

Operating Instructions

Control units
in modular design

ESM 906
ESM 910

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1. Technical data

1.1. Functional description

The modules are used to regulate the feed rate at the vibrating drive magnet by means of phase control without any other closed-loop control. The feed rate is set by means of potentiometers, analog voltage setpoint setting (0-10 VDC) or analog current injection (0-20 mA). If the last mentioned setpoint setting method is used, cable lengths of more than 10 m are admissible, otherwise the maximum cable length is 3 m. If strong interference sources are present, all control cables must be shielded.

The output voltage for the smallest setpoint of 0 V (potentiometer turned all the way to the left) can be set between 0 and 90 Volt_{EFF} using trimming potentiometer U_{MIN}. The maximum output voltage for a setpoint of 100% can be set between 150 and 220 Volt_{EFF} using trimming potentiometer U_{MAX}.

An enabling input makes it possible to switch the modules on and off at no-load. Enabling can be done via NO contact or by 12...24 VDC voltage signal. Floating contacts are used for setpoint and enabling signal.

Notice:

Terminals 19 and 20 are used for selection of operating mode. With these terminals jumpered, the module operates in symmetric full-wave mode (for type '-2 drives'). The vibrating drive now operates at double mains frequency. A missing connection results in asymmetric half-wave mode and the drive will operate at mains frequency (for type '-1' drives).

In addition, module ESM 906 features two status outputs provided by NPN-doped transistors with a load capability of max. 30 V at 0.1 A which are switched through. Status output 'READY' is valid when mains supply voltage is applied and internal supply voltage is generated. When the enable signal is present as well, status output "ACTIVE" is valid.

Module ESM 906 is provided with a 10 A high-speed miniature fuse (5x20 mm) which is accessible from the front panel. This fuse is intended for **short-circuit protection of the internal semiconductor only**. Overload protection for the entire device is to be provided **externally** (i = max. 6A).

Module ESM 910 is not protected by a dedicated fuse, but is equipped with a short-circuit-proof power supply unit. Both modules have a firmly set soft start function.

Notes on installation

Both modules generate a certain amount of heat. To ensure proper dissipation of this heat take care to observe a clearance of at least 50 mm to adjacent equipment components.

1.2. EC conformity

The controller is compliant with the following standards:

EC EMC Directive 2014/30/EU
EC Low Voltage Directive
2014/35/EU

Applied harmonised standards:

DIN EN 60204, part 1
EN 61439-1

1.3. Type information and technical data

Device type	Supply voltage and output	RNA part number
ESM 906	110 V +6% -10%; 50/60 Hz; max. 6 A load current	31007219
ESM 906	230 V +6% -10%; 50/60 Hz; max. 6 A load current	31007218
ESM 910	110 V +6% -10%; 50/60 Hz; max. 15 A load current	31007100
ESM 910	230 V +6% -10%; 50/60 Hz; max. 15 A load current	31007098

Device type	ESM 906	ESM 910
Output voltage	0...220 V (0...105 V)	
Output current	0...6 A	0...15 A
Setpoint setting	Potentiometer 10 kΩ; 0...10V DC or 0...20 mA DC	
Enabling input	Floating contact / 12...24 V DC	
Ambient temperature	0...45°C	
Degree of protection	IP 20	
Applied standards	EN 50081-2; EN 50082-2; VDE 0160; BGV – A2	

2. Safety directives

This description contains the necessary information for the correct application of the product described below. The information is intended for technically qualified workers.

Qualified workers are people who, due to their professional training, experience and schooling, as well as their knowledge of relevant standards, provisions, accident prevention regulations and operating conditions, have been authorized by the person responsible for the safety of the equipment to perform the required tasks and who can recognize and avoid potential hazards (definition for skilled persons according to IEC 364).

Danger notices

The following notices are for the safety of users as well as the safety of the described products and any connected systems.



Warning! Hazardous voltage

Improper handling may result in death, severe injury or major material damage!

- Disconnect power supply before conducting assembly or disassembly tasks and when replacing fuses.
- Prior to start-up verify that the voltage specifications match the local mains supply.



Any work on electrical equipment of the machine/system shall be carried out exclusively by a professional electrician, or by instructed persons working under the direction and supervision of a professional electrician, according to electrotechnical rules.

Observe all safety and hazard notes and signs local to the equipment!

Inspect/check the electrical equipment of the machine/system periodically. Remedy defects such as loose connections or damaged cables at once.



Prior to start-up make sure that the protective earth conductor is connected and in proper condition. Make the PE conductor test with approved test devices only.

3. Notes on start-up

Make sure that following points are checked prior to making connection to power supply and switching on the controller:



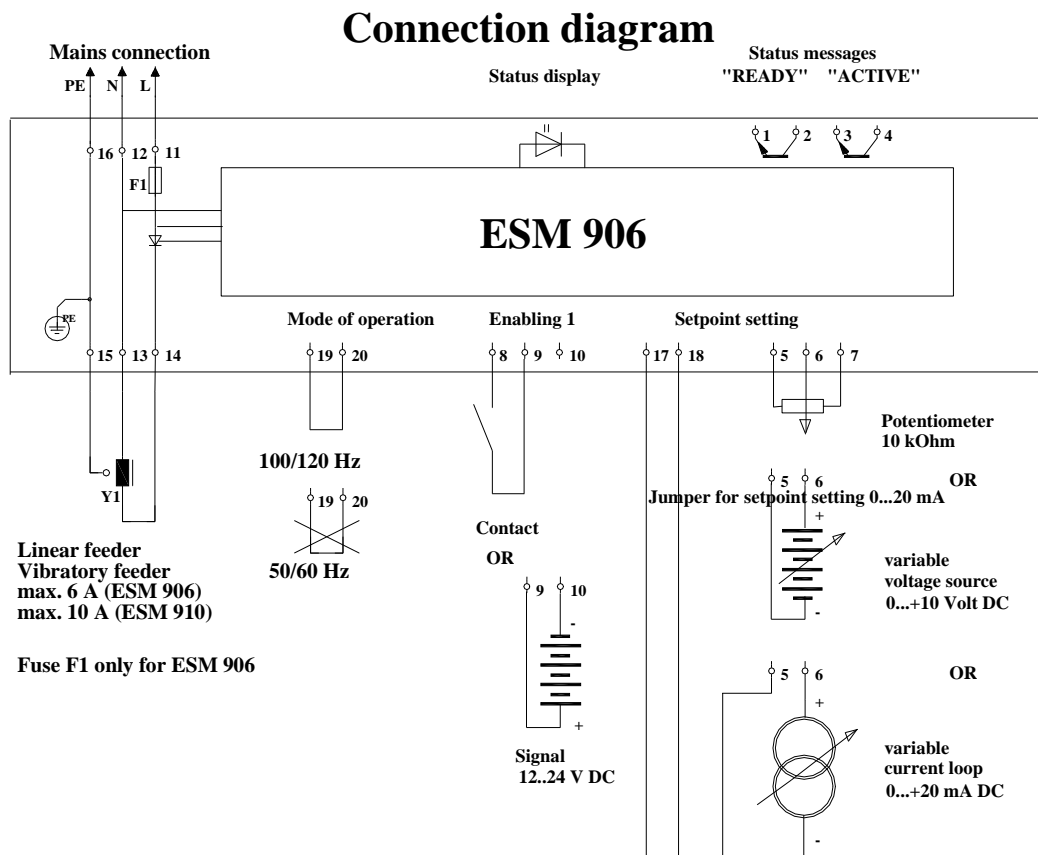
- Is the controller casing properly closed with all screws tightened?
 - Are all plug hooks engaged / firmly screwed in place?
 - Are all cables and glands in proper condition?
 - Is operation for the INTENDED USE made sure?
 - Does the supply voltage specified on the controller match the local supply system?
- Does the supply frequency specified on the vibratory drive match the local supply system?

Only if you can clearly answer all the above questions with "Yes" should the controller be put into operation.



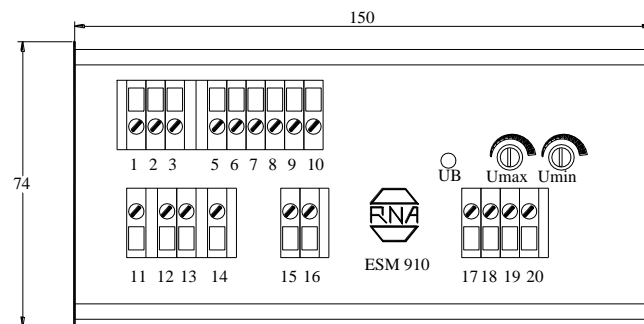
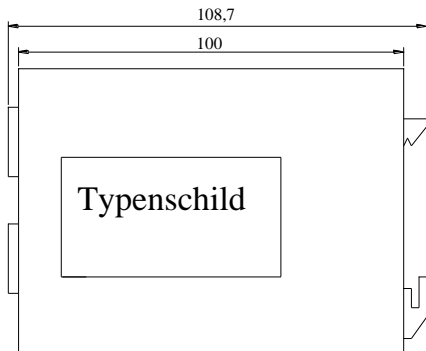
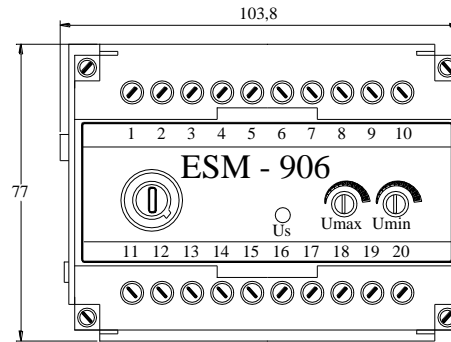
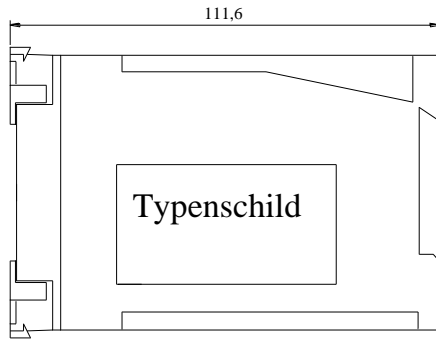
Set the controller to minimum output before switching-on for commissioning or start-up after repairs or replacement of controllers/vibratory drives. Then watch proper operation while the output is increased.

4. Connection diagram



Note: The connection diagram for module ESM 910 is identical except for the missing status outputs at terminals 1 through 4. Terminals 1 and 2 must be bridged in this case (enabling 2).

5. Dimensioned drawing



Typenschild = Rating plate



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