

Operating instructions  
**REOTRON LMS**  
4-Q-Power controller for lifting magnets

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**REOTRON**

Electronic Power Controllers

## Technical safety instructions for the user

This description contains the necessary information for the correct application of the product described below. It is intended for use by technically qualified personal.

Qualified personnel are persons who, because of their training, experience and position as well as their knowledge of appropriate standards, regulations, health and safety requirements and working conditions, are authorised to be responsible for the safety of the equipment, at all times, whilst carrying out their normal duties and are therefore aware of, and can report, possible hazards (Definition of qualified employees according to IEC 364)

### Safety Instructions

The following instructions are provided for the personal safety of operators and also for the protection of the described product and connected equipment.



#### **Warning!**

**Hazardous Voltage**

**Failure to observe can kill, cause serious injury or damage**

- Isolate from mains before installation or dismantling work, as well as for fuse changes or post installation modifications.
- Observe the prescribed accident prevention and safety rules for the specific application.
- Before putting into operation check if the rated voltage for the unit conforms with the local supply voltage.
- Emergency stop devices must be provided for all applications. Operation of the emergency stop must inhibit any further uncontrolled operation.
- **Electrical connections must be covered**
- **The earth connection must be checked, for correct function, after installation.**

### Specified Use

The units described herein are electrical controllers for installation in industrial plant. They are not to be used for domestic applications.

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**1.0 General**

The REOTRON LMS series of 3-phase power controllers have been specially designed to give 4 quadrant control of lifting magnets. They are constructed by using a double B6 rectifier circuit and enable the direction of current flow to be changed in a connected magnet from a control input. Connection to the mains supply is made normally by using a transformer, preferably with a Delta/Star configuration. An integral over-voltage limiting circuit protects the unit against cable faults or prevents power failure due to high current spikes.

**The over-voltage limiter must be connected externally.**

**2.0 Function**

The power controller is connected to the mains supply through a transformer. This transformer is also used to convert the voltage to the required range for the output. The double B6 rectifier stack enables the controller to operate with both current polarities and for power from the magnet to be fed back onto the mains supply.

Polarity changes of the magnet current can be made with a switched input (24 V, DC Signal or contacts). A polarity change can be made in all four quadrants.

The controller output voltage and current polarities are indicated from separate outputs (digital signal 0 / 24 V, DC).

The power inverter operates as a controller without independent regulation functions. Control and regulation functions are provided externally, using a set-point input for the magnet voltage and effective value outputs for voltage and current.

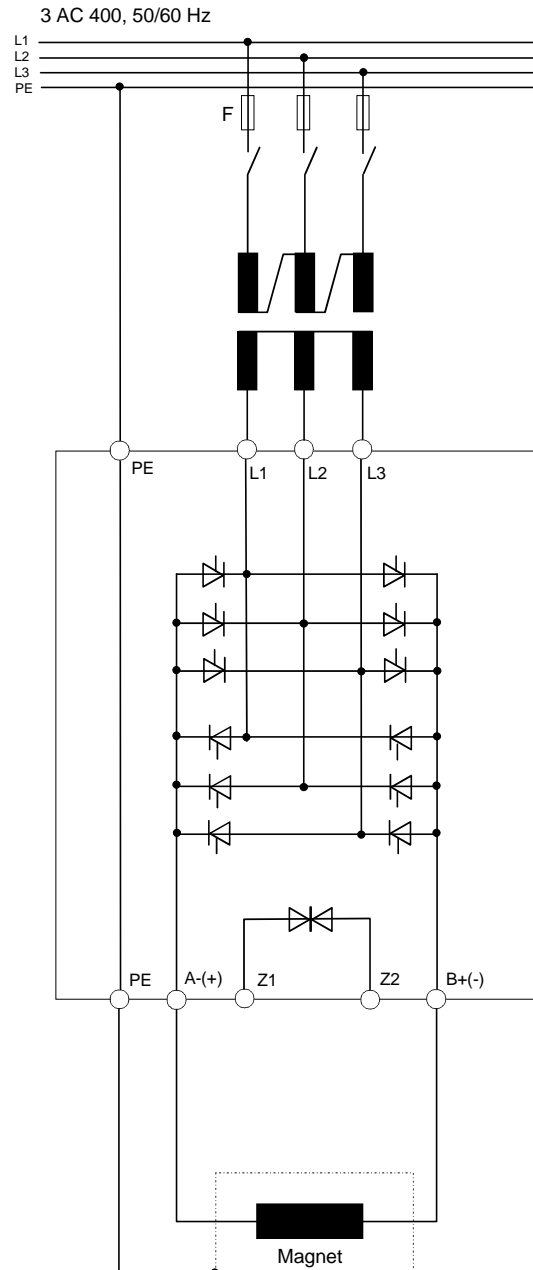
The set point source for the magnet voltage can be in the form of a potentiometer or a voltage control-signal 0...10V; DC or a current control-signal 0(4)...20 mA.

The signal range for the effective values, are within the nominal values of 0...+7.5 V, DC, relating to 100% of the output current and 400V for the output voltage. In this way peak values of up to +10V DC can also be monitored.

Total inhibit or enable control of the unit from external equipment is achieved by using an input (24 V, DC signal or contact). When this input is not used then terminals 32 and 33 must be linked.

A ready signal (relay contacts) is provided for monitoring the internal power supply voltage (under-voltage), a phase loss on the mains supply (e.g. blown fuse), and the internal over-temperature switch. The warning signal has to be verified externally, using a timed delay.

The over-temperature warning signal indicates a high power semiconductor temperature without switching off the controller's output. Some external action must be taken in response to this signal otherwise a load hanging from the magnet could be dropped. An over-temperature switch-off signal indicates that the output power has been switched off due to high temperature which could possibly cause damage to the controller.

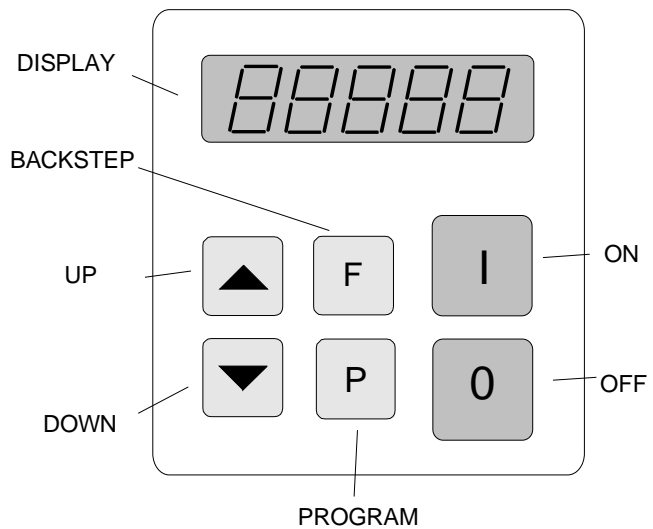


The controller has a built-in touch panel with an LED display and programming keys. The display indicates the operating mode and also shows fault codes. The controller is configured for acceptance of the external signals.

The display is limited to the following messages:

- “OFF” No enable signal present (Terminals 31, 32, 33).
- “run” Run mode
- “STOP” Unit switched off using the “O” key.
- „Lo.Po.“ Low voltage or phase failure
- „Error Hot“ Over-temperature switch

The “I” and “O” keys are used to switch the controller ON and OFF, however this **does not provide mains isolation**; only the power semiconductors are inhibited. Keys “P”, “F” and the arrow keys are used for adjusting parameters.



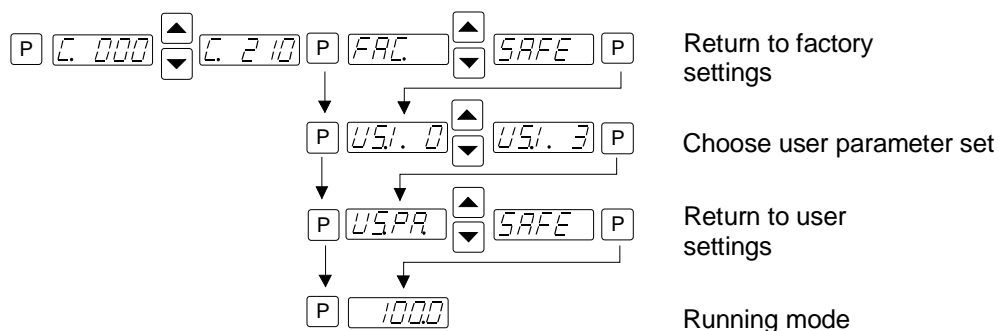
**Parameters should not be changed whilst the lifting magnet is in operation.**

**Note !**

When there is a fault condition or there is an unknown parameter code displayed, the factory settings can be reset by using access code “210”.

1. Press the P key
  2. Select 210 using the arrow keys
  3. Press the P key (Display will show “FAC.”)
  4. Press the arrow key (Display will show “SAFE.”)
  5. Press the P key (Display will show “US.PA.”) not relevant1
  6. Press the P key
- End

Code 210 (Factory setting)



**2.1 Fault warnings**

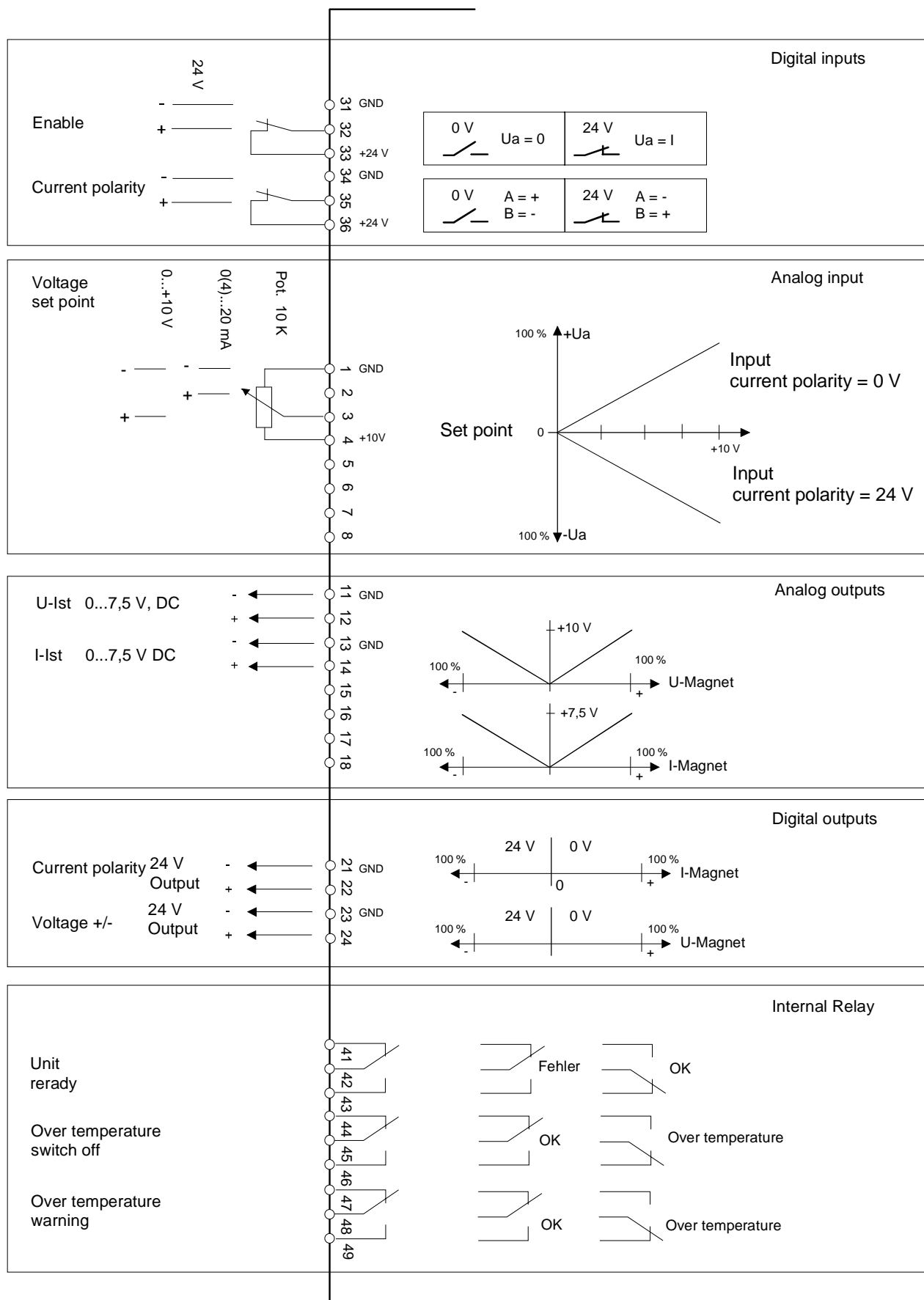
Error	HOT	Over-temperature of the power semiconductors; output opens. Message must be cancelled in "C 009".
Error	OV	Over-voltage; input voltage too high. Output opens. Message must be cancelled in "C 009".

**Fault messages must be confirmed (reset) in menu "C 009".**

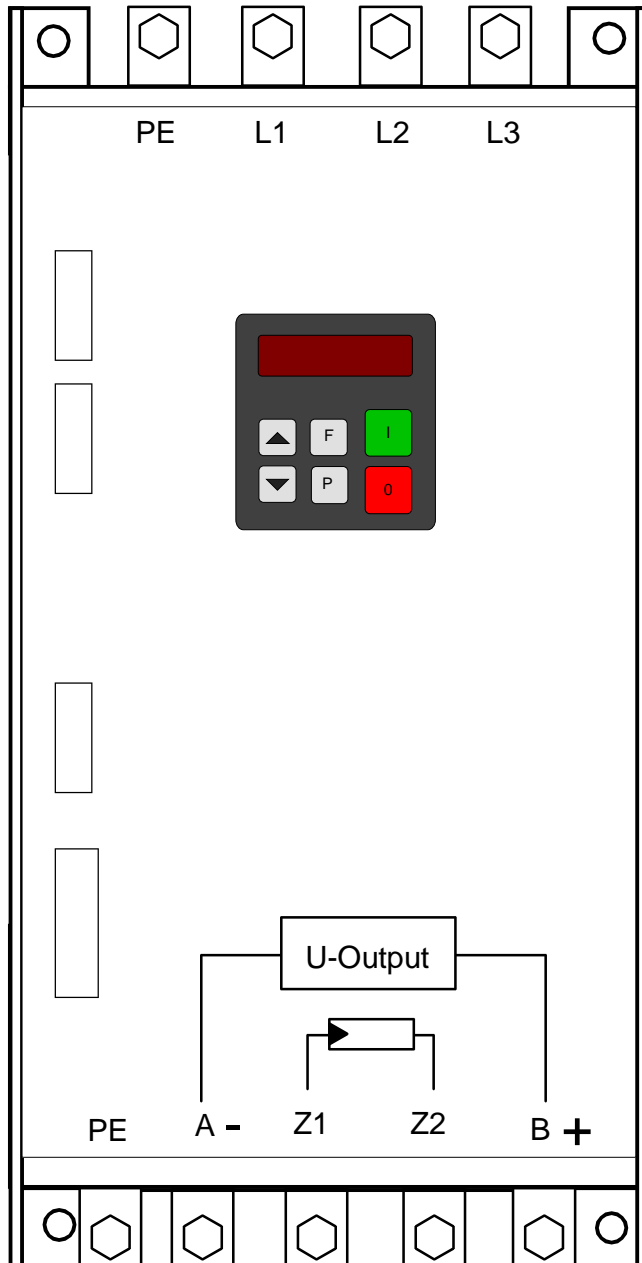
Code 009 Error reset

P C. 000 ▲ ▼ C. 009 P CLrEr. ▲ Error reset

2.2 Function of Inputs and Outputs



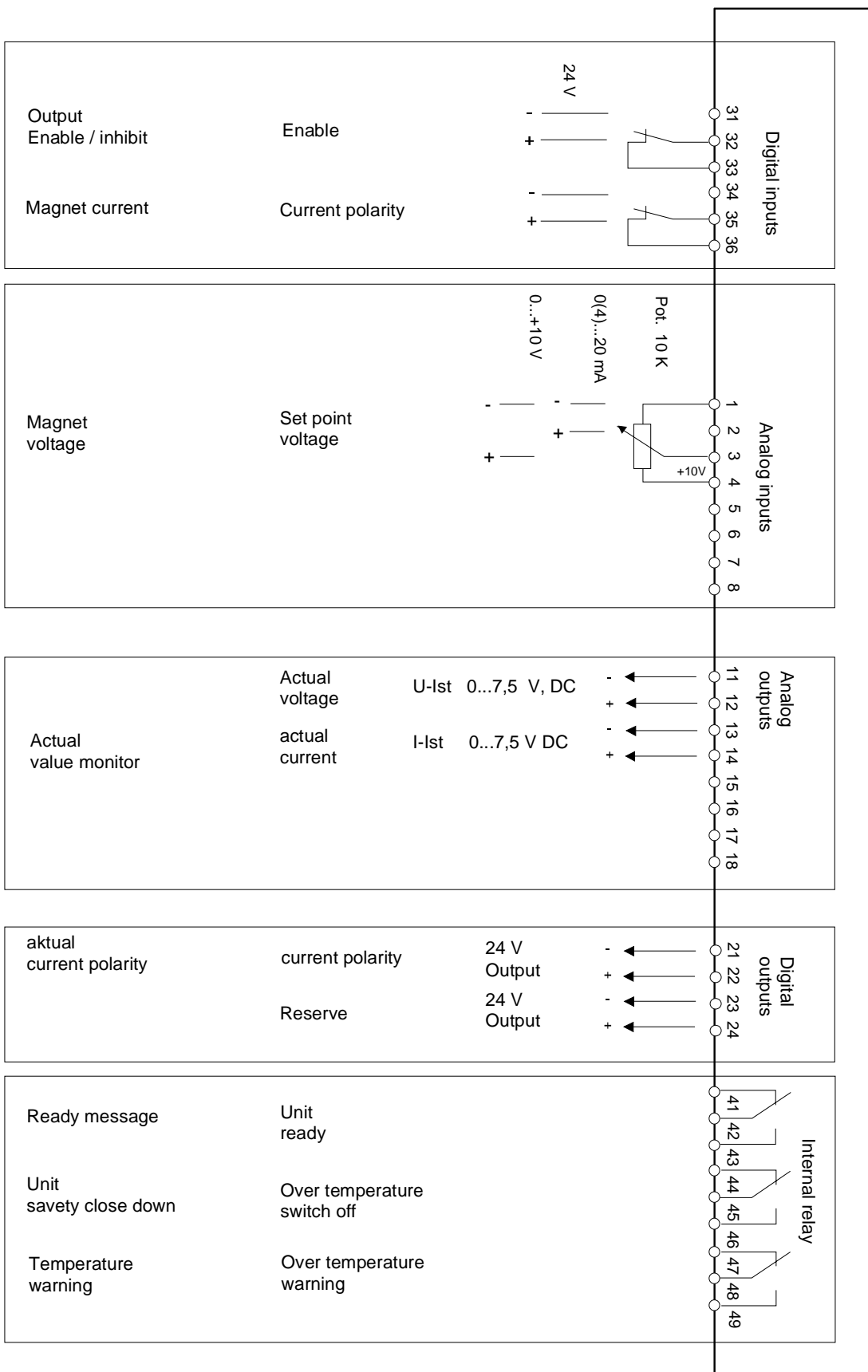
**3.0 Unit front view**



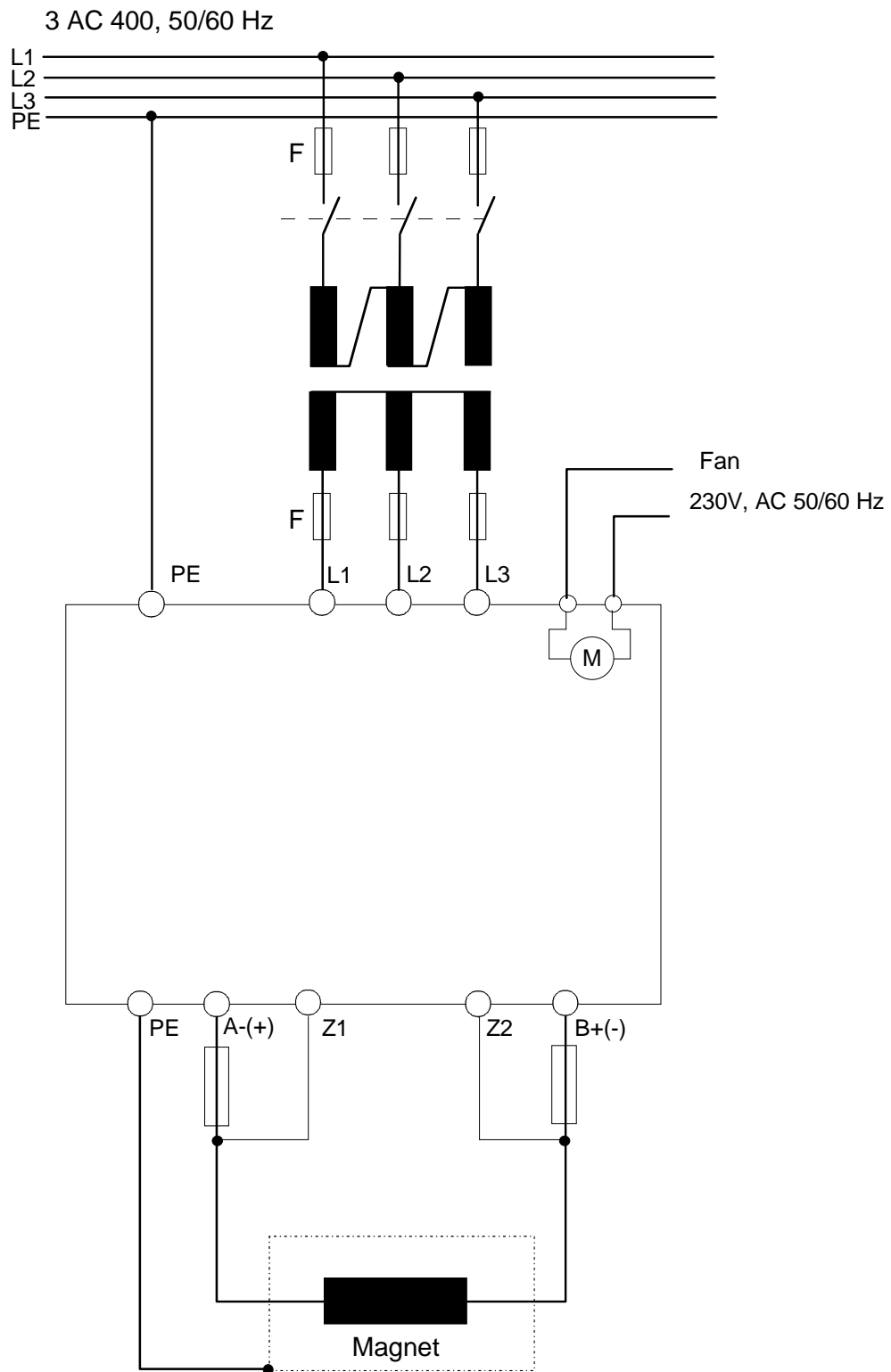
#### 4.0 Technical Data

Unit type	REOTRON LMS 50	REOTRON LMS 80	REOTRON LMS 120	REOTRON LMS 160
Supply voltage	3 x 160... 300 V, 50/60 Hz			
Output voltage	0...+/- 400 V			
Output current	50 A	80 A	120 A	160 A
Voltage set point input	Potentiometer 10 K, 0...+10 V, DC (Impedance 220 KR) or 0(4)... 20 mA (250 R)			
Enable input	24 V, DC			
Current direction input	24 V, DC			
Effective voltage output	0...+7,5 V, DC with reference to U <sub>max</sub> = 400 V , 5 mA			
Effective current output	0...+7,5 V, DC with reference to output current, 5 mA			
Current polarity output	24 V, DC, 10 mA			
Voltage polarity output	24 V, DC, 10 mA			
"Ready" output	Relay, change-over contacts 1 A, 250 V AC, 30 V DC			
Over temperature warning	+65 °C	Relay, change-over contacts 1 A, 250 V AC, 30 V DC		
Over temperature, switch-off signal	+85 °C	Relay, change-over contacts 1 A, 250 V AC, 30 V DC		
Construction	IP 00			
Operating temperature	0...+45 °C			
Storage temperature	-20...+70 °C			
Relative humidity	93 % without due or condensation on surfaces			
Degree of pollution	Grad 1 (IEC 664)			
Altitude	1000 m 0,5 % rated current reduction for each additional 100 m			
Installation orientation	Vertical			

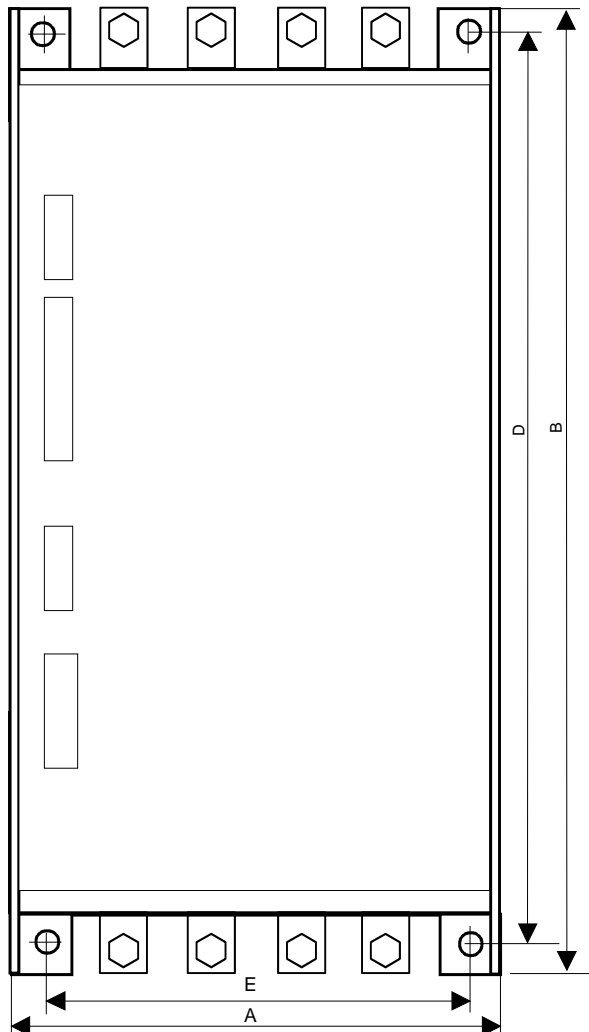
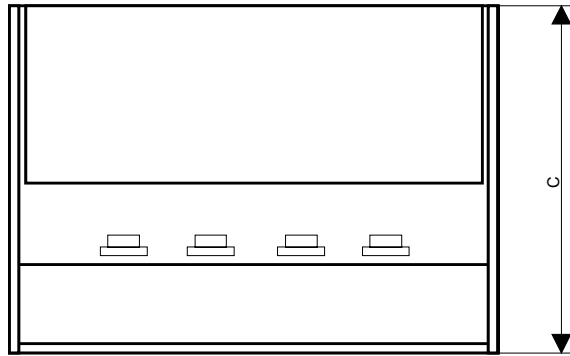
**5.0 Control signal connections**



**6.0 Power connections**



**7.0 Dimensions**



	A	B	C	D	E
LMS 50	205	430	200	415	180
LMS 80	220	430	240	415	195
LMS 120	220	430	240	415	195
LMS 150	220	430	240	415	195