Technical Documentation

VISY-Output 4

4-Channel Relay Output Box

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1 Introduction

VISY-Output 4 is a 4-channel relay output module, installed in a case with the protection IP 66. It serves as a link between the tank level gauge VISY-X and external safety equipment or external alarm indicators.

With VISY-Output 4 different alarm conditions detected by the tank level gauge VISY-X will be transferred to the external devices. As VISY-Output 4 has its own housing it can be installed at any position chosen for the best wiring. The connection to the tank level gauge VISY-X can be realised with a reasonable communication cable. Up to eight devices of VISY-Output 4 can be connected to VISY-Command for simultaneous operation.

2 Installation

2.1 Safety precautions

Following safety precautions must be observed during installation of the VISY-Output 4:

- The VISY-Output 4 is designed for operation within the VISY-X system only.
- Modifications to the VISY-Output 4 are prohibited without the prior consent of the manufacturer.
- Every installation and maintenance work, with the exception of functional tests, must be performed in de-energised condition only.
- The installation and configuration of the VISY-Output 4 must be carried out only by expert personnel. Specialised knowledge must be obtained by regular training.
- Operators, installers and service technicians must comply with all applicable safety regulations. This also applies to any local safety regulations and accident prevention regulations not stated in this technical documentation.

The safety instructions in this manual are labelled as follows:

⚠ **If you do not observe these safety instructions, the risk of an accident exists or the VISY-X system could be damaged.**

☞ *Useful information in these instructions, that should be observed, is printed in italics and marked with this symbol.*

2.2 Requirements

For the connection of VISY-Output 4 to the VISY-X system an interface card of version VI-4 or higher must be installed and connected to the communication adapter VISY-ICI 485.

2.3 Installation

VISY-Output 4 must securely be mounted to a wall inside of a building.

The casing cover must be removed to reach the mounting holes.

2.4 Design and construction

The following figure shows the position of connections, LEDs and controls of the VISY-Output 4.

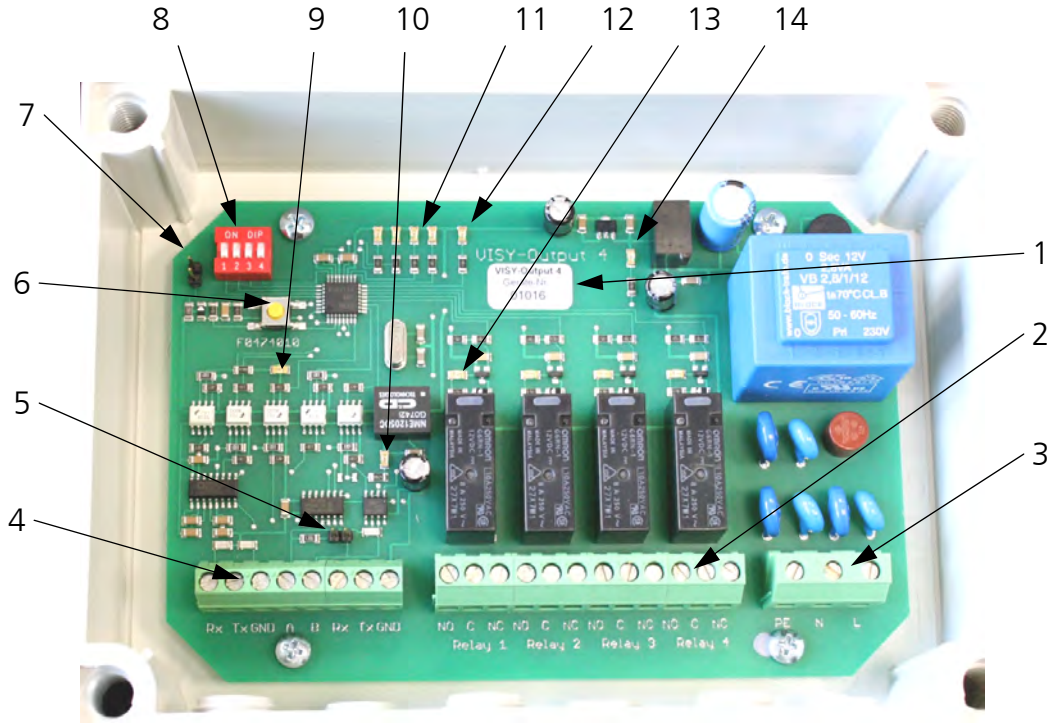


Figure 1: Design and construction

2.4.1 Device information

(1) Label with the serial number that unambiguously identifies the device. When doing the configuration using VISY-Setup the serial number has to be entered to address the device.

2.4.2 Connections

(2) 12-pole screw terminal for the connection to the relay contacts

(3) 3-pole screw terminal for the connection of the auxiliary power

(4) 8-pole screw terminal for the connection of the communication lines

2.4.3 Controls

(5) Jumper for the activation of the terminating impedance for the RS-485 network. Under normal circumstances, the communication in the RS-485 network should be trouble free without activation of the terminating impedance (jumper not plugged in), as the data rate is relatively low.

(6) Reset button for manufacturing purposes only. During normal operation the reset button must not be pressed, as the outputs might switch to an incorrect status temporary.

(7) Jumper for manufacturing purposes only. During normal operation the jumper must be removed to prevent malfunction.

(8) 4-way DIP switch, currently without function.

2.4.4 LEDs

(9) Receive LED (red)

(10) Transmit LED (red)

(11) Output LEDs (red) – one for each output

(12) Status LED (yellow)

(13) Relay LEDs (red) – one for each relay

(14) Operating voltage LED (green)

2.5 Auxiliary power

The supply of auxiliary power (230 VAC) has to be realised by a fixed installation. The wires of the auxiliary power have to be connected to the terminals PE, N und L of the 3-pole screw terminal.

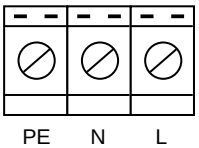


Figure 2: Screw terminal for auxiliary power

2.6 Connecting the relay contacts

The VISY-Output 4 is equipped with four relays with potential-free change-over contacts. External safety equipment or alarm indicators can be connected with the Relay 1 to 4 marked clamps of the 12-pole screw terminal. The VISY-Command alarm signals can be mapped to the relays individually. If the contact shall be used with normally-closed (NC) or normally-open (NO) function depends on the application and the mode of relay operation (standard mode or failsafe mode, see chapter 3.3).

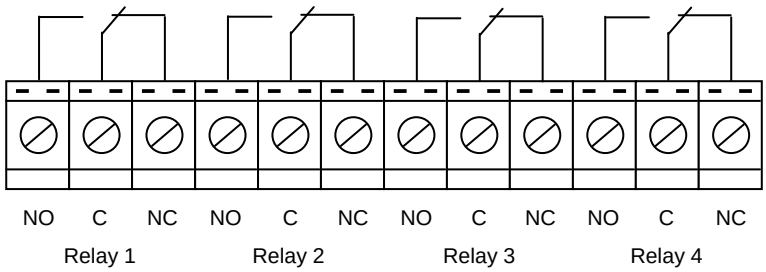
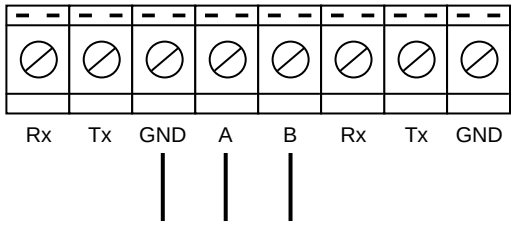


Figure 3: Screw terminal for the relay contacts

2.7 Connecting to VISY-Command

Up to eight devices of VISY-Output 4 can simultaneously be operated by the VISY-X system. For connection of VISY-Output 4 the communication adapter VISY-ICI 485 is necessary, which must be installed inside the VISY-Command. The communication between VISY-ICI 485 and VISY-Output 4 is done via a galvanically isolated RS-485 interface. The communication line is to be connected at the terminals A, B und GND of the 8-pole screw terminal.

For the connection of VISY-Output 4 and VISY-Input 8 modules to the VISY-ICI 485, it is recommended to use a 3-core cable including signal ground (GND) in order to improve the interference immunity.



The connection of communication lines at the clamps RX and TX is not supported yet.

Figure 4: Screw terminal for the communication

Additional information about connecting the communication lines can be found in the documentation of VISY-ICI 485.

- Technical Documentation VISY-ICI 485 (English) – Art.-Nr. 207150

3 Configuration

Further configuration of the VISY-Output 4 follows, as typical for the tank level gauging system VISY-X, with the configuration software VISY-Setup. Please note the detailed information about configuration in the following instruction manual.

- Technical Documentation VISY-Setup V4 (English) – Art.-Nr. 207158

Changing the configuration means to adopt the VISY-Output 4 to the requirements of the special application. Following settings are possible:

(1) Communication timeout

(2) Output action following timeout

(3) Mode of relay operation

(4) Relay delay

☞ *After the configuration it is highly recommended to test, if the alarm signalising works as expected.*

3.1 Communication timeout

The communication timeout defines if and how the outputs will react when the communication between the interface card VI-… and the VISY-Output 4 times out. The communication timeout can be set to a value between 0 and 240 minutes.

Timeout = 0 (minutes)

After a communication timeout the outputs will keep the last status that they had before the timeout.

Timeout = 1 – 240 (minutes)

After the defined time (1 – 240 minutes) for the communication timeout runs out the outputs react as it has been defined with the configuration of the output action following timeout (see next chapter).

3.2 Output action following timeout

The output action following timeout defines, how the outputs will react in case of a communication timeout. If the communication times out the outputs can either be activated, deactivated or they can keep the last status that they had before the timeout.

☞ *If a timeout of 0 is configured the outputs do not change there state after a communication timeout.*

☞ *The relays react according to the configured mode of relay operation.*

3.3 Mode of relay operation

The relay operation is possible in two operational modes:

Standard Mode

In the standard mode a relay is normally dropped out (passive). It pulls in (active), when the associated output is activated.

Failsafe Mode

In the failsafe mode a relay is normally pulled in (active). It drops out (passive), when the associated output is activated.

The failsafe mode offers the advantage to send an alarm via the relay contact, even if the auxiliary power to the VISY-Output 4 breaks down.

The following table shows the status of the relay depending on the mode of relay operation and the status of the associated output.

Relay work mode	Output	Relay status
Standard	deactivated	dropped out (passive)
Standard	activated	pulled in (active)
Failsafe	deactivated	pulled in (active)
Failsafe	activated	dropped out (passive)

Table 1: Relay work mode

3.4 Relay delay

If the relay delay is activated, the relay status (dropped out / pulled in) will change as soon as the event for output activation is active for at least 1 minute. The relay delay is only active during output activation. If the output is deactivated, the relay status will change without delay.

If an output is activated and the relay delay is turned on, the according output LED flashes slowly to indicate the delayed reaction of the relay.

3.5 Maintenance mode

The maintenance mode is used to deactivate the outputs of VISY-Output 4 temporary. This function can for example be used during the configuration to avoid false alarms via the relay contacts caused by incomplete configuration causes. The maintenance mode will be turned on and off using the VISY-Setup software, as far as this function is supported by the used version. During the maintenance mode the output LEDs are flashing fast.

☞ *The maintenance mode will be stopped automatically as soon as VISY-Setup is stopped or whenever the data link between VISY-Setup and the VI-... interface card is interrupted.*

⚠ **As deactivating safety relevant equipment is always a critical task use the maintenance mode thoughtful.**

4 Fault diagnosis

VISY-Output 4 has several LEDs that help with fault diagnosis. For the location of these LEDs see figure 1.

4.1 Operating voltage LED (14)

The green operating voltage LED indicates, if the VISY-Output 4 is supplied with voltage. The LED lights up permanently, when the auxiliary power is switched on. If the LED flickers or is off, a problem with the auxiliary power or the internal power supply unit is indicated.

4.2 Status LED (12)

The yellow status LED indicates the status of the communication between the VI- … interface card in the VISY-Command and the VISY-Output 4.

The following table lists the possible indications of the status LED and also explains the meaning of the indications.

Status LED	Error	Meaning
on	no error	data are received regularly without problems
off	no communication	no data have been received since the last power up or reset
flash (1 time)	communication interrupted	communication is interrupted for more than 1 minute

Status LED	Error	Meaning
flash (2 times)	communication timeout	communication has timed out (no communication for longer than the configured timeout)

Table 2: Status LED

Under normal conditions the Status LED should constantly be on.

4.3 Output LEDs (11)

The four red output LEDs indicate whether the outputs are activated or deactivated. Additionally these LEDs indicate the relay delay or the maintenance mode. The following table lists possible indications and explains the meaning of these indications.

Output LED	Description
on	Output activated
off	Output deactivated
slow flash	Relay delay
fast flash	Maintenance mode

Table 3: Output LEDs

4.4 Relais-LEDs (13)

The four red relay LEDs indicate if a relay is dropped out (passive) or pulled in (active).

In the standard mode of operation the output and relay LEDs indicate the same status, in the failsafe mode of operation output and relay LEDs indicate the opposite status.

4.5 Receive LEDs (9) / Transmit LED (10)

The two red communication LEDs indicate whether data are received or transmitted.

Under normal conditions the communication LEDs should flash regularly.

5 Technical Data

Dimensions:	H 60 x B 180 x T 130 [mm] (without screw joints)
Protection category:	IP66
Ambient temperature:	0 °C ... +40 °C
Auxiliary power:	230 VAC ±10 %, 50 - 60 Hz, ≤ 4 VA
Communication:	1 x RS-485, galvanically isolated, 3-pole screw terminal including signal ground (GND) for connection to VISY-ICI 485 2 x RS-232 (not supported yet)
Outputs:	4 relays, each having 1 potential-free change over contact
Relay max. load:	AC: U ≤ 250 VAC, I ≤ 5 A, P ≤ 500 VA, cos φ ≥ 0,7 DC: U ≤ 30 VDC, I ≤ 5 A, P ≤ 150 W

Table 4: Technical Data

6 List of figures

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