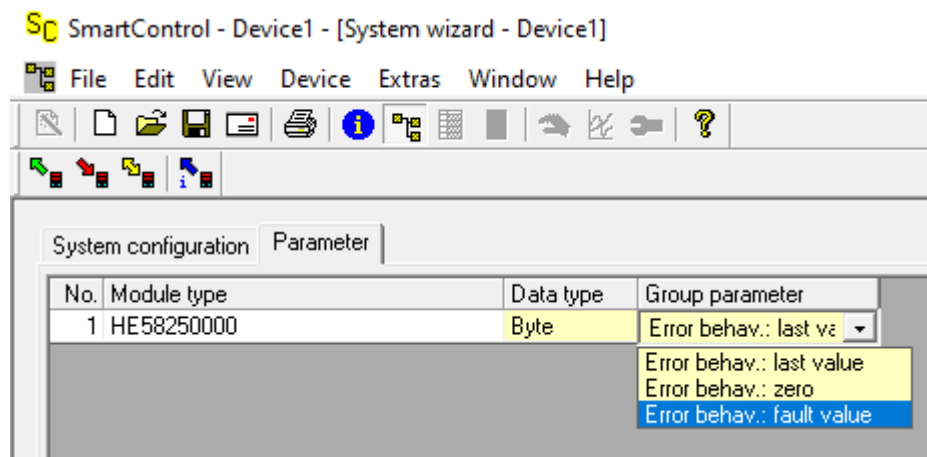


Fig. 11 Screen Parameterisation Error behaviour

If the error behaviour for the module is selected with **fault value**, the predefined output states from the **FItS** parameter apply.

The error mask ErrM defines which outputs are subject to monitoring for short circuit, open circuit and power supply. In the event of an error, the corresponding LED flashes and an alarm message is sent to the coupler.

5.1.3 Pulse mode

Individual outputs can be output as a pulse signal with a ***pulse mask***. This is particularly interesting for loads that require increased starting power and reduced continuous power.

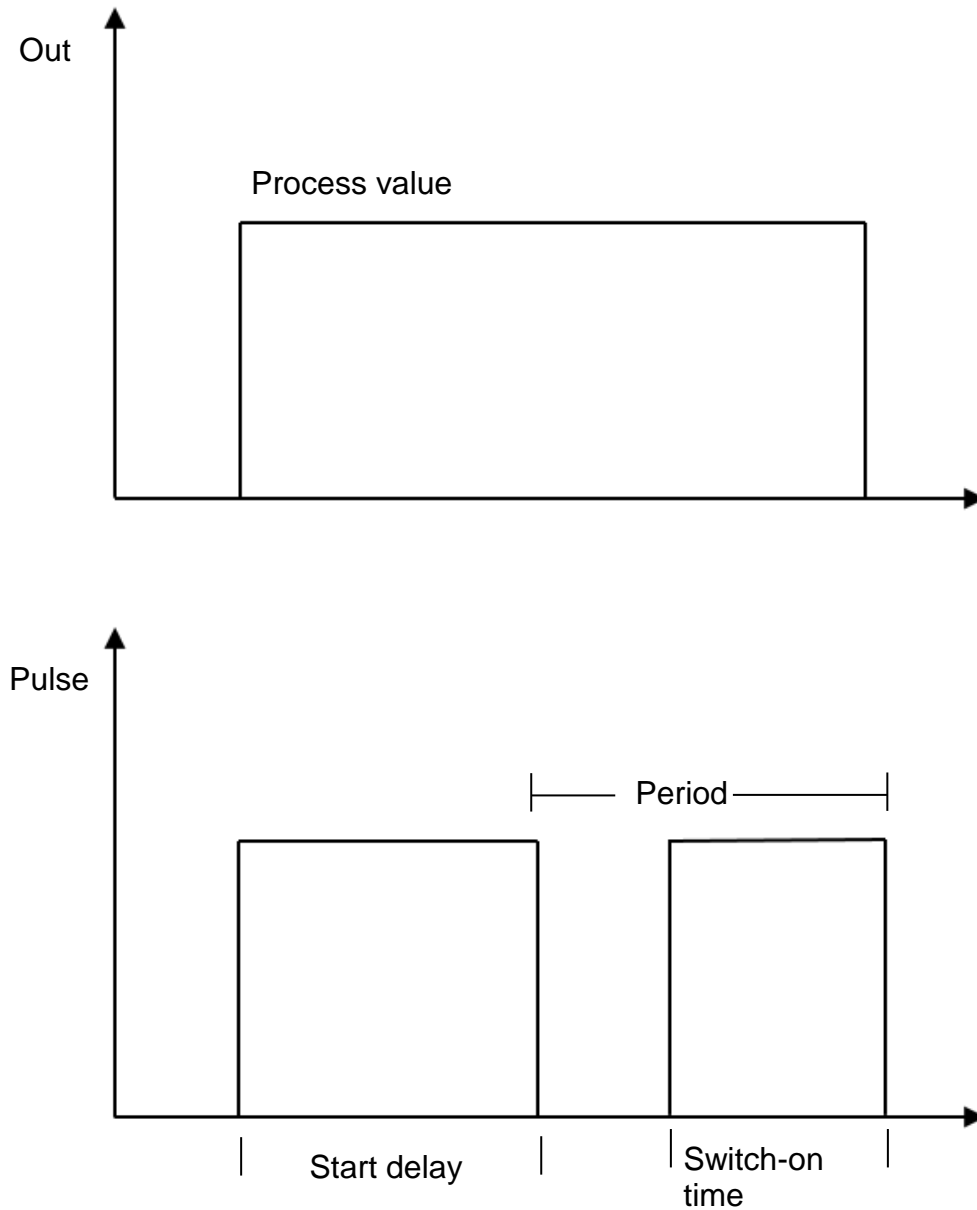


Fig. 12 Diagram of pulse mode parameters

5.2 Meaning of the module status information

The module status is mapped in the status byte. Each bit represents a piece of information. The meaning of the individual bits can be found in the table.

Bit	Meaning	Comment
0	Alarm 0 Bit is set if the output supply is not available.	Is accepted by the module
1	Alarm 1 Bit is set if an error (open circuit or short circuit) is detected on an activated channel enabled via error mask.	
2	Status 1 Bit is set if an EEPROM error is detected.	
3	Bit is not used	
4	No communication with the module (module has failed)	Is set by the coupler
5	Module does not match the configuration	
6	Reserve	
7	Reserve	

6 SmartControl – Engineering Tool

The 'SmartTool' engineering tool parameterises the function modules of a HIMOD device and configures the device system. The physical connection is established by a PC with RS232 interface and a special cable at the 'SmartPort' front interface on the fieldbus coupling module:

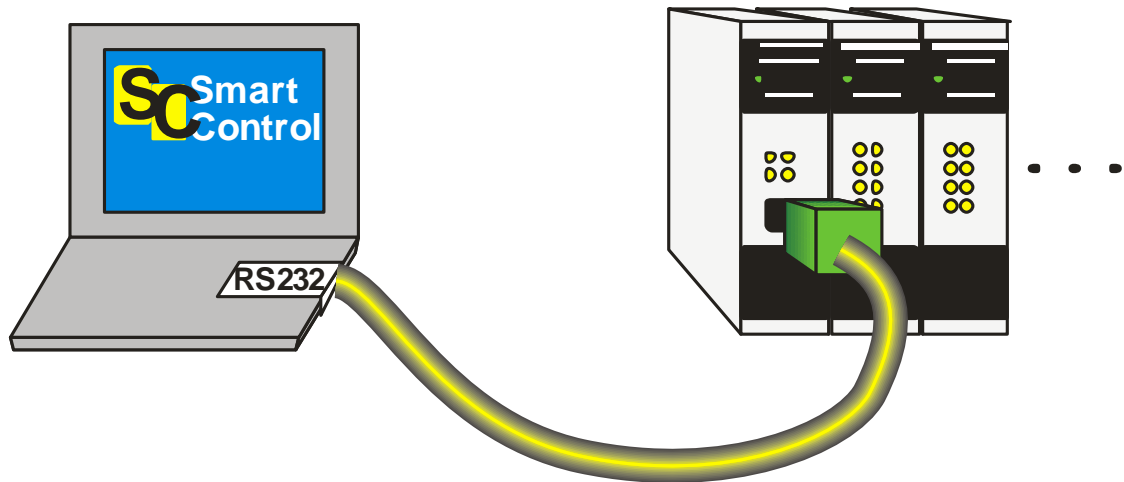


Fig. 13 'SmartControl' connection

6.1 Order numbers SmartControl components

SmartControlExpert Software	58510000
HIMOD Programming adapter	58511000

6.2 Functionality of the 'SmartControl' software

- Setting the parameters and configuration parameters
- Download: Transferring an engineering to the module
- Online mode / visualisation
- Basic diagnostic function
- Save file, parameterisation
- Print function
- Online documentation / help
- Data acquisition and trend recording
- Network / multiple licence
- Assistant function

7 Technical Data

7.1 Module function

Outputs:	8 x 24 V DC in 2 switching groups
Supply:	external source, 18 ... 32 VDC
Load capacity:	2 A max., 1.5 A with continuous operation of all outputs
Protection mechanisms:	Short circuit, overvoltage, current limiting, temperature monitoring Module available with built-in freewheeling diodes
Fail-Safe:	The behaviour in the event of bus failure can be set separately for each output or for all outputs together
Pulse operation:	Individual outputs can be operated with an adjustable pulse generator.
Potential isolation:	The logic section is electrically isolated from the module's outputs.
Indicators:	1 LED green/red Module function and configuration 8 LED yellow Output status

7.2 Environmental conditions

Environmental temperature:	Operation: -10 .. 55°C Storage: -25 .. 60°C Transport: -25 .. 85°C Influence: ≤0,05% / 10K
Humidity:	KUF DIN 40040, max ≤95% rel. humidity 75% rel. humidity on annual average, no condensation
Ice formation:	Not permitted
Air pressure:	Operation and storage: 80 kPa to 106 kPa Transport 70 kPa to 106 kPa
Air and creepage distances:	Working voltage: 50 V AC Degree of pollution: 2 Overvoltage category: II
Vibration:	in accordance with EN 60068-2-6, sinusoidal vibrations Load: 5g, 2 h per room direction
Shock:	according to EN 60068-2-7 Load: 25g over 11 ms, half sine wave

EMC: Emission: DIN EN 61000-6-3
 Immission: DIN EN 61000-6-2

Protection type: Housing front: IP 20
 Housing IP 20
 Connections: IP 20

7.3 Mounting and connection

Mounting: on 35mm top-hat rails to EN 50022
 Locking via metal foot latch
 Operating position: vertical

Housing Material: Polyamide PA 6.6
 Flammability
 class: V0 (UL 94)
 Dimensions: 22.5 x 99 x 117.5 mm (W x H x D)
 Weight: 125 kg

Connection technology: Connector plug, pluggable alternatively available:
 Screw terminals for conductor cross-sections from 0.2 to 2.5 mm²
 (AWG 24-12)
 Spring terminals for conductor cross-sections from 0.2 to 2.5 mm²
 (AWG 24-12)

Connection Power supply and communication bus via T-bus connector
 mounted in the mounting rail.
 Current consumption 7.5V: 60 mA
 Current consumption 24V: 40 mA

Subject to technical changes