

Digital „potentiometer“ DIGIPOT-50MA

0...10 V / 4...20 mA

Quick start guide

digital setpoint device with two selectable output signals 0...10V (Iout= 50mA) or 4...20mA

suitable for

- our Inverters: GA500, GA700, J1000, V1000, A1000, MFR ...
- our servocontrols: Volksservo, ARS, SGD, DIS...
- our DC-controls: ARI-series
- diverse controls of several producers

for panel installation

display values 0-99 on LED-Display

arrow keys for increasing or decreasing

usable also

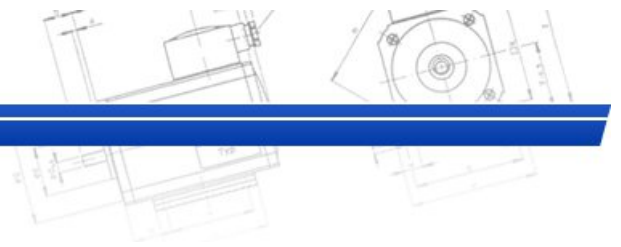
- as voltmeter for 0 to 10V-signals
- as transducer with display for 0...10 V / 4...20mA-signals

under EMC-directive 89/336-EEC and under low-voltage-directive 73/23-EEC



accreditation





Functions:

- 1.) digital potentiometer with an output-voltage of 0 ... 10 V DC
- 2.) digital potentiometer with an output-current of 4 ... 20 mA
- 3.) voltmeter (display of an analog voltage of 0 ... 10 V DC)
- 4.) transducer from 0 ... 10 V DC to 4 ... 20 mA
- 5.) slavepotentiometer with a fixed division ratio
- 6.) slavepotentiometer with a variable division ratio

1.) Digital potentiometer with an output-voltage of 0 ... 10 V DC (max. 50mA)

The output voltage is proportional to the display-value. By adjusting the parameter V_{min} (P3) and V_{max} (P2) in the setup of the device (mode is described below) the upper and lower limit of the display-value is adjusted. Hereby V_{min} is the display-value at the output-voltage 0 V and V_{max} at 10 V. The default value for V_{min} and V_{max} are 00 and 99.

The display-value in proportion to the output-voltage will be calculated as follows:

1. Default setting:

V_{min} and V_{max} set as default

→ display-value 00 = 0 volt, display-value 99 = 10,0 volts

2. Another example:

$V_{min} = 20$, $V_{max} = 80$

→ display-value 20 = 0 volt, display-value 80 = 10,0 volts.

There is another parameter in the device setup. $OutMax$ (P4), is fixing the maximum output-voltage as percent-value of 10 V (default value 100%).

The display-value will be calculated proportional to the output-voltage as follows:

1. V_{min} and V_{max} set with default-values, $OutMax$ also set with default-values

→ display-value 00 = 0 volt / display-value 99 = 10,0 volts.

2. V_{min} and V_{max} set with default-value, $OutMax = 50$

→ display-value 00 = 0 volt / display-value 99 = 5,0 volts.

The output voltage is calculated as follows:

$$V_{out} = (10 * OutMax / 99) / (V_{max} - V_{min}) * display\text{-value}$$

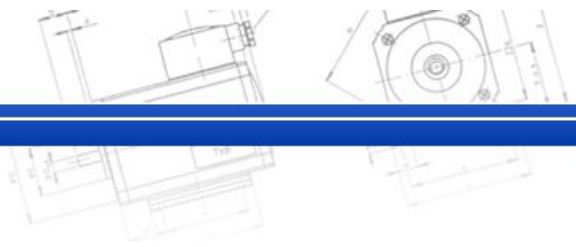
with display-value = as set on the display.

V_{max} = maximum value as display-setup (P2).

V_{min} = minimum as display-setup (P3).

$OutMax$ = maximum output-voltage (P4), percentage (100% = 10 V)

The setup parameters will be saved into the EEPROM and so these will be saved also after switching off the device. During the setup the new value will be saved after one second. By using the arrow-keys the values are adjusted.



2) Digital potentiometer with an output-current of 4 ... 20 mA

The given output-current of the device is proportional to the display value:
Display-value 00 = 4 mA / display value 99 = 20 mA

The setup parameters will be saved into the EEPROM and so these will be saved also after switching off the device. During the setup the new value will be saved after one second. By using the arrow-keys the values are adjusted.

3.) Voltmeter

In the voltmeter mode the arrow-keys are not used. The display shows a value proportional to the input-voltage. By adjusting Vmin (P3) and Vmax (P2) the minimum and maximum values are adjusted. The display-values are calculated with the following formula:

$$\text{Display-value (0-99)} = V_{in} / 10 * (V_{max}-V_{min}) + V_{min}$$

with V_{in} = input voltage 0 ... +10V DC
 V_{max} = maximum-value as in the display-setup (P2).
 V_{min} = minimum-value as in the display-setup (P3).

4.) Transducer of 0 ... 10 V DC to 4 ... 20 mA-signals

In this mode the DIGIPOT-50 is used as a transducer. $V_{in} = 0V$ will be transduced to 4mA and $V_{in} = 10V$ to a 20mA-signal. All values in between will be calculated proportional.

5.) Slave-potentiometer with a fixed division ratio

In the mode as a slave-potentiometer with a fixed division ratio the arrow-keys are not used. The displayed value is the input-voltage V_{in} . In this mode the output-voltage at the output-connection will be calculated from the input-voltage V_{in} and the value OutMax (P4).

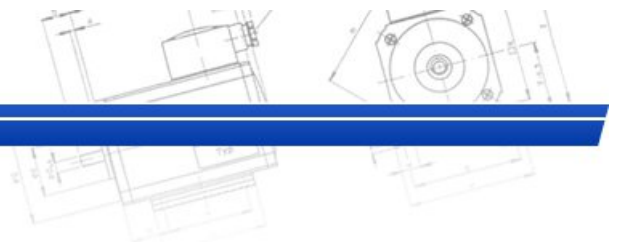
Example:

$$\begin{aligned} \text{Input-voltage} &= 5 \text{ volts, OutMax} = 50 \\ \rightarrow \text{output-voltage} &= 2,5 \text{ volts.} \end{aligned}$$

The relation between V_{in} and V_{out} is: $V_{out} = V_{in} * \text{OutMax (P4)} / 100 * \text{AMP-Vin (P5)}$.

6.) Slave-potentiometer with a variable division ratio

In the mode as a slave-potentiometer with a variable division ratio on the display the relation between the input- and output-voltage is shown. The mode is similar to the former one with the difference that by using the arrow-keys the relation can be adjusted.



Configuration of the device

To setup the required mode (potentiometer, voltmeter or transducer) and the limits of the display-value (voltmeter-mode):

- a) Press both arrow-keys at the same time
- b) Switch on the device.
- c) The display shows "P -"
- d) By using the ↑-key choose the required parameter.

"P 1" = Mode

"P 2" = Maximum-display-value (Vmax).

"P 3" = Minimum-display-value (Vmin).

"P 4" = Maximum output-voltage in percent in relation to 10V (OutMax).

"P 5" = Amplification of the input-voltage (Vin), with an adjustment range of 1,0 to 9,9 (AMP-Vin).

- e) After "P 1" is displayed press the ↓-key to choose the mode.
Confirm your adjustment by using the ↑-key.

a. "0 1" = digital potentiometer with an output-voltage of 0 ... 10 V DC.

b. "0 2" = digital potentiometer with an output-current of 4 ... 20 mA.

c. "0 3" = voltmeter 0 ... 10V

d. "0 4" = transducer 0 ... 10 V DC to 4 ... 20 mA

e. "0 5" = slave-potentiometer with a fixed division ratio

f. "0 6" = slave-potentiometer with a variable division ratio

After your choice please press once again the ↓-key to save the data and to return to the parameter menu.

- f) Choose "P2" on the display and confirm with the ↓-key to setup the maximum value (Vmax). By using the ↑-key the value is saved into the EEPROM and you return to the parameter menu.

- g) Choose "P3" on the display and go on as above to adjust the minimum display-value (Vmin).

- h) Choose "P4" on the display and press the ↓-key to come to the setup of the maximum output-value OutMax (00 = 0 Volt / 99 = 10V). This parameter is used in the mode „digital potentiometer“ and „slave-potentiometer“.

- i) To return to the normal mode you have to switch off and then on the device. Please wait minimum 1s until the data are saved in the EEPROM.