Contents

Technical Information for the User ........................................................................................................3
1.0 General ........................................................................................................................................4
2.0 Construction ...............................................................................................................................4
3.0 Function description .......................................................................................................................5
3.1 Mode ...........................................................................................................................................5
   3.2 Regulation mode ..........................................................................................................................6
   3.3 Set point ....................................................................................................................................6
   3.4 Effective value ............................................................................................................................7
   3.5 Control functions .........................................................................................................................7
4.0 Technical Data ..............................................................................................................................8
   4.1 Limited the output voltage by using line input from 230V or 240V .............................................8
5.0 Declaration of Conformity ...........................................................................................................8
6.0 Ordering codes ............................................................................................................................9
7.0 Operation .....................................................................................................................................10
   7.1 Adjustment ................................................................................................................................10
   7.2 Adjustment Procedure ...............................................................................................................10
   7.3 Indications on display ...............................................................................................................11
   7.4 Error Messages ..........................................................................................................................11
8.0 Settings .......................................................................................................................................12
9.0 Setting up instructions ................................................................................................................13
   9.1 Internal set point .........................................................................................................................13
   9.2 Unit configuration .........................................................................................................................13
      9.2.1 Service menu ......................................................................................................................14
      9.2.2 Display effective values measured inside unit ....................................................................14
   9.3 Setting Up Procedures ...............................................................................................................15
   9.4 Select Interface ..........................................................................................................................15
   9.5 Save current settings ..................................................................................................................16
   9.6 Restore parameter settings .........................................................................................................16
   9.7 Software version .........................................................................................................................16
   9.8 Hide parameter menus ...............................................................................................................16
10.0 Connection diagram ....................................................................................................................17
   10.1 Connection details .....................................................................................................................18
11.0 Dimensions ................................................................................................................................18
12.0 Putting into service ....................................................................................................................19
   12.1 Preparatory measures ...............................................................................................................20
   12.2 Measurements and Settings ....................................................................................................20
   12.3 Putting into service without a proper load ...............................................................................20
13.0 Installation of Thyristor Control Units .......................................................................................21
   13.1 Fuses ......................................................................................................................................21
   13.2 Incoming breaker ......................................................................................................................21
   13.3 Output Breaker ..........................................................................................................................21
   13.4 Installation and climatic Conditions .........................................................................................21
   13.5 Signal cables ............................................................................................................................21
14.0 Interference prevention ...............................................................................................................22
   14.1 Earthing ...................................................................................................................................22
   14.2 Control cables ...........................................................................................................................22
   14.3 Interference protection of other external components and equipment ..................................22
15.0 Engineering notes .......................................................................................................................23
Technical Information 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 specialist 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
- Earth bonding must be tested prior to operation

Prescribed Use
The units described herein are electrically powered for use in industrial applications. They are designed for power adjustment of resistive or inductive loads

Declaration of conformity
We declare that these products conform with the following standards and directives:

<table>
<thead>
<tr>
<th>Directives</th>
<th>Standards</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 2014/35/EU LVD</td>
<td>- EN 50178:1997</td>
</tr>
<tr>
<td>- 2011/65/EU RoHs</td>
<td></td>
</tr>
</tbody>
</table>

REO AG, D - 42657 Solingen
1.0 General

The range of REOTRON MEW Thyristor Regulators are microprocessor based units for controlling the power to resistive and inductive loads. In essence the units comprise inverse parallel connected power semiconductors (thyristors) and the control and regulation electronics. The units have a regulated, AC output. The inverse parallel connected thyristors operate as contact free, power controllers using the phase angle control or the full wave principles. In the phase angle control mode the equipment can be used as a voltage or current regulator and also there is an option for power regulation. The set point value for the current and voltage can be provided by an external control voltage of 0-10 V, 0(4)-20 mA, DC or a potentiometer. The lowest set point has priority. The effective value is fed back internally from a voltage or current transformer. The maximum current limit of the unit cannot be exceeded in all regulation modes, using phase angle control. Applications with a wide load resistance variation Rcold/Rwarm are possible, and an overloading of the unit is prevented.

Typical Applications

<table>
<thead>
<tr>
<th>Industrial Ovens</th>
<th>Steam Generators</th>
<th>Lighting Installations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infra Red Emitters (Dryers)</td>
<td>Preheating Plants</td>
<td>Air Conditioning Plant</td>
</tr>
<tr>
<td>Tunnel Heaters</td>
<td>Room Heating Equipment</td>
<td>Fan Heating Systems</td>
</tr>
<tr>
<td>Plastic Moulding Equipment</td>
<td>Extruders</td>
<td></td>
</tr>
</tbody>
</table>

2.0 Construction

The REOTRON -MEW 700 thyristor controller is a completely functional, compact, unit. It has been designed for building into an enclosure. All connections for the supply, power output, feedback signals and the supply for the isolator are made through screw terminals. A touch panel with an LED display and setting up keys is incorporated in the front panel. There are connectors provided for analogue signals and optional a field bus interface. Inside the unit there is a printed circuit, control card and a power card, comprising the semiconductors, firing and regulating circuits and the system power supply.

Overview
3.0 Function description

Features:

**Mode:** switchable
- 1. Phase angle control
- 2. Full wave principle

**Regulation mode:**
- 1. Current regulation RMS
- 2. Voltage regulation RMS
- 3. Power regulation Real power

**Set point inputs:**
- 1. Voltage or Power Potentiometer 10 kR, 0...+10 V, 0(4)...20 mA, internal Keypad
- 2. Current Potentiometer 10 kR, 0...+10 V, 0(4)...20 mA, internal Keypad
- Option interface The Set points are transmitted via interface

**Feedback monitoring:**
- 1. Voltage or Power Voltage 0...+10 V, DC correspond 0...100% RMS
- 2. Current Current 0...+10 V, DC correspond 0...100% RMS

**Status**
- Enable (ON/OFF) Contact or 24 V, DC
- Fault relay Change over contact

**Interface: Option**
- Serial RS 232
- Fieldbus Pofibus-DP
- Fieldbus CAN-Bus
- Fieldbus DeviceNet

3.1 Mode

**Phase angle control**
In the phase angle control mode the mans voltage half waves are more or less cut in function of the given set point.
This mode of operation is suitable for resistive, inductive and resistive-inductive loads.
The benefits with this mode of operation are the continuous adjustment, the fine dosing and the height regulating dynamics. A dynamic current limitation is possible only with this mode of operation.

**Full wave control**
In the full wave principle mode of operation, always full sinus waves are switched in function of the set point. In this operating mode almost no harmonics are produced, however, the dynamic regulation is not possible. This mode of operation is suitable in particular for loads with high thermal inertia.
3.2 Regulation mode

The REOTRON MEW Thyristor Regulator range includes 3 regulators, i.e. voltage, current and power regulator. All the regulators always work in combination, i.e. with voltage regulation for example, the current regulation operates like a cascade control and limits the output current in case of overload on the rated current. In case of current regulation mode, the maximum voltage limit can be prescribed over the voltage set point. With power regulation, the current limit is also effective as cascade.

In case both the voltage and current regulation are used, the set point of the power regulator must be set to 100 % (over display, in menu „C 002“, parameter „P“).

Voltage regulation

Microprocessor controller with PI Characteristics; the P portion is adjustable externally by using the keyPad. The units maximum voltage output is factory set to the rated voltage (for 100% set point).

Parameter setting

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Code</th>
<th>Setting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power „P.“</td>
<td>C 020</td>
<td>100%</td>
</tr>
<tr>
<td>Set point current „I.“ Display</td>
<td>C 020</td>
<td>100%, or smaller</td>
</tr>
<tr>
<td>or Set point current connection 7 u. 8</td>
<td></td>
<td>bridge = 100%</td>
</tr>
</tbody>
</table>

Current regulation

Microprocessor controller with PI Characteristics; the P portion is adjustable externally by using the KeyPad. The units maximum output current (Rated Current) is factory set.

Parameter setting

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Code</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power „P.“</td>
<td>C 020</td>
<td>100%</td>
</tr>
<tr>
<td>Set point voltage „U.“ Display</td>
<td>C 020</td>
<td>100%, or smaller</td>
</tr>
<tr>
<td>or Set point current connection 3 u. 4</td>
<td></td>
<td>bridge = 100%</td>
</tr>
</tbody>
</table>

Power regulation

With power regulation, the real power value is controlled. In this case, the input that is normally coordinated to the voltage set point is now used as set point input. This set point input corresponds to 0...100 % of the unit output power.

The current set point must be set to 100 % or to the required limit value. Setting over display or link between terminals 7 and 8.

Parameter setting

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Code</th>
<th>Settings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output power „P.“</td>
<td>C 020</td>
<td>0%</td>
</tr>
<tr>
<td>Set point voltage „U.“ Display</td>
<td>C 020</td>
<td>100%, or smaller</td>
</tr>
<tr>
<td>Set point voltage „I.“ Display</td>
<td>C 020</td>
<td>100%, or smaller</td>
</tr>
<tr>
<td>or Set point current connection 7 u. 8</td>
<td></td>
<td>bridge = 100%</td>
</tr>
<tr>
<td>Power regulation „E.F.P.“</td>
<td>C 003</td>
<td>1</td>
</tr>
</tbody>
</table>

3.3 Set point

Set-point inputs (inputs for internal signals)
There are two set-point inputs that can be used for external signals:
Set point 1 = Voltage or Power
Set point 2 = Current

Set point is displayed in the control-panel
All set points can be adjusted by using the internal display.
3.4 Effective value

The effective values of the current and voltage are measured inside the controller and are used for regulation. Units with the DA module option have 0...10 V DC outputs for the effective values of voltage, current and power which are provided for use by a plant control system.

3.5 Control functions

Enable
Run / Stop input.
A control voltage (24V DC) must be applied to terminals 32(+) and 31(-), to enable the unit, or a connection made between terminals 32 and 33 by using a switch. A permanent link between terminals 32 and 33 is used for operation without an external enable. The firing pulses are inhibited whilst the enable input is not closed.

Start ramp / Stop ramp
This function reduces surges on the mains supply when the load is switched on and off.

Set point control (min / max)
The set-point control characteristics can be adjusted to match the subsequent process controller or automation system, by setting the lower and upper values.

Status / Ready relay (clamp 41,42,43)
For monitoring the actual status, an internal relay can be used. In case of applied input voltage and enabled power output, clamp 42 – 43 closes.

For using this relay as a “READY” signal point “r.b.” in Code “C 003” has to be set to 1. In case of an error like “LO.PO.”, clamp 42 – 43 opens.

Clamp assignment:
41 \rightarrow \text{normally close (NC)}
42 \rightarrow \text{change-over contact (CO)}
43 \rightarrow \text{normally open (NO)}

Failure relay (clamp 44,45,46)
In case of an error (for example “Error Hot”) the contact 45 – 46 closes.

Clamp assignment:
44 \rightarrow \text{normally close (NC)}
45 \rightarrow \text{change-over contact (CO)}
46 \rightarrow \text{normally open (NO)}
4.0 Technical Data

<table>
<thead>
<tr>
<th>Type</th>
<th>Input voltage [V]</th>
<th>Output voltage [V]</th>
<th>Output current [A]</th>
</tr>
</thead>
<tbody>
<tr>
<td>MEW 700-5/230 - 400</td>
<td>230 - 400V +/- 10% 50/60 Hz</td>
<td>Ue – 3 V</td>
<td>0...5</td>
</tr>
<tr>
<td>MEW 700-10/230 - 400</td>
<td>230 - 400V +/- 10% 50/60 Hz</td>
<td>0...10</td>
<td></td>
</tr>
<tr>
<td>MEW 700-25/230 - 400</td>
<td>230 - 400V +/- 10% 50/60 Hz</td>
<td>0...25</td>
<td></td>
</tr>
</tbody>
</table>

Load: R / RL, Transformer Load max. Induction 1.45 Tesla

Set point Inputs
- current
  - voltage or power: 0...+10 V
  - 0(4)...20 mA
- Potentiometer 10 KR, internal Display

External feedback U: 0...+/-5 V
External feedback I: 0...+/-5 V
Feedback monitor U or P (version without interface): 0...+10 V, DC
Feedback monitor I (version without interface): 0...+10 V, DC
Enable: Contact
Faulty relay: Change over contact 250 V, 1 A
Protection: IP 20
Operating temperature: 0...+45 °C
Storing temperature: -20...+75 °C
Rel. air humidity: 93 % without condensation and surface water coning
Contamination level: degree 1 (IEC 664)
Mounting direction: Vertical (Connections below)
Mounting height: 1000 m, 0,5 % rated current reduction for each additional 100 m

4.1 Limited the output voltage by using line input from 230V or 240V

By using the controller at line input from 230 or 240V you must limited the output voltage under Code 020 – point „u“: At line= 230V to 57% and at line= 240V to 60%.

5.0 Declaration of Conformity

In order to comply with the EMC requirements, when using phase angle controllers it is necessary to build in a suitable filter in the line input, e.g. Book-style filter CNW 201 (further information in Section 15.0, "Engineering notes")
### 6.0 Ordering codes

<table>
<thead>
<tr>
<th>Type</th>
<th>ID No.</th>
<th>Input voltage [V]</th>
<th>Output current [A]</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOTRON MEW 700 – 5 / 230 – 400</td>
<td>6321 05</td>
<td>230 – 400</td>
<td>5</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 10 / 230 – 400</td>
<td>6321 01</td>
<td>230 – 400</td>
<td>10</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 10 / 230 – 400 RS-232</td>
<td>6321 30</td>
<td>230 – 400</td>
<td>10</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 10 / 230 – 400 Profibus DP</td>
<td>6321 10</td>
<td>230 – 400</td>
<td>10</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 10 / 230 – 400 CAN-Bus</td>
<td>6321 50</td>
<td>230 – 400</td>
<td>10</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 10 / 230 – 400 DeviceNet</td>
<td>6321 40</td>
<td>230 – 400</td>
<td>10</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 25 / 230 – 400</td>
<td>6322 01</td>
<td>230 – 400</td>
<td>25</td>
</tr>
<tr>
<td>REOTRON MEW 700 – 25 / 230 – 400 Profibus DP</td>
<td>6322 10</td>
<td>230 – 400</td>
<td>25</td>
</tr>
</tbody>
</table>

Without interface with feedback output  
e.g. ID 6322 01  
RS-232 without feedback output  
e.g. ID 6322 30  
Profibus DP without feedback output  
e.g. ID 6322 10  
CAN-Bus without feedback output  
e.g. ID 6322 50  
DeviceNet without feedback output  
e.g. ID 6322 40
7.0 Operation

The six buttons and a LED display found in the front panel, are used for operating and setting up the unit. All operating methods and adjustable parameters can be set up through this panel.

The “I” and “O” buttons are used for switching the unit ON and OFF, however, these do not provide mains isolation, they simply inhibit the power semiconductors.

The “P”, “F” and “Cursor Buttons” are used for parameter adjustment. Parameters are set by using menu controls which are called up by entering operator codes. A capital letter is used to indicate the selected function. The display value can be increased or decreased by units, or tenths of units, by a short press of the cursor buttons. Holding the buttons down will cause the display to change in units of ten.

7.1 Adjustment

To prevent accidental or unauthorized adjustment the adjustment parameters, in the user menus, are protected. A code must be entered to open the user menus. There are different pass codes for each function group.

Setting adjustments are automatically saved upon leaving the programming mode or if no button is pressed for a period of 100 seconds.

7.2 Adjustment Procedure

All setting routines are commenced by pressing the programming button “P”. The following diagram should clarify the sequence in which keys are pressed:

Example

1. Press the “P” key.
2. Select the code number with the cursor keys.
3. Press the “P” key. This displays the first menu point. The required menu point can be found by repeatedly pressing the “P” key (scrolling).
4. The value in the menu point can be changed with the cursor keys.
5. Scroll to the next menu point or to the end of the menu, which returns the display to the set point value, by pressing the “P” key. To exit the menu and return back to the normal display quickly, depress the “P” key for 5 seconds.
6. To return back to the previous position in the menu, press the “F” key.
7.3 Indications on display

During normal running mode ‘run’ is shown in the LED display.
In the programming mode an abbreviation for the corresponding parameter (see setting up instructions) and the setting values, are displayed. Setting changes are stored upon leaving the programming mode or after a pause of 100 seconds.

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>.LaPo</td>
<td>Initialisation Phase. When the supply voltage is connected (Left decimal point blinks)</td>
</tr>
<tr>
<td>run</td>
<td>Normal Operation</td>
</tr>
<tr>
<td>off</td>
<td>Unit is not enabled</td>
</tr>
<tr>
<td>run</td>
<td>Left decimal point is present. Current regulation is active. The maximum current of the unit or the regulated current set point value has been reached.</td>
</tr>
<tr>
<td>!run</td>
<td>The two upper vertical segments of the first digit illuminate. Peak value limiter. This is caused by a fault condition on either the load or by the externally generated effective value, feedback signal. The load impedance is too low, for example, or the effective value is too high.</td>
</tr>
<tr>
<td>-run</td>
<td>The upper horizontal segment of the first digit illuminates. Maximum control limit of the controller has been reached. The unit has no more regulation range available and so the output voltage is near to the supply voltage.</td>
</tr>
<tr>
<td>_run</td>
<td>Lower horizontal of the first digit illuminates. Maximum power limit has been reached</td>
</tr>
<tr>
<td>LoPo</td>
<td>Under Voltage, input voltage to too low.</td>
</tr>
</tbody>
</table>

7.4 Error Messages

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error HOR</td>
<td>Over temperature of the power semi-conductors, output is inhibited. Use <code>C009</code> to reset</td>
</tr>
<tr>
<td>Error OU</td>
<td>Overvoltage, input voltage too high, output is inhibited. Use <code>C009</code> to reset</td>
</tr>
</tbody>
</table>

Error messages must be reset in menu `C009`
8.0 Settings

The following table contains all the available key settable parameters. The unit is supplied with factory settings that can be recalled from access code “C210” under FAC. User codes can be saved under code “C143” and then recalled with code “C210” under USPA.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Code</th>
<th>Factory Default</th>
<th>Menu Code</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Set point – when internal set point is selected only!</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Voltage set point</td>
<td>0...100 %</td>
<td>U. 0 %</td>
<td>002</td>
</tr>
<tr>
<td>Current set point</td>
<td>0...100 %</td>
<td>I. 0 %</td>
<td>002</td>
</tr>
<tr>
<td>Power set point</td>
<td>0...100 %</td>
<td>P. 100 %</td>
<td>002</td>
</tr>
<tr>
<td><strong>Configuration</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>External set point OFF</td>
<td>0 / I</td>
<td>E.S.O. 0</td>
<td>003</td>
</tr>
<tr>
<td>4...20 mA (only when E.S.O. = 0)</td>
<td>0 / I</td>
<td>4.20. 0</td>
<td>003</td>
</tr>
<tr>
<td>Enable Inverse</td>
<td>0 / I</td>
<td>-En. 0</td>
<td>003</td>
</tr>
<tr>
<td>External feedback voltage</td>
<td>0 / I</td>
<td>E.F.U. 0</td>
<td>003</td>
</tr>
<tr>
<td>External feedback current</td>
<td>0 / I</td>
<td>E.F.I. 0</td>
<td>003</td>
</tr>
<tr>
<td>Power control ON (instead of voltage control)</td>
<td>0 / I</td>
<td>E.F.P. 0</td>
<td>003</td>
</tr>
<tr>
<td>Full wave control</td>
<td>0 / I</td>
<td>F.S.P 0</td>
<td>003</td>
</tr>
<tr>
<td>60°el. phase angle in first half wave</td>
<td>0 / I</td>
<td>C.60 0</td>
<td>003</td>
</tr>
<tr>
<td>Clock speed of the firing puls of the Full wave control</td>
<td>0 / I</td>
<td>SLo 0</td>
<td>003</td>
</tr>
<tr>
<td>Status- / Ready relay</td>
<td>0 / I</td>
<td>r.b 0</td>
<td>003</td>
</tr>
<tr>
<td><strong>Parameter</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum Output Voltage (without set point)</td>
<td>0...100 %</td>
<td>U. 0 %</td>
<td>020</td>
</tr>
<tr>
<td>Minimum Output Current (without set point)</td>
<td>0...100 %</td>
<td>I. 0 %</td>
<td>020</td>
</tr>
<tr>
<td>Minimum Output Power (without set point)</td>
<td>0...100 %</td>
<td>P. 100 %</td>
<td>020</td>
</tr>
<tr>
<td>Maximum Output Voltage (Limit)</td>
<td>25...100 %</td>
<td>u 100 %</td>
<td>020</td>
</tr>
<tr>
<td>Maximum Output Current (Limit)</td>
<td>25...100 %</td>
<td>i 100 %</td>
<td>020</td>
</tr>
<tr>
<td>Maximum Output Power (Limit)</td>
<td>25...100 %</td>
<td>p 100 %</td>
<td>020</td>
</tr>
<tr>
<td>Voltage Regulator – P Characteristic</td>
<td>1...100</td>
<td>P.U. 20</td>
<td>020</td>
</tr>
<tr>
<td>Current Regulator - P Characteristic</td>
<td>1...100</td>
<td>P.I. 15</td>
<td>020</td>
</tr>
<tr>
<td>Power Regulator - P Characteristic</td>
<td>1...100</td>
<td>P.P. 15</td>
<td>020</td>
</tr>
<tr>
<td>Soft Start (ramp)</td>
<td>0...60 Sec. /</td>
<td>0,1</td>
<td>020</td>
</tr>
<tr>
<td>Soft Stop (ramp)</td>
<td>0...60 Sec. \</td>
<td>0,1</td>
<td>020</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interface ON</td>
<td>0 / I</td>
<td>S.I.F. 0</td>
<td>017</td>
</tr>
<tr>
<td><strong>Service</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Save User Parameter</td>
<td>PUSH</td>
<td></td>
<td>143</td>
</tr>
<tr>
<td>Restore Factory Default Settings</td>
<td>FAC.</td>
<td></td>
<td>210</td>
</tr>
<tr>
<td>Enable advanced Service mode</td>
<td>0 / I</td>
<td>En.S. 0</td>
<td>127</td>
</tr>
<tr>
<td>Display software version</td>
<td></td>
<td></td>
<td>001</td>
</tr>
</tbody>
</table>
9.0 Setting up instructions

9.1 Internal set point

Code C 002

- Set point 1, Voltage [%]
- Set point 2, Current [%]
- Set point 3, Power [%]

Running mode

9.2 Unit configuration

Code 003

- E.S.O. = 0 = External Set point
- E.S.O. = I = Internal Set point (Keys)

- 4.20 = 0 = External Set point 0...20 mA / 0...10V
- 4.20 = I = External Set point 4...20 mA

- E.F.U. = 0 = internal feedback voltage
- E.F.U. = I = external feedback voltage

- E.F.I. = 0 = internal feedback current
- E.F.I. = I = external feedback current

- E.F.P. = 0 = Voltage- / Current regulation
- E.F.P. = I = Power regulation set point

- F.S.P. = 0 = Phase angle control
- F.S.P. = I = Full wave control

- C.60. = 0 = Full wave control
- C.60. = I = 60°el. phase angle in first half wave

- S.L.o. = 0 = Fast puls firing (Only full wave control)
- S.L.o. = I = Slow puls firing

- r.b. = 0 = Relay = Status function
- r.b. = I = Relay = Fault function

- U.P.A. = 0 = Regulation mode
- U.P.A. = I = control mode

Running mode
9.2.1 Service menu

Display set points sent to the unit.

Code 050

Display set point voltage [%]

Display set point current [%]

Display set point power [%]

Running mode

9.2.2 Display effective values measured inside unit

Code 051

Display feedback voltage [%]

Display feedback current [%]

Display feedback power [%]

Running mode
9.3 Setting Up Procedures

Code 020

<table>
<thead>
<tr>
<th>Code 020</th>
<th>P</th>
<th>U 800</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 020</td>
<td>P</td>
<td>I 650</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>P 1000</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>U 500</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>I 500</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>P 500</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>P 20</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>P 10</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>I 40</td>
<td>P</td>
</tr>
<tr>
<td>Code 020</td>
<td>P</td>
<td>h 40</td>
<td>P</td>
</tr>
</tbody>
</table>

Min output voltage [%] (without external set point)
Min output current [%] (without external set point)
Min output power [%] (without external set point)
Output voltage limit [%] Umax
Output current limit [%] Imax
Output power limit [%] Pmax
P-Char voltage regulation
P-Char current regulation
P-Char power regulation
Start ramp time [Sek.]
Stop ramp time [Sek.]
Running mode

9.4 Select Interface

Code 017 Interface (Option)

<table>
<thead>
<tr>
<th>Code 017</th>
<th>P</th>
<th>SIF 1</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Code 017</td>
<td>P</td>
<td>Run</td>
<td>P</td>
</tr>
</tbody>
</table>

0 = Interface off
I = Interface on
Running mode

Communication using the interface is activated by setting parameter “S.I.F.” to “I”. Should there be a need to run under manual control e.g. for testing, then this parameter should be set to “0”.


9.5 Save current settings
Code C 143

Save current parameter settings
Running mode

9.6 Restore parameter settings
Code C 210

Restore factory settings
Restore user settings (previously saved in "C 143"
Running mode

9.7 Software version
Code 001

Version
Date
Running mode

9.8 Hide parameter menus
Code C 117

Hd.C. = 1 = Hide menus
Running mode

If Hd.C. = 1 all parameter menus are hide. Set Hd.C to "0" again for change parameters.
10.0 Connection diagram

- **Filter**
- **LAST**
- **L1**
- **L2 (N)**
- **PE**
- **U**
- **V(N)**
- **Pot. 10 KR**
- **Enable**
- **Set point**
- **Voltage/Current**
  - **0(4)...20 mA**
  - **0...+10 V**
- **RS 232 Option**
- **OPTION Interface**
- **Interface**
- **24 V DC**
- **Feedback output (0...10 V)**
- **Internal Relais**
- **Error**
- **Status**
- **External feedback input**
- **NOT applicable at bus type**
- **Use screened control cable**

**Diagram Notes:**
- Use designated control cable for proper installation.
- Connections for power and signal inputs are labeled accordingly.
- Interfaces include RS 232 and OPTION for communication and control.
- Various feedback outputs and error statuses are highlighted for monitoring purposes.
- Internal relays are designated for specific control functions.
10.1 Connection details

Voltage regulation

Set point voltage

0(4)...20 mA 0...+10 V Pot. 10 K

If using 4...20 mA signal, set parameter 4.20 = I in Menu "C003"

Current regulation

Set point current

0(4)...20 mA 0...+10 V Pot. 10 K

If using 4...20 mA signal, set parameter 4.20 = I in Menu "C003"

Voltage and current regulation

Set point voltage

0(4)...20 mA 0...+10 V Pot. 10 K

If using 4...20 mA signal, set parameter 4.20 = I in Menu "C003"

Set point current

0(4)...20 mA 0...+10 V Pot. 10 K

If using 4...20 mA signal, set parameter 4.20 = I in Menu "C003"

Power regulation

Set point power

0(4)...20 mA 0...+10 V Pot. 10 K

If using 4...20 mA signal, set parameter 4.20 = I in Menu "C003"
11.0 Dimensions

MEW 700-5/10

MEW 700-25
12.0 Putting into service

Safety Instruction

⚠️ Qualified personnel only, are permitted to install electronic equipment

Because attenuation capacitors (Y-capacitors) are used, leakage current flows through the case to protective earth (PE). Therefore, units must be earthed.

12.1 Preparatory measures

- Check if the local supply voltage is the same as the rated voltage for the unit (rating plate) and that the load is within the permitted power range.
- Connect the control unit in accordance with the connection diagram.
- Adjust set-points to zero.
- Switch off enable (if used)
- Check if cables are connected correctly.

The control unit is now ready for operation and can be switched on (power supply, enable). The unit is factory set according to the rating plate i.e. 100% set point equals 100% voltage, current or power.
Set-point control only can be used, in which case no other settings are necessary.

12.2 Measurements and Settings

Because of the phase-angle-control, the shapes of the supply voltage and current sine curves are changed. The output voltage and current must be measured with effective value meter (true-RMS).

12.3 Putting into service without a proper load

A thyristor can only be switched ("fired") into a conducting state, if the current level is sufficiently high enough. It will only switch-off, if the current is lower than the threshold current (every time the current goes through the zero-crossing point). When the thyristor controller is put into service, without a proper load, realistic measurements such as the voltage, for example, cannot be obtained. Even the setting of the output current i.e. limit, can only be done with a proper load and not by short circuiting the output of the thyristor controller. This is because the thyristor, once “fired”, cannot be turned off. The current has to pass through “zero” for the thyristor to switch off. Using a low impedance load it is not possible to evaluate the current level from the internal current flow.

If a proper load is not available or not possible to carry out the correct commissioning procedure then a makeshift test can be carried by connecting a resistive load, such as incandescent lamps to the output of the thyristor controller.
13.0 Installation of Thyristor Control Units

13.1 Fuses
The REOTRON MEW... series of thyristor controllers are fitted with semiconductor fuses, which protect the power semiconductors (thyristors) from damage when there is a short-circuit on the output. These fuses are selected for the permitted peak current of the semiconductors and are not provided for protection against overload or line faults! Fuses are provided only in the current-carrying circuits with thyristors. Fuses for overload, line and earth fault protections should be fitted to the incoming power side.

13.2 Incoming breaker
An isolator must be connected in front of a thyristor-controller, mounted inside a control panel (VDE 0160/6.3.1) because of the leakage-current from a high-impedance thyristor and hence the current flow through the protection circuit. This can be used to disconnect the unit from mains supply before a routine shut-down.
Because all REOTRON thyristor-controllers have an enable input, it is possible to inhibit the input pulses, and hence firing of the thyristors, until the main contactors have securely closed or before the contactors open again when shutting down.
When enable inputs are used in this way, the contactors can be rated for current-free switching, in which case AC1 would be suitable. If direct-on-line switching is used i.e. by switching the thyristor controller, without using the enable, the rating of the contactors must be in accordance with AC3.

13.3 Output Breaker
A circuit-breaker on the output of the thyristor controller should be avoided, because it cannot operate without a load. Current or voltage monitoring in the output of the thyristor controller must be used to control the circuit-breaker at the input side.
Current-free switching of the thyristor controllers’ output (e.g. load switching) is possible, however, by using the enable input.

13.4 Installation and climatic Conditions
The mounting base should be free of vibration, if possible. Note that the temperature of the heat-sink rises when a power controller is operating. The heat-sink must be mounted vertically to ensure efficient cooling. The ambient temperature range allowed below the heat-sink is 0°...+45°C. The relative air humidity is < 75% without dew. The clearance below the unit should be at least 150mm and above at least 100mm. There must be a clearance of 50mm between units mounted next to each other. For altitudes above 1000m the power must be derated by 0,5% per 100m additional height.

13.5 Signal cables
Set Points
If external voltage (0...10V) or current (0(4)...20mA) set-points are used; care should be taken to ensure that all equipment is connected through equal-potential bonding. If the bonding is earthed, then this should be at a single point, thus avoiding earthing loops and possible coupled interference.
14.0 Interference prevention

14.1 Earthing
Correct earthing of electronic controls is highly important for two reasons:
First it ensures the safety of operators and service personnel, and secondly it provides a fail-safe operation of the equipment. Therefore, in addition to providing protective earthing, in accordance to DIN standards, it also provides an earth path for pulse interference produced during operation. For the latter, controllers that are mounted onto a chassis–plate in a control panel should be bonded to earth with the shortest possible connection and the largest possible earth contact area and also, for example, onto the centrally bonded chassis-plate. The reason for this is to ground high-frequency interferences produced by switching on the mains (contactors, relays, switches) before they cause fault conditions. If the earth conductors are too long and if they run together with other cables, in one cable duct, then they are unsuitable for grounding high-frequency noise.
The more complex the unit and the more "intelligent" the functions - especially serial bus connections – then the more important it is to use correct earthing techniques.

14.2 Control cables
Control cables also are "antennas" that receive interference produced by other loads. Signal cables that are run alongside power cables can generate voltage spikes through inductive and capacitive cross-coupling. Therefore control conductors should not be mixed with power cables in the same cable ducting. If this cannot be avoided then shielded cables should be used. In particular cables from inverters to motors are very critical because of the presence of high-speed switching. There should be maximum distance between control cables output cables from frequency inverters. The shielding around the control conductors should be grounded onto a large contact area (earthed mounting plate) at the equipment end.

14.3 Interference protection of other external components and equipment
**Contactors** produce extreme Burst-interferences on switching. Contactor coils must be connected with RC-snubbers. Suitable RC-snubbers can be obtained from switch manufacturers.

**Magnets / magnetic valves** are also interference sources in the same way as contactors. RC- snubbers and varistors can be components and varistors can be connected across these components

**Frequency inverters** are to connect to a mains filter recommended by the manufacturer.

**Motor wires** should be shielded and routed away from control cables.
## 15.0 Engineering notes

<table>
<thead>
<tr>
<th>Type</th>
<th>connection terminal (power)</th>
<th>connection terminal (control)</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOTRON MEW 700-5</td>
<td>2,5 mm²</td>
<td>1,5 mm²</td>
</tr>
<tr>
<td>REOTRON MEW 700-10</td>
<td>2,5 mm²</td>
<td>1,5 mm²</td>
</tr>
<tr>
<td>REOTRON MEW 700-25</td>
<td>6 mm²</td>
<td>1,5 mm²</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>recommended line filter in the mains input</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOTRON MEW 700-5</td>
<td>CNW 202/7/480</td>
</tr>
<tr>
<td>REOTRON MEW 700-10</td>
<td>CNW 202/16/480</td>
</tr>
<tr>
<td>REOTRON MEW 700-25</td>
<td>CNW 202/30/480</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>weight in kg</th>
<th>min. cable cross-section</th>
<th>Power loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOTRON MEW 700-5</td>
<td>1,5</td>
<td>1,5 mm²</td>
<td>15 W</td>
</tr>
<tr>
<td>REOTRON MEW 700-10</td>
<td>1,5</td>
<td>1,5 mm²</td>
<td>25 W</td>
</tr>
<tr>
<td>REOTRON MEW 700-25</td>
<td>2</td>
<td>4 mm²</td>
<td>40 W</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type</th>
<th>recommended input fuse: Type: gl / gG</th>
</tr>
</thead>
<tbody>
<tr>
<td>REOTRON MEW 700-5</td>
<td>10 A</td>
</tr>
<tr>
<td>REOTRON MEW 700-10</td>
<td>16 A</td>
</tr>
<tr>
<td>REOTRON MEW 700-25</td>
<td>25 A</td>
</tr>
</tbody>
</table>