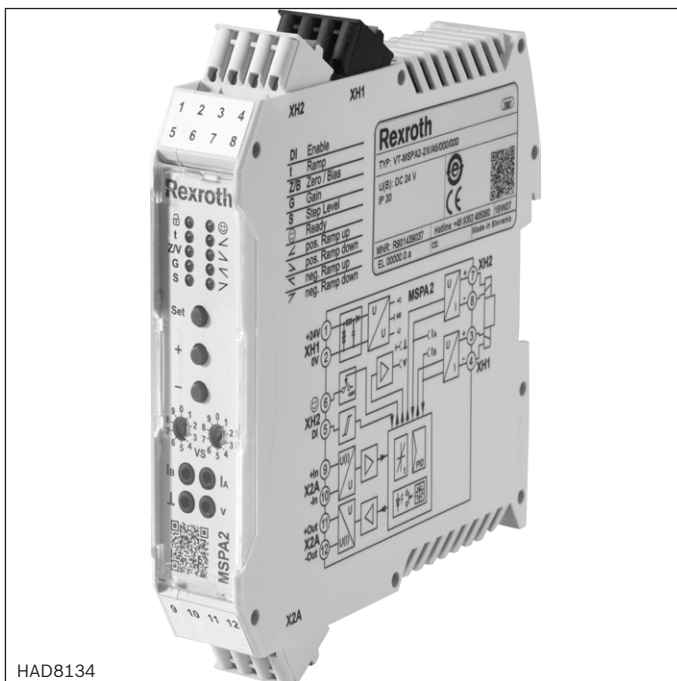


Valve amplifier for proportional valves without electrical position feedback

Type VT-MSPA Supplementary information

RE 30232-Z
Edition: 2018-06



HAD8134

► Component series 2X



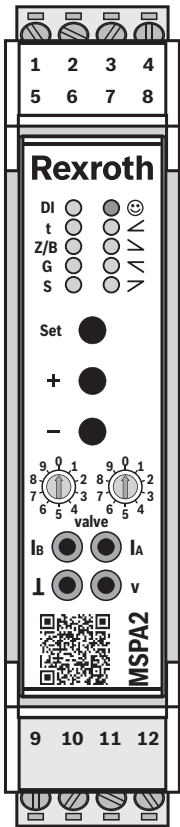
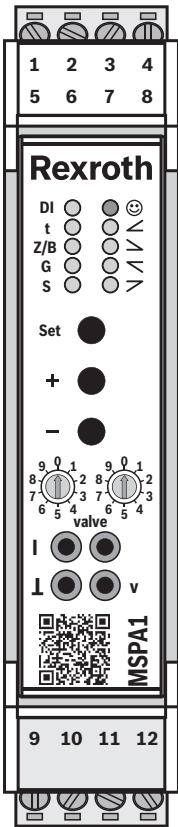
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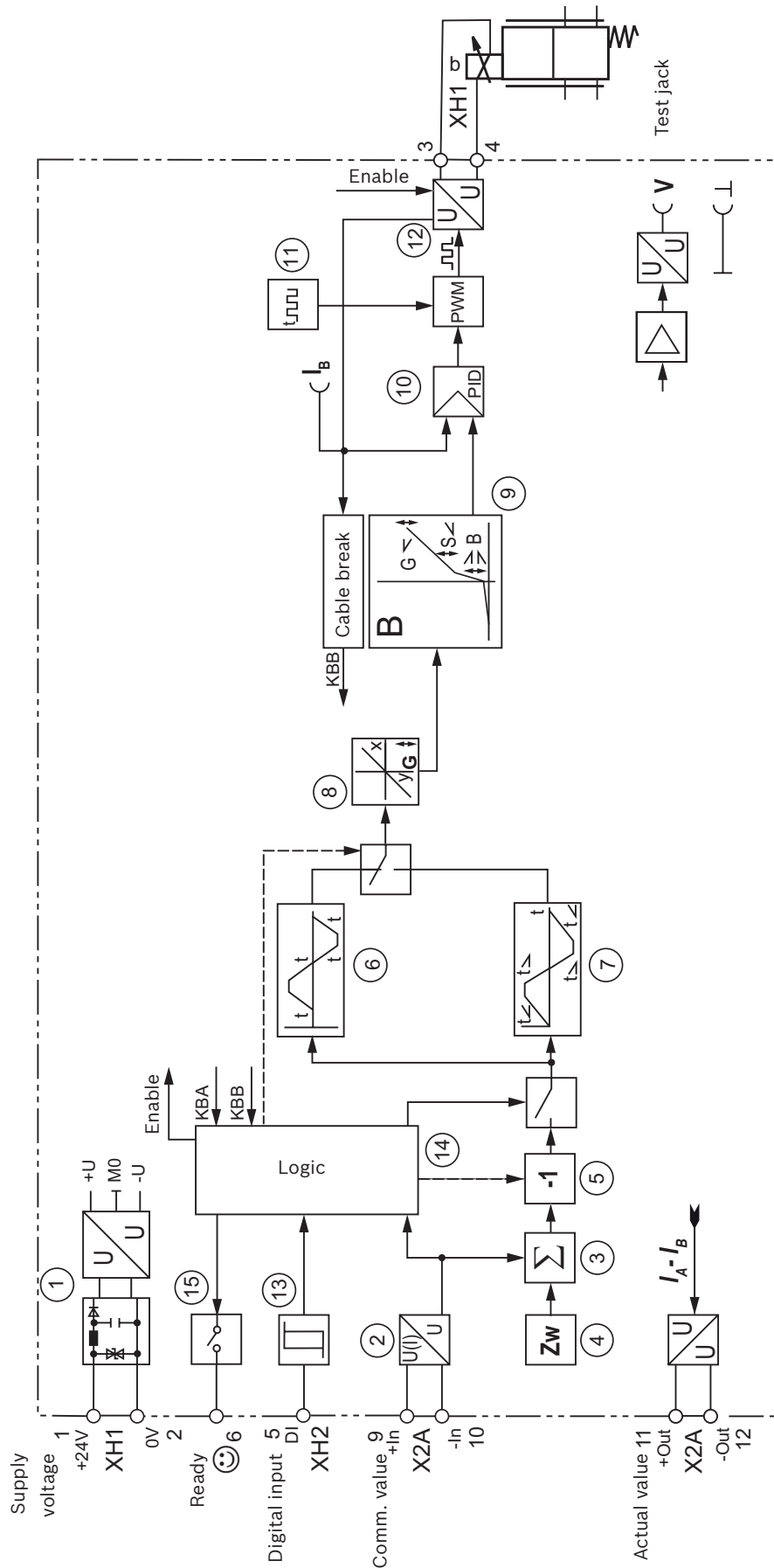
This supplementary information is to assist users in changing over to or replacing old amplifiers by the VT-MSPA_x-2X. It contains rewiring tables and draws your attention to the differences between the devices.

=	Terminal number and function identical
⇒	Identical function with other terminal number ⇒ rewiring
x	Function not compatible
*	Parameter variant of digital input
**	Changed scaling

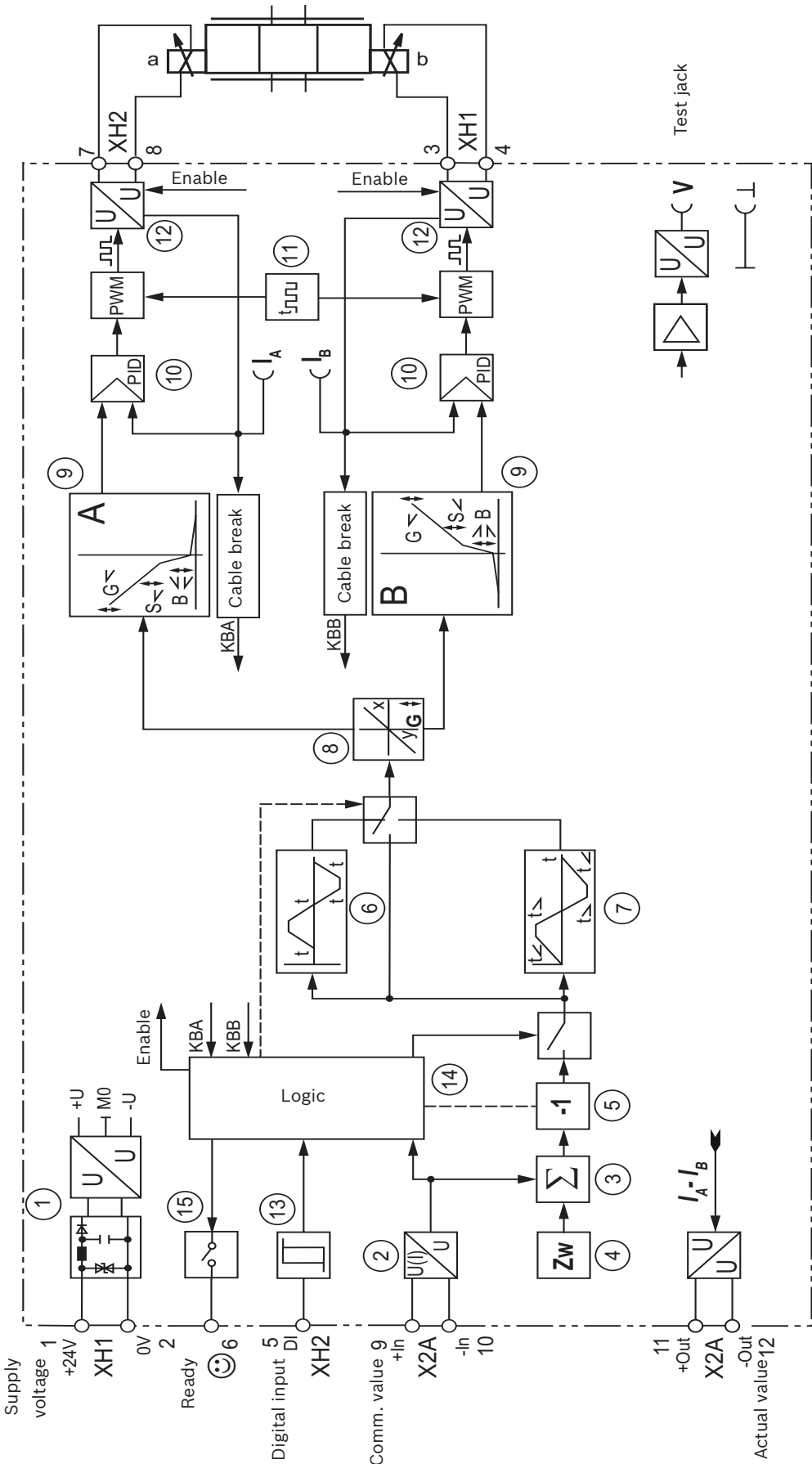
VT-MSPA1 / VT-MSPA2



Block circuit diagram VT-MSPA1

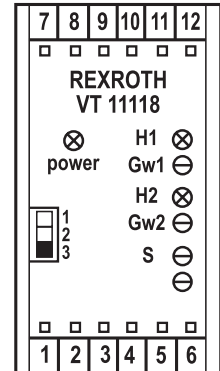


Block circuit diagram VT-MSPA2



VT11118-1X**VT11118-1X****VT-MSPA2-2X**

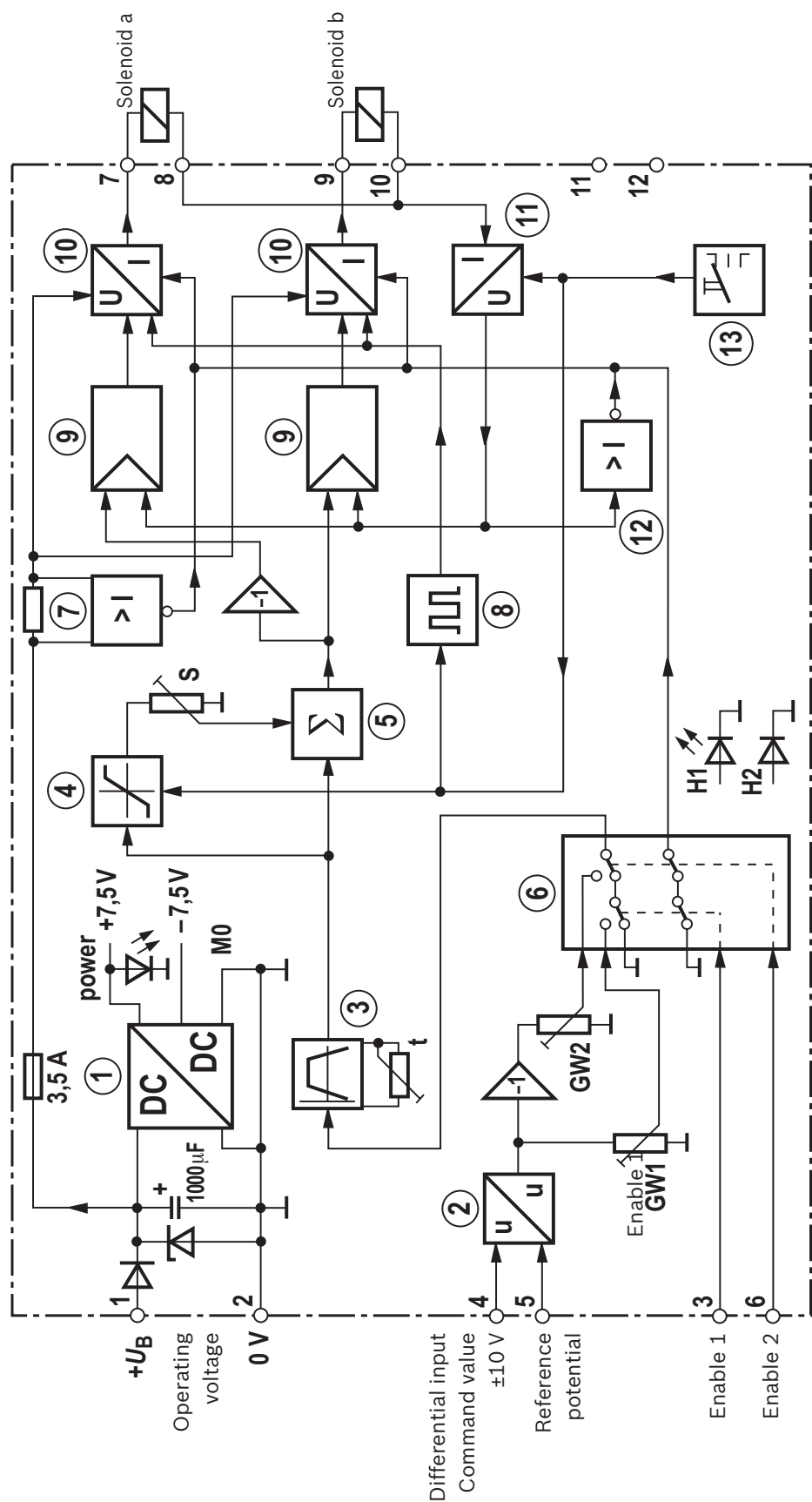
+U _B / 24 VDC	1	=	1	+U _B / 24 VDC
0 V	2	=	2	0 V
Enable 1	3	⇒	5	DI enable
Command value U +/-	4	⇒	9	Command value +
Reference potential	5	⇒	10	Command value -
Enable 2	6	x	6	DO ready
Solenoid A	7	⇒	7	Solenoid A +
Solenoid A	8	⇒	8	Solenoid A -
Solenoid B	9	⇒	3	Solenoid B +
Solenoid B	10	⇒	4	Solenoid B -
n. c.	11	x	11	AO: I - act +
n. c.	12	x	12	AO: I - act -



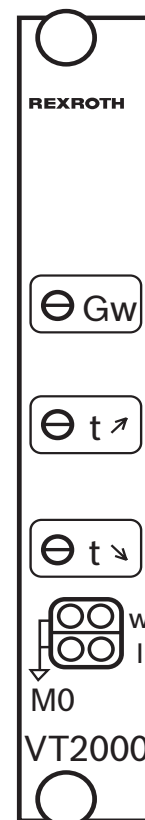
As against VT11118, the VT-MSPA2-2X is provided with only one enable input and one command value attenuator. With the VT-MSPA2-2X, command value inversion is a possible function of the digital input.

Block circuit diagram

VT11118-1X (RE 30218)

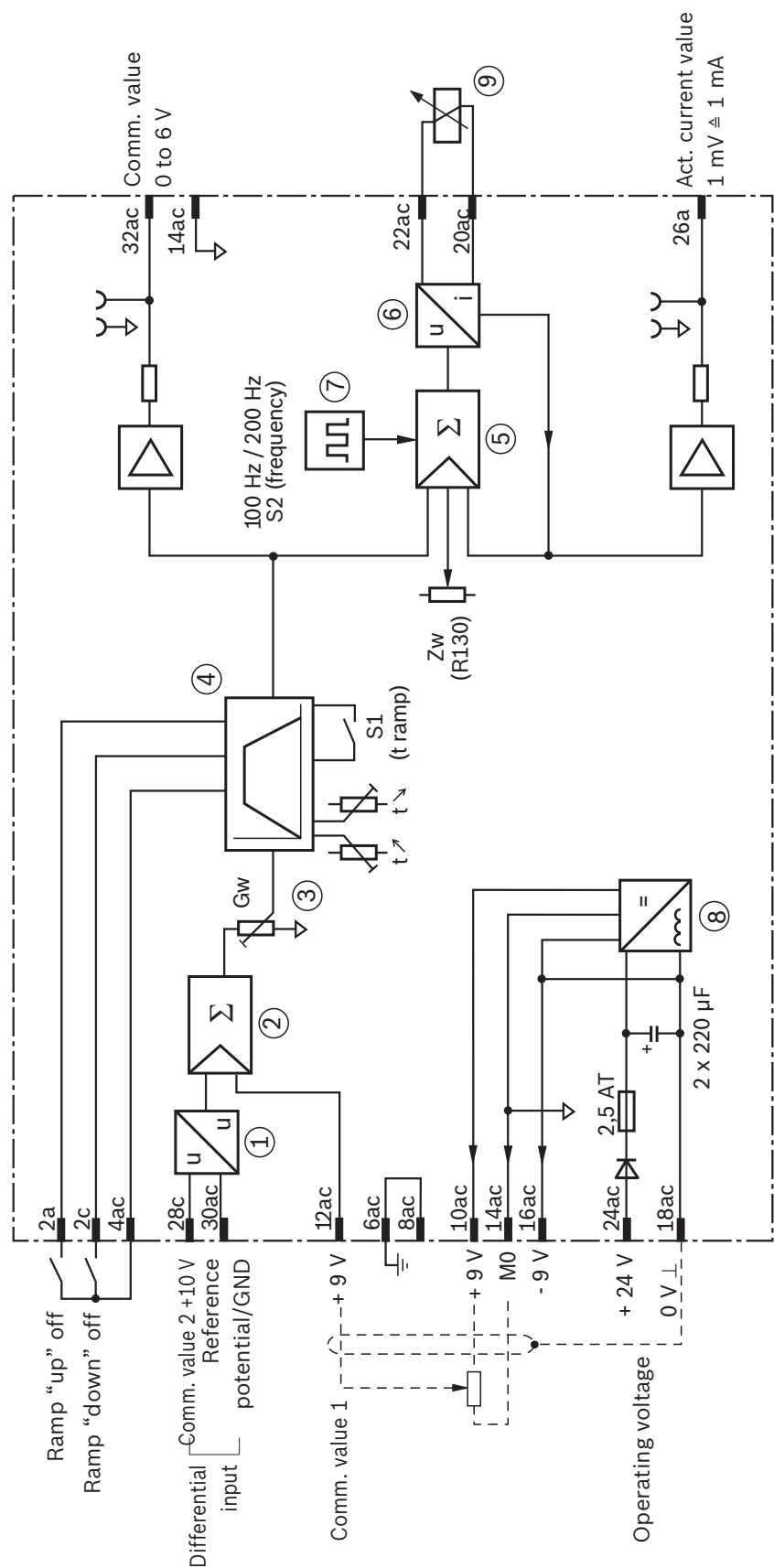


1	Power supply unit	7	Short-circuit detector
2	Differential amplifier	8	Clock pulse generator
3	Ramp generator	9	Current controller
4	Step function generator	10	Output stage
5	Summator	11	Current measurement of solenoids
6	Comm. value changeover and enable of output stages	12	Overcurrent detector
		13	Valve type selector switch



Block circuit diagram

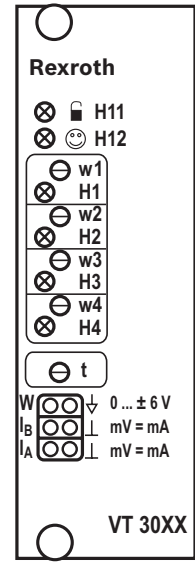
VT2000-5X (RE 29904)



GW	=	Command value attenuation	1	Differential input	7	Clock pulse generator
t	=	Ramp time setting	2	Summator	8	Power supply unit
Zw (R130)	=	Additional biasing current setting (0 to 300 mA)	3	Attenuator, max. command value	9	Proportional solenoid of the valve

VT3000-3X**VT3000-3X****VT-MSPA2-2X**

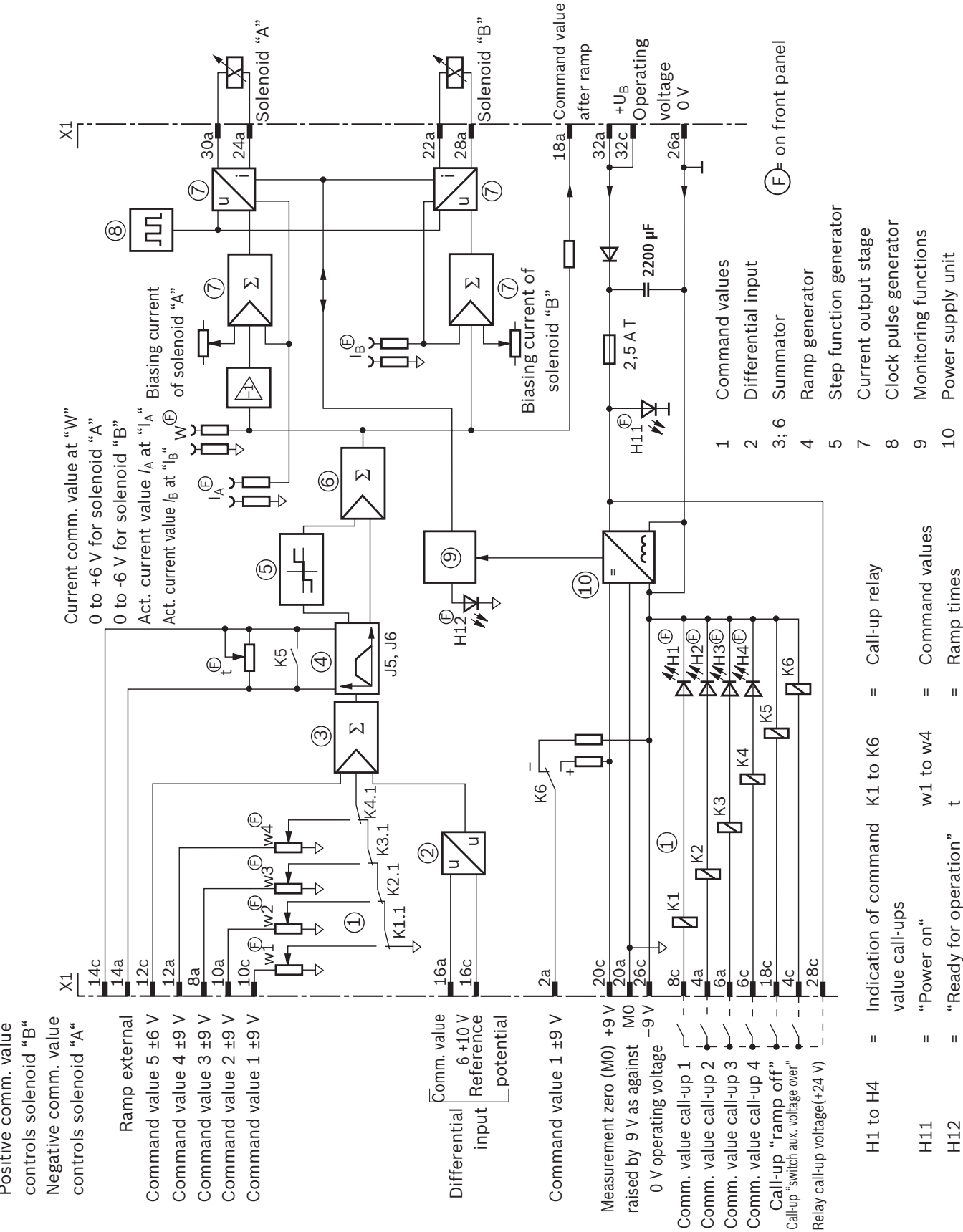
Auxiliary voltage +/-9 V	2a			-
-	2c			
Comm. value call-up 2	4c			
Call-up of "switch auxiliary voltage over"	4c	⇒	5*	Inversion
Comm. value call-up 3	6a	x	5	Enable
Comm. value call-up 4	6c			-
Command value 3 +/-9 V	8a			-
Comm. value call-up 1	8c			-
Command value 2 +/-9 V	10a			-
Command value 1 +/-9 V	10c			-
Command value 4 +9 V	12a	x	11	Act out +
Command value 5 +6 V	12c	x	12	Act out -
External ramp (pos. comm. value = solenoid B / neg. comm. value = solenoid A)	14a	x		-
	14c	x		-
Differential input, command value 6 +/-10 V	16a	⇒	9	+In
Differential input, reference potential	16c	⇒	10	-In
Command value after ramp	18a			-
Call-up "ramp off"	18c	⇒	5*	Ramp off
M0 (is raised by 9 V as against 0 V operating voltage)	20a			-
+9 V	20c			-
Solenoid B +	22a	⇒	3	Solenoid B +
n. c.	22c			-
Solenoid A -	24a	⇒	8	Solenoid A -
n. c.	24c			-
Operating voltage 0 V	26a	⇒	2	0 V
-9 V	26c			-
Solenoid B -	28a	⇒	4	Solenoid B -
Relay call-up voltage (+24 V)	28c	x		-
Solenoid A +	30a	⇒	7	Solenoid A +
n. c.	30c			-
Operating voltage +U _B	32a	⇒	1	+U _B / 24 VDC
	32c			



The VT-MSPA2-2X does not feature command value call-ups. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X. An external analog ramp time command value is not available in the VT-MSPA2-2X. The functions "Inversion" and "Ramp off" are not available together in the VT-MSPA2-2X.

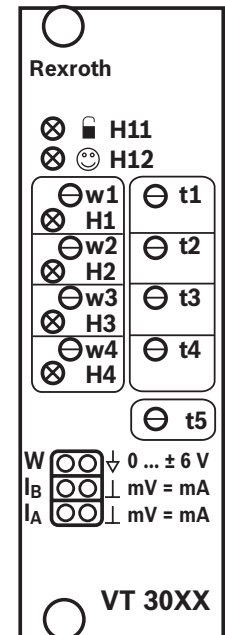
Block circuit diagram

VT3000-3X (RE 29935)



VT3006-3X**VT3006-3X****VT-MSPA2-2X**

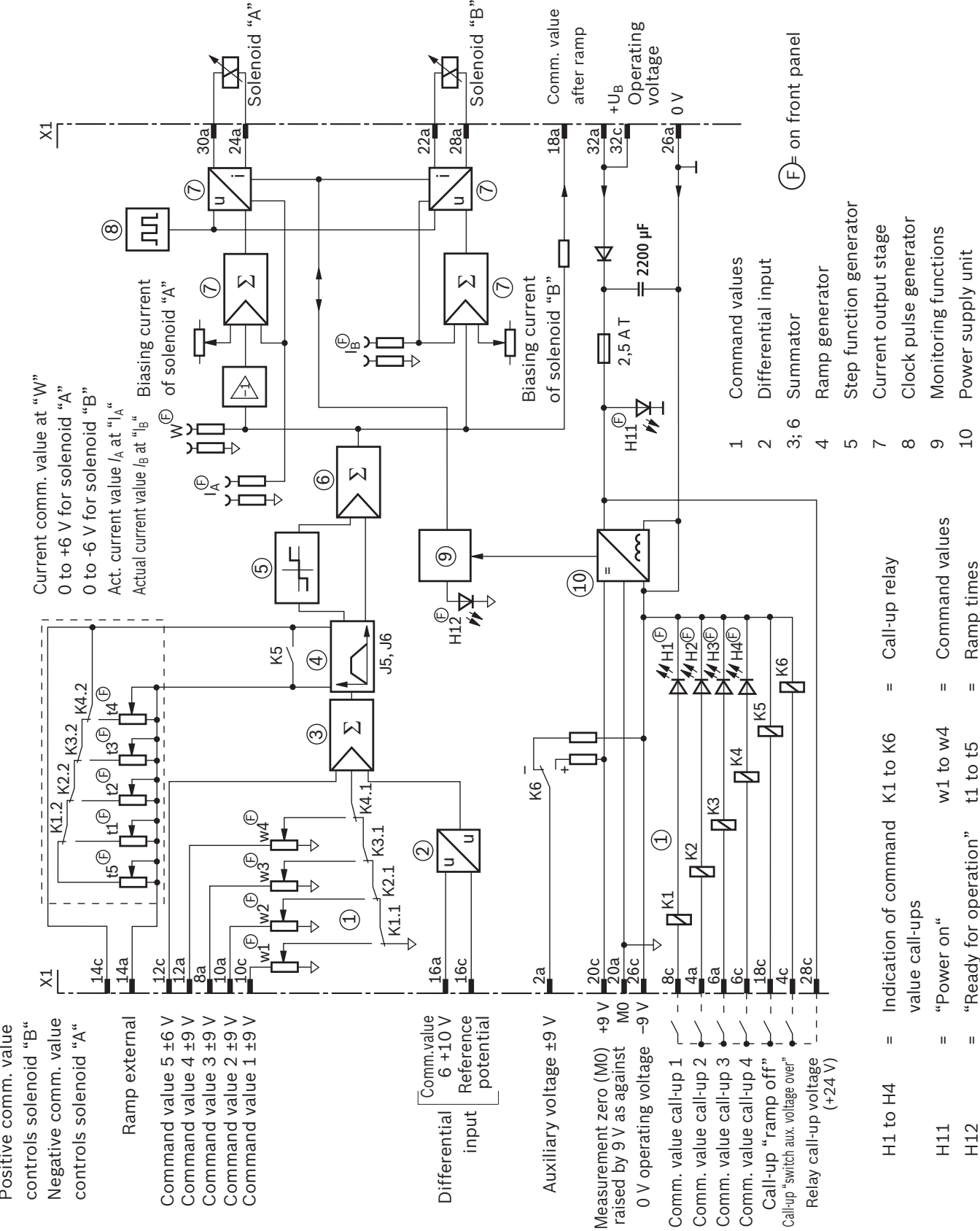
Auxiliary voltage +/-9 V	2a			-
-	2c			
Comm. value call-up 2	4a			
Call-up of "switch auxiliary voltage over"	4c	⇒	5*	Inversion
Comm. value call-up 3	6a	x	5	Enable
Comm. value call-up 4	6c			-
Command value 3 +/-9 V	8a			-
Comm. value call-up 1	8c			-
Command value 2 +/-9 V	10a			-
Command value 1 +/-9 V	10c			-
Command value 4 +9 V	12a	x	11	Act out +
Command value 5 +6 V	12c	x	12	Act out -
External ramp (pos. comm. value = solenoid B / neg. comm. value = solenoid A)	14a			-
	14c			-
Differential input, command value 6 +/-10 V	16a	⇒	9	+In
Differential input, reference potential	16c	⇒	10	-In
Command value after ramp	18a			-
Call-up "ramp off"	18c	⇒	5*	Ramp off
M0 (is raised by 9 V as against 0 V operating voltage)	20a			-
+9 V	20c			-
Solenoid B +	22a	⇒	3	Solenoid B +
n. c.	22c			-
Solenoid A -	24a	⇒	8	Solenoid A -
n. c.	24c			-
Operating voltage 0 V	26a	⇒	2	0 V
-9 V	26c			-
Solenoid B -	28a	⇒	4	Solenoid B -
Relay call-up voltage (+24 V)	28c			-
Solenoid A +	30a	⇒	7	Solenoid A +
n. c.	30c			-
Operating voltage +U _B	32a	⇒	1	+U _B / 24 VDC
	32c			



The VT-MSPA2-2X does not feature command value call-ups and ramp call-ups. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X. An external analog ramp time command value is not available in the VT-MSPA2-2X. The functions "Inversion" and "Ramp off" are not available together in the VT-MSPA2-2X.

Block circuit diagram

VT3006-3X (RE 29926)

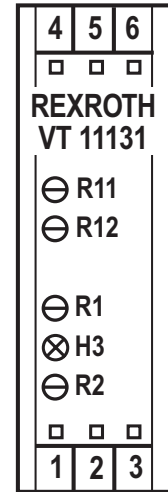


VT11132-1X

VT11132-1X

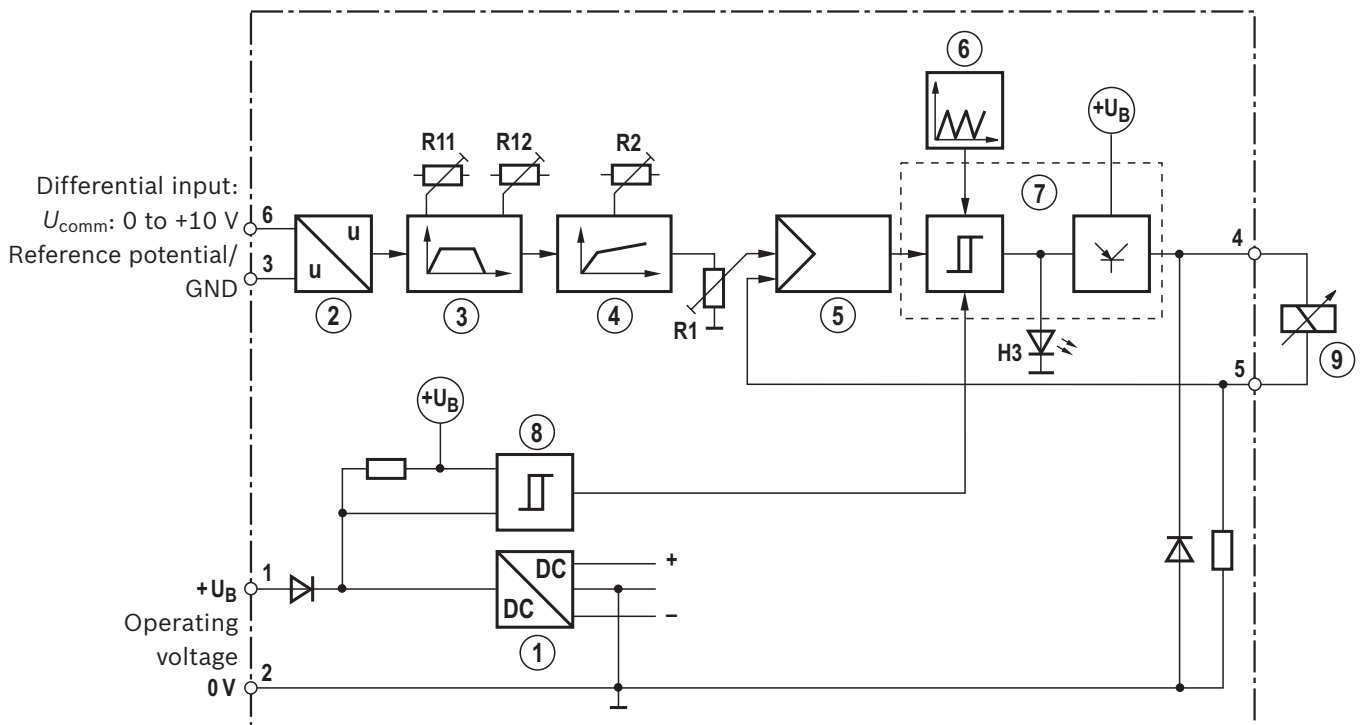
VT-MSPA1-2X

$+U_B$ / 24 VDC	1	=	1	$+U_B$ / 24 VDC
0 V	2	=	2	0 V
Reference potential GND	3	⇒	10	Command value -
Solenoid 1	4	⇒	3	Solenoid +
Solenoid 2	5	⇒	4	Solenoid -
Signal 0-10 V	6	⇒	9	Command value + 0...10 V
			5	DI enable
			6	DO ready
			7	-
			8	-
			11	AO: I - act +
			12	AO: I - act -



Block circuit diagram

VT11132-1X (RE 29865)



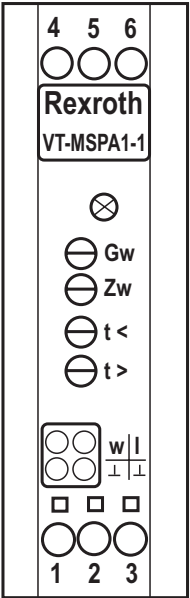
- | | | | | | |
|---|---|------------------------|---|---|-----------------------|
| 1 | = | Power supply unit | 6 | = | Clock pulse generator |
| 2 | = | Differential amplifier | 7 | = | Output stage |
| 3 | = | Ramp generator | 8 | = | Switching stage |
| 4 | = | Function generator | 9 | = | Proportional solenoid |
| 5 | = | Current controller | | | |

VT-MSPA1-1-1X/V0/0, VT-MSPA1-10-1X/V0/0, VT-MSPA1-11-1X/V0/0

VT-MSPA1-1-1X/V0/0
VT-MSPA1-10-1X/V0/0
VT-MSPA1-11-1X/V0/0

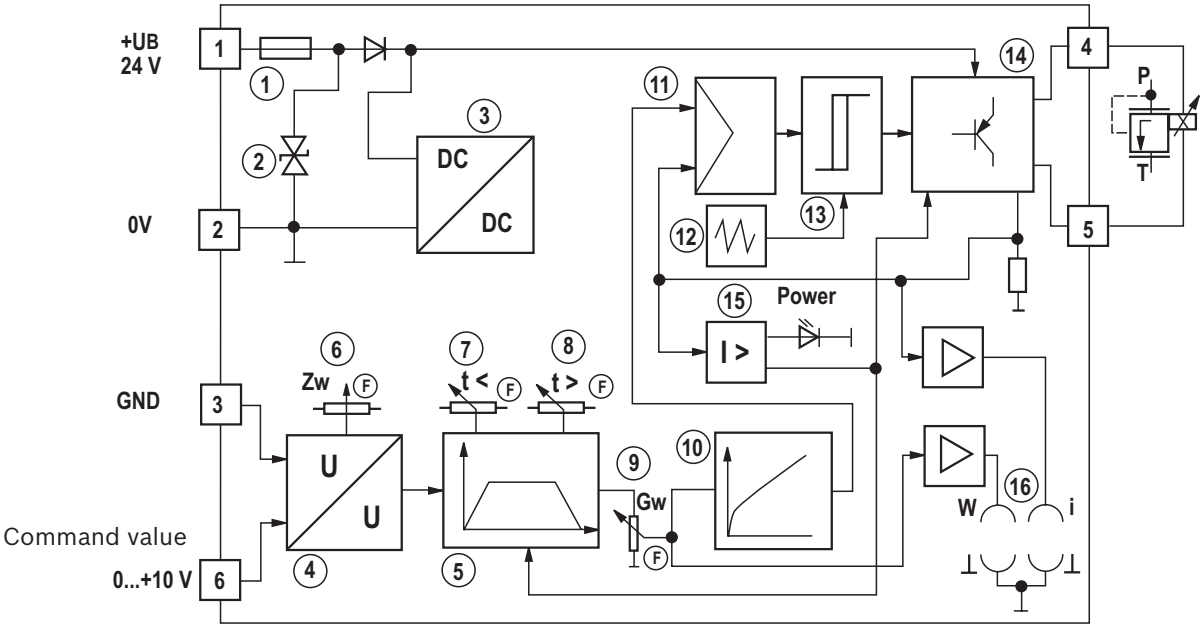
VT-MSPA1-2X

$+U_B$ / 24 VDC	1	=	1	$+U_B$ / 24 VDC
0 V	2	=	2	0 V
$-U_{comm}$	3	$\Rightarrow$	10	Command value -
Solenoid +	4	$\Rightarrow$	3	Solenoid +
Solenoid -	5	$\Rightarrow$	4	Solenoid -
$+U_{comm}$	6	$\Rightarrow$	9	Command value + 0...10 V
			5	DI enable
			6	DO ready
			7	-
			8	-
			11	AO: I - act +
			12	AO: I - act -



Block circuit diagram

VT-MSPA1-1-1X/V0/0, VT-MSPA1-10-1X/V0/0, VT-MSPA1-11-1X/V0/0 (RE 30223)



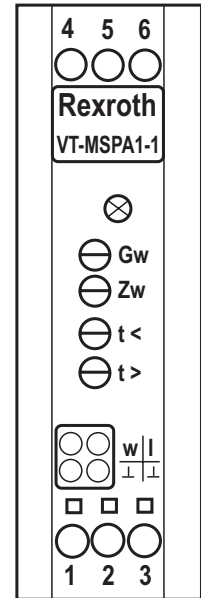
- | | | |
|-------------------------|-------------------------------------|----------------------------|
| 1 = Fuse | 6 = Pot. for zero point | 12 = Clock pulse generator |
| 2 = Suppressor diode | 7 = Pot. "ramp up" | 13 = Schmitt trigger |
| 3 = Power supply unit | 8 = Pot. "ramp down" | 14 = Output stage |
| 4 = Command value input | 9 = Potentiometer I_{max} | 15 = Fault detection |
| 5 = Ramp generator | 10 = Characteristic curve generator | 16 = Test jack |
| | 11 = Current controller | |
- (F) = on front panel

VT-MSPA1-150-1X/V0/0, VT-MSPA1-30-1X/V0/0

VT-MSPA1-150-1X/V0/0
VT-MSPA1-30-1X/V0/0

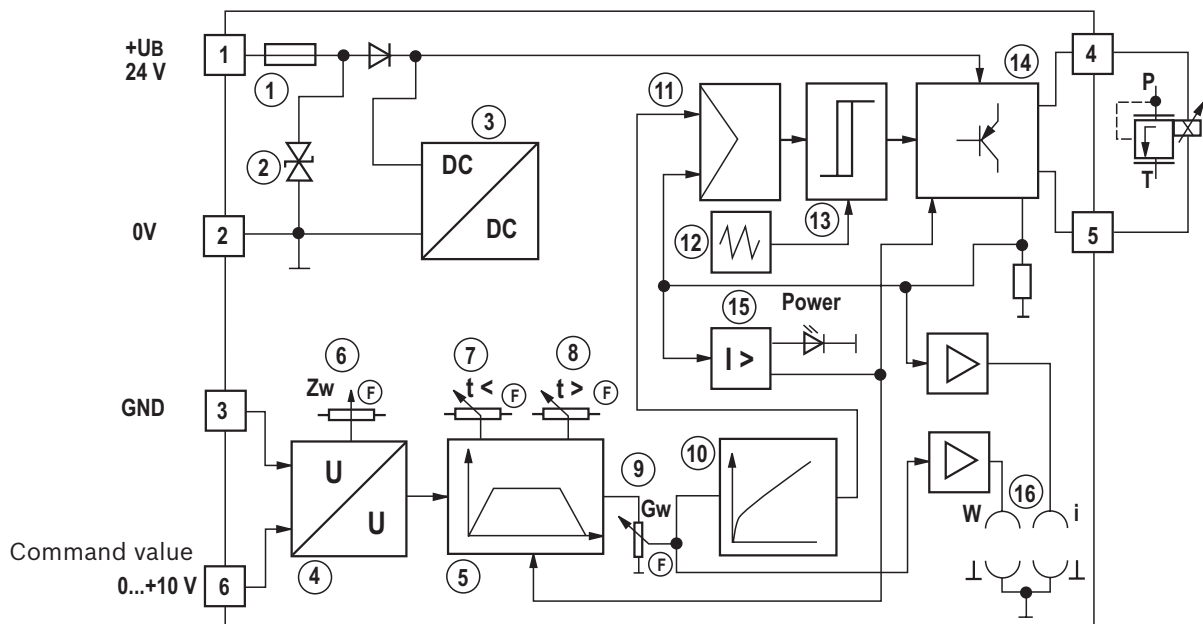
VT-MSPA1-2X

$+U_B / 24 \text{ VDC}$	1	=	1	$+U_B / 24 \text{ VDC}$
0 V	2	=	2	0 V
$-U_{\text{comm}}$	3	$\Rightarrow$	10	Command value -
Solenoid B	4	$\Rightarrow$	3	Solenoid +
Solenoid B	5	$\Rightarrow$	4	Solenoid -
$+U_{\text{comm}}$	6	$\Rightarrow$	9	Command value + 0...10 V
	7	x	5	DI enable
	8	x	6	DO ready
	9	x	7	-
	10	x	8	-
	11	x	11	AO: I - act +
	12	x	12	AO: I - act +



Block circuit diagram

VT-MSPA1-150-1X/V0/0, VT-MSPA1-30-1X/V0/0 (RE 30224)



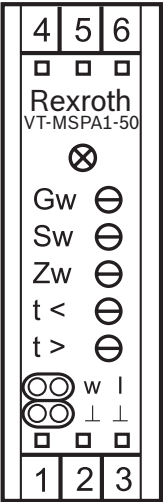
- | | | |
|-------------------------|-------------------------------------|----------------------------|
| 1 = Fuse | 6 = Pot. for zero point | 12 = Clock pulse generator |
| 2 = Suppressor diode | 7 = Potentiometer "ramp up" | 13 = Schmitt trigger |
| 3 = Power supply unit | 8 = Pot. "ramp down" | 14 = Output stage |
| 4 = Command value input | 9 = Potentiometer I_{max} | 15 = Fault detection |
| 5 = Ramp generator | 10 = Characteristic curve generator | 16 = Test jack |
| | 11 = Current controller | |
- (F) = on front panel

VT-MSPA1-50-1X/V0

VT-MSPA1-50-1X/V0

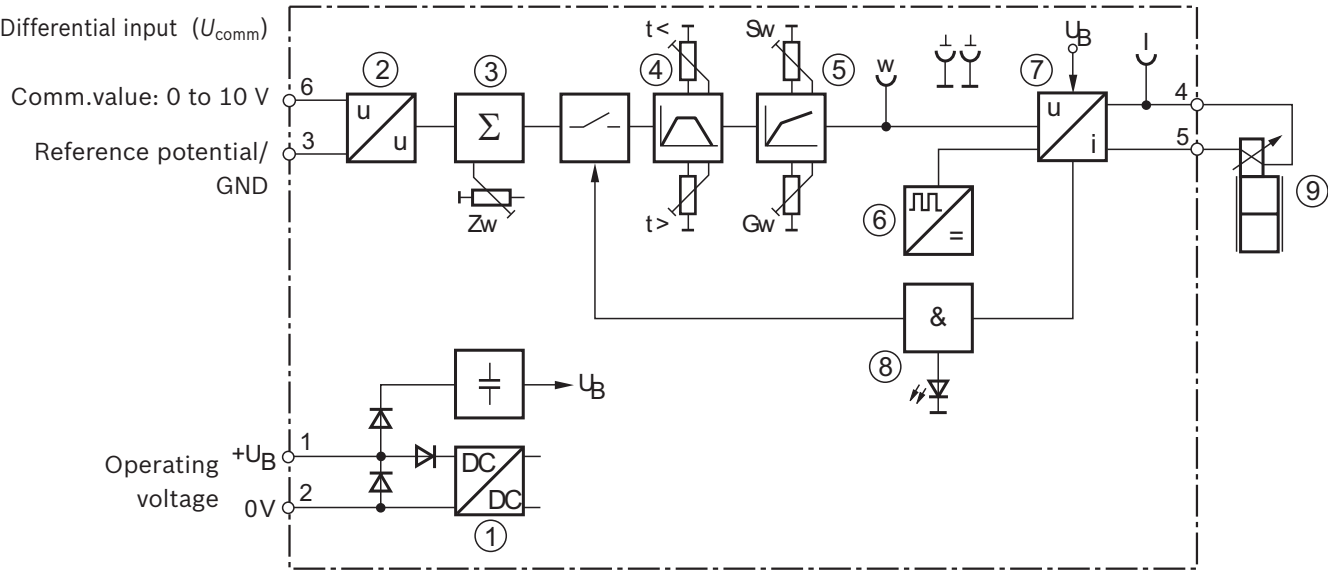
$+U_B$ / 24 VDC	1	=	1	$+U_B$ / 24 VDC
0 V	2	=	2	0 V
Reference potential GND	3	$\Rightarrow$	10	Command value -
Solenoid	4	$\Rightarrow$	3	Solenoid +
Solenoid	5	$\Rightarrow$	4	Solenoid -
Command value 0...10 V	6	$\Rightarrow$	9	Command value + 0...10 V
			5	DI enable
			6	DO ready
			7	-
			8	-
			11	AO: I - act +
			12	AO: I - act +

VT-MSPA1-2X



Block circuit diagram

VT-MSPA1-50-1X/V0 (RE 30225)



- 1

=

Power supply unit
- 2

=

Differential amplifier
- 3

=

Command value summator
- 4

=

Ramp generator
- 5

=

Characteristic curve generator
- 6

=

Clock pulse generator
- 7

=

Current output stage
- 8

=

Fault detection
- 9

=

Proportional valve
- Zw

=

Zero point, command value
- t<

=

Ramp time “up”
- t>

=

Ramp time “down”
- Sw

=

Step height
- Gw

=

Max. command value
- w

=

Command value
- I

=

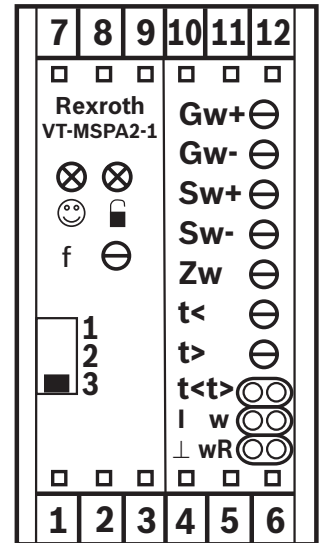
Actual current value

VT-MSPA2-1-1X/V0/0

VT-MSPA2-1-1X/V0/0

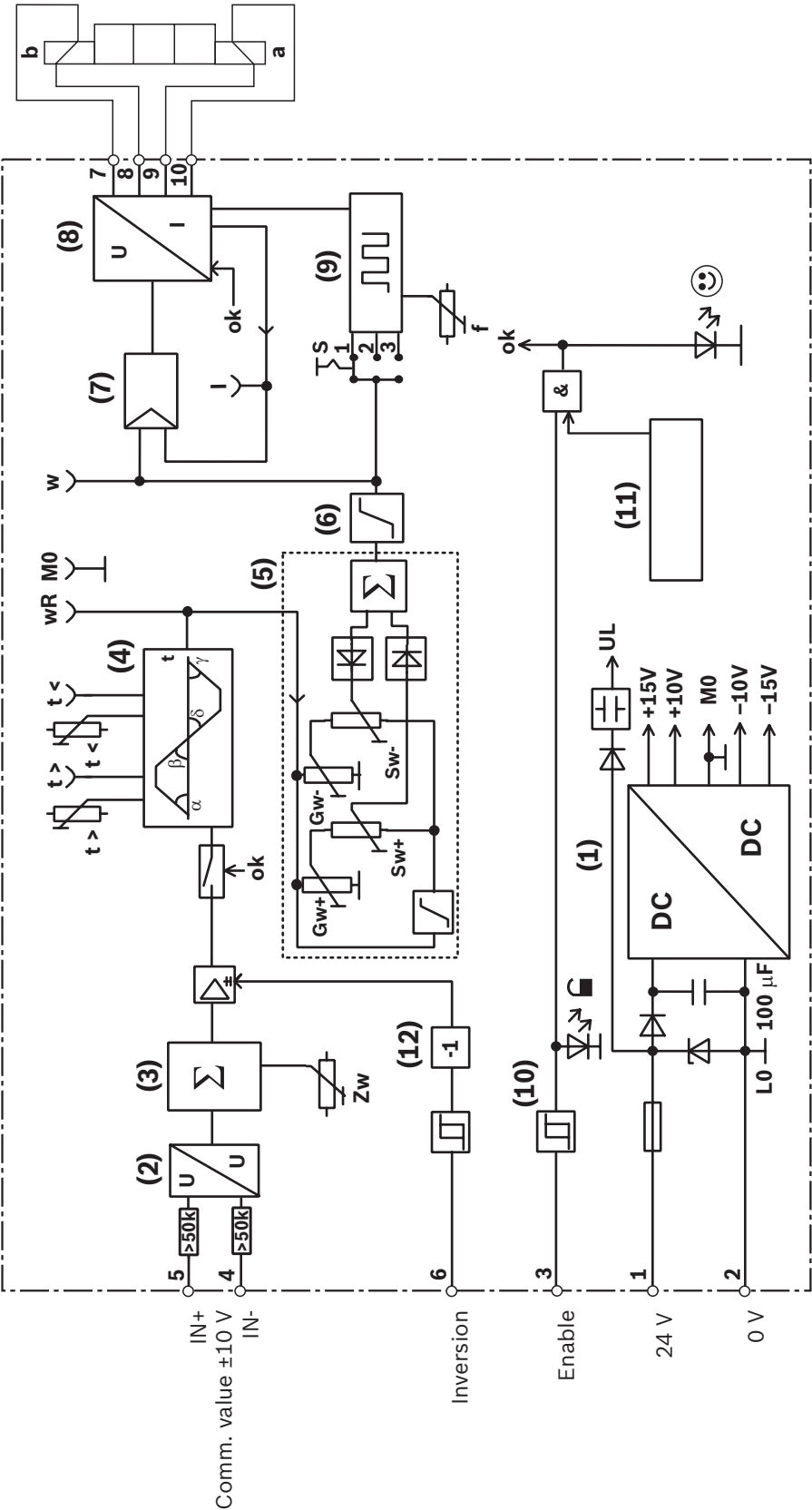
VT-MSPA2-2X

+U _B / 24 VDC	1	=	1	+U _B / 24 VDC
0 V	2	=	2	0 V
DI enable	3	⇒	5*	DI enable
Command value IN -	4	⇒	10	Command value -
Command value IN +	5	⇒	9	Command value + 0...10 V
Inversion	6	⇒	5*	Inversion
Solenoid B -	7	⇒	3	Solenoid B -
Solenoid B +	8	⇒	4	Solenoid B +
Solenoid A +	9	⇒	7	Solenoid A +
Solenoid A -	10	⇒	8	Solenoid A -
n. c.	11	x	11	AO: I - act +
n. c.	12	x	12	AO: I - act +
			6	DO ready



Block circuit diagram

VT-MSPA2-1-1X/V0/0 (RE 30228)



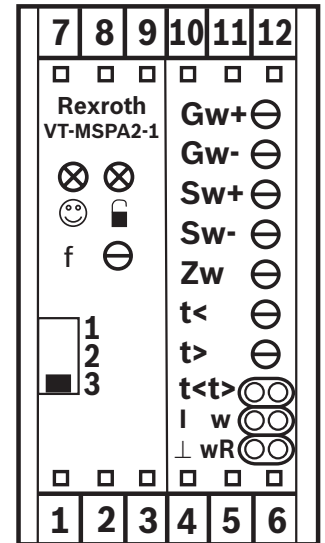
Zw	=	Zero point, command value	1	Power supply unit	7	Current controller
t<	=	Ramp time "up"	2	Differential amplifier	8	Current output stage
t>	=	Ramp time "down"	3	Comm. value summator	9	Clock pulse generator
Sw	=	Step height	4	Ramp generator	10	Enable function
Gw	=	Amplitude attenuator	5	Char. curve generator	11	Fault detection
w	=	Command value	6	Amplitude limiter	12	Inversion
wR	=	Comm. value after ramp				
	=	Ready for operation				
	=	Enable				

VT-MSPA2-525-10/V0

VT-MSPA2-525-10/V0

VT-MSPA2-2X

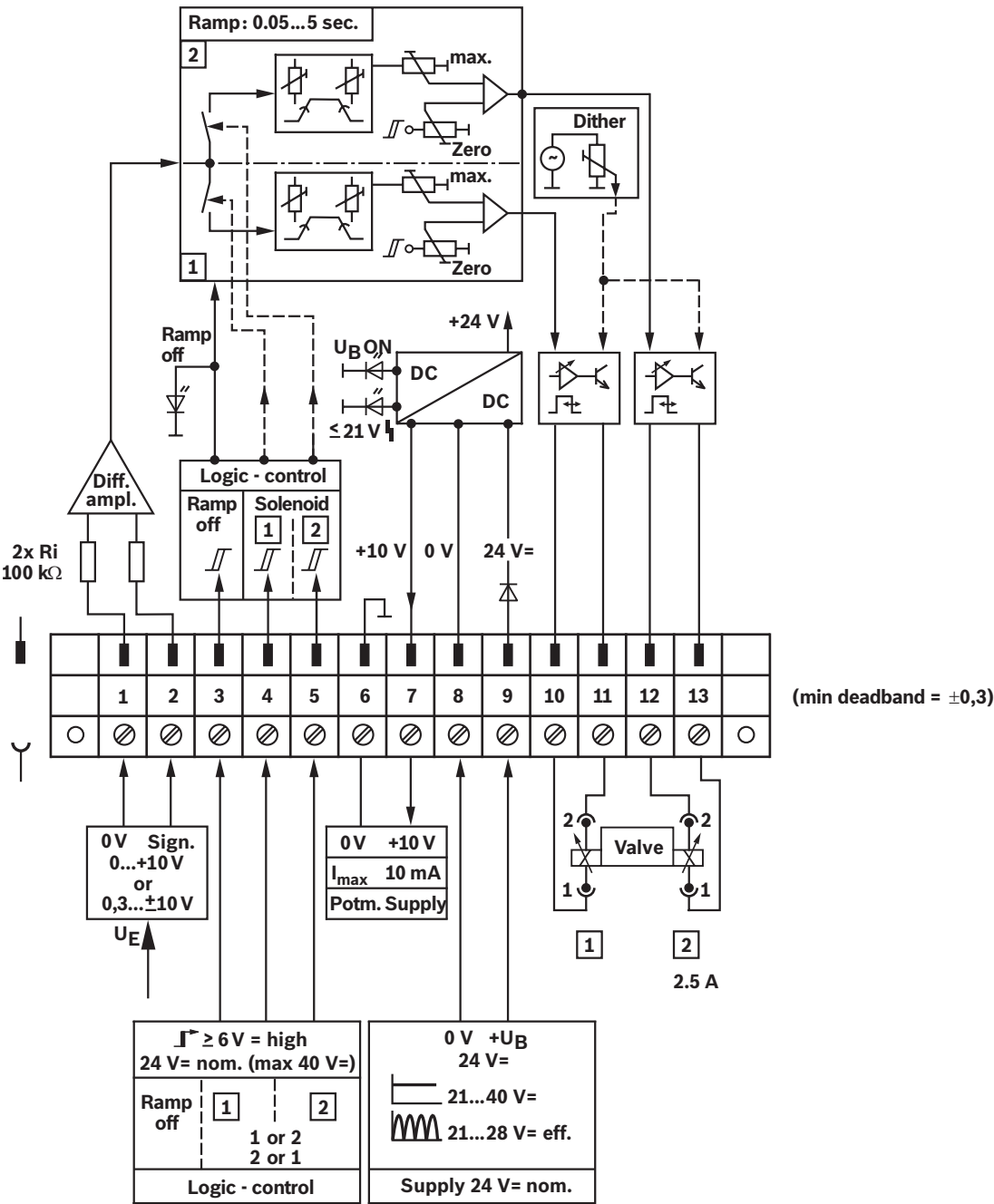
0 V signal +/-10 V or 0 - 10 V	1	⇒	9	Command value + 0...10 V
Signal +/-10 V or 0 - 10 V	2	⇒	10	Command value -
Ramp off	3	x	5*	DI enable
Logic control	4	x	6	DO ready
Logic control	5	x	11	AO: I - act +
Potentiometer supply 0 V	6	x	12	AO: I - act +
Potentiometer supply +10 V	7	x		
0 V	8	⇒	2	0 V
+U _B / 24 VDC	9	⇒	1	+U _B / 24 VDC
Solenoid 1	10	⇒	7	Solenoid A +
Solenoid 1	11	⇒	8	Solenoid A -
Solenoid 2	12	⇒	3	Solenoid B -
Solenoid 2	13	⇒	4	Solenoid B +



No external potentiometer supply, ramp functions can be parameterized with the VT-MSPA2-2X.

Block circuit diagram

VT-MSPA2-525-10/V0 (RE 30229)

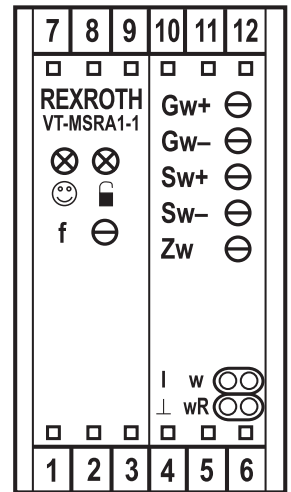


VT-MSRA1-1-1X/V0/0

VT-MSRA1-1-1X/V0/0

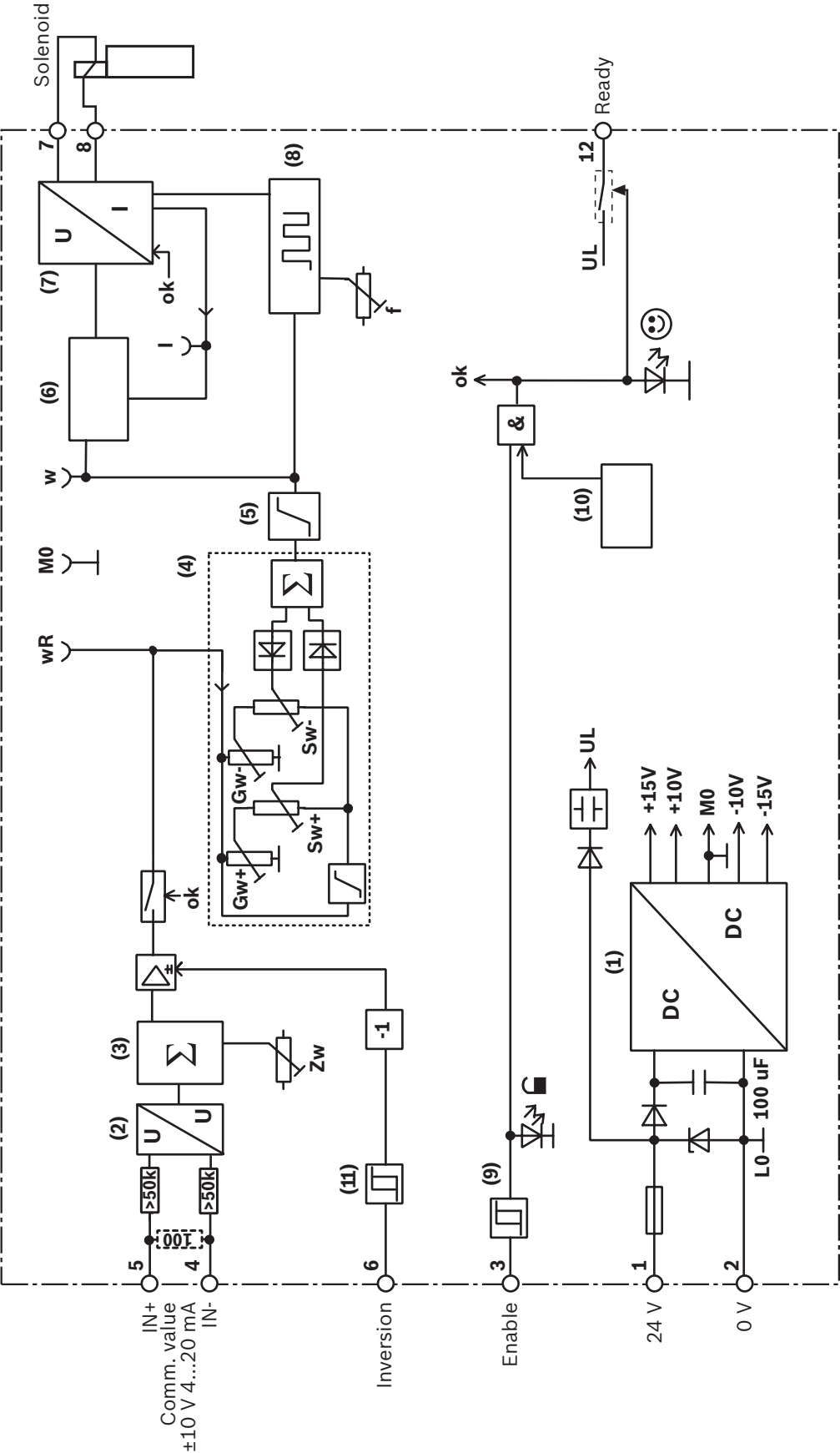
VT-MSPA1-2X

+U _B / 24 VDC	1	=	1	+U _B / 24 VDC
0 V	2	=	2	0 V
Enable U	3	⇒	5	DI enable
Reference potential IN -	4	⇒	10	Command value -
Command value IN +	5	⇒	9	Command value +
Inversion	6	⇒	5*	Inversion
Solenoid	7	=	3	Solenoid +
Solenoid	8	=	4	Solenoid -
n. c.	9	x	8	n. c.
n. c.	10	x	11	AO: I - act +
n. c.	11	x	12	AO: I - act -
Ready for operation	12	⇒	6	DO ready



Block circuit diagram

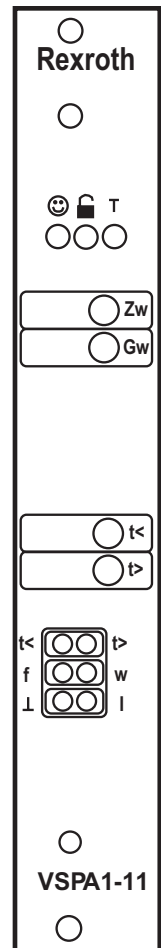
VT-MSRA1-1-1X/V0/0 (RE 30227)



Zw	=	Zero point, comm. value	1	Power supply unit	7	Current output stage
Sw	=	Step height	2	Differential amplifier	8	Clock pulse generator
Gw	=	Amplitude attenuator	3	Comm. value summing	9	Enable function
w	=	Command value	4	Char. curve generator	10	Fault detection
wR	=	Comm. value after ramp	5	Amplitude limiter	11	Inversion
	=	Ready for operation	6	Current controller		
	=	Enable				

VT-VSPA1-11-1X/V0/0, VT-VSPA1-10-1X/V0/0**VT-VSPA1-11-1X/V0/0,
VT-VSPA1-10-1X/V0/0****VT-MSPA1-2X**

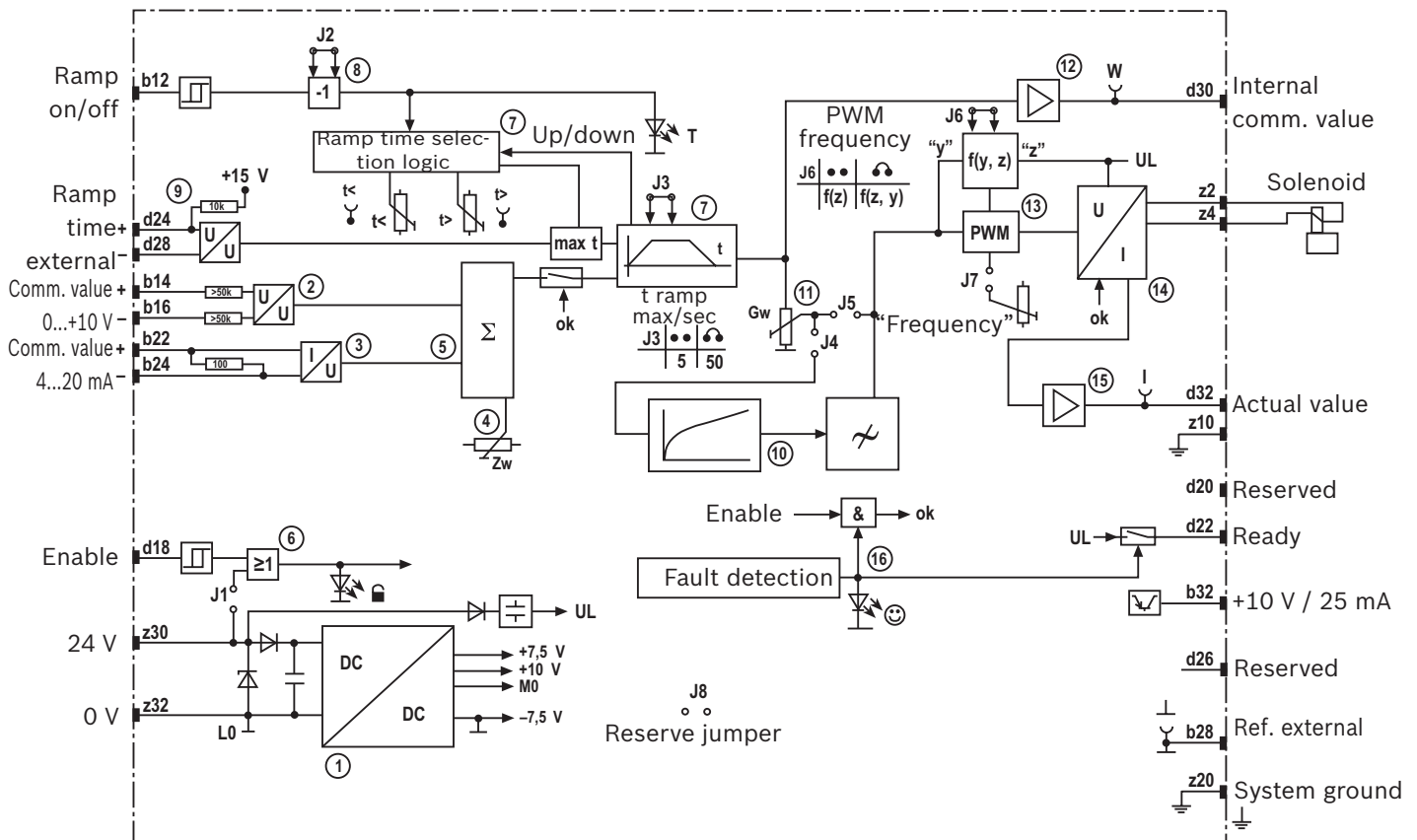
n. c.	2b			-
n. c.	2d			-
Solenoid A	2z	⇒	3	Solenoid +
n. c.	4b			-
n. c.	4d			-
Solenoid A	4z	⇒	4	Solenoid -
n. c.	6b			-
n. c.	6d			-
n. c.	6z			-
n. c.	8b			-
n. c.	8d			-
n. c.	8z			-
n. c.	10b			-
n. c.	10d			-
Actual value ground	10z	⇒	12	Act out -
Ramp on/off	12b		5*	Ramp on/off
n. c.	12d			-
n. c.	12z			-
Command value 1 (+10 V)	14b	⇒	9	+In (A5)
n. c.	14d			-
n. c.	14z			-
Command value 1 (-10 V)	16b	⇒	10	-In (A5)
n. c.	16d			-
n. c.	16z			-
n. c.	18b			-
Enable	18d	⇒	5	Enable
n. c.	18z			-
n. c.	20b			-
n. c.	20d			-
System ground	20z			-
Command value 2 (+4-20 mA)	22b	⇒	9	+In (F5)
Ready signal	22d	⇒	6	DO ready
n. c.	22z			-
Command value 2 (-4-20 mA)	24b	⇒	10	-In (F5)
Ramp time external	24d			-
n. c.	24z			-
n. c.	26b			-
n. c.	26d			-
n. c.	26z			-
Reference external	28b			-
Reference of ramp time external	28d			-
n. c.	28z			-



VT-VSPA1-11-1X/V0/0, VT-VSPA1-10-1X/V0/0**VT-VSPA1-11-1X/V0/0,
VT-VSPA1-10-1X/V0/0****VT-MSPA1-2X**

Internal command value	30b			-
Internal command value +/- 10 V	30d			-
Operating voltage (24 V)	30z	⇒	1	+U _B / 24 VDC
+10 V / 25 mA	32b			-
Actual current value	32d	⇒	11	Act out +
LO (0 V)	32z	⇒	2	0 V

No external analog ramp time command value available in the VT-MSPA2-2X.

Block circuit diagram**VT-VSPA1-11-1X/V0/0, VT-VSPA1-10-1X/V0/0 (RE 30100)**

- | | | | | | |
|---|------------------------|----|-----------------------|----|-----------------------|
| 1 | Power supply unit | 7 | Ramp generator | 13 | Clock pulse generator |
| 2 | Differential input | 8 | Ramp on/off | 14 | Current output stage |
| 3 | Current input | 9 | Ramp time external | 15 | Actual value output |
| 4 | Zero point adjustment | 10 | Char. curve generator | 16 | Fault detection |
| 5 | Command value summator | 11 | Amplitude limiter | | |
| 6 | Enable | 12 | Command value output | | |

VT-VSPA1-1-1X, VT-VSPA1K-1-1X/**VT-VSPA1-1-1X,
VT-VSPA1K-1-1X/****VT-MSPA1-2X**

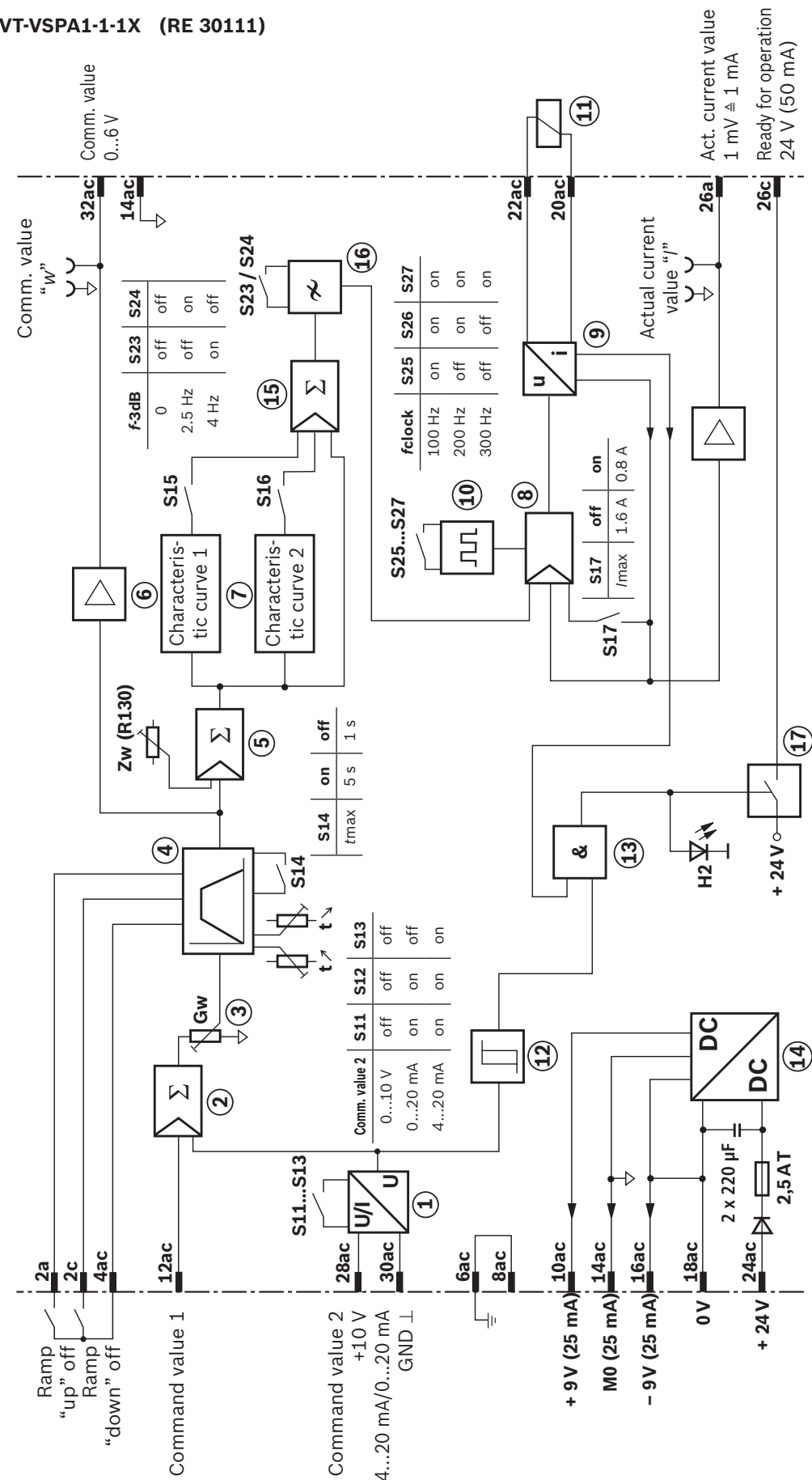
Ramp up/off	2a	⇒	5*	Ramp off
Ramp down/off	2c	⇒	5*	Ramp off
U for ramp off	4ac			-
System ground	6ac	x	12	Act out -
System ground	8ac			-
+9 V	10ac			-
Command value 1	12ac			-
M0	14ac			-
-9 V	16ac			-
U _B 0 V	18ac	⇒	2	+U _B 0 V
Solenoid	20ac	⇒	3	Solenoid +
Solenoid	22ac	⇒	4	Solenoid -
U _B +24 V	24ac	⇒	1	+U _B 24 VDC
Actual current value AO (1 mV = 1 mA)	26a	⇒	11**	Act out +
Ready for operation	26c	⇒	6	Ready for operation
Command value 2 +10 V, 4-20 mA	28ac	⇒	9	+In
Command value 2 GND	30ac	⇒	10	-In
Command value 0-6 V	32ac	x		-



Switching the ramps off separately as provided by the VT-VSPA1-1-1X is not possible with the VT-MSPA2-2X.

Block circuit diagram

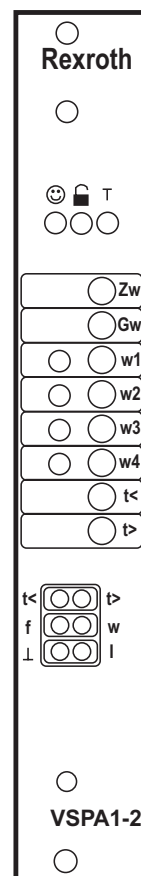
VT-VSPA1-1-1X (RE 30111)



VT-VSPA1K-1-1X/ (RE 30111)

VT-VSPA1-2-1X/V0/0, VT-VSPA1-2-1X/V0/A4**VT-VSPA1-2-1X/V0/0,
VT-VSPA1-2-1X/V0/A4****VT-MSPA1-2X**

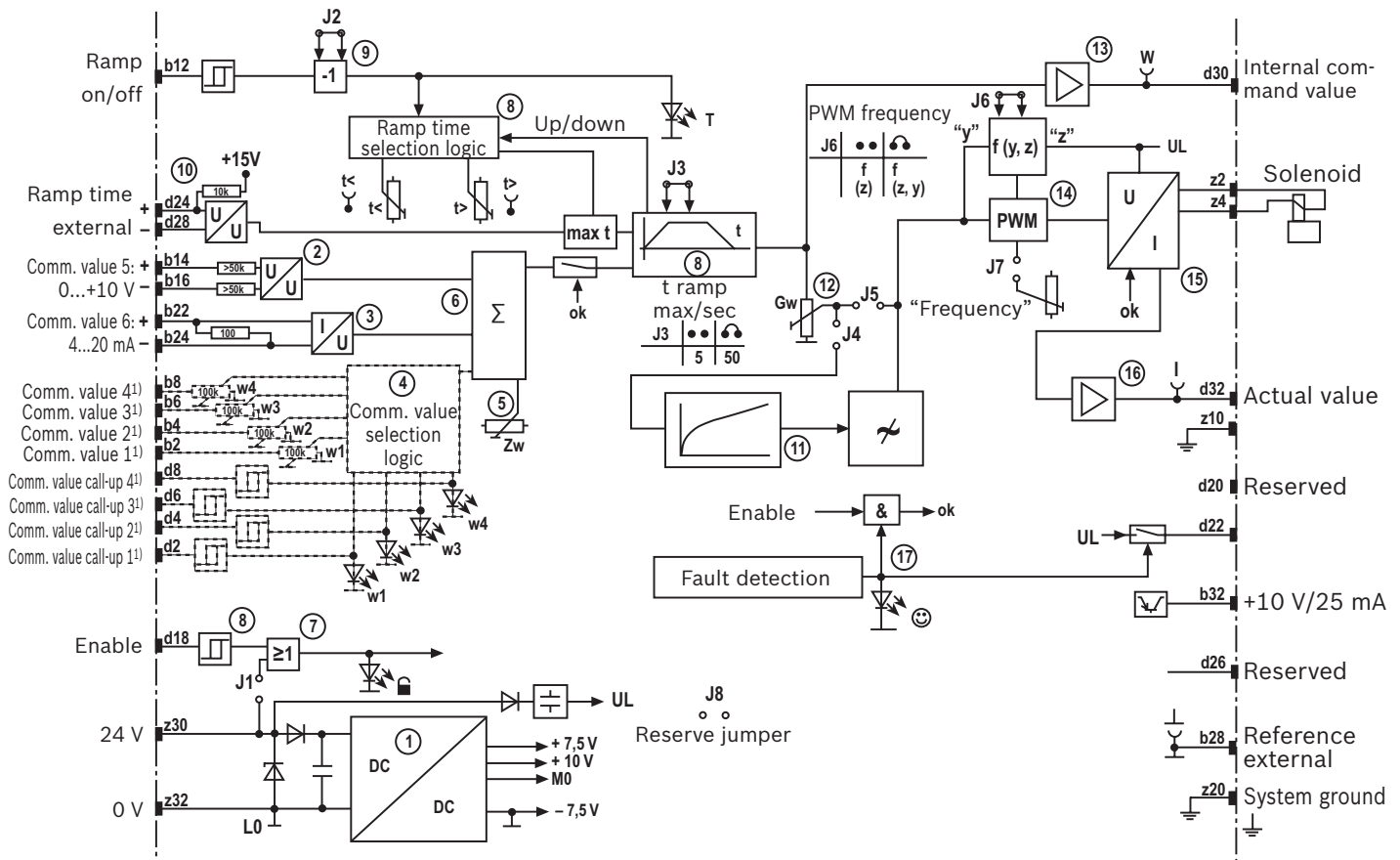
Command value 1	2b			-
Command value call-up 1	2d			-
Solenoid A	2z	⇒	3	Solenoid +
Command value 2	4b			-
Command value call-up 2	4d			-
Solenoid A	4z	⇒	4	Solenoid -
Command value 3	6b			-
Command value call-up 3	6d			-
n. c.	6z			-
Command value 4	8b			-
Command value call-up 4	8d			-
n. c.	8z			-
n. c.	10b			-
n. c.	10d			-
Actual value ground	10z	⇒	12	Act out -
Ramp on/off	12b		5*	Ramp on/off
n. c.	12d			-
n. c.	12z			-
Command value 5 + (10 V)	14b	⇒	9	+In (A5)
n. c.	14d			-
n. c.	14z			-
Command value 5 - (10 V)	16b	⇒	10	-In (A5)
n. c.	16d			-
n. c.	16z			-
n. c.	18b			-
Enable	18d	⇒	5	Enable
n. c.	18z			-
n. c.	20b			-
n. c.	20d			-
System ground	20z			-
Command value 6 + (4-20 mA)	22b	⇒	9	+In (F5)
Ready signal	22d	⇒	6	DO ready
n. c.	22z			-
Command value 6 - (4-20 mA)	24b	⇒	10	-In (F5)
Ramp time external	24d			-
n. c.	24z			-
n. c.	26b			-
n. c.	26d			-
n. c.	26z			-
Reference external	28b			-
Ref. of ramp time external	28d			-
n. c.	28z			-
n. c.	30b			-



VT-VSPA1-2-1X/V0/0, VT-VSPA1-2-1X/V0/A4**VT-VSPA1-2-1X/V0/0,
VT-VSPA1-2-1X/V0/A4****VT-MSPA1-2X**

Internal comm. value +/-10 V	30d			-
Operating voltage (24 V)	30z	⇒	1	+U _B / 24 VDC
+10 V / 25 mA	32b			-
Actual current value	32d	⇒	11	Act out +
L0 (0 V)	32z	⇒	2	0 V

The VT-MSPA2-2X does not feature command value call-ups. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X. An external analog ramp time command value is not provided by the VT-MSPA1-2X.

Block circuit diagram**VT-VSPA1-2-1X/V0/0, VT-VSPA1-2-1X/V0/A4 (RE 30115)**

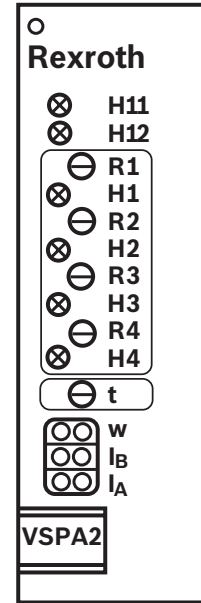
1) only with option A4

- | | | | | | |
|---|------------------------|----|-----------------------|----|-----------------------|
| 1 | Power supply unit | 7 | Enable | 13 | Command value output |
| 2 | Differential input | 8 | Ramp generator | 14 | Clock pulse generator |
| 3 | Current input | 9 | Ramp on/off | 15 | Current output stage |
| 4 | Command value call-ups | 10 | Ramp time external | 16 | Actual value output |
| 5 | Zero point adjustment | 11 | Char. curve generator | 17 | Fault detection |
| 6 | Command value summator | 12 | Amplitude limiter | | |

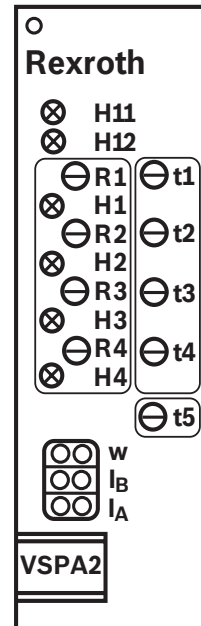
VT-VSPA2-1-1X/T1, VT-VSPA2-1-1X/T5**VT-VSPA2-1-1X/T1,
VT-VSPA2-1-1X/T5****VT-MSPA2-2X**

Auxiliary voltage +/-9 V	2a			-
Ready for operation	2c	⇒	6	Ready for operation
Comm. value call-up 2	4a			-
Call-up of “switch auxiliary voltage over”	4c	⇒	5*	Inversion
Command value call-up 3	6a			-
Command value call-up 4	6c			
Command value 3 +/-9 V	8a			
Comm. value call-up 1	8c			-
Command value 2 +/-9 V	10a			-
Command value 1 +/-9 V	10c			-
Command value 4 +9 V	12a	x	11	Act out +
Command value 5 +6 V	12c	x	12	Act out -
Ramp external	14a			-
	14c			-
Differential input, reference potential	16a	⇒	10	-In
Differential input, command value 6 +/-10 V	16c	⇒	9	+In
Command value after ramp	18a			-
Call-up “ramp off”	18c	⇒	5*	Ramp off
M0 (is raised by 9 V as against 0 V operating voltage)	20a			-
+9 V	20c			-
Solenoid B +	22a	⇒	3	Solenoid B +
n. c.	22c			-
Solenoid A -	24a	⇒	8	Solenoid A -
n. c.	24c			-
Operating voltage 0 V	26a	⇒	2	0 V
-9 V	26c			-
Solenoid B -	28a	⇒	4	Solenoid B -
Relay call-up voltage (+24 VDC)	28c			-
Solenoid A +	30a	⇒	7	Solenoid A +
Enable external	30c	⇒	5*	Enable
Operating voltage +U _B	32a	⇒	1	+U _B / 24 VDC
	32c			

.../T1



.../T5

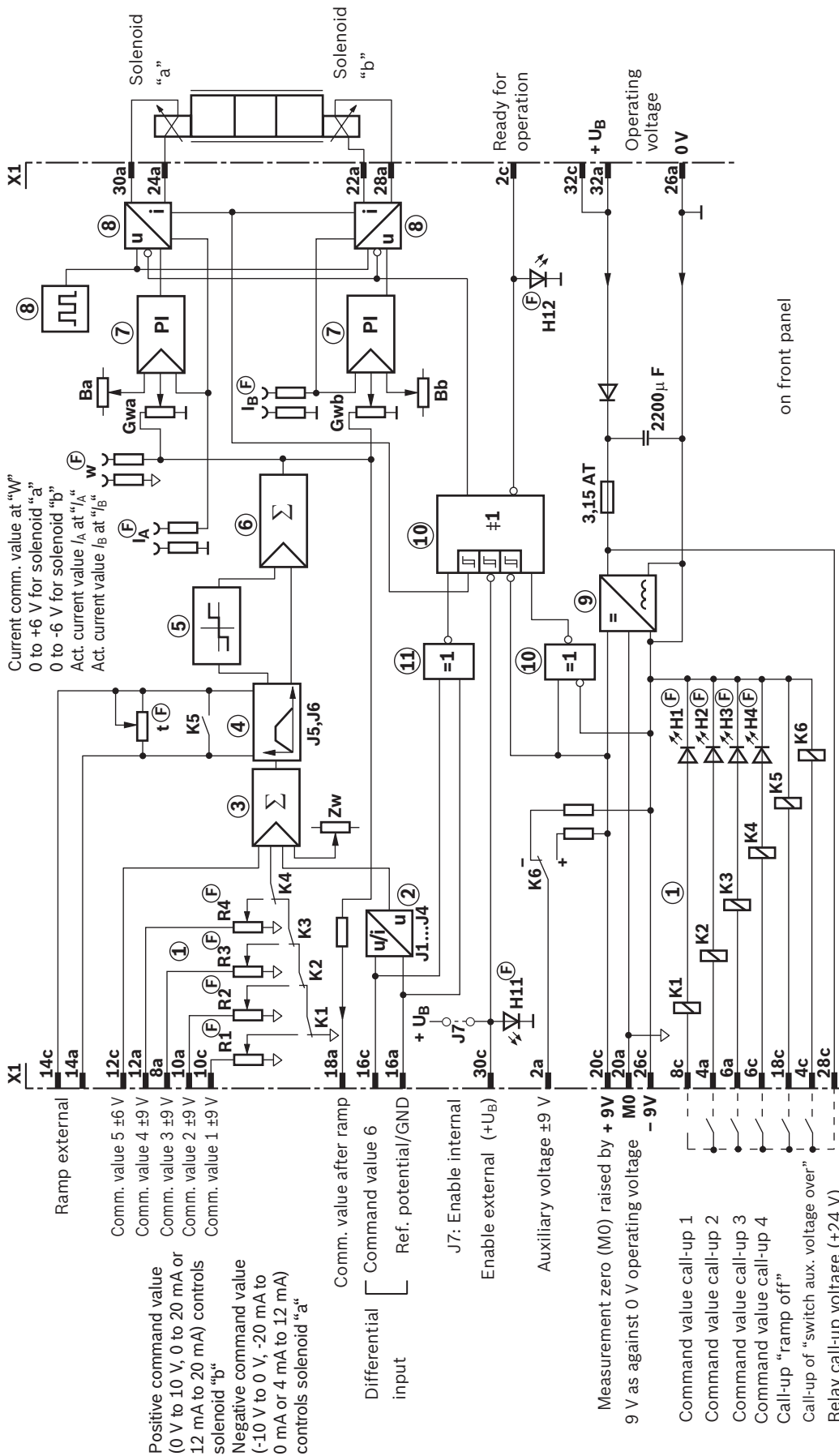


The VT-MSPA2-2X does not provide a voltage supply for external potentiometers. Command value call-ups and ramp call-ups are not available in the VT-MSPA2-2X. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X.

An external analog ramp time command value is not available in the VT-MSPA2-2X. The functions of “Inversion” and “Ramp off” are only available separately in the VT-MSPA2-2X.

Block circuit diagram

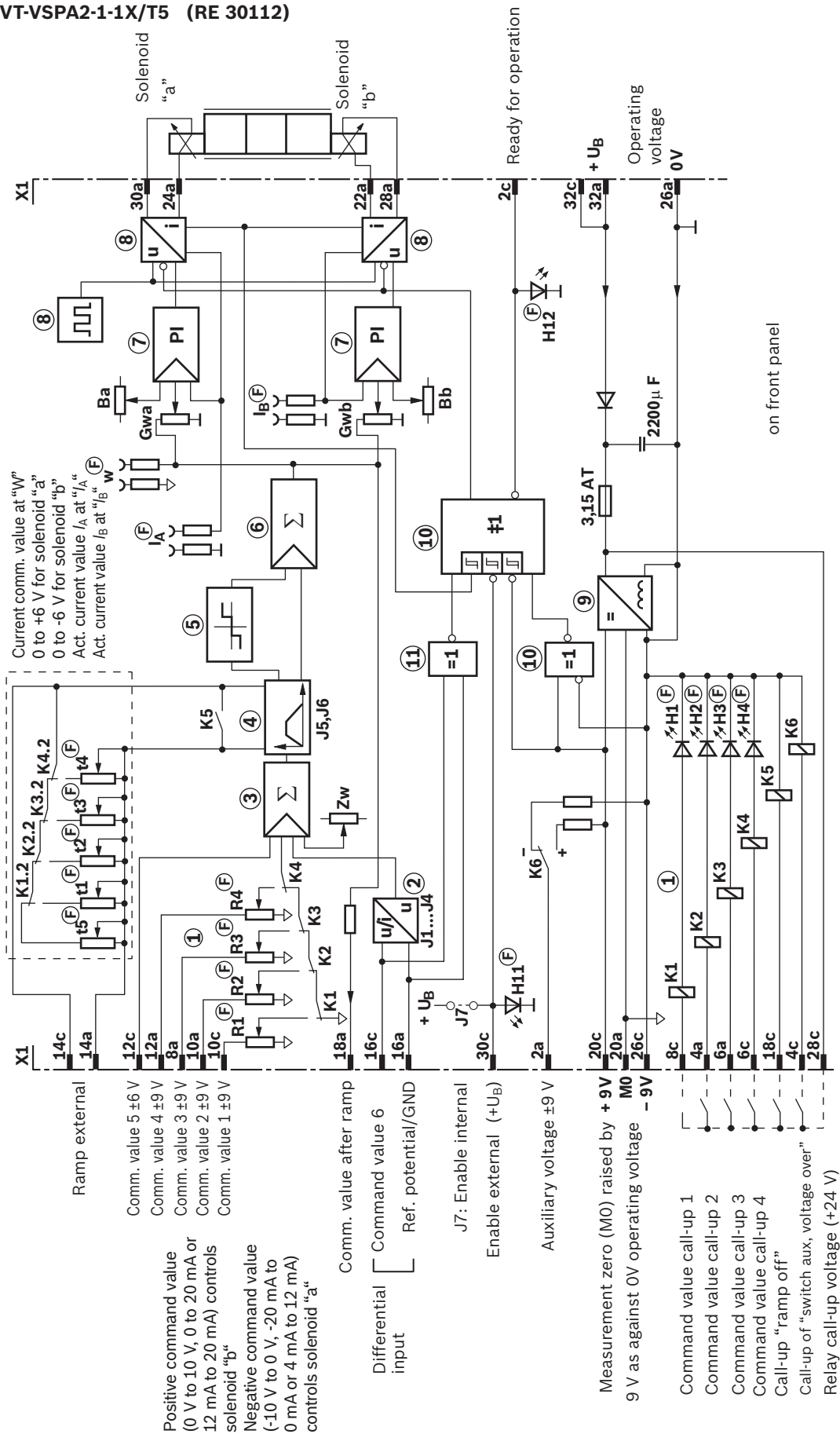
VT-VSPA2-1-1X/T1 (RE 30112)



H1 to H4	LED lamps for comm. value call-ups	Ba	Blasing current, solenoid "a"	1	Command values	8	Output stage w/ clock pulse generator
K1 to K6	Call-up relay	Bb	Blasing current, solenoid "b"	2	Differential input	9	Power supply unit
R1 to R4	Command values	t	Ramp time	3, 6	Summator	10	Monitoring functions
Gwa	Comm. value attenuator, solenoid "a"			4	Ramp generator	11	Cable break monitoring
Gwb	Comm. value attenuator, solenoid "b"			5	Step function		(with 4 to 20 mA only)
Zw	Zero point command value			7	PI current controller		

Block circuit diagram

VT-VSPA2-1-1X/T5 (RE 30112)

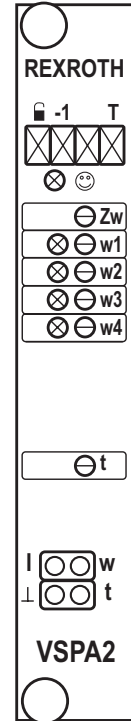


H1 to H4	LEDs for comm. value call-ups	Ba	Biassing current, solenoid "a"	1	Command values	8	Output stage w/ clock pulse generator
K1 to K6	Call-up relay	Bb	Biassing current, solenoid "b"	2	Differential input	9	Power supply unit
R1 to R4	Command values	t1 to t5	Ramp time	3, 6	Summator	10	Monitoring functions
Gwa	Comm. value attenuator, solenoid "a"			4	Ramp generator	11	Cable break monitoring (with 4 to 20 mA only)
Gwb	Comm. value attenuator, solenoid "b"			5	Step function		
Zw	Zero point command value			7	PI current controller		

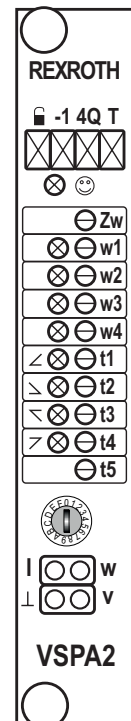
VT-VSPA2-1-2X/V0/T1, VT-VSPA2-1-2X/T5**VT-VSPA2-1-2X/V0/T1,
VT-VSPA2-1-2X/T5****VT-MSPA2-2X**

Command value 1 (+/-10 V)	2b			-
Command value call-up 1 (24 V input)	2d			-
Solenoid A +	2z	⇒	7	Solenoid A +
Command value 2 (+/-10 V)	4b			-
Command value call-up 2 (24 V input)	4d			-
Solenoid A -	4z	⇒	8	Solenoid A -
Command value 3 (+/-10 V)	6b	x		-
Comm. value call-up 3 (24 V input)	6d			-
Solenoid B -	6z	⇒	3	Solenoid B +
Command value 4 (+/-10 V)	8b			-
Comm. value call-up 4 (24 V input)	8d			-
Solenoid B +	8z	⇒	4	Solenoid B -
Inversion of command value (24 V input)	10b	⇒	5*	Inversion
Ramp call-up 1 (24 V input)	10d			
System ground	10z	⇒	12	Act out -
Ramp on/off (24 V input)	12b	⇒	5*	Ramp on/off
Ramp call-up 2 (24 V input)	12d			-
n. c.	12z			-
Command value 5 (+/-10 V)	14b	⇒	9	+In (A5)
Ramp call-up 3 (24 V input)	14d			-
n. c.	14z			-
Command value 5 (+/-10 V)	16b	⇒	10	-In (A5)
Ramp call-up 4 (24 V input)	16d			-
n. c.	16z			-
Remote select 1**	18b			-
Enable	18d	⇒	5	Enable
n. c.	18z			-
4-quadrant operation (24 V input)	20b	⇒	5*	4-quadrant operation (24 V input)
n. c.	20d			-
System ground	20z			-
Command value 6 + (4-20 mA)	22b	⇒	9	+In (F5)
Ready signal (24 V, H-active, 50 mA)	22d	⇒	6	DO ready
n. c.	22z			-
Command value 6 - (4-20 mA)	24b	⇒	10	-In (F5)
Ramp time external	24d			-
n. c.	24z			-
Measuring signal, ramp time	26b			-

.../T1



.../T5



VT-VSPA2-1-2X/V0/T1, VT-VSPA2-1-2X/T5

**VT-VSPA2-1-2X/V0/T1,
VT-VSPA2-1-2X/T5**

VT-MSPA2-2X

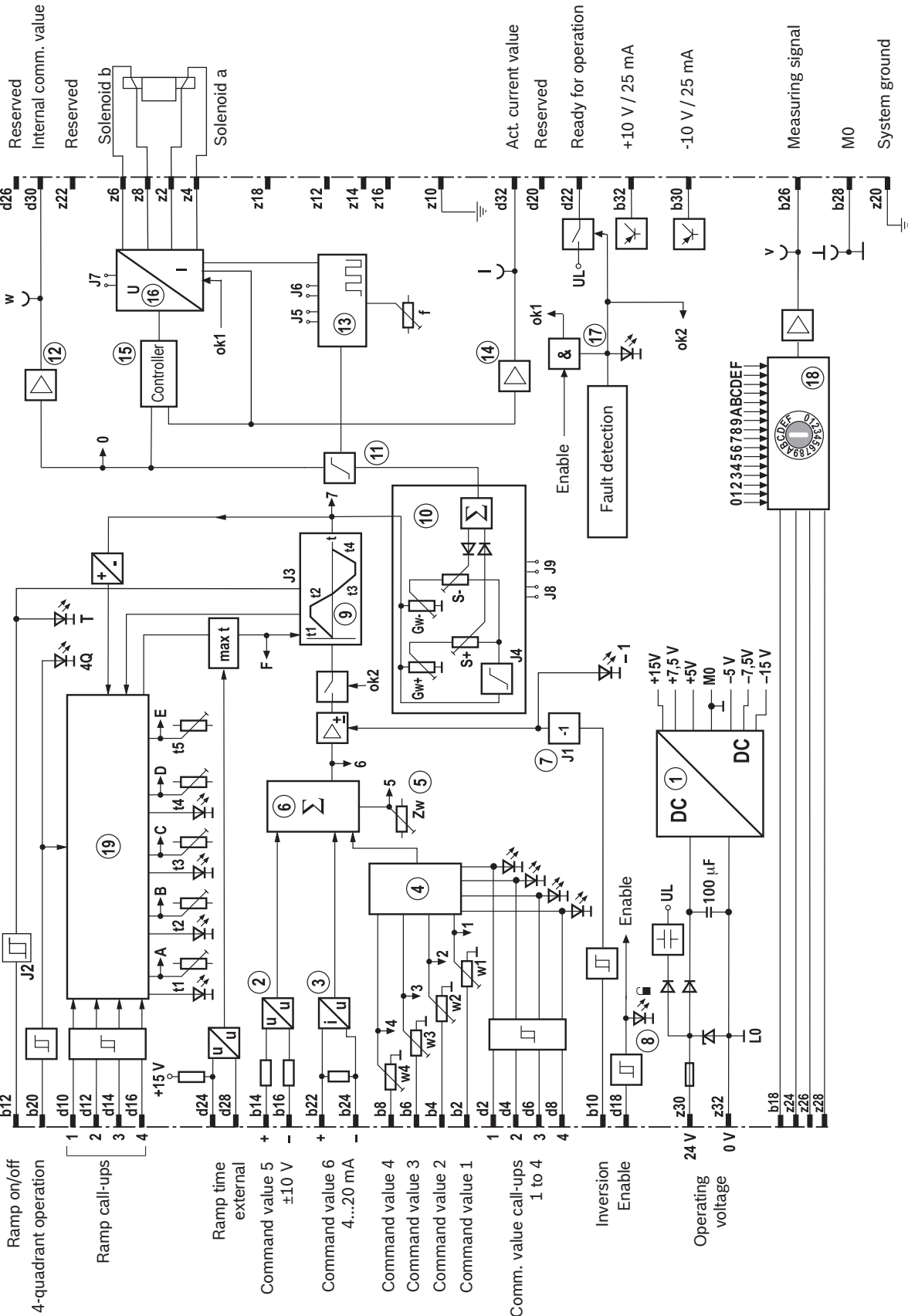
n. c.	26d			-
n. c.	26z			-
Reference potential for outputs (M0)	28b			-
Reference of ramp time external	28d			-
n. c.	28z			-
-10 V / 25 mA	30b			-
Internal command value +/-10 V	30d			-
Operating voltage (24 V)	30z	⇒	1	+U _B / 24 VDC
+10 V / 25 mA	32b			-
Actual current value	32d	⇒	11	Act out +
LO (0 V)	32z	⇒	2	0 V

The VT-MSPA2-2X does not provide a voltage supply for external potentiometers. Command value call-ups and ramp call-ups are not available in the VT-MSPA2-2X. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X.

An external analog ramp time command value is not available in the VT-MSPA2-2X. The functions of “inversion” and “ramp off” are only available separately in the VT-MSPA2-2X.

Block circuit diagram

VT-VSPA2-1-2X/T5 (RE 30110)

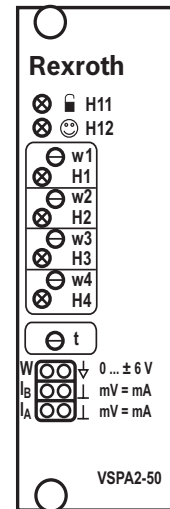


1	Power supply unit	6	Command value summator	11	Amplitude limiter	16	Current output stage	ok2	Card monitoring
2	Differential input	7	Command value inversion	12	Command value output	17	Fault detection		
3	Current input	8	Enable function	13	Clock pulse generator	18	Meas. point changeover switch		
4	Comm. value selection logic	9	Ramp generator	14	Act. current value output	19	Ramp time selection logic		
5	Zero point adjustment	10	Char. curve generator	15	Current controller	ok1	Output stage enable signal		

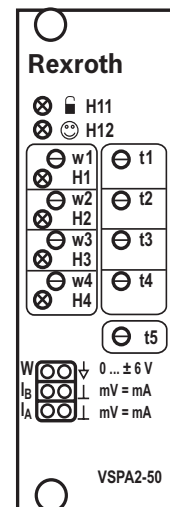
VT-VSPA2-50-1X/T1, VT-VSPA2-50-1X/T5**VT-VSPA2-50-1X/T1,
VT-VSPA2-50-1X/T5****VT-MSPA2-2X**

Auxiliary voltage	2a	x	6	Ready for operation
Ready for operation	2c			-
Comm. value call-up 2	4a			-
Call-up of "switch auxiliary voltage over"	4c	⇒	5*	Inversion
Comm. value call-up 3	6a	x	5	Enable
Comm. value call-up 4	6c			
Command value 3 +/-9 V	8a			
Comm. value call-up 1	8c			-
Command value 2 +/-9 V	10a			-
Command value 1 +/-9 V	10c			-
Command value 4 +9 V	12a	x	11	Act out +
Command value 5 +6 V	12c	x	12	Act out -
External ramp (pos. comm. value = solenoid B / neg. comm. value = solenoid A)	14a			-
	14c			-
Differential input, reference potential	16a	⇒	10	-In
Differential input, command value 6 +/-10 V	16c	⇒	9	+In
Command value after ramp	18a			-
Call-up "ramp off"	18c	⇒	5*	Ramp off
M0 (is raised by 9 V as against 0 V operating voltage)	20a			-
+9 V	20c			-
Solenoid B +	22a	⇒	3	Solenoid B +
n. c.	22c			-
Solenoid A -	24a	⇒	8	Solenoid A -
n. c.	24c			-
Operating voltage 0 V	26a	⇒	2	0 V
-9 V	26c			-
Solenoid B -	28a	⇒	4	Solenoid B -
Relay call-up voltage (+24 V)	28c			-
Solenoid A +	30a	⇒	7	Solenoid A +
n. c.	30c			-
Operating voltage +U _B	32a	⇒	1	+U _B / 24 VDC
	32c			

.../T1



.../T5

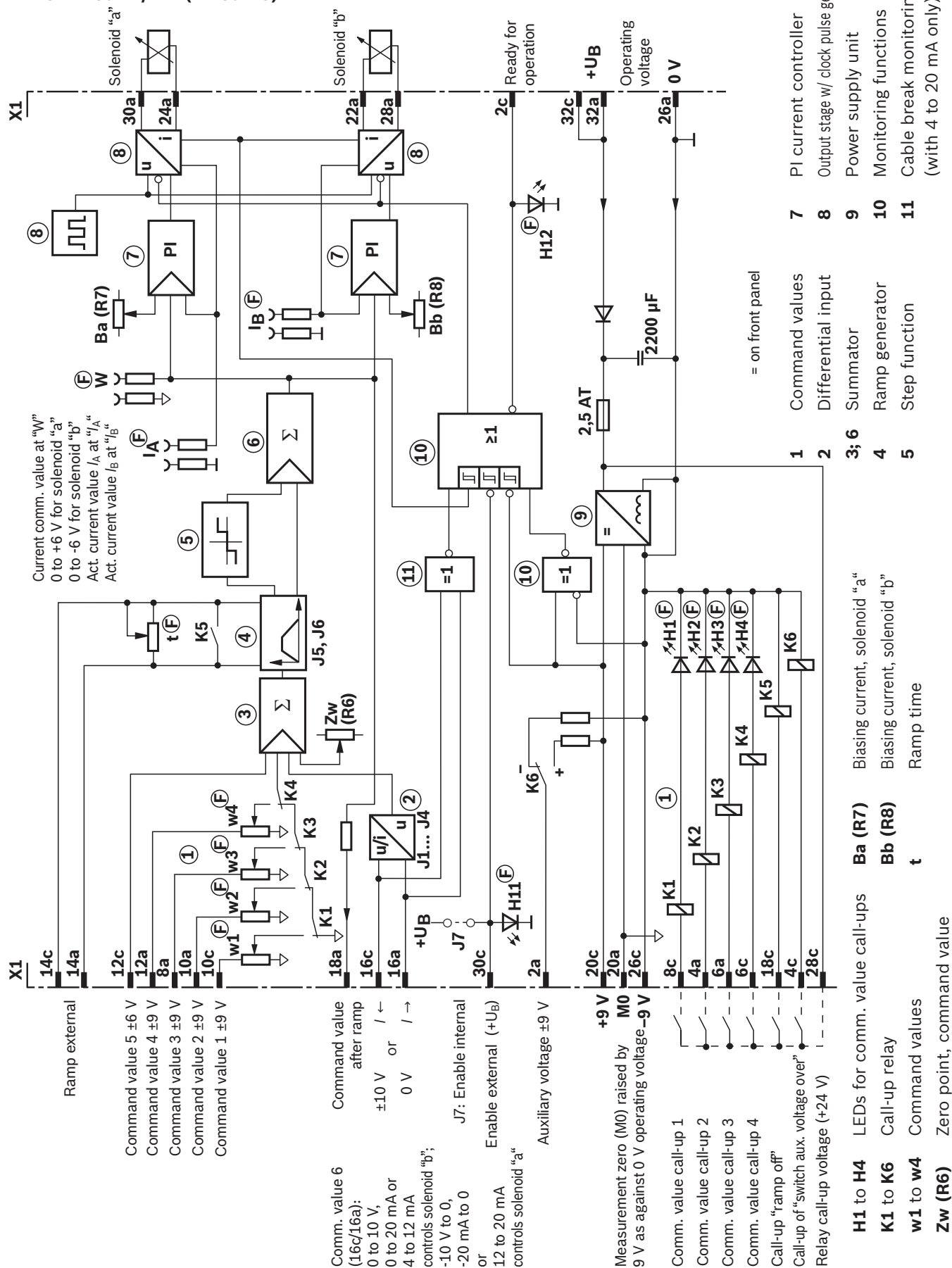


The VT-MSPA2-2X does not provide a voltage supply for external potentiometers. Command value call-ups and ramp call-ups are not available in the VT-MSPA2-2X. If these are required, they have to be implemented by means of command value module VT-SWMA-1-1X.

An external analog ramp time command value is not available in the VT-MSPA2-2X. The functions of "inversion" and "ramp off" are only available separately in the VT-MSPA2-2X.

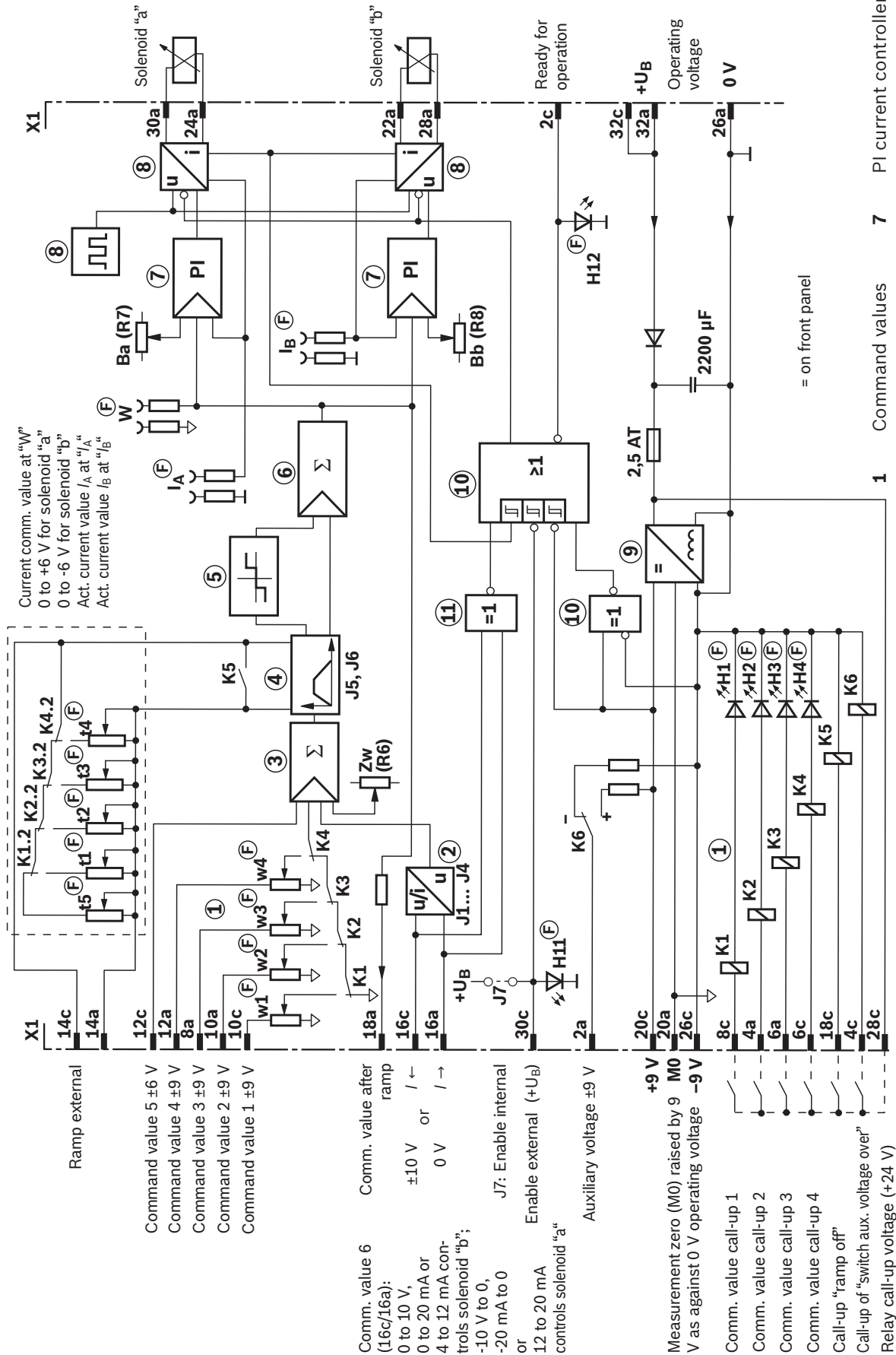
Block circuit diagram

VT-VSPA2-50-1X/T1 (RE 30113)



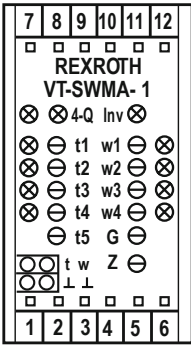
Block circuit diagram

VT-VSPA2-50-1X/T5 (RE 30113)



H1 to H4	LEDs for command value call-ups	Ba (R7)	BIASING current, solenoid "a"	1	Command values	7	PI current controller
K1 to K6	Call-up relay	Bb (R8)	BIASING current, solenoid "b"	2	Differential input	8	Output stage w/ clock pulse generator
w1 to w4	Command values	t1 to t5	Ramp time	3; 6	Summator	9	Power supply unit
Zw (R6)	Zero point, command value			4	Ramp generator	10	Monitoring functions
				5	Step function	11	Cable break monitoring (with 4 to 20 mA only)

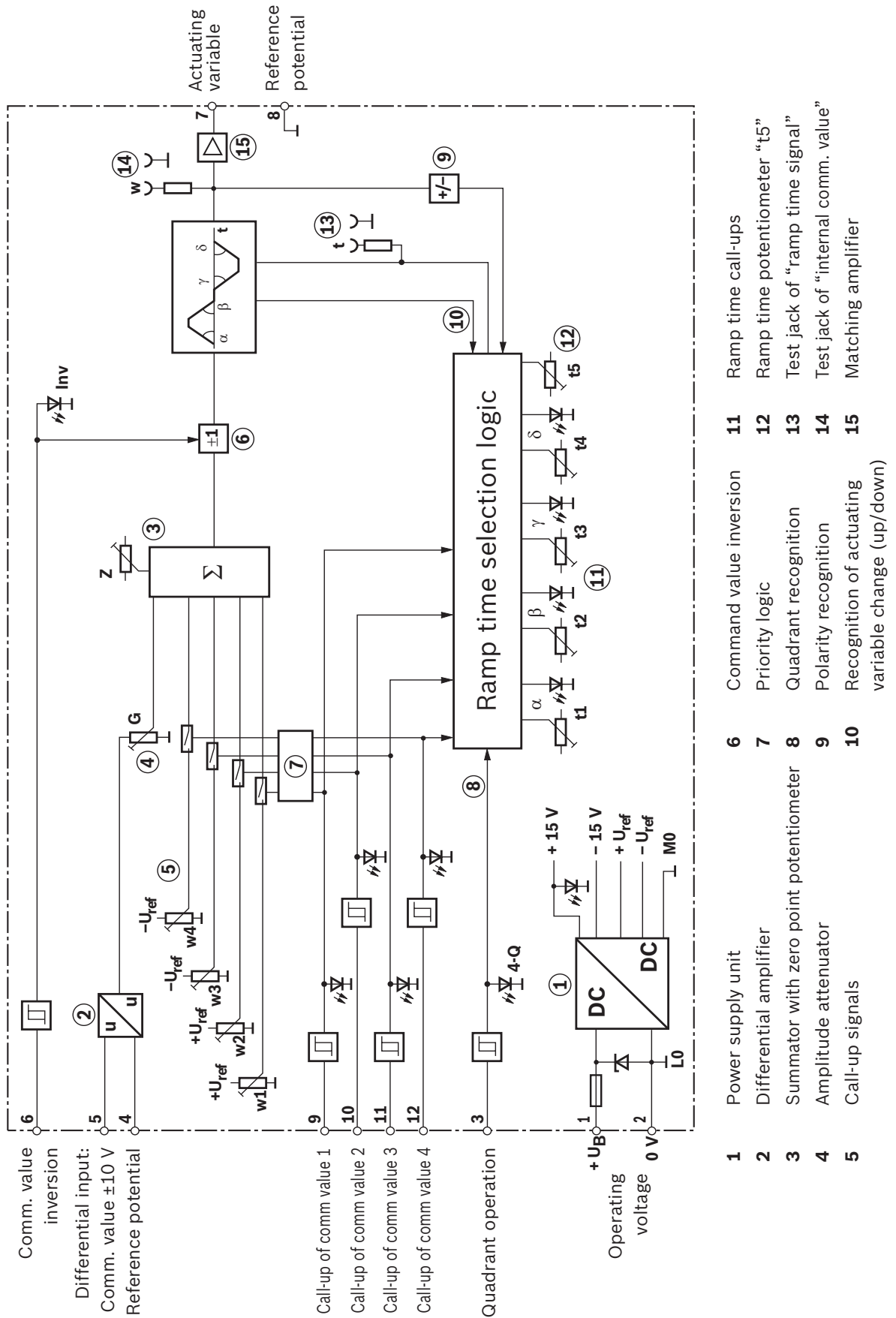
VT-SWMA-1-1X/V0/0



Operating voltage	$+U_B$	1	7	Actuating variable output
	0 V	2	8	Reference potential
Quadrant operation	$+U_{4-Q}$	3	9	Comm. value call-up 1
Differential input	Reference potential	4	10	Comm. value call-up 2
	$\pm U_{comm}$	5	11	Comm. value call-up 3
Comm. value inversion	$+U_{Inv}$	6	12	Comm. value call-up 4

Block circuit diagram

VT-SWMA-1-1X/V0/0 (RE 29902)



Amplifier				Valves				Functions				Successor									
Mat. no.	Type	De- sign	RoHS confor- mity	Data sheet	End of phase- out	Families	Command values				Out- put stage		Ramp		Further		VT-MSPA2x		Command value module		
							Input 0 / ±10 V	Ext. pot. supply	Internal comm. value	Comm. value call-ups	1 solenoid	2 solenoids	Digital input, ramp off	Selection of simple/ 4Q ramp	Up/down ramp can be switched off separately	Ext. ramp time	Enable	Inversion	Ready DO	Act. current value (analog output)	Mat. no.
New amplifier						All valves of the old series below are considered.	X	-	-	X	X	-	X	-	X	X	-	X	-	-	-
R901439034	VT-MSPA1-2X/A5/000/000	Module	Yes	30232	-			-	-	-	-	-	-	-	-	-	-	-	-	-	-
R901439036	VT-MSPA1-2X/F5/000/000	Module	Yes	30232	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901439037	VT-MSPA2-2X/A5/000/000	Module	Yes	30232	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901439038	VT-MSPA2-2X/F5/000/000	Module	Yes	30232	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	
R900211788	VT 11118-1X/	Module	No	30218	Jul 19	3DREP6...2X; 4WRZ...7X;	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R900033828	VT 2000-5X/	Card	Yes	29904	Dec 20	3DRE...7X...G24-8...; DBEM10...7X...G24-8...; DBEM20...7X...G24-8...; DBEM30...7X...G24-8...; DBEP6...1X; DBET-6X...G24-8...; DRE10...6X...G24-8...; DRE20...6X...G24-8...; DRE30...6X...G24-8...; ZDRE10...2X...G24-8...; ZDRE20...2X...G24-8...; ZDRE30...2X...G24-8...	X	-	X	-	X	-	X	-	X	-	X	-	X	-	
R900020298	VT 3000-3X/	Card	Yes	29935	Dec 20	DBEP6...1X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	
R900020299	VT 3006-3X/	Card	Yes	29926	Dec 20	DBEP6...1X	X	-	X	X	-	X	-	X	-	X	-	X	-	X	
R900030647	VT11132-1X/	Module	Yes	29865	Jul 19	(Z)DRE6...1X...	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901142355	VT-MSPA1-10-1X/V0	Module	Yes	30223	Jul 19	(Z)DRE6...1X...	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901142360	VT-MSPA1-11-1X/V0/0	Module	Yes	30223	Jul 19	(Z)DBE6-2X...; 3DRE...7X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...; DRE10...6X...G24-8...; DRE20...6X...G24-8...; DRE30...6X...G24-8...; ZDRE10...2X...G24-8...; ZDRE20...2X...G24-8...; ZDRE30...2X...G24-8...	X	-	-	-	-	-	-	-	-	-	-	-	-		
R900720060	VT-MSPA1-1-1X/V0/0	Module	Yes	30223	Jul 19	DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901288142	VT-MSPA1-150-1X/V0/0	Module	Yes	30224	Jul 19	3DRE...7X...G24-8...; DBEM10...7X...G24-8...; DBEM20...7X...G24-8...; DBEM30...7X...G24-8...; DBEP6...1X; DBET-6X...G24-8...; DRE10...6X...G24-8...; DRE20...6X...G24-8...; DRE30...6X...G24-8...; ZDRE10...2X...G24-8...; ZDRE20...2X...G24-8...; ZDRE30...2X...G24-8...	X	-	-	-	-	-	-	-	-	-	-	-	-		
R901288145	VT-MSPA1-30-1X/V0/0	Module	Yes	30224	Jul 19	3DRE...7X...G24-8...; DBEM10...7X...G24-8...; DBEM20...7X...G24-8...; DBEM30...7X...G24-8...; DBEP6...1X; DBET-6X...G24-8...; DRE10...6X...G24-8...; DRE20...6X...G24-8...; DRE30...6X...G24-8...; ZDRE10...2X...G24-8...; ZDRE20...2X...G24-8...; ZDRE30...2X...G24-8...	X	-	-	-	-	-	-	-	-	-	-	-	-		
R900249810	VT-MSPA1-50-1X/V0	Module	Yes	30225	Jul 19	Valves with 2.5 A	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901010980	VT-MSPA2-1-1X/V0/0	Module	No	30228	Jul 19	4WR410...2X; 4WR46...2X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901197784	VT-MSPA1-1-1X/V0/0	Module	No	30227	Jul 19	4WRPH6...2X(SO855)	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901386328	VT-MSPA1-1-1X/V0/01	Module	No	30227	Jul 19	4WRPH6...2X(SO855)	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901152628	VT-VSPA1-10-1X/V0/0	Card	No	30100	Dec 20	(Z)DRE6...1X...	X	-	-	-	-	-	-	-	-	-	-	-	-	-	
R901152637	VT-VSPA1-11-1X/V0/0	Card	No	30100	Dec 20	(Z)DBE6-2X...; 3DRE...7X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; ZDRE10...2X...G24...; ZDRE20...2X...G24...; ZDRE30...2X...G24...	X	-	X	X	-	X	-	X	-	X	-	X	-	X	
R900033823	VT-VSPA1-1-1X/	Card	Yes	30111	Dec 20	3DRE...7X...G24-8...; DBEP6...1X	X	X	X	-	X	-	X	-	X	-	X	-	X	-	
R900934744	VT-VSPA1-1-1X/002/60SEC	Card	Yes	30111	Dec 20	3DRE...7X...G24-8...; DBEP6...1X	X	X	X	-	X	-	X	-	X	-	X	-	X	-	
R900966500	VT-VSPA1-1-1X/004	Card	Yes	30111	Dec 20	3DRE...7X...G24-8...; DBEP6...1X	X	X	X	-	X	-	X	-	X	-	X	-	X	-	
R900978827	VT-VSPA1-1-1X/005	Card	Yes	30111-05	Dec 20	3DRE...7X...G24-8...; DBEP6...1X	X	X	X	-	X	-	X	-	X	-	X	-	X	-	
R900782310	VT-VSPA1-2-1X/V0/0	Card	No	30115	Dec 20	DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; ZDRE10...2X...G24...; ZDRE20...2X...G24...; ZDRE30...2X...G24...	X	-	X	X	-	X	-	X	-	X	-	X	-		
R901002761	VT-VSPA1-2-1X/V0/04	Card	No	30115	Dec 20	DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; ZDRE10...2X...G24...; ZDRE20...2X...G24...; ZDRE30...2X...G24...	X	-	X	X	-	X	-	X	-	X	-	X	-		
R900053778	VT-VSPA1K-1-1X/	Card	Yes	30111	Dec 20	DBEP6...1X	X	X	X	-	X	-	X	-	X	-	X	-	X	-	
R900029790	VT-VSPA2-1-1X/V75	Card	Yes	30112	Jul 19	4WR410...2X; 4WR46...2X	X	X	X	X	-	X	-	X	-	X	-	X	-	X	
R901002090	VT-VSPA2-1-2X/V0/0T1	Card	Yes	30110	Dec 20	3DREP6...2X; 3DREP6...2X; 3DREP6...2X; (SO0674); 4WR410...2X; 4WR46...2X; 4WRZ...7X	X	-	-	-	-	-	-	-	-	-	-	-	-		
R901002095	VT-VSPA2-1-2X/V0/0T5	Card	Yes	30110	Dec 20	3DREP6...2X; 3DREP6...2X; 3DREP6...2X; (SO0674); 4WR410...2X; 4WR46...2X; 4WRZ...7X	X	-	-	-	-	-	-	-	-	-	-	-	-		
R900214081	VT-VSPA2-50-1X/V1	Card	Yes	30113	Dec 20	3DREP6...2X; 3DREP6...2X; 3DREP6...2X; (SO0674); 4WR410...2X; 4WR46...2X; 4WRZ...7X	X	X	X	X	-	X	-	X	-	X	-	X	-	X	
R901077297	VT-VSPD-1-2X/V0/0-0-1	Card	No	30523	Jul 19	(Z)DBE6-2X...; (Z)DRE6...1X...; 3DRE...7X...G24...; 3DREP6...2X; 4WR410...2X; 4WR46...2X; 4WRZ...7X; DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; ZDRE10...2X...G24...; ZDRE20...2X...G24...; ZDRE30...2X...G24...	X	-	X	X	-	X	-	X	-	X	-	X	-		
R901161533	VT-VSPD-1-2X/V0/0-0-1	Card	No	30523	Jul 19	(Z)DBE6-2X...; (Z)DRE6...1X...; 3DRE...7X...G24...; 3DREP6...2X; 4WR410...2X; 4WR46...2X; 4WRZ...7X; DBEM10...7X...G24...; DBEM20...7X...G24...; DBEM30...7X...G24...; DBEP6...1X; DBET-6X...G24...; DRE10...6X...G24...; DRE20...6X...G24...; DRE30...6X...G24...; ZDRE10...2X...G24...; ZDRE20...2X...G24...; ZDRE30...2X...G24...	X	-	X	X	-	X	-	X	-	X	-	X	-		
Old amplifier																					

Notes

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