Control Amplifier RV 41/42

PID controller

Output signal 0 to ± 10 V
Without/with output stage for control of servo valves

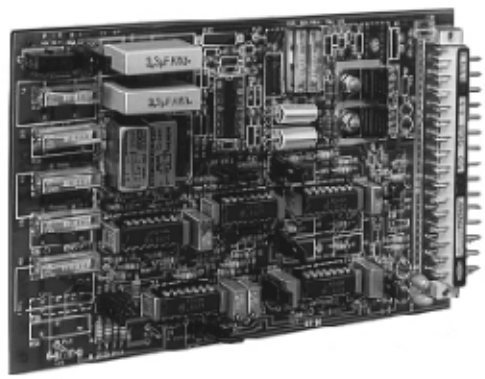
Catalog Register
A17, P17, H17

Publication 750**2107**.06.02.90

OBSOLETE DOCUMENT
Technical Reference Only

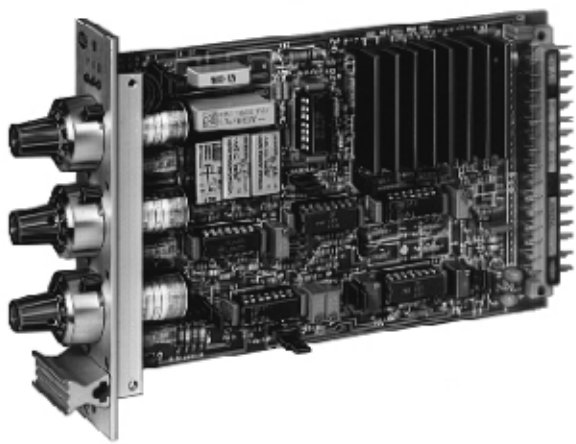
Description (standard unit)

General
The electronic control amplifier RV 41 is used to compare setpoints (command variable W) with an actual value (controlled variable X).
The deviations are transferred via a PID network to the summing amplifier at the output of which a final control variable (Y) is available for control of an output stage. The PID network consists of a P, I, D controller. The different control amplifiers can be adjusted independently of each other. Furthermore, the I or D controllers can be switched on and off at will.
The amplifier used for control of servo valves is provided with a negative current feedback power stage and an input for the oscillator voltage.



Features

- 2 adding setpoint inputs
- Adjustable generation of the actual value
- Easy change of control network
- High resolution of the setting parameters
- Plug-in sign reversal of the manipulated variable
- Plug-in sign reversal of the compensated actual value
- LEDs indicating the active control networks
- With and without output stage for control of servo valves



Parameters

General parameters

Designation		Control amplifier RV 41/42
Design		Analog control amplifier
Mounting position		Upright, free air circulation must be ensured
Ambient temperature range ϑ_u	[°C]	0 ... +45
Weight	[kg]	0.16
Size of PCB	[mm]	100 x 160
Space requirement for installation in 19" line rack	[mm]	30
Terminal strip		31-pin, to DIN 41 617

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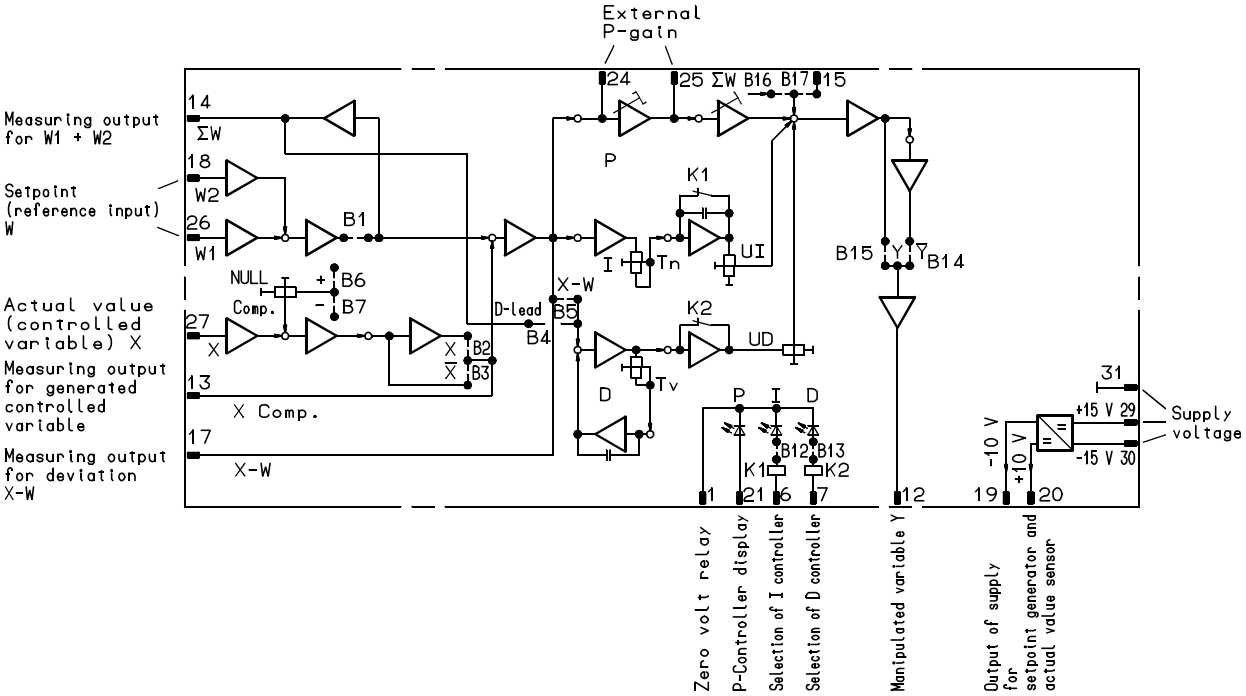
Equipment survey (standard designs)

Cat. No.		5996864	5998726	5998512	5998732	5998710	5998708	5998513	5998709	5998794	5998515	5998683	5998516	5996872	5998769
Design		Without output stage		With output stage for control of servo valves											
Type		RV 41	RV 41	RV41	RV41	RV41	RV41	RV41	RV41	RV41	RV42	RV42	RV42	RV42	RV42
Power supply															
Internal operating voltages	[V]	+ 15 ± 0.6 – 15 ± 0.6 – –		+ 15 ± 0.6 – 15 ± 0.6 + 10 ± 0.01 – 10 ± 0.01											
Power consumption	[mA]														
for + 15 V		75		75											
for – 15 V		75		75											
Supply of output stage	[V]	–		+ 15 ± 0.6 – 15 ± 0.6											
Power consumption	[V]														
Output stage incl. valve current + 15 V		–		17.5	20	40	50	90	110	810	17.5	20	70	90	810
– 15 V		–		17.5	20	40	50	90	110	810	17.5	20	70	90	810
Inputs															
Input voltage															
– rated	[V]	± 10		æ 10											
– maximum	[V]	± 30		± 30											
Input resistance R:	[MΩ]	< 1		< 1											
Enable signal of output stage	[V]	–		24 VDC ± 4											
Selection P, I, D controller	[V]	24 VDC ± 4		24 VDC ± 4											
Input current per input	[mA]	10		10											
Outputs															
Output voltage for supply of external setpoint or actual value generators	[V]	+ 10 ± 1 – 10 ± 1		– –											
Output current at +10	[mA]	100		–											
–10	[mA]	100		–											
Analog outputs	[V]	0 ... ± 10		0 ... ± 10											
Output current max.	[mA]	≤ 10		≤ 10											
Output current of servo valve															
Rated current	[mA]	–		7.5	10	30	40	80	100	800	7.5	10	60	80	800
Solenoid coil resistance Servo valves	[Ω]	–		400	1000	260	80	22	27	7	400	1000	40	22	7
Controllers															
Actual value generation															
X-compensation	[V]	0 ... ± 0.5	0 ... ± 10	–											
X-calibration	[X- factor]	0.95...1.05	0.95...4.9	0.95 ... 1.05											
Setpoint-Actual value Comparing accuracy	[%]	< 0.1		< 0.1											
P controller	[Factor]	0.1 ... 1.1		0.1 ... 1.1											
Gain		1 ... 11		1 ... 11											
Selectable ranges		10 ... 110		10 ... 110											
		100 ... 1100		100 ... 1100											
Fine adjustment within the ranges		linear		linear											
I controller															
Reset time T_n adjustable	[sec]	3×10^{-5} ... 36.6		3×10^{-5} ... 36.6											
D controller															
Rate time T_v adjustable	[sec]	3×10^{-5} ... 33		3×10^{-5} ... 33											
Front panel 122 x 30 mm		–	–	–	–	–	–	–	–	–	X	X	X	X	X
Block diagram No.		1	1	2	2	2	2	2	2	2	2	2	2	2	2
Front view No.		1	1	1	1	1	1	1	1	1	2	2	2	2	2

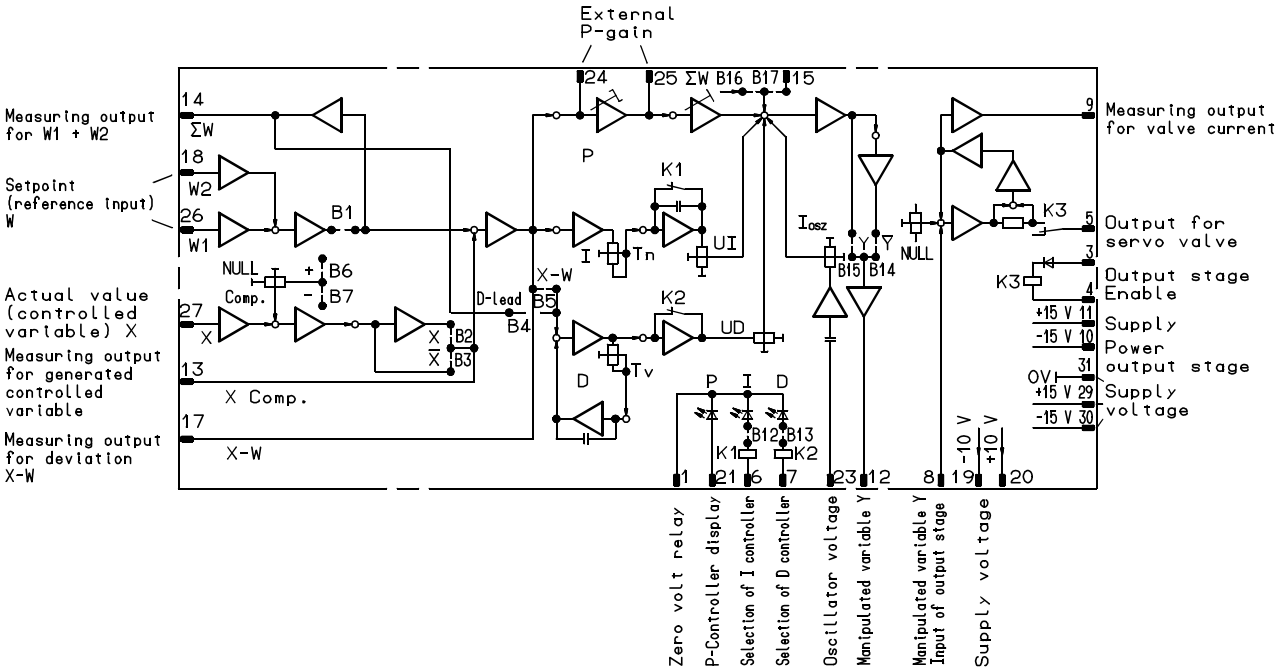
Block diagram 1

RV 41/42, without output stage

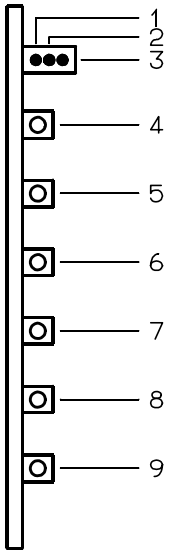


Block diagram 2

RV 41/42, with output stage

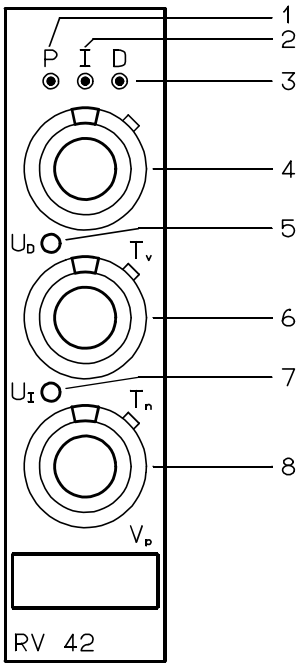


Front view 1



1 LED indicator/P controller
2 LED indicator/I controller active
3 LED indicator/D controller active
4 Adjustment of rate time T_V
with 15-turn trimming potentiometer
5 Adjustment of size of differential share U_D
with 15-turn trimming potentiometer
6 Adjustment of length of reset time T_n
with 15-turn trimming potentiometer
7 Adjustment of size of integration share U_I
with 15-turn trimming potentiometer
8 Adjustment of gain "V_P" of P controller
with 15-turn trimming potentiometer
9 Adjustment of size of oscillating current I_{OSZ}
with 15-turn trimming potentiometer
(only for design with power stage)

Front view 2



1 LED indicator/P controller
2 LED indicator/I controller active
3 LED indicator/D controller active
4 Adjustment of rate time T_V
with 10-turn potentiometer
5 Adjustment of size of differential share U_D
6 Adjustment of length of reset time T_n
with 10-turn potentiometer
7 Adjustment of size of integration share U_I
8 Adjustment of gain of P controller
with 10-turn potentiometer

Accessories for control amplifier RV 41/42

Description	Specification	Cat. No.	Publication No.
Setpoint adjuster SE 01 Angle of rotation 270°	For setpoint of controller	**5998477**	7501675
Setpoint adjuster SE 02 Angle of rotation 3600°	For setpoint of controller	**5998478**	7501782
Card mount KT 02	31-pin	**5996580**	–
Power pack NT 09	2 x 19 VAC/60 VA ± 10 V ± 15 V ± 24 V	**5998462**	7502225