

**EM-Drive Model with loose leads connection**

**2.2 \*1**

**Safety Instructions:**

- The Installation and Operating may only be done by capable and qualified personal.
- First operation may be done at No-Load of the drive.
- The drive must only be operated at power divided low voltage (>60V)
- The drive may exclusively be operated at low-ripple DC-Voltage. Permissible Voltage values according type plate +10%.
- Changing the Direction of Rotation is exclusively possible by means of the yellow signal line.  
**Never reverse the Power Supply input lines (danger of destruction).**
- Electronic Drives of Type EM have by standardization an internally fixed adjusted Torque respectively Current Limitation. This protective function is reducing the motor current when highly exceeding the rated torque. **Permanent operation in this state is not allowed**, as the protective function takes place only beyond rated operation values.

**Connectors**

Supply Power leads (cross-section 0,5mm<sup>2</sup> or 1,5mm<sup>2</sup>)

Color	Function	Description / Details
red	+VM	Supply Voltage according type plate +10%
blue	Gnd	Power Ground

Control and Operation Lines (cross-section 0,14mm<sup>2</sup>)

Color	Function	Description / Details	
orange	+12,0V	Auxiliary voltage, load: 100mA max.	
brown	+10,0V	Reference voltage for speed setting, load: 10mA max.	
white	n-set	Analog input for speed setting 0-10V	
blue	GND	Reference voltage ground (same potential as Supply Power Ground)	
black	Error Output	Indication of Current Limitation / Low Voltage <sup>(1)</sup>	
violet	Encoder Canal A	2 Impulse per revolution (motor shaft) <sup>(2)</sup>	
grey	Encoder Canal B	2 Impulse per revolution (motor shaft) <sup>(2)</sup> 120° phase shift to A	
		Function at „High“-Level (12-24V)	Function at „Low“-Level (< ca. 5V)
green	Enable	Drive functions released for operation	No release for operation
red	Brake	Brake deactivated, drive ready	Brake (short circuit brake) activated <sup>(3)</sup>
yellow	Direction of Revolution	CCW	CW

<sup>(1)</sup> Open-Collector-Output 45V 100mA

<sup>(2)</sup> Open-Collector-Input 45V 100mA, optional Open-Emitter-Output available

<sup>(3)</sup> Short-Circuit Brake is only functional with applied supply power.

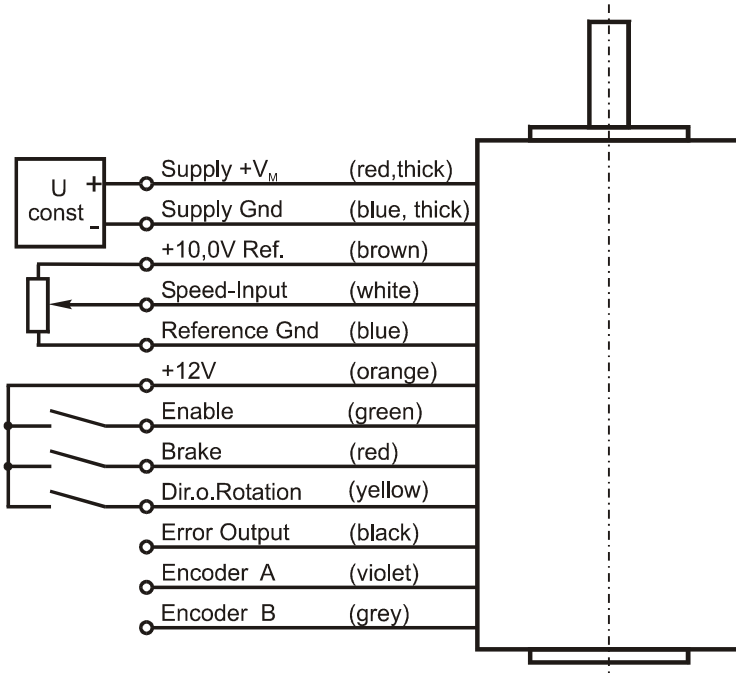
# Operating Instructions

## 1. Connection Supply Power

Please note: The drive has a red and a blue supply power lead as well as **control leads of the same color**. The supply power leads are the ones with the larger cross-section!

Red Lead: (+VM) DC-Supply Voltage according Type Plate +10%  
Blue Lead: (GND) supply Voltage Ground

## 2. Operating the Drive



The drive turns **CW** at following conditions:

- A voltage higher than 0V is applied to the speed setting input.
- Enable and Brake Input are connected to +12V.
- Direction of rotation Input is Low-Level.

Changing the direction of rotation can be performed by setting the appropriate input (yellow lead). Due to the high dynamics of the drive, we recommend to change the direction of rotation at standstill condition, in order to avoid damages of attached mechanics like gears, etc.

Illustration: Test Assignment

Error Output and Encoder Outputs are basically realized as "Open-Collector"-Output with 45V max and 100mA max.. Upon request, the Outputs are also as „Open-Emitter“-Outputs available.

### Error Output

The Error Output (black) indicates following conditions: Over-Current, Low-Voltage and Overheat (Thermo couple) result into „LOW“-Signal of Error Output.

### Encoder Outputs A and B

The Encoder Outputs A and B (violet and grey) provide per armature revolution two complete periods of a rectangular signal which are 120° phase shifted.

\*1 Revision history:

2.2 to 2.1: Changing the colours of following Control and Operation Lines: orange (previous pink), violet (red-white), grey (blue-white).