EPH elektronik
Produktions- und
Handelsges. mbH

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Assembly instruction / User manual

4-Q motor speed control unit digital, type DLR 24/20-526

Technical data under reserve technical changes

Please read these instruction before using and please keep safe for future.
You may download further technical advice under www.eph-elektronik.de.

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Safety instructions and Safeguarding

1.1 Installation note

An external mains adapter is required for the electrical supply of the speed controller EPH 526. If this mains adapter is itself supplied with a voltage >50V DC or >75V AC the following points have to be considered:
The unit should only be installed by qualified specialist personnel. Installation and operation of the unit should comply with the local regulations for electrical installations as well as health and safety regulations. The protection of people and property must be warranted by applying the currently applicable safety regulations (VDE, electrical safety regulations, IEC, etc.). High start-up currents can occur at the moment of tuning on a controller device / mains adapter due to charging process of the intermediate circuit. An effective safeguard is therefore required on the mains input side (e.g. a C-Rated 16A line circuit breaker). The use of RCD circuit breakers before control unit / mains adapter is not recommended because of the leakage currents generated by EMC interference suppressing devices. The regulator card / mains adapter must not be operated without an effective connection to earth! The connection to earth must comply with local regulations.

1.2. ESD-Protection / Hazard note

Attention during installation of the electronic board!	**Danger to burn - Beware!**	**Danger to fire-Beware!**	**Danger to life-Beware!**
It must be warranted on your part that there is sufficient ESD-protection. 	Parts of this controller card can be reach a temperature up to 80°C. Increased risk at controller cards without protective cover.	Unprofessional handling and installation can cause a fire.	Parts of this controller card are under intermediate circuit voltage and remain energised >50VAC respectively 75VDC after turning main power off. Coming into contact with the terminals, lines and unit parts can cause serious injuries or result in death!

2. Getting started DLR24/20-526 with 15/4-pole spring clamp terminal

1. Select modes:
   - put jumper 1 on 1-2 for internal speed reference value (potentiometer 1) or on 2-3 for external speed reference
     (for internal reference put jumper 2 on 1-2 for value max. 5V DC)
   - put jumper 2 on 1-2 for reference value max. 5V or on 2-3 for max. 10V DC target value input.
   - put jumper 3 on 1-2 for 12V motor or on 2-3 for 24V motor.
   - put DIP switch 1 and 2 ON for inverted enables (no need of connecting terminal 15, 16 und 18)
   - put DIP switch 3 to 8 Off

2. Turn potentiometer 2 (Imax) for current limitation to the right position.

3. Potentiometer 3 (IxR) compensation to left position.

4. Connection of the control wires see connection diagram, page 7.

5. Connect DC motor to terminals 3 and 4.

6. Connect power supply to terminal 1 Plus (ca. 10 – 36V DC), on terminal 2 GND.

7. Now switch on power supply.

8. LED green (power on) illuminates on the pcb.

9. With potentiometer 1 (n ref) the speed reference value can be adjust from 0 to 100%, if jumper 1 was put on 1-2.

10. Motor direction can be changed witch a voltage (5 – 36V DC) on terminal 19 (e.g. bridge from clamp 17 to 19)

3. Technical features

- Power supply Ue: 10V DC – 36V DC (with inverse-polarity protection)
- High frequency f>20 kHz, this results in low-noise operation
- Electric connection via spring clamp terminals
- High level of effectiveness by using Power Mosfets
- Mounting: mounted with screws or on a 35mm mounting rail

The dispose of this product has to be done via separate electrical- and electronic equipment disposal.

4. Technical data

type	Supply Voltage	Armature voltage U_A	Armature current I_N	Mechanical power P_{ab}
DLR 24/ 20	10-36V DC	0 - 12/24V DC	0 – 20A	approx. 350W

Model:	DLR 24/20/P:	screw mounting
	DLR 24/20/M:	screw mounting or mounting rail 35mm
	DLR 24/20/G:	screw mounting or mounting rail 35mm with yellow cover
Protection:	external fuse:	20 AT
Environment temperature:		5° to 45°C
Relative air humidity:		18% to 85% (non-condensation)
Control range:		up to 1 : 30

Speed control through EMF control with I x R compensation.

5. Connecting

5.1. Control connections

Speed ref. value:	terminal 11:	5V DC
	terminal 12:	wiper external potentiometer (10kOhm)
	terminal 13:	GND
Controller enable 1:	terminal 15:	Input 5-36V DC
Controller enable 2:	terminal 16:	Input 5-36V DC
Speed ref.enable:	terminal 18:	Input 5-36V DC
Motor direction:	terminal 19:	Input 5-36V DC

Output 1 (ready for operation): terminal 9: turns on voltage 10V-36V DC (<50mA), when the controller is ready

Output 2 (Overload):	terminal 10:	turns on voltage 10V-36V DC (<50mA), when the current is longer than 3 sec. at the current limit. Resettable by selecting 0V at speed reference value (terminal 12) or disable speed reference (terminal 18)

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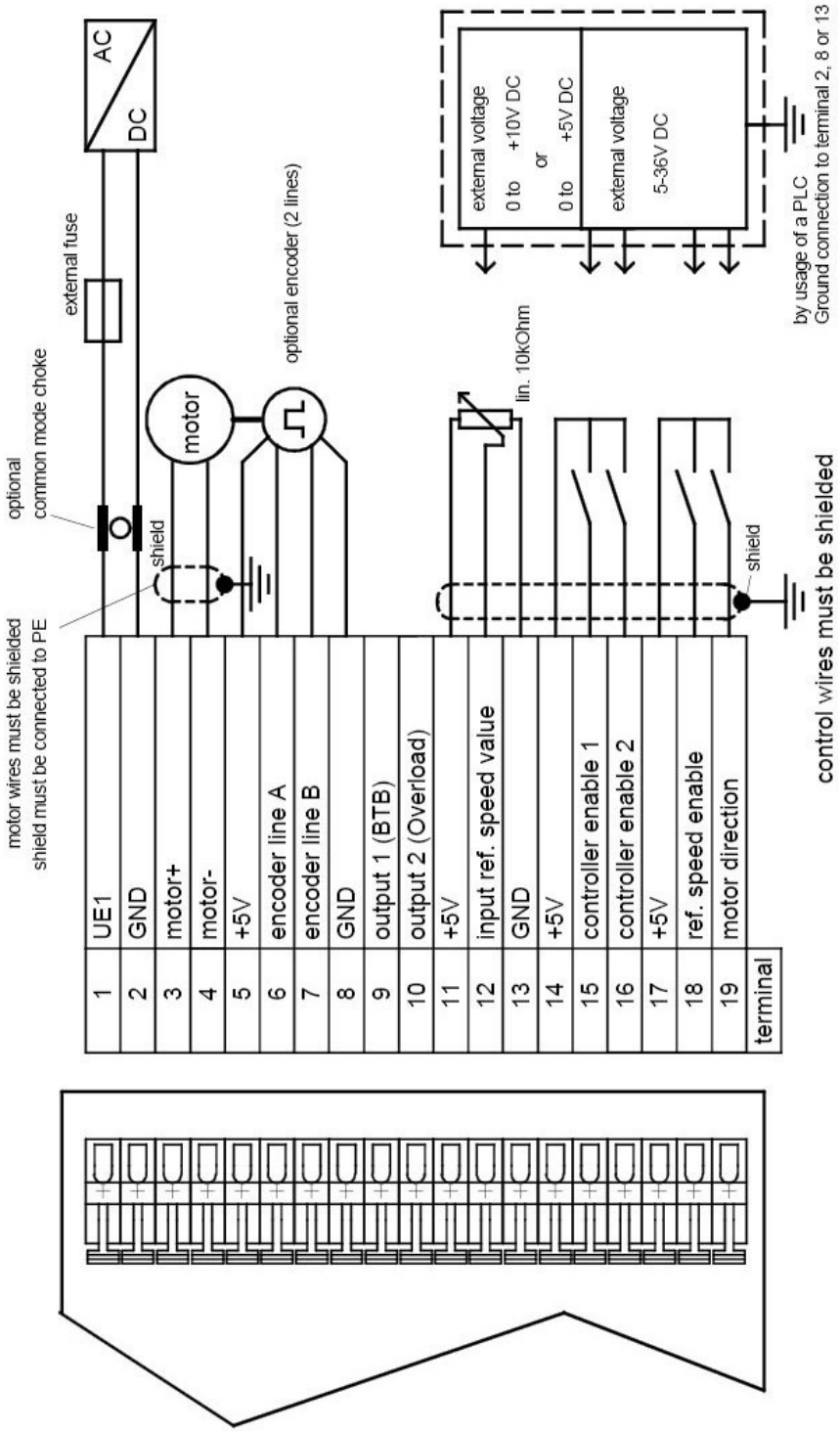
5.2 Connecting diagram



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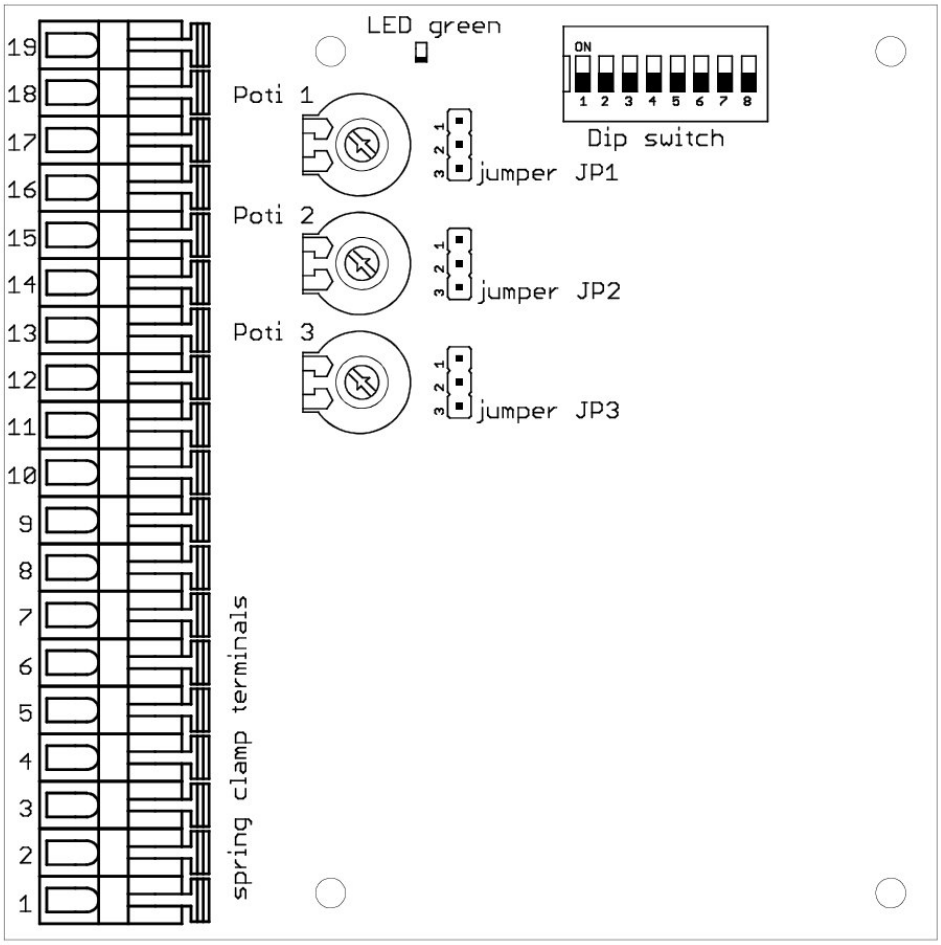

5.3. Overview DIP switch

Different modes are selectable by using the DIP-switch (mode changes work only, when the power supply is turned off and on).

DIP 1	Off	Controller enable not inverted (terminals 15 and 16 must be connected, for working motor in the wanted direction)
DIP 1	ON	Controller enable inverted (terminals 15 and 16 must not be connected, for working motor in the wanted direction)
DIP 2	Off	Speed ref. enable not inverted (terminal 18 must be connected, for a ref working. speed value)
DIP 2	ON	Speed ref. enable inverted (terminal 18 must not be connected, for a ref. working. speed value)
DIP 3	Off	Speed ref. value 0 to 5V/10V means motor voltage: 0 to + 12V/+24V (motor voltage)
DIP 3	ON	Speed ref. value 0 to 5V/10V means motor voltage: -12V/-24V to +12V/+24V (half speed value -> motor voltage=0VDC)/joystick control
DIP 4	Off	Ramp for motor voltage 1 sec., when DIP5 and DIP 6 are Off
DIP 4	ON	Ramp for motor voltage 2 sec., when DIP5 and DIP6 are Off
DIP 5	Off	Ramp for motor voltage 1 sec., when DIP4 and DIP6 are Off
DIP 5	ON	Ramp for motor voltage 3 sec., when DIP4 and DIP6 are Off
DIP 6	Off	Ramp for motor voltage 1 sec., when DIP4 and DIP5 are Off
DIP 6	ON	Ramp for motor voltage 5 sec., when DIP4 and DIP5 are Off
DIP 7	Off	Motor turns not off after 3 sec. on current limit (motor overload)
DIP 7	ON	Motor turns off after 3 sec. on current limit (motor overload)
DIP 8	Off	No function
DIP 8	ON	No function

6. CE Declaration of Conformity

The manufacturer

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herewith declares that the product:

Product:	4-Q motor control unit digital
Type	DLR 24/20/X – 526

is conform to the mentioned EC-regulation in connection with the test peripheral devices:

Regulation 2014/30/EU – electromagnetic compatibility (EMC-regulation)

The following harmonised standards were conducted:

DIN EN 55011 VDE 0875-11:2011-04	EMI emission
DIN EN 61000-6-2 VDE 0839-6-2:2006-03	EMI immunity

The transistor controller`s conformity to the mentioned standards doesn´t concern the complete system. An extra EMC-test would be necessary to get the conformity for the complete system.

If the transistor controller is integrated in a machine, the machine has to comply with regulation 2006/42/EG (machines directive). If not operating is not allowed.
If the supply voltage of a machine is > 50V AC respectively 75V DC, the regulation 2014/35/EC (low voltage directive) is to be observed.

Name authorised person:	Reiner Mannsperger
Address authorised person:	see address of the manufacture
Professional Competence:	manager development
Date:	30th June 2017