Hengli ®

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Proportional amplifier

Type VT 2000

For controlling proportional pressure valve.
EURO circuit board structure.

Contents

Features

VT-2000 is a proportional power amplifier
and consists of:
- Voltage regulator
- Two input circuits of differential and
  potentiometer
- Controllable constant current generator
- Ramp generator
- Oscillator 200Hz
- Ramp adjustable for time of "up" and "down"

Technical data

Weight	m	Approx. 0.15kg
Voltage	U	DC 24V (-5%~+10%)
Power	P	30VA
Fuse wire	Is	1.2AT
Control voltage	U	Input differential 0~+10V
		Manual potentiometer input 0~+9V
Min. load resistance for control vloltage	R	500Ω
Max. output current	I_{max}	800mA
Max. load resistance	R	30Ω
Pilot current	I	100mA
Vibration current frequency	f	200Hz
Ambient temperature	t	0~40°C
Temperature drift		0.5‰ (max. current value)/ °C

Ordering code

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VT-2000 [   ]  40 [   ]    ★ [   ]
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Bare terminal   =BK
32 ends plug to DIN41612   =BS
(For EURO circuit board breadth)
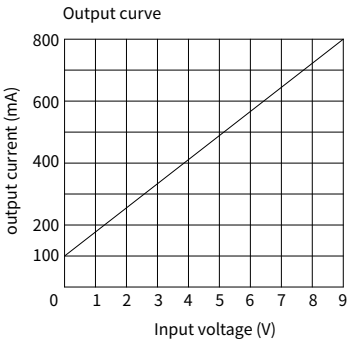
Further details in clear text
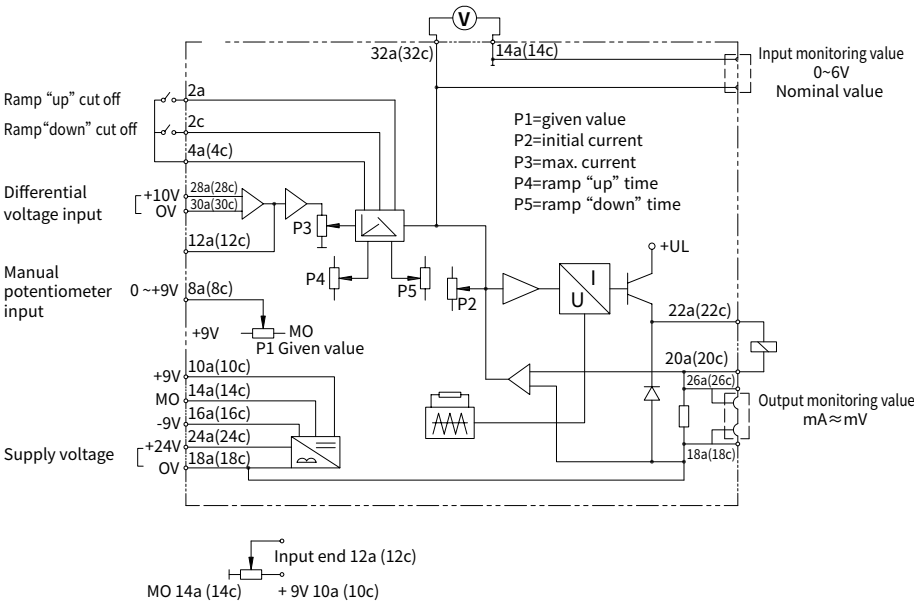
G=   second generation (only for BS version)

40=   Series 40

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Characteristic curve

Output curve

Wiring diagram of amplifier

Type VT-2000BS40G

Ramp "up" cut off — 2a
Ramp "down" cut off — 2c
4a(4c)

Differential voltage input — +10V / OV — 28a(28c) / 30a(30c) — 12a(12c)

Manual potentiometer input — 0 ~+9V — 8a(8c)

+9V — MO — P1 Given value

Supply voltage — +9V — 10a(10c) / MO — 14a(14c) / -9V — 16a(16c) / 24a(24c) / +24V — 18a(18c) / OV

32a(32c) 14a(14c)

P1=given value
P2=initial current
P3=max. current
P4=ramp "up" time
P5=ramp "down" time

P3   P4   P5   P2

+UL

22a(22c)
20a(20c)
26a(26c)
18a(18c)

Input monitoring value 0~6V
Nominal value

Output monitoring value mA≈mV

Input end 12a (12c)
MO 14a (14c)   + 9V 10a (10c)

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Application specification

Type VT-2000BS40G

Principle chart of Hydro-electric proportional amplifier type VT-2000BS40G see Wiring Chart
1. 20a (20c), 22a (22c) in the right of the dotted line, connects with proportional solenoid coil,
   And 22a (22c) is the high electric potential and 20a(20c) is the low electric potential.

2. 24a (24c), 18a (18c, 16a, 16c) in the left of the dotted line, connects with DC 24V power,
   among them, 24a (24c) connects the positive pole, 18a (18c, 16a, 16c) connects the negative pole.
   The controller's power shall be separate with the differential input power,
   namely 30a (30c) can't connect the 14a (14c) and 18a (18c, 16a, 16c),
   otherwise, it could be damage the controller.

3. Two controlling methods:
(1). manual control:
a: External potentiometer (provided by user themselves, suggesting to use one with resistance
   greater than 5K and smaller than 10K but smaller than 2K is not permitted; Power is not limited),
   one end connects 10a (10c) (+9), another end connects 14a (14c) (M0 is the measurement zero);
   and the slide end connects 12a (12c). Input the voltage value 0~ +9 V into 12a (12c) end by
   adjusting the potentiometer, and 100~800mA square wave pulse current will proportionally
   appears from the proportional solenoid.

b: The controller has a built-in input potentiometer P1, the amplifier panel <given
   value> potentiometer, which can replace of external potentiometer. When using P1, put through
   8a (8c)and 12a (12c), then it can get 100~800mA current from the solenoid to control the
   solenoid outputting force.

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(2). Automatic control:
Differential voltage signal from the programmable controller (PLC), function generator and so on
inputs from 28a (28c), 30a (30c), and 28a (28c) connects high frequency, while 30a (30c) low frequency.
Correspondingly appearing 100~800mA in the solenoid when the differential changes at range of 0~10V.
Notes: Don't make the 30a (30c) connected with the 14a (14c)(M0) or negative end 18a (18c), 16a (16c) of
the DC24V power, namely the PLC and the proportional controller can't use one power or have mutual
grounding.
When the requiring current is less than 800mA, it can limit the max. current by adjusting the P3 in the
amplifier panel, e.g. input +9V to end 12, it can limit the output current 800mA into 600mA or other values
by adjusting the potentiometer P3.
Two potentiometer P4 and P5 in the amplifier panel is respectively used for adjusting the time of ramp
"up" and "down", and the adjustable time range is 0.2~5 seconds.
There is two pairs test holes, the 0~+6V test hole for monitoring the input voltage signal, mV ≈ mA hole
for monitoring the output current and the mV measured by the voltage meter approx. equal the mA value
in the solenoid.
Potentiometer P2 (initial current) on the panel is used for adjusting the pilot current with the range
0~400mA; and preset current is 100mA before dispatch from factory.

Note:
Other potentiometers on the panel have been adjusted before shipment from the factory, if you modify
them, the performance parameter given by the manual will not be effective. This amplifier can be
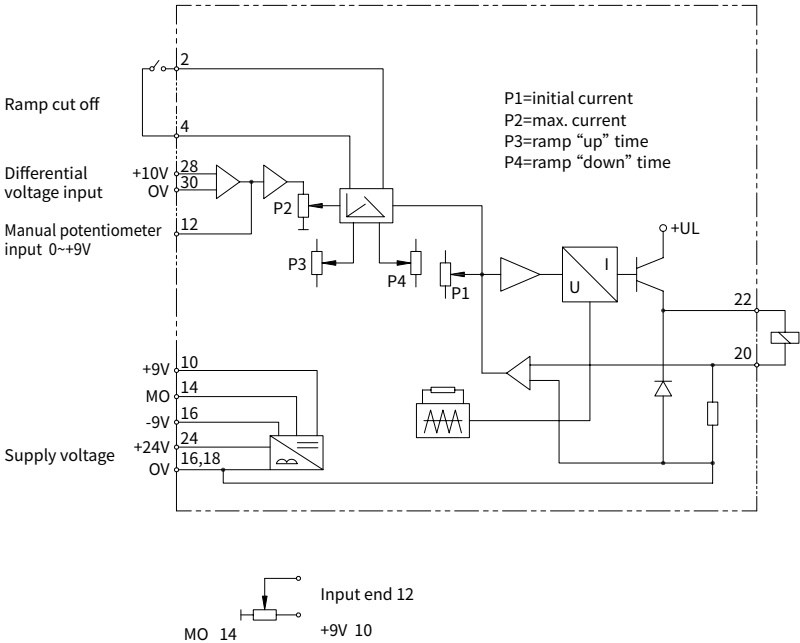plugged in and off only under the electric breakaway.

Outline dimension

Type VT-2000BS40G
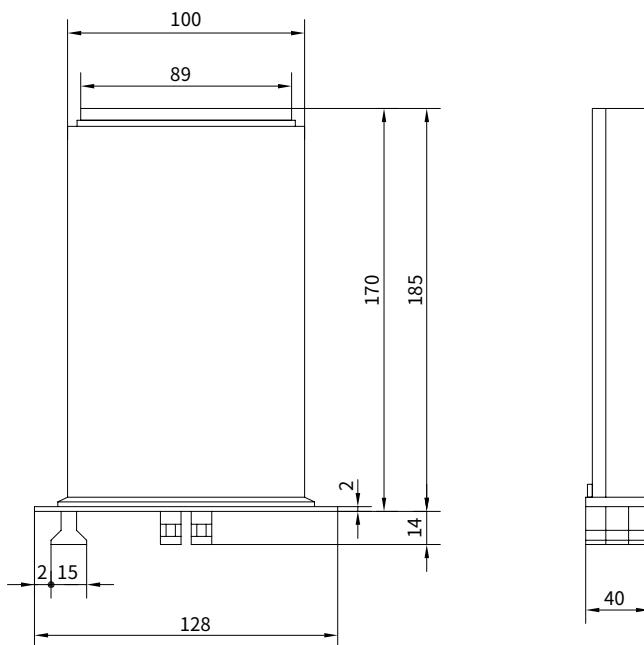
Amplifier type VT-2000BS40G circuit outline dimension adopts Europe standard 100×160 mm, connecter is Europe 32 ends plug. and it has a stand type VT-3002L forming a complete set.

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Wiring diagram of amplifier

Type VT-2000BK40

P1=initial current
P2=max. current
P3=ramp "up" time
P4=ramp "down" time

Ramp cut off

Differential voltage input   +10V 28 / OV 30

Manual potentiometer input 0~+9V   12

Supply voltage   +9V 10 / MO 14 / -9V 16 / +24V 24 / OV 16,18

Input end 12
MO 14   +9V 10

Application specification

Type VT-2000BK40

Principle chart of Hydro-electrical proportional amplifier type VT-2000BK40 see Wiring Chart.
1. End 20 and 22 in the right of the dotted line, connects with proportional solenoid coil (22 is the high electric potential and 20 is the low electric potential.)

2. End 24, 18 (or 16) in the left of the dotted line, connects with DC 24V power, among them, 24 connects the positive pole, 18 or 16 connects the negative pole. The controller's power shall be separate with the differential input power, namely end 30 can't connect the 14 and 18 or 16, otherwise, it could be damage the controller.

3. Two controlling methods:
(1) Manual control:
External potentiometer (provided by user themselves, suggesting to use one with resistance greater than 5K and smaller than 10K but smaller than 2K is not permitted; Power is not limited), one end connects 10 (+9), another end connects 14 (M0 is the measurement zero); and the slide end connects 12. Input the voltage value 0~+9V into end12 by adjusting the potentiometer, and 100~800 mA square wave pulse current will proportionally appear from the proportional solenoid to actuate it.

(2) Automatic control:
Differential voltage signal from the programmable controller (PLC), function generator and so on inputs from end 28 and 30, among them, end 28 connects high frequency, while 30 low frequency. Correspondingly appearing 100~800mA in the solenoid when the differential changes at range of 0~10V.
Notes: Don't make the end 30 connected with the 14 (M0) or negative end 18, 16 of the DC24V power, namely the PLC and the proportional controller can't use one power or have mutual grounding.
When the requiring current is less than 800mA, it can limit the max. current by adjusting the P2 in the amplifier panel, e.g. input +9V to end 12, it can limit the output current 800mA into 600mA or other values by adjusting the potentiometer P2.
Two potentiometer P3 and P4 in the amplifier panel is respectively used for adjusting the time of ramp "up" and "down", and the Max. time of ramp is 5 seconds. If system needn't ramp time, 2 and 4 can be short-circuited.
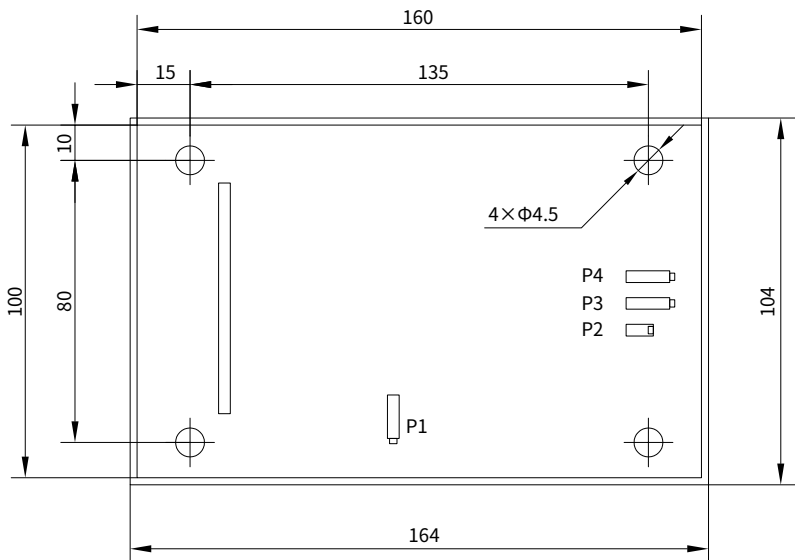Potentiometer P1 on the panel is used for adjusting the pilot current with the range 0~400mA ; and preset current is 100mA before dispatch from factory.

Note:
Other potentiometers on the panel have been adjusted before shipment from factory, if you modify it, the performance parameter given by the manual will not be assured.

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Outline dimension

Type VT-2000BK40

Amplifier type VT-2000BK40 circuit outline dimension adopts
Europe standard 100×160 mm, with plastics supporting board
(1mm thick), the wring terminal can connects the cable directly.

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