USER MANUAL FOR THE CONTROLLER
DIGR-1302/I
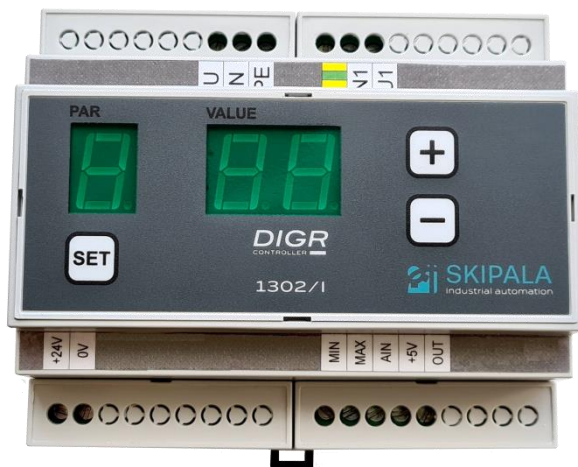
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1. Technical data

Rated supply voltage U_{nap}	110–230 VAC, 50 Hz
Maximum load power	700 VA pro U_{nap} 230V
	350 VA pro U_{nap} 110V
Intrinsic power dissipation	7 W
Output voltage	20-99 % U_{nap} s krokem 0,5 %
Output frequency	100 Hz, 50 Hz, 33 Hz, 25 Hz, 20 Hz
Supply voltage	18-24V DC /60mA
2× digital input	24V DC PNP
1× digital output	24V DC max. 80mA
1× analogue input	0-10V DC / 24V DC PNP
Interference suppression	třída A (ČSN EN 55011 ed. 4)
Protection	IP20
Weight	0,4 kg

2. Environmental conditions

The environmental conditions for which the equipment is designed.

Space	internal
Altitude	up to 2,000 m.a.s.l.
Ambient temperature	10–55 °C
Relative humidity	5–80%
Mains supply voltage fluctuation	±10%
Overvoltage category	II (ČSN 33 2000-4-443 ed. 3)
Degree of environmental pollution	AE4 (ČSN 33 2000-5-51 ed. 3)

3. Description

The DIGR-1302/I controller is a triac based controller designed to control vibratory feeders driven by an electromagnetic coil. Two basic variables are regulated:

- Output voltage amplitude: in the range of 20–99%
- Output voltage frequency: in the steps to fixed values:
  100 Hz, 50 Hz, 33 Hz, 25 Hz, 20 Hz

The operation of the controller is defined by parameters that are set by the user from the control panel. The controller can be controlled from the control panel or by external analogue and digital signals.

An external power module can be connected to the controller for switching currents up to 20A/400V.

The controller has IP20 protection and is intended for mounting on a DIN rail in a switchboard. The small size and efficient user functions create the prerequisites for the deployment of these controllers, working both independently and with a master control system, in most vibratory feeder applications. On our website www.skipala.cz you can find application sheets with examples of controller wiring and settings.
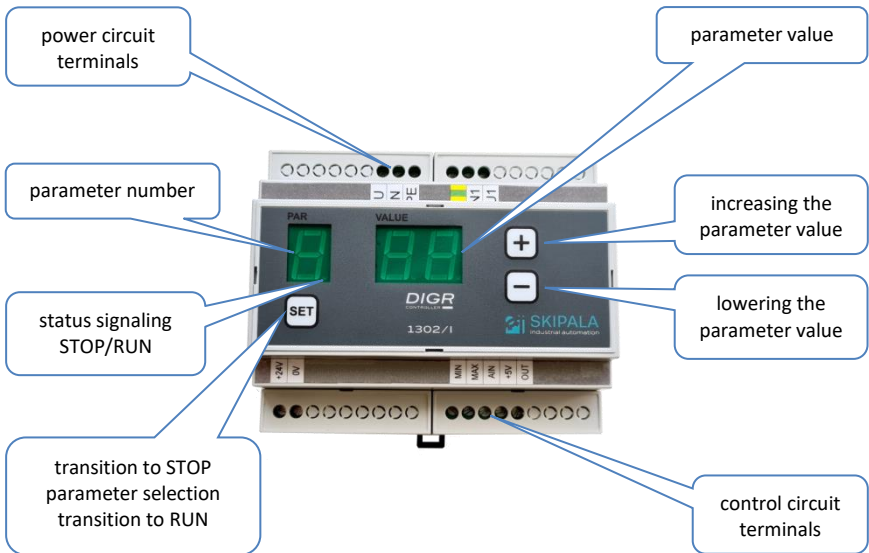
Fig. 1 – description of controls
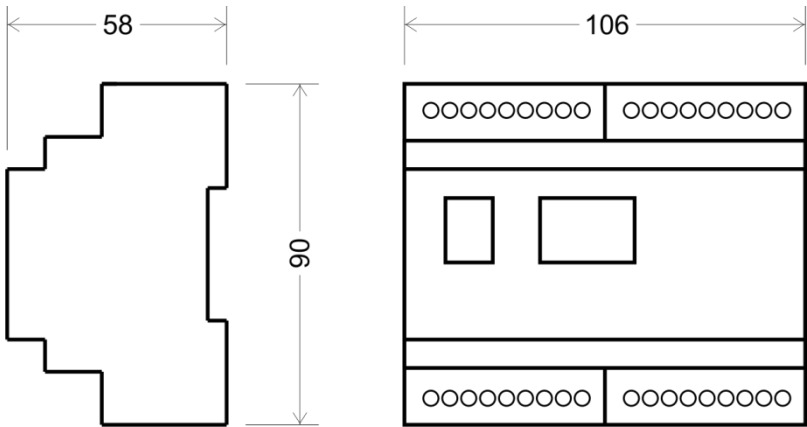
Fig. 2 – basic dimensions

Fig. 3 – connection of the external parts of the controller

	FU1 3,15A		
	L	U	U1
supply 230V AC	N	N	N1
	PE	PE	

vibration feeder

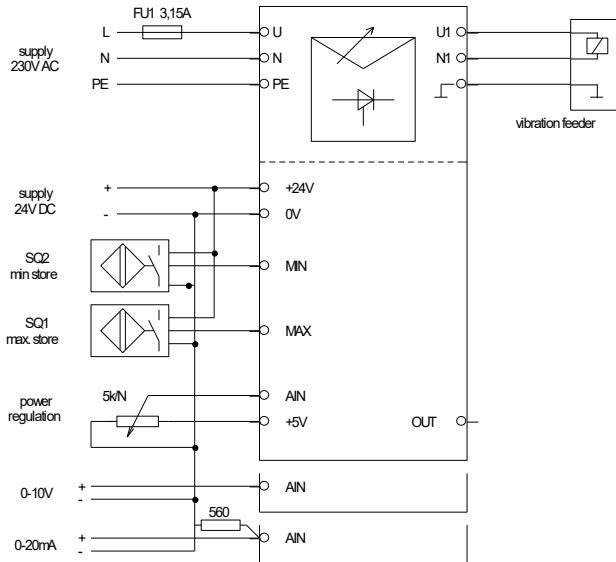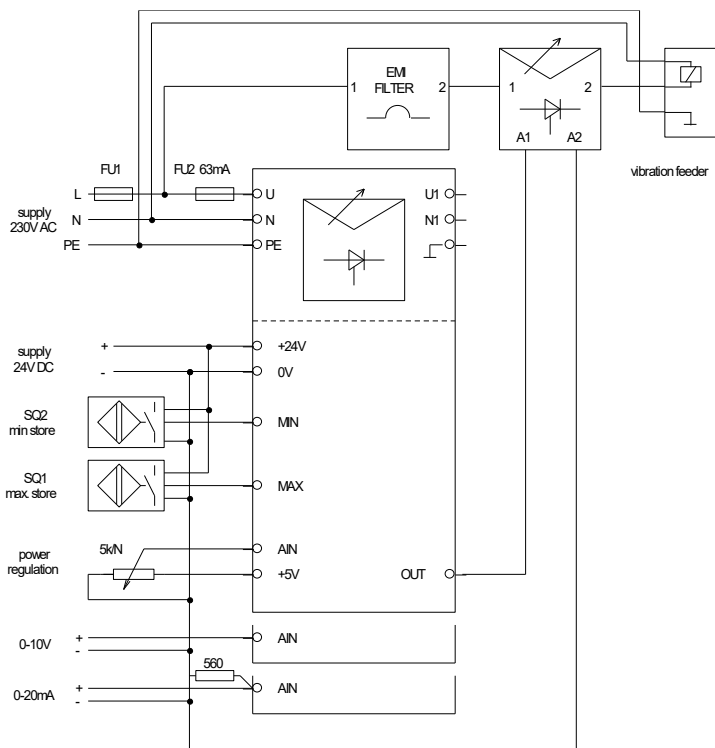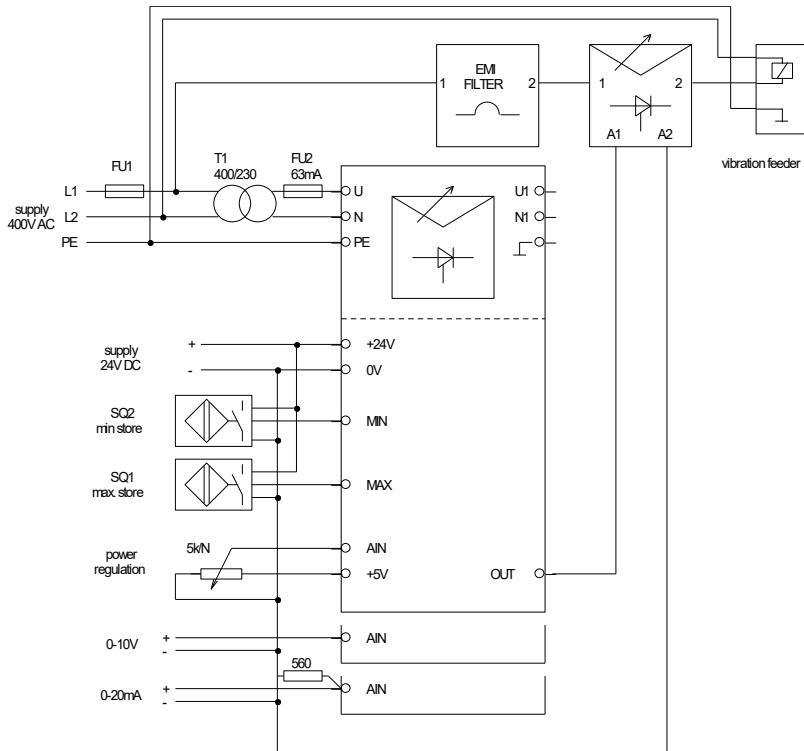|		
supply 24V DC	+	+24V
	-	0V
SQ2 min store		MIN
SQ1 max. store		MAX
power regulation	5kN	AIN
		+5V OUT
0-10V	+	AIN
	-	
0-20mA	+	560 AIN
	-	

Fig. 3a – connection of the external parts of the controller
external module 230V

Fig. 3b – connection of the external parts of the controller
external module 400V

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4. Installation

⚠️ The connection of the external electrical parts of the controller may only be carried out by a person with the appropriate electrical qualifications.
Use in a manner not specified by the manufacturer is prohibited!

4.1. Mechanical assembly

The regulator is intended for installation in a switchboard, it can be installed in a horizontal position on a DIN rail TS35. There must be a free space of at least 20 mm above the top and bottom edges of the device.

Fig. 4 – assembly
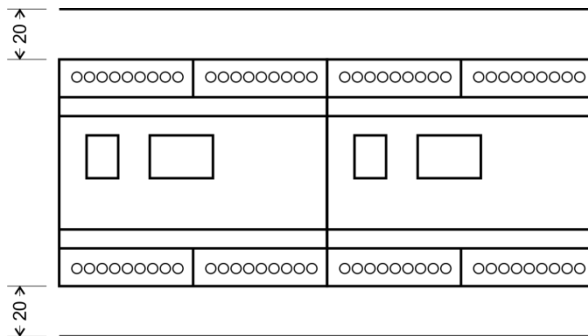
4.2. Connecting the power part

Connect according to Fig. 3, or Fig. 3a, or Fig. 3b. The power supply must be secured against overload and short circuit. Choose the current value and characteristic of the securing element with regard to the power input of the used vibrating feeder. The maximum value of the upstream fuse is 6A characteristic C. When using an external power module, it is necessary that the electrical connection be supplemented with the necessary interference suppression elements.

Cross section of the connected wires: 0,75-1,50 mm^2
Stripped wire end length: 6 mm

4.3. Connecting the control part

The controller requires a 24V supply voltage, which you connect to the +24V and 0V terminals. Connect sensors, valves, digital and analogue signals according to the requirements of the specific application (Fig. 3, 3a, 3b). Use PNP type sensors (output signal is switched to +24 V).

Wire cross section: 0,50-1,50 mm^2
Stripped wire end length: 6 mm

Tip for you: on our website www.skipala.cz you will find application sheets with examples of controller wiring and settings.

5. Switching on

The controller is switched on automatically after connecting the 24V supply voltage and the 230V power voltage at the same time. Between switching off and switching on, a time delay of min. 3s. If this delay is not observed, incorrect operation of the controller may occur.
After switching on, the controller is ready for operation. Depending on the setting of the digital input functions (parameter PAR 1), it is in the STOP state, the state is signaled by the lighting of the decimal point in the first segment of the display, or RUN, the decimal point is off.

6. Parameters

The controller contains a set of parameters marked PAR 0-PAR 9.
Use the ⌨ button, the controller enters the STOP state and at the same time the PAR 0 parameter is displayed. The parameter value can be changed using the ⊕ or ⊖ button. Press the ⌨ button again to display the next parameter. Saving is done automatically after scrolling through all parameters.

PAR 0 Amplitude

The controller regulates the amplitude of the output voltage in the range of 20-99 % with a step of 0.5 %. The value of 0.5 % is expressed on the display by lighting up the decimal point after the last digit. The effective value of the output voltage is dependent on the supply voltage. The PAR 0 parameter can also be set while the controller is running. The setting range is limited by the value of PAR 6 Amplitude MIN and PAR 7 Amplitude MAX. If the amplitude is set using an analog signal (parameter PAR 4), it is not possible to set the amplitude with parameter PAR 0.

PAR 1 Digital inputs

The PAR 1 parameter configures the digital inputs. Controller can work according to the needs of concrete application without sensors, with one sensor or with two sensors. Signals from the sensors put the controller in the STOP state, when the feeder is stationary, or in the RUN state, when the feeder is working.

00- **Not connected** – Digital inputs are not used.

01- **Maximum stock** – A sensor monitoring the supply of parts on the output path of the vibrating feeder is connected to the MAX input. A +24V signal at the input indicates the presence of a part. If the sensor logic is reversed, use value 03 for the parameter PAR 1.
When the path is full, the sensor detects the part for longer than the time set by parameter PAR 3, the feeder stops and switches to the STOP state. After the path is emptied, the sensor is not active for longer than the time set by parameter PAR 2, the feeder switches to the RUN state again.
Tip for you: By appropriate setting of parameters PAR 2, PAR 3 we achieve such a state, that monitoring the filling status of the output path is possible with only one sensor.

02- **Minimum** – **Maximum stock** – A sensor is connected to the input MIN to monitor the minimum stock of parts on the output path of the vibrating feeder. A sensor is connected to the input MAX to monitor the maximum stock of parts. A +24V signal at the input indicates the presence of a part. If the sensor logic is reversed, use value 04 for the parameter PAR 1.
The feeder enters the RUN state after the minimum stock sensor has not been active for the time specified by parameter PAR 2. The feeder switches to the STOP state if both stock sensors are active for the time specified by parameter PAR 3.

03- **Maximum stock** – A sensor monitoring the supply of parts on the output path of the vibrating feeder is connected to the MAX input. A +24V signal at the input indicates the absence of a part. If the sensor logic is reversed, use value 01 for the parameter PAR 1.

When the path is full, the sensor detects the part for longer than the time set by parameter PAR 3, the feeder stops and switches to the STOP state. After the path is emptied, the sensor is not active for longer than the time set by parameter PAR 2, the feeder switches to the RUN state again.

Tip for you: By appropriate setting of parameters PAR 2, PAR 3 we achieve such a state, that monitoring the filling status of the output path is possible with only one sensor. Use this setting in the case of control from the master PLC control system.

04- **Minimum – Maximum stock** – A sensor is connected to the input MIN to monitor the minimum stock of parts on the output path of the vibrating feeder. A sensor is connected to the input MAX to monitor the maximum stock of parts. A +24V signal at the input indicates the absence of a part. If the sensor logic is reversed, use value 02 for the parameter PAR 1.

The feeder enters the RUN state after the minimum stock sensor has not been active for the time specified by parameter PAR 2. The feeder switches to the STOP state if both stock sensors are active for the time specified by parameter PAR 3.

PAR 2 Delay ON

The description is given together with the description of parameter PAR 3.

PAR 3 Delay OFF

Parameters PAR 2 and PAR 3 set the delay in switching off or switching on the feeder, which is triggered by the signal on the MAX or MIN input. The range of setting the value is 0.0-9.9 s. The delay setting is only meaningful if at least one sensor is connected to the controller to monitor the filling on the output path of the vibrating feeder. Otherwise, we recommend to set it to 0 s.

Tip for you: Let's assume that the output path is full and the controller is in the STOP state. The parts are gradually removed from the path and their movement causes a short interruption of the signal from the filling sensor. The ON delay (parameter PAR 2) must be longer than the signal interruption. Then this interruption will be ignored and the controller will switch into the RUN state only after the path is actually emptied. A similar situation occurs when filling the path. The individual parts pass around the sensor and generate short impulses.

The Delay OFF (parameter PAR 3) must be longer than these impulses. They will then be ignored and the controller will switch to the STOP state until the path is actually full.

PAR 4 Method of regulation

The value of the parameter determines the way of entering the required amplitude of the output voltage:

00 - The amplitude is entered using the ⊕ or ⊖ button.
01 - The amplitude is specified by a 0-5V voltage signal on the AIN terminal. This setting is suitable for using a potentiometer. The value of the potentiometer must be in the range of 1-10 kΩ.
02 - The amplitude is specified by a voltage signal of 0-10V or a current signal of 0-20mA on the AIN terminal. If a current signal is used, a 560Ω resistor must be connected between the AIN and 0V terminals.

PAR 5 Not used

This parameter is not used for the DIGR-1302/I controller.

PAR 6 Amplitude MIN

Minimum amplitude limit. The description is given together with the description of parameter PAR 7.

PAR 7 Amplitude MAX

Maximum amplitude limit. These parameters can be used to limit the setting of the amplitude value in the parameter PAR 0.
Tip for you: The operator has the possibility to correct the value within the permissible range without major influence on the correct operation of the feeder.

PAR 8 Frequency

The principle of changing the oscillation frequency consists in omitting a certain number of half-waves of the sinusoid of the regulated voltage. Change does not happen smoothly, but in leaps and bounds. The frequency can be set with the parameter value:

00 - 100 Hz *
01 - 50 Hz
02 - 33 Hz
03 - 25 Hz
04 - 20 Hz

* At a frequency of 100 Hz, the amplitude control is only effective up to 50%.

PAR 9 Starting time

This parameter is used to adjust the value of the amplitude during the Start and Run of the feeder so that the feeder starts and stops smoothly. The range of setting the value is 0-5 s. The time applies for the 0% to 100% ramp up and 100% to 0% ramp down.

Fig. 10 – parameter table

Parameter Number	Factory values	Application values 1	Application values 2
PAR 0 Amplitude	31		
PAR 1 Digital inputs	00		
PAR 2 Delay ON	05		
PAR 3 Delay OFF	05		
PAR 4 Method of regulation	00		
PAR 5 Not used	00		
PAR 6 Amplitude MIN	20		
PAR 7 Amplitude MAX	99		
PAR 8 Frequency	01		
PAR 9 Starting time	02		

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7. Maintenance

The controller does not require any special maintenance. Carry out regular inspections and revisions in accordance with Act No. 250/2021 Coll., CSN 33 1500 and all related standards, within the intervals applicable to the equipment to which the controller is connected.

⚠️ In the event of a malfunction, any repairs are prohibited. Repairs may only be carried out by the manufacturer or by a company authorised by the manufacturer.

In case of complications with the controller operation, it is possible to perform a RESTART, during which all parameters are factory set. RESTART is performed as follows:

    a) disconnect the controller from the mains and wait at least 10 seconds for the capacitors to discharge
    b) press and hold the 🔲 button
    c) connect the controller to the 24V power supply
    d) release the 🔲 button

The values of the factory setting parameters are listed in the table (Fig. 10).

8. Disposal

At the end of the service life of the controller, the controller must be handed over to a specialist company or manufacturer for professional disposal.

9. Warranty

The warranty for the product is 12 months from the date of sale.

Serial number:

Vendor: Date of sale:

10. Manufacturer identification

Name of the manufacturer: **Skipala s.r.o.**
                                              VAT: CZ06607551
Manufacturer's registered office: Rybnik 301
                                              560 02 Rybnik
                                              Czech Republic
Contact details: web: www.skipala.cz   e-mail: skipala@skipala.cz

EU DECLARATION OF CONFORMITY

pursuant to Act No. 90/2016 Coll. on conformity assessment of specified products when made available on the market, as amended.

Manufacturer: **Skipala s.r.o.**
                  Rybnik 301, 560 02 Rybnik
                  Czech Republic
                  ID: 06607551

Product identification data:
          Name: Digital controller for vibratory feeders
          Type: **DIGR-1302/I**
Product description:
          The product is designed to regulate vibratory feeders driven by an electromagnetic coil.

The manufacturer declares that the above-mentioned product complies with the relevant provisions of the European Union regulations and is safe under the conditions of its intended use.

The basis for issuing the EU Declaration of Conformity is **Certificate No. 1250284** issued by the Electrical Engineering Testing Institute based on compliance with the requirements of the "ETI Certificate" certification scheme .

List of laws, technical and harmonized standards used:
          Government Regulation No. 118/2016 Coll. (Directive 2014/35/EU of the European Parliament and of the Council)
          Government Regulation No. 117/2016 Coll. (Directive 2014/30/EU of the European Parliament and of the Council)
          EN 61010-1 ed. 2:11+A1:19
          EN 61326-1 ed. 3:22
          EN IEC 61000-6-2 ed. 4:19
          EN IEC 61000-6-4 ed. 3:19

The last two digits of the year in which the CE marking was affixed to the product: 25

In Rybnik, July 16, 2025   Karel Skipala
                                  Managing Director