

Service case with test device for proportional valves with integrated electronics (OBE)

Type VT-VETSY-1

RE 29685

Edition: 2014-04

Replaces: 03.11



H 5967_d

► Component series 1X

Features

- Service case contains test device, 24 V power supply unit, connection cable and adapter cable (see ordering code)
- The test device is suitable for the control and functional testing of proportional valves with integrated electronics and an operating voltage of ± 15 V or +24V
- makes commissioning and troubleshooting hydraulic systems with proportional valves easier
- Service case:

– Dimensions	(W x H x D)	450 x 100 x 350 mm
– Weight	empty	2 kg
	complete	4.3 kg

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 **Notice:** The test device may only be used by persons who are familiar with the device, the valve, and the hydraulic system. With the corresponding setting, the control signals coming from the system are ignored. If

control-side safety regulations are provided, they are thereby rendered inoperable. No liability will be accepted for damage caused by incorrect operation!

Ordering code

01	02		03		04		05		06		07		08	
VT-VETSY-1	-	1X	/	1	-	2	-	1	-	1	-	0	/	*

01	Service case with test device for proportional valves with integrated electronics	VT-VETSY-1
02	Component series 10 ... 19 (10 ... 19: unchanged technical data and pin assignment)	1X
03	Test device type VT-VET-1-1X	1
04	Connection cable to valve: 2x 6-pin connection cables type VT-VETK-1-1X	2
05	Adapter cable for valve type 4WSE2EM6-1X: Adapter cable type VT-VETAK-1-1X	1
06	Power supply unit 90 – 264 VAC/+24 VDC; 3.75 A: Power supply unit type VT-VETNT-3-1X/G24	1
07	Power supply unit 115/220 V/±15 VDC; 0.25 A: Without power supply unit (can be ordered separately, see page 10)	0
08	Further details in the plain text	*

1) The power connection connector of the power supply unit fits sockets in Germany and many other European countries.
In some countries, a country-specific adapter needs to be used.
This is not included in the scope of delivery.

Test device type VT-VET-1-1X

The test device is suitable for the control and functional testing of proportional valves with integrated electronics and an operating voltage of ±15 V or +24 V.

Operating modes:

- ▶ external operation → loop through the operating voltage and the command values from the control cabinet to the valve
- ▶ internal/external operation → command value specification via the test device; operating voltage from the control cabinet
- ▶ internal operation → operating voltage via a separate power supply unit; command value specification via the test device
- ▶ Command value specification via BNC socket → operating voltage optional



Type VT-VET-1-1X

Functional description and operating instructions

Voltage supply

The test device can be supplied with +24 V or ± 15 V of power, depending on the operating voltage required by the valve. To do this, the “power selector” change-over switch needs to be set accordingly prior to commissioning.

An internal DC/DC-converter generates the required auxiliary voltages ± 15 V for the internal command value specification. The “power selector” switch changes, among other things, the internal **reference potential L0** to the respective externally applied ground potential.

Switch position “+24 V” → Input pin B = reference potential

Switch position “+15 V” → Input pin C = reference potential

Connections

Input connector ES (item 1) and 4 mm input sockets:

The left-hand input connector ES is used to connect the connection cable coming from the control or control cabinet. The left-hand 4 mm sockets are directly connected to the pins of the input connector ES, depending on the setting of the control elements (see control and display elements).

All of the signals coming from the control are therefore measured at the sockets.

For the operation of the test device and valve, the necessary operating voltages +24 V or ± 15 V (depending on the type of valve) must be available.

If there is still no operating voltage available on the control cabinet side, a corresponding power supply unit can be connected to the input connector ES.

Output socket AB (item 16) and 4 mm output sockets:

The right-hand output socket AB is used to connect the valve. The right-hand 4 mm sockets are directly connected to the pins of the output socket AB.

All of the signals going to or coming from the valve are therefore measured at the 4 mm sockets.

With the short-circuit connectors, each individual wire of the connection cable can be separated, for example, to enable a current measurement.

BNC socket:

An externally generated command value signal can be fed to the BNC socket using a standardized 50 Ω cable.

Here, the command value selector switch “setpoint selector” is to be switched to the position “BNC”.

PE socket:

The PE socket is directly connected to the PE connection of the input connector ES. The output socket AB has no PE connection.

Potentiometer/trimmer

Designation	Function	Requirements
setpoint intern	Command value specification for the valve (AB – pin D) The output automatically switches between $U_{\text{command}} = \pm 10$ V or $I_{\text{command}} = \pm 20$ mA, depending on the load resistance of the valve command value input.	► –
stepfunction level	Setting the step amplitude The step function is activated by the “stepfunction key” button.	► Operating voltage on the input switch ES Position the “power selector” switch corresponding to the type of operating voltage ► Switch the “setpoint selector” to the “intern” position ► Pressing the “stepfunction key” button generates the step function.

Functional description and operating instructions (continued)

LED displays

Designation	Function	Requirements
power	Display of the internal voltage supply	► Operating voltage at the input switch ES
enable indication control	Display of the enable signal coming from the control/control cabinet (input socket ES – pin C)	► Operating voltage is +24 V ► “power selector” switch in “24 V” position ► “power” LED lights up
enable indication valve	Display of the enable signal going to the valve (output socket AB – pin C and measuring sockets C). The LED also lights up as soon as an enable signal is applied only on the left-hand 4 mm-measuring socket C. Without a short-circuit connector this signal is not applied at the output socket AB and thus on the valve.	► Operating voltage is +24 V ► “power selector” switch in “24 V” position ► “power” LED lights up ► Enable signal is activated

Switches

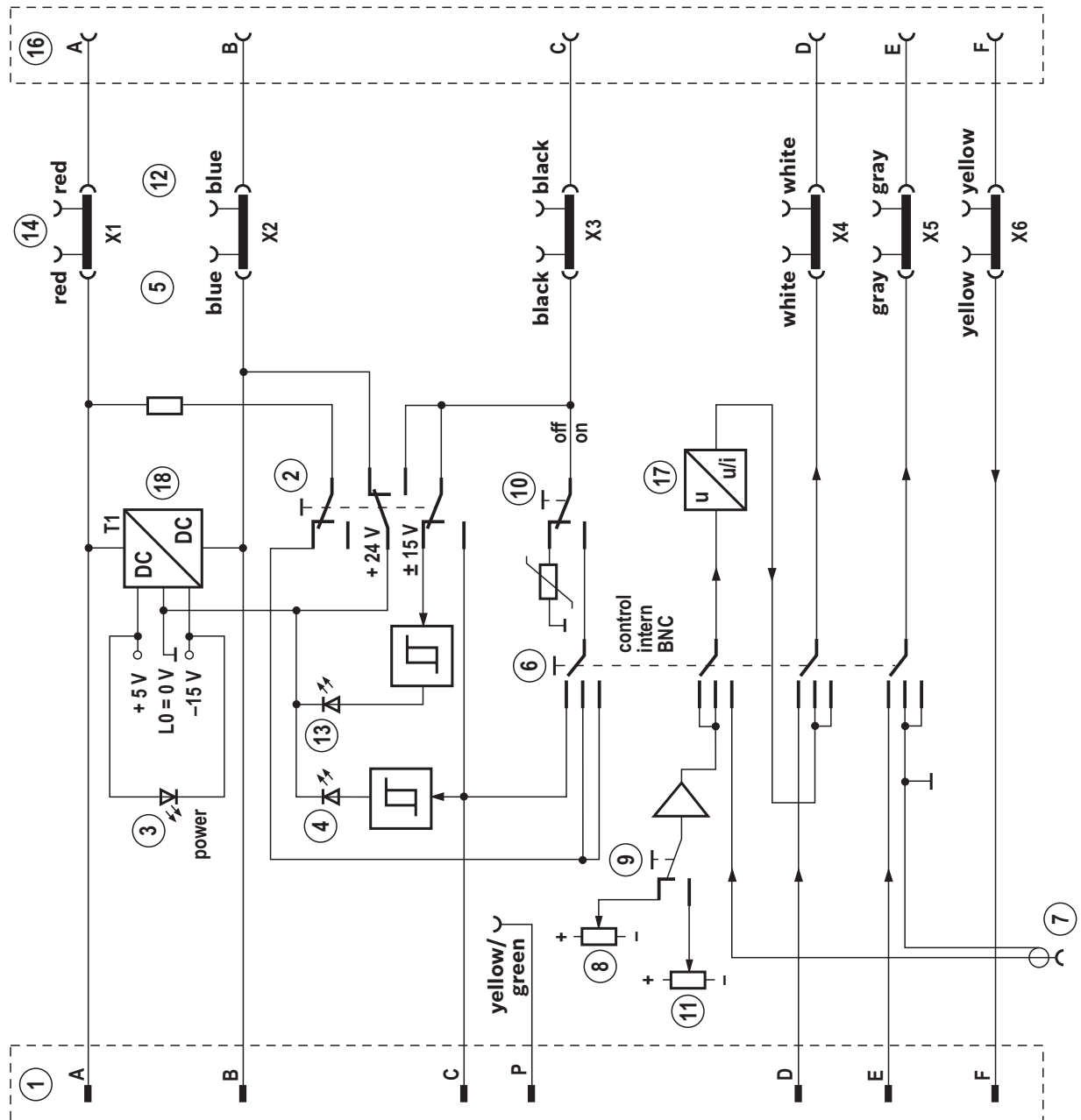
All of the functions described are valid only as long as all short-circuit bridges are plugged!

Designation	Switch position	Function
power selector	+24 V	The internal reference potential is connected to ES – pin B (0 V at $U_B = 24$ V).
		The “enable” switch can generate an enable signal (“on”) or turn it “off”.
	±15 V	The internal reference potential is connected to ES – pin C (0 V at $U_B = \pm 15$ V).
		The enable signal generation is deactivated. ES – pin C is directly connected to AB – pin C (short-circuit bridge).
enable (only at 24 V operation)	on	”setpoint selector” switch in “control” position → An externally applied enable signal (ES – pin C) from the control is connected through.
		”setpoint selector” switch in “intern” or “BNC” position → The enable signal for the valve is set.
	off	The enable signal output (AB – pin C) is connected with low impedance to the reference potential (0 V).
setpoint selector	control	The command value lines are connected directly from the control through to the valve via pin D and pin E.
		If the “power selector” switch is in the “24V” position and the “enable” switch is in the “on” position → The enable signal of the control is connected through to the valve (pin C).
	intern or BNC	”power selector” switch in “24V” position → The enable signal to the valve corresponds to the position of the “enable” switch.
		The reference potential for the command value (AB – pin E) corresponds to the internal reference potential (0 V).
	intern	If the “stepfunction key” button is not actuated → The command value signal to the valve (AB – pin D) corresponds to the specification by the command value potentiometer “setpoint intern”.
		If the “stepfunction key” button is actuated → The command value signal to the valve (AB – pin D) corresponds to the specification by the trimmer “stepfunction level”.
	BNC	The applied signal at the BNC socket is connected through as a command value signal to the valve (AB – pin D).

Buttons

Designation	Function	Requirements
stepfunction key	Switching between the command value specifications “setpoint intern” and “stepfunction level” (button actuated)	Operating voltage applied at the input switch ES. Switch position “power selector” corresponding to the type of operating voltage. ”setpoint selector” switch to “intern”

Block diagram/pin assignment



Pin assignment		
Pin	Valve version with operating voltage +24 V	Valve version with operating voltage ±15 V
A	+24 V	+15 V
B	0 V	-15 V
C	Enable or reference potential for the valve actual value, for example, for 4WRSE	0 V
PE	Protective earth	Protective earth
D	Command value +	Command value +
E	Command value -	Command value -
F	Actual value	Actual value

Technical data

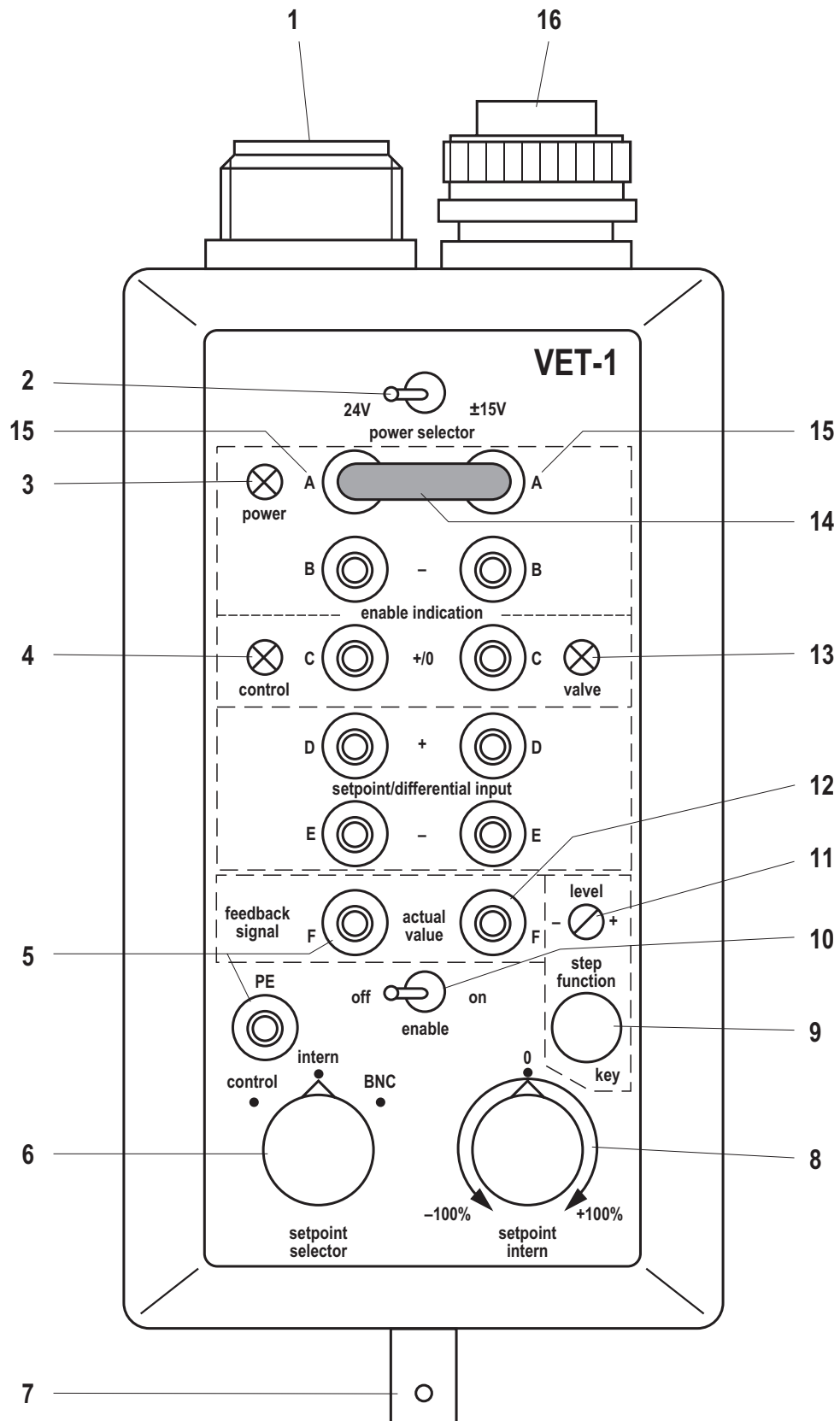
(For applications outside these parameters, please consult us!)

Operating voltages			
"power selector" switch			
– Switch position "24V"	U_B	V	24; – 20% + 40%
– Switch position "±15 V"	U_B	V	±15; ± 10%
Current consumption of the test device	I	A	0.1
Maximum current carrying capacity from pin A and B of the input connector ES and the output socket AB in the examination of 24 V proportional or high-response valves	$I_{\max}$	A	6

Inputs			
– Input connector ES			
Command values at pin E and D	$U_e; I_e$		corresponding to the valve specifications
Enable signal at pin C (24 V operation)			
not active	U_F	V	0 ... 10
active	U_F	V	16 ... U_B
– Output socket AB			
Actual value at pin F	$U_e; I_e$		corresponding to the actual value output of the valve
– BNC socket	U_e	V	0 ... ±10

Outputs (All short-circuit bridges plugged in)			
– Input connector ES			
Actual value at pin F	$U_a; I_a$		corresponding to the actual value output of the valve
– Output socket AB			
Enable signal at pin C (24 V operation)			
• "setpoint selector" switch			
– Switch position "intern" or "BNC"			
"enable" switch			
in switch position "off"	U_F	V	0
in switch position "on"	U_F		U_B
– Switch position "control"			
"enable" switch			
in switch position "off"	U_F	V	0
in switch position "on"	U_F		corresponding to pin C of the input connector ES
Command values at pin D and E			
• "setpoint selector" switch			
– Switch position "intern" or "BNC"			
Pin E			Reference potential
Pin D	U_{command}	V	0 ... ±10, if $R_{e \text{ valve}} > 500 \Omega$
	I_{command}	mA	0 ... ±20, if $R_{e \text{ valve}} < 500 \Omega$
– Switch position "control"			
Pin E and D	U_{command}		corresponding to input connector ES (pin E and D)
Dimensions (W x H x D)		mm	94 x 54 x 160
Weight	m	kg	0.36

Device view



Position numbers see page 8

Description of the connections, as well as the display and adjustment elements

Functional element	Name	Position ¹⁾
Input connector ES: connection on the control side via connector K31, CM02E14S-61P		1
Switch to select the required operating voltage from the valve	power selector	2
LED indicators:		
► Ready for operation	power	3
► Enable signal of the input connector ES and from the external control at pin C	enable indication control	4
► Enable signal at measuring sockets, output socket AB and pin C	enable indication valve	13
Input measuring sockets	A to F and PE	5
Designation for measuring sockets A to F	A to F	15
Switch to select the command value signal source	setpoint selector	6
BNC socket for connecting an external independent command value generator		7
Potentiometer for setting the internal command value signal	setpoint intern	8
Shift key between the internal command value signals to generate a step signal	stepfunction key	9
Enable switch to generate an enable signal independent of the external control	enable	10
Trimmer to set the amplitudes of the internal step function generator	stepfunction level	11
Current/voltage output for the valve command value with automatic switching between $U_A = 0 \text{ V} \dots \pm 10 \text{ V}$ or $I_A = 0 \dots \pm 20 \text{ mA}$		17
Short-circuit bridges to separate individual cable wires of the connection from the control to the valve		14
Output measuring sockets to control the signals on the valve connection cable	A ... F	12
Output socket AB: connection on the valve side via the flange socket MS3108A-14S-6S		16
Voltage converter DC/DC for the internal voltage supply		18

¹⁾ Position numbers relate to device view and block diagram

 Notices:
Mode of operation without enable input

Valves with integrated electronics and an operating voltage of +24 V without enable input use port C as reference potential for the valve actual value. In this case, the “enable” switch must be set to the “off” position.

Mode of operation with enable input

Valves with integrated electronics and an operating voltage of +24 V with enable input use port B as reference potential for the valve actual value. In this case, the “enable” switch must be set to the “on” position.

Overview of the proportional valves suitable for testing

At the time this data sheet was published, the following Rexroth proportional valves could be tested with the test device VT-VET-1-1X:

Valve type	Operating voltage U_B
Servo valves with integrated electronics (OBE)	
4WSE2EM6 (without electric position feedback)	±15 V
4WSE2EM10(A)-4X (without electric position feedback)	±15 V
4WSE2EE10(A)-4X	±15 V
4WSE2EM10-5X (without electric position feedback)	±15 V
4WSE2ED10-5X	±15 V
4WSE2EM16(A) (without electric position feedback)	±15 V
4WSE2ED16(A)	±15 V
4WSE3EE16	±15 V
4WSE3EE25	±15 V
4WSE3EE32	±15 V
4DSE1EO2 (without electric position feedback)	±15 V
3DSE2EH10 (without electric position feedback)	±15 V
Proportional and high-response valves with integrated electronics (OBE)	
4WRAE (without electric position feedback)	+24 V
4WRBAE (without electric position feedback)	+24 V
4WREE	+24 V
4WRPE	+24 V
4WRPEH	+24 V
4WRSE(H)	+24 V
4WRKE	+24 V
4WRBKE	+24 V
4WRLE	+24 V
4WRTE	+24 V
4WRGE	±15 V or +24 V
4WRDE	±15 V or +24 V
.WRCE	±15 V or +24 V
FESE (from component series 2X)	+24 V
3FERE	+24 V
.WRZE (without electric position feedback)	+24 V
DBEE (without electric position feedback)	+24 V
DBEME (without electric position feedback)	+24 V
DBEMTE (without electric position feedback)	+24 V
DBETE (without electric position feedback)	+24 V
DBETRE (without electric position feedback)	+24 V
ZDBEE (without electric position feedback)	+24 V
STW valves upon request	±15 V or +24 V
DREE (without electric position feedback)	+24 V

Power supply units

Included within the scope of delivery:

Power supply unit type VT-VETNT-3-1X/G24

Table power supply unit 90-264 VAC → 24 VDC; 3.75 A

The power connection connector of the power supply unit fits sockets in Germany and many other European countries.

In some countries, a country-specific adapter needs to be used. This is not included in the scope of delivery.



H 6847

Type VT-VETNT-3-1X/G24 (actual product may differ)

Technical data (For applications outside these parameters, please consult us!)				
Operating voltage	<i>U</i>	VAC	90 ...264; 47 ... 63 Hz	
Current consumption	<i>I</i> _{max}	A	1.2	
Fuse			electronic overload protection	
Output voltage	<i>U</i>	VDC	24 ± 1 V; 3.75 A	
Length of power cord	<i>l</i>	m	approx. 1.5	
Length of the cord to the test device	<i>l</i>	m	approx. 1.5	
Dimensions (W x H x D)		mm	139 x 61 x 36	
Weight	<i>m</i>	kg	0.46	

Not included in the scope of delivery:

Power supply unit type VT-VETNT-2-1X/G15

Connector power supply unit 115 VAC/230 VAC → ±15 VDC; 0.25 A

(must be ordered separately, material no.: **R900576199**)

The power supply unit fits sockets in Germany and many other European countries.

In some countries, a country-specific adapter needs to be used. This is not included in the scope of delivery.



H 6846

Type VT-VETNT-2-1X/G15

Technical data (For applications outside these parameters, please consult us!)				
Operating voltage	<i>U</i>	V	115/230 ± 5% 50/60 Hz switchable	
Current consumption	<i>I</i>	mA	29	
Fuse			Thermal fuse 130 °C	
Output voltages	<i>U</i>	VDC	+15 ± 0.2 V; 0.25 A	
		VDC	-15 ± 0.2 V; 0.25 A	
Length of the cord to the test device	<i>l</i>	m	2	
Dimensions (W x H x D)		mm	86 x 56 x 86	
Weight	<i>m</i>	kg	0.63	

Connection and adapter cable

Included in the scope of delivery (2 pieces):

Connection cable type VT-VETK-1-1X

Connection cable between test device VT-VET-1-1X and proportional valves with integrated electronics (valves with ordering code **K9** and **K31** for the electrical connection)

Technical data (For applications outside these parameters, please consult us!)			
Connection for valve		Mating connector according to DIN EN 175201-804	
Connection for test device		Connector MS3101A 14S 6P	
Length of connection cable	<i>l</i>	m	3
Weight	<i>m</i>	kg	0.3



Notices:

Several cables can be connected to each other to extend the length.

When operating valves with electrical connection K31, the ground conductor is interrupted.

Included within the scope of delivery:

Adapter cable type VT-VETAK-1-1X

Adapter cable between test device VT-VET-1-1X and proportional valves with integrated electronics (valves with ordering code **K17** for the electrical connection)

Technical data (For applications outside these parameters, please consult us!)			
Connection for valve		Mating connector VG 95328	
Connection for test device		Connector MS3101A 14S 6P	
Length of connection cable	<i>l</i>	m	3
Weight	<i>m</i>	kg	0.3

Notes

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