ГИДРООТВЕТ
доступная гидравлика

Digital Proportional Amplifier

RT-MSPD1

Series: 1X

Table of contents

Features

– Suitable for the control of one-solenoid proportional valves without electrical position feedback
– Powerful 32-bit processor
–Command value input 0~±10V or 4~20 mA
–One pulsed current output stage
–Adjustment range of minimum solenoid current 0~0.8 A
–Adjustment range of maximum solenoid current 0.8~3 A
–Adjustment range of ramp time 0.05~5 s
–+10V regulated voltage, used for external potentiometer control
– One configurable digital input/ output, used for the customers' special requirement, defaults to be amplifier enable input
–Fault diagnosis function, power supply voltage, coil short circuit, open circuit or other abnormal conditions prompted
–Polarity protection for the voltage supply
–35mm rail mounting

Any question, please don't hesitate to contact us!

Odering code

RT- MSPD1 - 1X / *

Proportional amplifier
Suitable for two one-solenoid proportional amplifier without electrical position feedback

Design number =1X
10 ~ 19: Technical data and terminal function remain unchanged

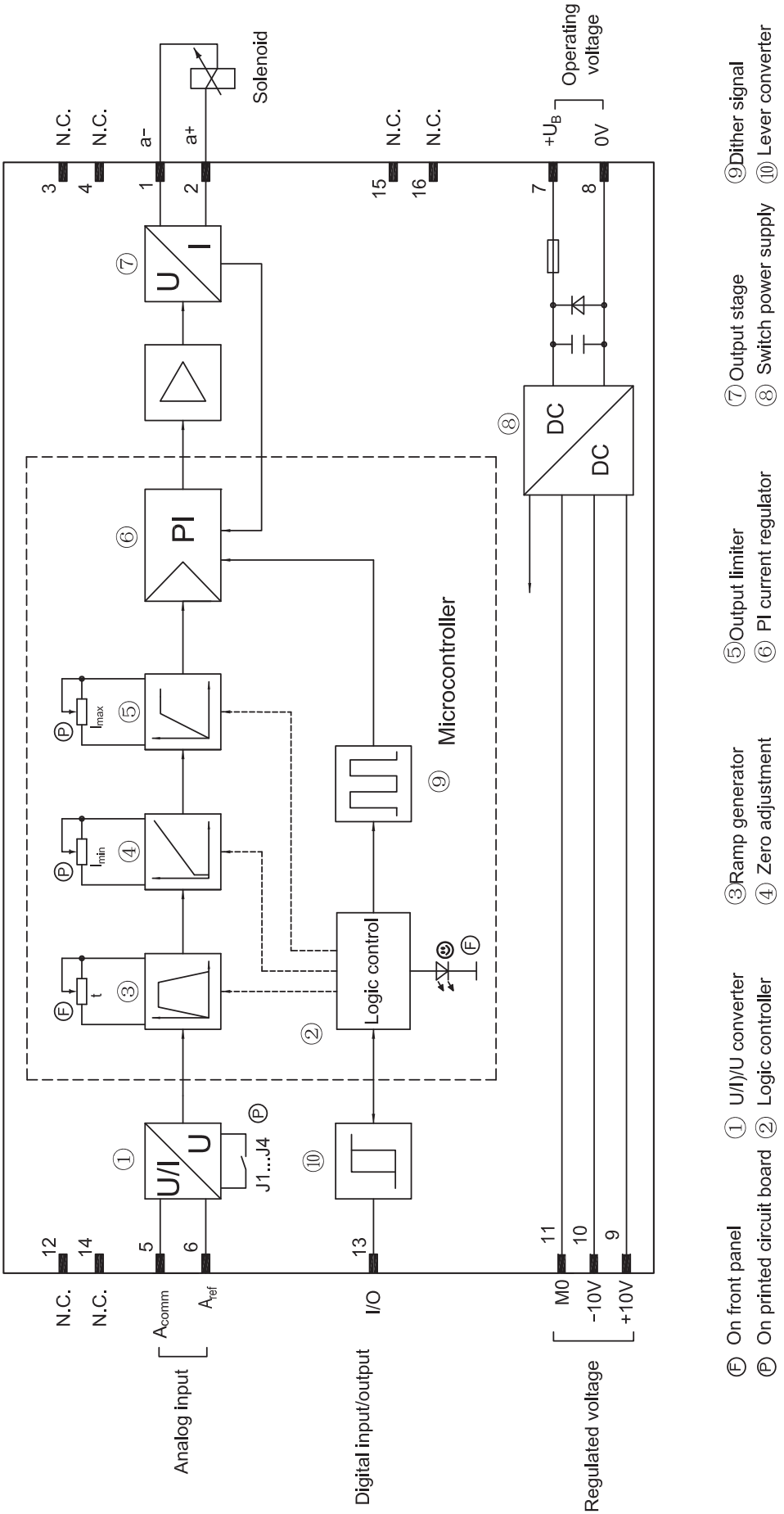
Configuration instructions of terminal "I/O[1)]
E = Enable function

1) "/E" is the default setting if no special requirements are needed; please apply textual description if need to configure into other functions.

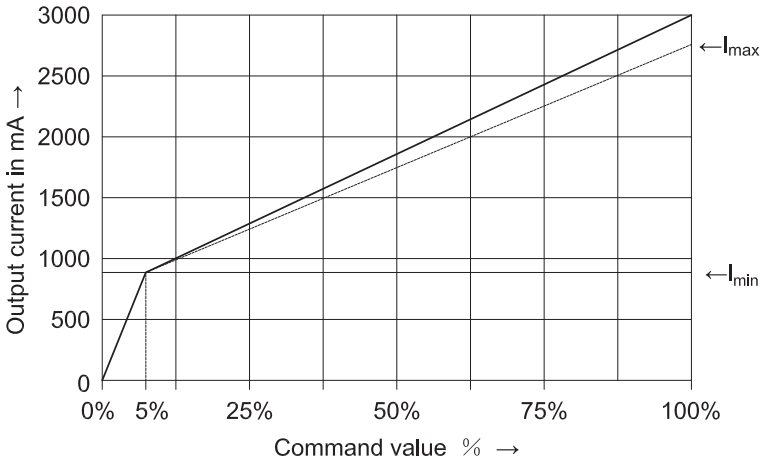
Technical data (For applications beyond these parameters, please consult us!)

Dimensions (L × W × H)		100×23×114 mm
Operating voltage	U_B	24 VDC
Operating range		
—Upper limit value	$U_B(t)_{max}$	30 V
—Lower limit value	$U_B(t)_{min}$	10 V
Current consumption of non-driving	I_{cmax}	40 mA
Ramp time		0.05 ~ 5 s，adjustable
Analog inputs：		
—Input voltage level	U	0 ~ +10 V
● Input resistance level	R_e	100 kΩ
● Resolution		< 10mV
—Input current level	I	4 ~ 20 mA，4 mA corresponding 0%，20 mA
● Input resistance	R_e	corresponding 100% 200Ω
Digital input/ output：	U	Configuration depending on customers' requirements，10 V < U < U_B，valid；U < 10 V，invalid；amplifier enable as the default configuration if no special requirements
Outputs:		
—Output stage		
● Maximal drive current	I_{max}	0.8 ~ 3 A，adjustable
● Minimal drive current	I_{min}	0 ~ 0.8 A，adjustable
—Regulated voltage	U	± 10 V，reference point is M0，I_{max} = 15 mA
Type of connection		Connection terminal (inserted type)
Permissible operating temperature range		-25 ~ 70 ℃
Storage temperature range		-25 ~ 85 ℃
Weight	m	0.28 kg

Block circuit diagram



Output curve



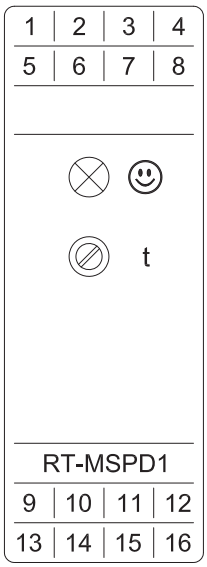
The maximal drive current I_{max} and the minimal drive current I_{min} are adjusted through the potentiometer on the printed circuit board, details in the later section “Display/ setting elements”

Pin assignment

Terminal		Function description
1	a–	Solenoid coils
2	a+	
3	N.C.	Reserve
4	N.C.	
5	A_{comm}	Analog input： Voltage: 0 ~ +10V Current: 4 ~ 20mA , 4 mA ≡ 0%, 20 mA ≡ 100%
6	A_{ref}	
7	$+U_B$	Operating voltage 24VDC
8	0V	
9	−10V	Regulated voltage output, the reference point is M0
10	+10V	
11	M0	Measuring reference point
12	N.C.	Reserve
13	I/O	Digital input/ output：10 V < U < $U_{B,}$ valid； U < 10 V , invalid, see detail in the upper section “Technical data”
14	N.C.	Reserve
15	N.C.	Reserve
16	N.C.	Reserve

Display/ setting elements

LED and potentiometers on the front panel



States and meanings of light "☺"

No.	States of light " ☺"	Meanings
1	Green always	In working order
2	Light off	No or lack of power supply of amplifier
3	Red flashes every 1s	Electromagnet cable fracture
4	Red flashes every 0.2s	Electromagnet cable short circuit

"t" －Ramp time, clockwise increases, counterclockwise decreases

Meanings of potentiometer and dial swith on the printed circuit board

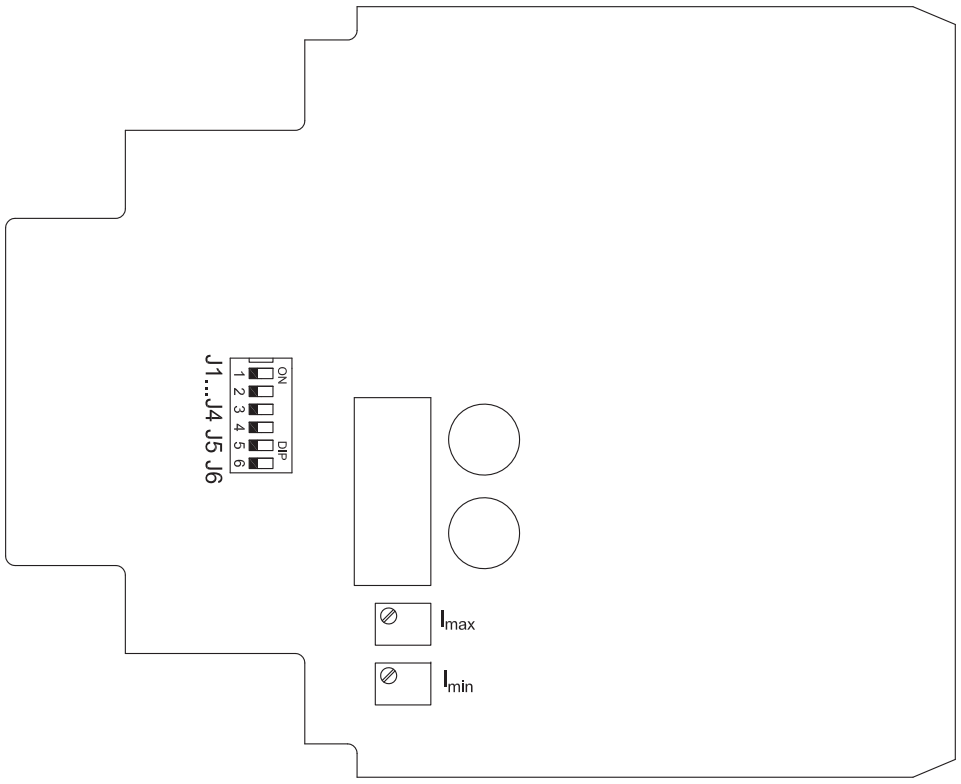
Potentiometer

"I_{max}" －Maximal drive current, clockwise increases,counterclockwise decreases

"I_{min}"－ Minimal drive current, clockwise increases, counterclockwise decreases

Dial switch

State of "J1, J2, J3, J4"	Analog input form of terminal 5, 6
ON, ON, ON, ON	Voltage mode 0 ~ +10 V
OFF, OFF, OFF, OFF	Current mode 4 ~ 20 mA



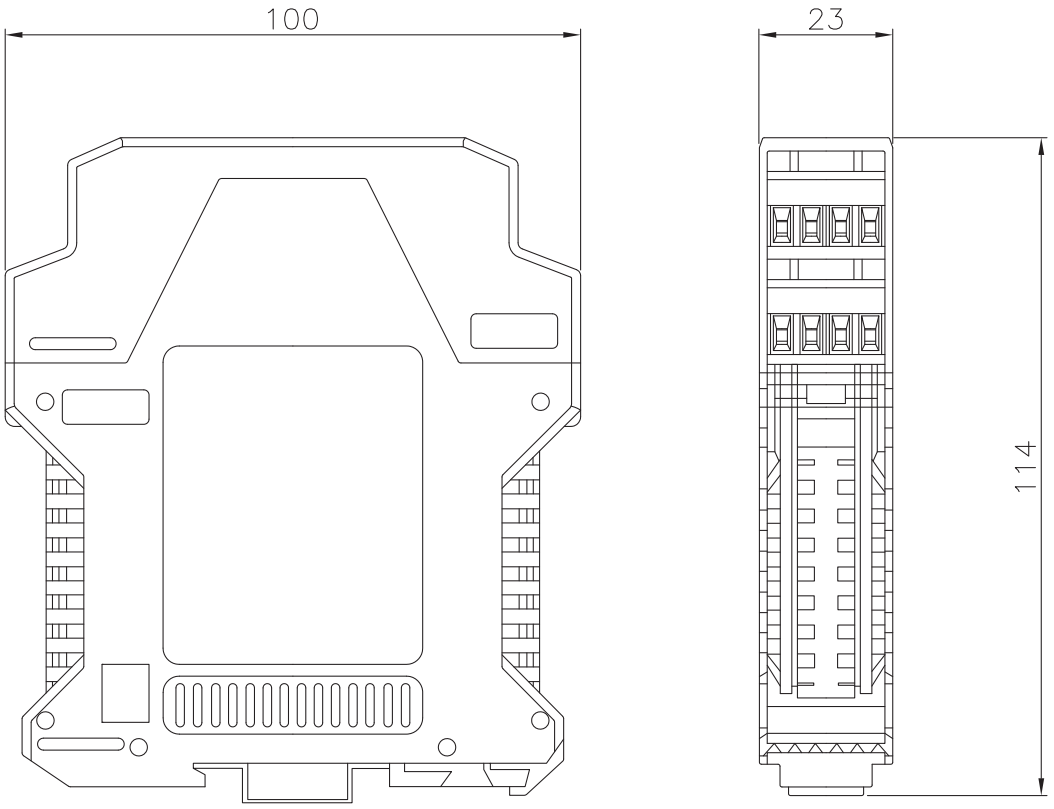
Note:

1. The potentiometers and other jumpers on the printed circuit board has been adjusted at the

factory, if you change settings of these potentiometers and jumpers, the warranty will become void!

2. Dial swith J5 and J6 on the printed circuit board are invalid.

Unit dimensions (in mm)



Project / maintenance instructions / additional information

– The amplifier card may only be unplugged or plugged in when switched off!

– Do not use plugs with free wheel diodes or LED displays when connecting the solenoids!

– Measurements at the card may only be carried out with instruments R_i > 100 kΩ!

– For switching the command values, use relays with gold contacts (small voltages, small currents)!

–When using external control, the control voltage may have a residual ripple factor of a maximum of 10%!

– Always shield command value cables; connect the shield to 0 V operating voltage on the card side, and leave the other side open (danger of earth loops)!

Recommendation: Also shield solenoid lines!

For solenoid cable lengths up to 50 m, use cable type LiYCY 1.5 mm^2.

For greater lengths, please consult us!

– The distance to aerial, radio sources and radar equipment must be at least 1 m!

– Do not lay solenoid and signal lines near power cables!

– Because of the loading current of the smoothing capacitor on the card, pilot fuses must be of the slow-blowing type!

– **Warning:** When using the **differential input, both inputs** must always be switched on or off **simultaneously**!

– Electrical signals generated via control electronics must not be used for switching safety-relevant machine functions. (See also the European standard "Safety requirements for fluid power systems and components – Hydraulics", prEN 982)