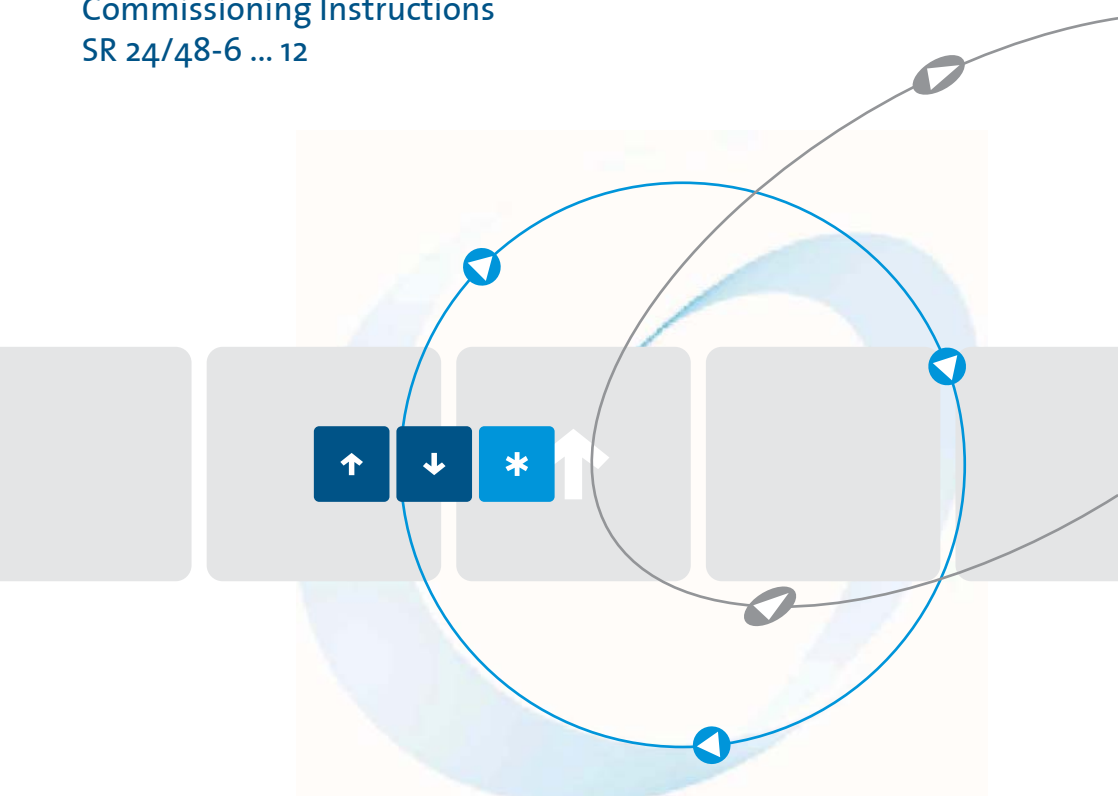


Commissioning Instructions
SR 24/48-6 ... 12



as per 05/09 12600.10001

Table of Contents		Page
1.	Safety notes	3
2.	Declaration of conformity	3
3.	Brief description	4
4.	Technical data	4
5.	Parameter adjustments, Operational indications	5
5.1	Potentiometers	5
5.2	Parameter changes by components on soldering tags	5
5.3	Operational indications	6
6.	Speed control with tachometer feedback	6
7.	Connection	6
7.1	Terminal connection diagram	7
7.2	Dimensions	7

These commissioning instructions were prepared with great care. Nevertheless, the PETER electronic GmbH & Co. KG does not assume liability for damage resulting from mistakes possibly contained in this manual. Technical changes that serve to improve the product are subject to change without notice.

1. Safety notes

Adjustment work may only be performed by trained staff observing the safety regulations. Assembly and mounting work may only be carried out with the equipment de-energized.

Make sure that all the drive components are properly earthed/grounded.

Read these commissioning instructions carefully before putting the transistor switching controller into operation.

Besides, the user must ensure that the devices and associated components are fitted and connected in accordance with the applicable local, legal and technical regulations. The VDE-regulations VDE 0100, VDE 0110, VDE 0160 and VDE 0113, plus the appropriate regulations of the TÜV (Technical Inspectorate) and the employers' liability insurance associations apply in Germany.

The user must make sure that the drive assumes a safe operating state following a device failure, in the event of incorrect operation, or if the control unit has failed etc..

2. Declaration of conformity

In industrial linguistic usage the transistor switching controllers (closed-loop) of the type SR 24/48 are called "devices", however, in the sense of the "device-safety-law", the "EMC-law" or the "EC-guideline for machinery" they are not devices or machines ready for use or connection but they are components. It is only possible to define their final function, when these components are integrated into the design and construction of the user.

To be able to use the devices to their intended purpose, it requires power supply networks according to DIN EN 50160 (IEC38).

The user takes the responsibility to ensure that the user's design and construction comply with the applicable legal provisions. The commissioning is strictly forbidden as long as the conformity of the final product with the guideline 2006/42/EC (machinery guideline) is not proved.

The devices of the SR 24/48-series are electrical equipment that is used in industrial electrical power installations. They are designed for the application in machines, in order to control variable-speed drives with d.c. motors. These devices must only be operated together with appropriate mains transformers or power supply units. With due regard to the installation guidelines they meet the following requirements:

Emitted interference:	EN 50081-1:1994
Immunity to interference:	EN 50082-2:1995

CE



Dr. Thomas Stiller
Managing Director

3. Brief description

The transistor switching controllers (closed-loop) of the type series SR 24/48 - ... are short-circuit-proof one-quadrant controllers that are used for the armature supply of low voltage d.c. drives with permanent field.

The function as clocked controllers with a switching frequency of 16kHz.

Features:

- for motors with external and permanent excitation
- armature-current form factor ≤ 1.02 due to high clock-frequency
- no additional reactor required
- reduced motor noise and brush wear
- mounting on Euro-card with plug connector DIN 41612 or terminal connection
- high regulating dynamics
- short-circuit-proof
- degree of protection IP 00

4. Technical data

	SR 24-6	SR 24-12	SR 48-6	SR 48-12
Operating voltage according to DIN EN 50160 (IEC38)	24-38VAC/30-50VDC		37-46VAC/52-60VDC	
Fusing / supply voltage	10A	16A	10A	16A
max. Motor shaft power	120W	250W	250W	500W
Armature voltage	0 - 24V		0 - 48V	
max. Armature current	6A	12A	6A	12A
Control range	1:30 \pm 3% 1:100 \pm 1%		IxR compensation tachometer control	
Setpoint potentiometer	10k Ω			
Setpoint input	0 ... 10VDC			
Actual value input	factory-adapted to 24V		factory-adapted to 48V	
Connection / terminal version	control unit 8-pole 1.5mm ²		power unit 6-pole 1.5mm ²	
Connection / pluggable version	plug connect. DIN 41612	-	plug connect. DIN 41612	-
Ambient / Storage temperature	0°C ... 45°C / -25°C ... 75°C			
Environment	Overvoltage category III, pollution degree 2			
Cooling	convection			
Temp.-dependent reduction	power		2% / °C from 40°C max. 55°C	
Article number	22612.02006	22600.02012	22600.05006	22600.05012

5. Parameter adjustments, Operational indications

5.1 Potentiometers

Opposite the terminal block there are 5 potentiometers by means of which the following settings can be made.

Maximum speed

With the potentiometer "Nmax" the maximum speed can be limited.

Right stop of potentiometer -> high maximum speed

Minimum speed

With the potentiometer "Nmin" a base speed can be adjusted.

Right stop of potentiometer -> high minimum speed

IxR

In the case of armature voltage control the voltage drop on the armature resistance is compensated with the potentiometer "IxR".

The potentiometer is to be adjusted so that at medium speed and increasing load a speed drop does not occur. In the case of over-compensation the drive becomes unstable.

Right stop of potentiometer -> large IxR - component

Gain of the speed controller

With the potentiometer "Xp" the gain of the speed controller can be adjusted. Too much gain will result in an uneven running of the motor, whereas if the gain is too small the rise time gets too long and speed overshoots occur.

Right stop of potentiometer -> large gain

Current limit

With the potentiometer "Imax" the maximum current of the controller can be adapted to the conditions of the drive.

Right stop of potentiometer -> high current limit

5.2 Parameter changes by components on soldering tags

Designation	factory-installed	Function
R 8	220k Ω	Adjustment of P-gain By increasing the resistance the P-gain is increased
C 3	100nF	Adjustment of the I-gain By increasing the capacitance of the capacitor the integral-action time is prolonged
R 17	120k Ω with SR 24-... 220k Ω with SR 48-...	Adjustment of the armature voltage feedback Adjusted to 24V or 48V motors
BR 1	Jumper	Adjustment armature voltage or tachometer control With jumper: U _A - control
R 24	not installed	Adaptation to d.c. voltage tachometer in case of tachometer control

5.3 Operational indications

Next to the potentiometers there are two LEDs that indicate the following operational states.

LED	Function
D12 green	Supply voltage connected
D20 red	Controller in operation

6. Speed control with tachometer feedback

In as-delivered condition the controller is designed for armature voltage control of a 24V or 48V d.c. motor.

Should speed control with a d.c. tachometer be required the following changes have to be made on the controller board.

- Jumper BR1 has to be removed
- Resistor R24 has to be installed

R24 is calculated as follows:

$$R24 = ((max. tachometer voltage - 5.3) \times 3.7) \text{ k}\Omega$$

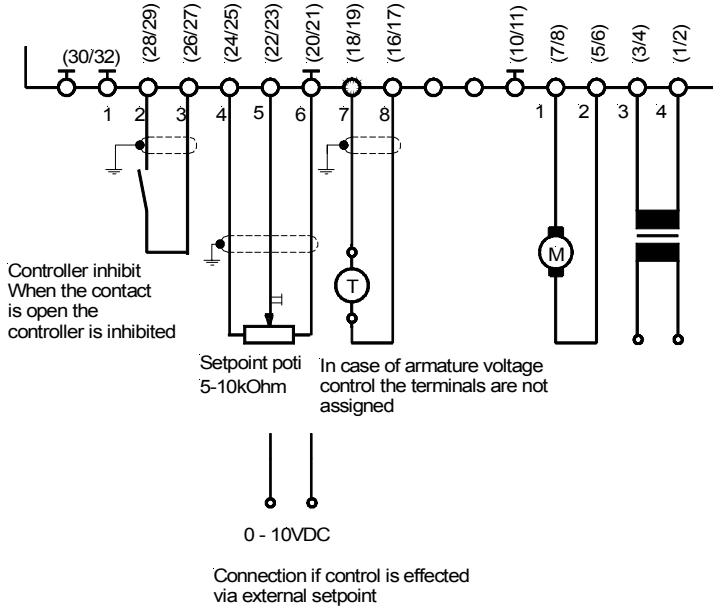
7. Connection (values in brackets stand for plug connector version)

Connector pin	Connection
(1-2) 4/2	Supply voltage
(3-4) 3/2	Supply voltage
(5-6) 2/2	"Plus"-connection Motor
(7-8) 1/2	"Minus"-connection Motor
(9)	N.C. (not connected)
(10-11)	Ground
(12-13)	N.C.
(14-15)	N.C.
(16-17) 8/1	Tachometer input "Minus"
(18-21) 6/1	Ground
(22-23) 5/1	Input setpoint (0 .. 10V) max. 15V
(24-25) 4/1	Supply setpoint poti (10V/8mA)
(26-27) 3/1	Controller inhibit 24V
(28-29) 2/1	Controller inhibit Input
(30-32) 1/1	Ground

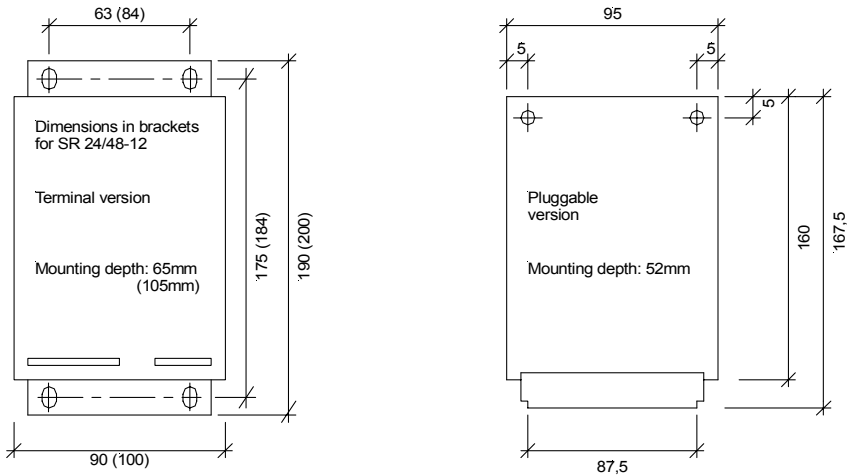
When contact is open
the controller is inhibited

7.1 Terminal connection diagram

Values in brackets stand for plug connector version



7.2 Dimensions



Notizen:



www.peter-electronic.com

