Operating Instructions for the Control Units for Vibratory Drives

Type ESR 2000
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Declaration of conformity
as defined by
Low voltage directive 2014/35/EU
and EMC directive 2014/30/EU

Herewith we declare that the product complies with the following provisions:

Low voltage directive 2014/35/EU
EMC directive 2014/30/EU

applied harmonized standards:

DIN EN 60204 T1
EN 61439-1

remarks:

Rhein-Nadel-Automation
Managing Director
Jack Grevenstein
1.1 **Performance Characteristics**

This compact control unit has been designed to operate a bowl or linear feeder. The unit has the following performance characteristics:
- A power regulator for vibratory drive unit with variable output frequency, load current max. 6A
- Two sensor amplifiers with independently adjustable time levels (on/off).
- 24V DC remote control input.
- Two relay outputs and two optocouplers for status messages and further links.
- A membrane keyboard for setting and editing the operating values (parameters) in the setting menus.
- Plug connections for:
  - Bowl or linear feeder
  - Sensors
  - Communication
  - Double-pole mains power switch

1.2 **EC Conformity**

The control device corresponds to the following regulations:

**Low voltage directive 2014/35/EU**
**EMC directive 2014/30/EU**

Applied harmonized standards:

DIN EN 60204 T1
EN 61439-1

1.3 **Technical Data**

<table>
<thead>
<tr>
<th>Mains voltage:</th>
<th>230 Volt AC, 50/60 Hz, +20 / -15%</th>
<th>110 Volt AC, 50/60 Hz, +10 / -10%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output voltage:</td>
<td>0 ... 208 Veff / 230 VAC ; 0 ... 98Veff / 110VAC</td>
<td></td>
</tr>
<tr>
<td>Load current channel 1:</td>
<td>6 Aeff</td>
<td></td>
</tr>
<tr>
<td>Minimum load current:</td>
<td>80 mA</td>
<td></td>
</tr>
<tr>
<td>Output frequency</td>
<td>30 to 140 Hertz</td>
<td></td>
</tr>
<tr>
<td>Internal fuse:</td>
<td>F1 = 10A</td>
<td></td>
</tr>
<tr>
<td>Soft start time, soft stop time</td>
<td>0 ... 5 sec., can be selected separately</td>
<td></td>
</tr>
<tr>
<td>External setpoint:</td>
<td>0 ... 10V DC</td>
<td></td>
</tr>
<tr>
<td>Sensor inputs:</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Remote control input:</td>
<td>24V DC (10-24 VDC)</td>
<td></td>
</tr>
<tr>
<td>Sensor power supply:</td>
<td>24V DC, max. 60 mA (per sensor input)</td>
<td></td>
</tr>
<tr>
<td>Sensor delay ON:</td>
<td>0 ... 60 sec.</td>
<td></td>
</tr>
<tr>
<td>Sensor delay OFF:</td>
<td>0 ... 60 sec.</td>
<td></td>
</tr>
<tr>
<td>Outputs:</td>
<td>2 relays / 2 potential-free change-over contacts</td>
<td></td>
</tr>
<tr>
<td>Status output (optocoupler):</td>
<td>max. 30V DC 10mA, 2 voltage-fed open contact</td>
<td></td>
</tr>
<tr>
<td>Relay contacts:</td>
<td>max. 6A 250V AC</td>
<td></td>
</tr>
<tr>
<td>Operating temperature:</td>
<td>0 ... 50° C</td>
<td></td>
</tr>
<tr>
<td>Type of protection:</td>
<td>IP 54</td>
<td></td>
</tr>
</tbody>
</table>

1.4 **Accessoires**

<table>
<thead>
<tr>
<th>Label</th>
<th>Denomination</th>
<th>Type</th>
<th>Manufacteur</th>
<th>Supplier</th>
<th>RNA-Mat-code</th>
</tr>
</thead>
<tbody>
<tr>
<td>XS1</td>
<td>Connector</td>
<td></td>
<td>Harting</td>
<td>EVG</td>
<td></td>
</tr>
<tr>
<td>XS3</td>
<td>Coupler connector, 5-poles, straight</td>
<td>09 0113 70 05</td>
<td>Binder</td>
<td>EVG</td>
<td>35051144</td>
</tr>
<tr>
<td>XS3</td>
<td>Coupler connector, 5-poles, angular</td>
<td>99 0113 75 05</td>
<td>Binder</td>
<td>EVG</td>
<td>35002546</td>
</tr>
<tr>
<td>XS4</td>
<td>Coupler connector, 7-poles, straight</td>
<td>09 0126 70 07</td>
<td>Binder</td>
<td>EVG</td>
<td>35051153</td>
</tr>
<tr>
<td>XS4</td>
<td>Coupler connector, 7-poles, angular</td>
<td>99 0126 75 07</td>
<td>Binder</td>
<td>EVG</td>
<td>35002545</td>
</tr>
</tbody>
</table>
2 Safety Instructions

It is always necessary to read and understand the safety instructions. This ensures that valuable material is not damaged and injuries are avoided. Steps must be taken to ensure that all persons working with this control unit are familiar with the safety regulations and observe them.

The device described in this manual is a control unit for operating RNA bowl feeders and linear feeders. The limit values specified in the technical data must be observed.

Note!
This hand indicates tips on operation of the control unit.

Attention!
This warning triangle indicates safety instructions. Failure to heed this warning can lead to severe injuries or death!

Work on electrical equipment of the machine/plant may be carried out only by a trained electrician or by untrained persons under the leadership and supervision of a trained electrician in accordance with the regulations for electrical engineering!

All safety and danger signs on the machine/plant must be observed!

The electrical equipment of a machine/plant must be inspected and checked regularly. Defects such as loose connections or damaged cables must be remedied immediately!

Before commencing operation, make sure that the earthing line (power earth, PE) is intact and installed at the connecting point. Only test instruments approved for this purpose may be used for checking the safety grounding conductor.

3 Commissioning Instructions

Before connecting up to the mains and switching on the control unit, it is essential to check the following points:

- Is the control unit in proper working condition and closed with all screws?
- Are the connector locks clicked in/screwed secure?
- Are all cables and glands intact?
- Is PROPER INTENDED USAGE ensured?
- Does the mains voltage specification on the control unit agree with the local mains voltage?
- Does the mains frequency specification on the vibratory drive agree with the local mains?
- Is the correct operating mode set on the control unit? (See “Operating Mode” section)

Operation of the control unit may be commenced only when all questions asked above can be answered unambiguously with YES.

Before you start operation after repair work has been carried out or control units/vibrating drives have been exchanged, set the output on the control unit to minimum before switching on. Check that the system is working properly when you increase the output.

Before opening the control unit you have to wait approx 5 min after disconnecting from the main., so that the charge can be unloaded to a safe voltage.
3.1 OPERATING MODE

To avoid mechanical and/or electrical damage occurring to the ESR 2000 control or connected equipment, the parameters listed in the tables below must be strictly adhered to. If you cannot find your particular type of drive unit listed in the tables then contact RNA AUTOMATION for advice.

To make shure that the drive unit will run smooth and stabel, it is necessary to use use a good balanced bowl.
Please refer also to the manuals of the drive units, to see how the springs have to be adjusted.

<table>
<thead>
<tr>
<th>Table 1</th>
<th>Bowl Feeder Type of Drive</th>
<th>max. current [Aeff]</th>
<th>max. magnet gap [mm]</th>
<th>Frequency range</th>
<th>Colour of Magnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>SRC - N 160 - 2</td>
<td>0,6</td>
<td>0,5</td>
<td>90...120 Hz</td>
<td>Black</td>
<td></td>
</tr>
<tr>
<td>SRC - N 200 - 2</td>
<td>1,2</td>
<td>0,5</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRC - B 200 - 2</td>
<td>1,2</td>
<td>0,5</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRC - N 250 - 2</td>
<td>2,6</td>
<td>1,2</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRC - B 250 - 2</td>
<td>2,8</td>
<td>1,2</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRC - N 400 - 1</td>
<td>3,8</td>
<td>2,8</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SRC - N 400 - 2</td>
<td>4,3</td>
<td>1,2</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRHL 400 - 1</td>
<td>5,7</td>
<td>2,8</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SRHL 400 - 2</td>
<td>5,3</td>
<td>1,5</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SRC - N 630 - 1</td>
<td>5</td>
<td>2,8</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Table 2</th>
<th>Linear Feeder Type of Drive</th>
<th>max. current [Aeff]</th>
<th>max. magnet gap [mm]</th>
<th>Frequency range</th>
<th>Colour of Magnet</th>
</tr>
</thead>
<tbody>
<tr>
<td>SLL 175</td>
<td>0,07</td>
<td>0,8</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SLL 400</td>
<td>0,6</td>
<td>1</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SLL 800</td>
<td>1,4</td>
<td>3</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SLL 804 &lt;1600</td>
<td>1,4</td>
<td>3</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SLL 804 ≥1600</td>
<td>2,8</td>
<td>3</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SLF 1000</td>
<td>2,6</td>
<td>2,5</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SLF 1500</td>
<td></td>
<td></td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>GL 01</td>
<td>0,6</td>
<td>1,0</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>GL 1</td>
<td>1,1</td>
<td>1,2</td>
<td>90...120 Hz</td>
<td>black</td>
<td></td>
</tr>
<tr>
<td>SLK - N 6</td>
<td>1,4</td>
<td>2,5</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
<tr>
<td>SLK - N 6 G</td>
<td>1,4</td>
<td>2,5</td>
<td>45...60 Hz</td>
<td>red</td>
<td></td>
</tr>
</tbody>
</table>

For easy differentiation (recognition of frequency ranges) RNA magnet cables are colour coded as follows:

<table>
<thead>
<tr>
<th>Cable Colour</th>
<th>Net Frequency</th>
<th>Variable Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>50/(60) Hz</td>
<td>45...60 Hz</td>
</tr>
<tr>
<td>Grey</td>
<td>100/(120) Hz</td>
<td>90...120 Hz</td>
</tr>
</tbody>
</table>

**WARNING:**
To avoid serious mechanical damage to the feeder unit, the maximum magnet gap and maximum current level MUST NOT be exceeded.

3.1.1 First Running

RNA can supply an adapter for running with easy plug-in between controller and drive unit. The adapter included a measuring unit for load current and coil voltage with a disconnecting switch. Type ESZ 01
Please note that all parameters of the controller are tuned up to the bowl feeder if supplied as a package with an ESR 2000 unit and in parameter 143 User 0.3 stored. All settings are stored and retrievable.

Reconfigurations, exchange of controllers or mechanical alterations may cause damages to springs, vibrating plate, tooling or transfer devices, when putting the feeder improperly into operation.

3.1.2 Initial Set Up

Procedure:
1. Check the feeder type against the ones shown in Table 1 and 2 for correct magnet gap settings, correct current settings and the frequency range.
2. Connect the ESR2000 control without feeder to the mains supply and switch on.
3. Do not connect the feeder unit to the ESR2000 at this stage.
4. Select Code 001:
   Select code
   Code C001
4. Set Amplitude to 50 %:
   Set Amplitude
   0 - 100 %
5. Set the frequency. Refer to table 1 or 2 for the drive unit
   Frequency
   45 - 120
6. Save settings:
   Return
6. Store and return to main menu
7. Switch off the controller
8. Connect the feeder to the controller
9. Switch on the controller

The drive unit must run now!

10. Select again Code 001
   Select code
   Code C001
11. Set Amplitude to 90 %:
    Set Amplitude
    0 - 100 %
12. Reduce the frequency until the correct speed and vibration is achieved.
    Operating Frequency
    45 - 120
13. Check the current load is below the maximum level indicated in Table 1 and 2!
    For easy running and to determine the load current, RNA can supply a plug adapter ESZ 01
14. Save your settings
    Return
    Store and return to main menu

With Code C210 you can reset to factory settings or restoring the stored user parameters.
Failure to heed above mentioned warnings can be lead to destroy the feeding equipment or parts thereof. In this case all warranty claims cease to exist.

After the first adjustment is successful, you can set the sensor inputs and the soft run or stopping time.

### 3.2 Sensor Inputs and Sensor Links

The control unit has two built-in sensor inputs. They can be used for checking the back pressure, the level, for cycle control and other monitoring functions. The following basic rules apply:

Sensor input 1 acts on channel 1, in case nothing else has been programmed in menu C006. Sensor input 2 has been provided for additional functions. See sensor links. The sensor inputs can only be evaluated when they are **activated**. See the connecting diagram for the sensor connections (XS3 plug connection).

![Connecting diagram for direct sensors](image-url)
3.3 Status Outputs and Relays

The status outputs are used for remote diagnostics of the control unit operating mode or for linking several control units together. They are unassigned NPN-doped transistor routes and are potential-free.

The transistor route is always connected at the STANDBY status output when the control unit is connected to the mains and switched on with the mains power switch.

The ON ACTION status output requires the same conditions as STANDBY. Channel 1 must also be active as the transistor will block if it is set to BACK PRESSURE, OFF or STOP. The status outlet and the remote control should be wired via the XS4 plug connection.

The two relays have different functions. K1 works as a status relay parallel to the ON ACTION back pressure output. K2 is either used for the delayed switch-off of blow-off air or for a cycle control function for one of the two sensor channels.

The connections and the cable inlets are on the right-hand side of the control unit. The terminal strip is behind the control unit panel.
4. Operation

4.1 General

Control unit plug connections

Mains power switch  The control unit is isolated from the mains with a double-pole switch.

XS 3  Plug connector for sensors

Channel 1  Plug connector for bowl feeder or linear feeder ( < 10A)

XS 4  Plug connector for optocoupler outputs and remote control input

The control unit display (membrane keyboard)

On/off  This key switches all connected devices off. "OFF" will appear in the display. The control unit is still ready for operation.

Cursor up and cursor down  Use these keys to page through the control unit menu or to set parameters.

Enter  Use this key to confirm the parameters entered with the cursor.

Decimal point in display  If the decimal point is not flashing, you cannot make an entry.

If the decimal point is flashing, you can make an entry.
4.2 Switching on the Control Unit

Switch on the control unit with the mains power switch. The main menu will appear in the display showing the last setpoint set in channel 1 (Bowl feeder or linear feeder feed rate).

![Display showing setpoint](image)

The following displays may also appear depending on the circuit state of the unit.

- **STOP**
  - The remote control has been activated but is currently not available on the unit.

- **OFF**
  - The unit has been switched off with the upper left-hand key on the membrane keyboard, all functions are blocked.

- **STATUS**
  - The back pressure monitoring sensor has been assigned thus switching off channel 1 (Bowl feeder).

4.3 Main Menu/Setting and Displaying Setpoints for Channel 1

**Display of setpoint or the channel 1 output (Bowl feeder)**
Alternatively: STOP, OFF or BACK PRESSURE

(see above)

Enter code to change or make required settings.

![Enter code](image)

Setpoint preset (Bowl feeder or linear feeder)

![Setpoint preset](image)

From these three basic displays you can page through the main menu using the cursor keys (UP/DOWN). Press the ENTER key in the main menu to activate a menu item for setting or adjustment. The decimal point will flash once you have pressed the ENTER key. Changes can now be made using the cursor keys (UP/DOWN). Confirm the entries by pressing the ENTER key again. The decimal point will no longer flash. You can scroll further through the menu using the cursor keys. This procedure is also used in the code menus described below.

All displays shown in the following section represent the factory settings. If the actual display on the control unit differs, the factory setting has been changed in the individual codes for a specific application.

4.4 Description of the Individual Codes for Programming the Control Unit

**Settings for channel 1**

The following functions can be set or limited for channel 1 in this submenu:
- vibration amplitude
- signal direction of the remote control
- remote control
- soft start time and soft stop time

**Lock setpoint**

This submenu allows the setpoints (oscillation amplitude) to be blocked in the main menu. The setpoints for channel 1 can no longer be changed in the main menu. This prevents the output values being accidentally changed. Changes can only be made using code C001.

**Setting sensor input 1**

Sensor input 1 is activated in this submenu. The following functions can also be set.
- invert input signal direction
- time before switch-on
Setting sensor input 2
Sensor input 2 is activated in this submenu. The following functions can also be set.
- invert input signal direction
- time before switch-off

Selecting the sensor links
The sensors activated with codes C004 and C005 can be linked to each other in this submenu.

Setting the cycle control system
Set the sensor input to be monitored and how the control will react when there is a fault.

Display status
This submenu is used to check the set vibration frequency and the sensor inputs and reset of error signals

Programmed application examples
Call memorized settings P1-10 based on application examples.

SAMPLE
(ask for our catalogue fax 0241/5109-219 or by Internet www.rna.de)

Output preset with an external voltage. 0-10V or potentiometer

Store parameters
If the values (user parameters) previously set in the different submenus are to be stored, call this submenu.

Block all setting functions
This code blocks all entry options on the control unit. The values can no longer be changed.
The menu can now only be enabled using this code.

Reset parameters
This submenu allows the user to reset the control unit to the factory settings. If user parameters have been stored, the control unit can also be set to these settings.

4.5 Application-specific Changes to the Factory Settings

4.5.1 Code C001 for power output

Aim: Setting and limiting the vibration amplitude, the remote control, the soft start time and the soft stop time.

Select code
Code C001

Set vibration amplitude

Limit vibration amplitude
For RNA-Feeder with 100V/200 V Magnets 90%

Remote control

Remote control signal direction

Soft start time

Soft stop time
Operating Frequency
(see 3.1 Operating Mode)
Return

Store and return to main menu

4.5.2 Code C003 Lock Setpoint

Aim: Blocking the setpoints in the main menu. The values can no longer be changed directly. Changes can only be made using code C001.

Select code
Code C003
Setpoint (vibration amplitude)
Return

Set code
1 = can be set
0 = entry blocked

Store and return to main menu

4.5.3 Code C004 Sensor Input 1 and Code C005 Sensor Input 2

Aim: Activating and setting the sensor inputs

Select code
Code C004
Sensor 1 input
Invert input signal direction
Sensor state delay
FREE, time before switch on.
Sensor state delay
ASSIGNED, time before switch-off.
Return

Set code
I = active
0 = inactive
I = start = 24V DC
0 = stop = 24V DC
0 - 60 sec.
0 - 60 sec.

Store and return to main menu

Code C005 is used for sensor input 2 in the same way.

4.5.4 Code C006 Sensor Links

Aim: Linking two previously activated sensor inputs.

Select code
Code C006

Only one of the eight sensor links can be set active.

And (And) link with blow-off of the outlet tracks
And (und) link without blow-off of the outlet tracks (since Versions-No. 10)
Or link
Min/Max link
And / S2 link (since Versions-No. 10)
Level control for the hopper controller (since Versions-Nr. 10)
A brief description of the individual links

And (AND) link of the two sensor inputs with blow-off of the outlet tracks.

Example:

Application: Two-track feeding system with back pressure control
Solution: Track 1 (Sensor 1) full = blow-off track 1 (Relais K1)
Track 2 still free
Track 2 (Sensor 2) full = blow-off track 2 (Relais K2)
Track 1 still free
Track 1 + Track 2 full = bowl feeder (chanal 1) stop blow-off air after approx. 4 sec

And (UND) link of the two sensor inputs without blow-off of the outlet track.
The bowl feeder (chanal 1) switches off, if both sensors are assigned. The air for sorting may be de-energizes later (4 sec) through relay K2.

Or link of both sensor inputs.
The bowl feeder switches off (chanal1), if one of both sensors is assigned. The air for sorting may be de-energizes later (4 sec) through relay K2.

Min/Max link of both sensor inputs.
The bowl feeder (chanal 1) switches off, if both sensors are assigned. Only when both sensors become free, the bowl feeder (chanal 1) switches on again. Relay K1 connects, with the switch off of the bowl feeder. Relay K2 connects 4 sec later (to switch off the blow-off air)

And / S2 link
The bowl feeder (chanal 1) switches off, when both sensors are assigned. When the sensor 2 is free, the system is switched on. The air for sorting can be switched off later (4sec) through relay K2.

Level control for the hopper
Sensor 2 switches relay K1 according to the entered delay time (C005). When the sensor 1 is darkened, relay K1 releases (looking of the hopper).
Application: Sensor 1 = traffic sensor ; Sensor 2 = level control ; Relay K1 = control hopper

Level control
Sensor 2 switches relay K1 according to the entered delay time (C005).
Application: Sensor 2 will be used as a level control (z.B. LC-N 24V DC). Relais K1 switches with a level controller: Bowl feeder or linear feeder empty.

4.5.5 Code C008 Cycle Control

Aim: Control sensors 1 (back pressure control) and/or 2.
The links "AND, SOL" must not be activated in code C006 when the cycle control system is activated.
The cycle control system monitors the FREE sensor state. The time (A 180) is used to set the maximum time which a sensor may be free before an alarm signal is issued. Relay K1 is picked up when an alarm signal is issued. The fault is cleared by covering the sensor.

If OUT = 1 and a fault occurs, the bowl feeder or linear feeder will also be switched off in addition to relay K1 (indicator lamp: fault) and an ERROR message will appear in the display. The fault is cleared with the cursor key at the bottom right.

If OUT = 0 and a fault occurs, only relay K1 is energized (indicator lamp: fault). The fault is cleared automatically when sensor 1 is assigned.

If A.I. = 1 Relay K1 is checked on breakdown (switch changed over from relay K2 to K1)

### 4.5.6 Code C009 Display Status/Return ERROR - signals

**Aim:** Checking the set vibration frequency and the sensor inputs.

**Select code**

Code C009 Clear error

Remote control signal channel 1

Signal at sensor input 1

Signal at sensor input 2

**Set code**

I = active

0 = inactive

**Return**

Store and return to main menu

With the menu item HA = half-wave you can check whether the operating mode (100–50Hz) has been correctly selected.

### 4.5.7 Code C200 Blocking all Setting Functions

**Aim:** The user can no longer (accidentally) change the set values. (4.3 available)

**Select code**

Code C200

Block the setting functions

**Set code**

I = enabled

0 = block

**Return**

Store and return to main menu

Now only code C200 will be accepted!!!

It is possible to change the setpoint for channel 1 and 2 in the main menu (see 4.3)

### 4.5.8 Code C100 Output Preset with an External Voltage

**Aim:** Setpoint adjustment with external voltage
If the external supply is activated, the last set digital output value (%) will be the minimum output for 0 volt. The maximum output for 10 volts should be set with the parameter P in C001.

The external voltage supply should be connected to terminal 31, 32 and 33 in the control unit. The connection is potential-free.

Terminal 31 = +10V
Terminal 32 = E
Terminal 33 = 0V

4.5.9 Code C143 Store Parameters

Aim: Storing user parameters.

Once PUSH has been confirmed with ENTER, the selected parameters will be stored separately by pressing a cursor key.

4.5.10 Code C210 Reset Parameters

Aim: Resetting to factory settings or restoring the stored user parameters.

FAC Selection and confirmation of FAC. applies the factory settings.
Selection and confirmation of US.PA restores the user parameters previously stored under C143.
4.5.11 Failure

In case of failure, the controller shuts off automatically showing a flashing „ERROR“ text. The error signal is stored even on disconnecting the line up to the moment when the error indication is cleared in C009.

- **Overload limiting ERROR**
  The output power is beyond allowable limit.

- **Short circuit break**
  A short circuit occurs when in operation.

- **Overvoltage circuit break**
  Voltage is or was too high.

- **Peak current limiting**
  An excessive peak current occurred.

5 Scale Drawing
Connecting Diagram

Drawing is valid for

External potentiometer

Relais "SYSTEM-AIR/ALARM"

Relais "STATUS"

Contact - load max. 6 A, 250 V AC

Load max. 6 A

Mains supply
230 V; 50/60 Hz

External rated value 0-10 VDC

Sensor 1, input
+24 VAC, max. 120 mA

Sensor 2, input
+24 VAC, max. 120 mA

6 VAC, remote control

24 VAC remote control

Main supply 230 V; 50/60 Hz
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