Universal Controller for
Industrial Lubrication Systems

Operating Manual
Version V6
Imprint

The operating manual is part of the scope of supply of VOGEL universal controllers for industrial lubrication systems.

The manual has been edited in conformity with applicable standards and rules for technical documentation.

© Copyright
WILLY VOGEL AG reserves the right to make changes to adapt to technical improvement. Reprinting or copying even of parts of this manual requires the permission of WILLY VOGEL AG.

Editor
Dipl.-Ing. S. Schlenzka

Contents

Part 1: General Operating Manual

EC Declaration of Conformity ............... 0 - 3
Introduction ............................................ 1 - 1
Safety Instructions............................................. 1 - 1
Notes Concerning this Manual ............. 1 - 2
Applications.............................................. 1 - 2
Versions, Designation............................ 1 - 3
Scope of Supply ..................................... 1 - 3
Design and Function.............................. 1 - 4
Design ........................................................ 1 - 4
Function...................................................... 1 - 5
Terminal Assignment................................. 1 - 6
Installation .............................................. 1 - 9
Operation.............................................. 1 - 10
Display Structure................................. 1 - 10
LEDs ........................................................ 1 - 11
LCD Display.............................................. 1 - 11
The Status Display ................................... 1 - 11
The Info Display ....................................... 1 - 11
Display of input functions: ....................... 1 - 12
Adjusting the input functions.............. 1 - 12
The Parameter Display............................ 1 - 12
Setting Parameters .................................. 1 - 14
Use as Replacement............................ 1 - 15
Failures ................................................. 1 - 16
Failure Messages .................................. 1 - 16
Device Failures............................................. 1 - 16
Maintenance and Repair...................... 1 - 16
Specifications ....................................... 1 - 17
Service Germany .................................. 1 - 18
Service Worldwide ............................... 1 - 18
Part 2: Device Descriptions

Controllers for Single-Line Lubrication Systems .................................................. 2 - 1
  Application ........................................................................2 - 1
  Overview ...........................................................................2 - 1
  Function ..............................................................................2 - 1
  Installation ...........................................................................2 - 3
  Operation .............................................................................2 - 3
  Failure Messages ..............................................................2 - 3
  EXZT2A02 ........................................................................2 - 5
  EXZT2A05 ........................................................................2 - 7
  EXZT2A07 ........................................................................2 - 9
  IGZ36-20, IGZ36-20-S6 .................................................. 2 - 11
  IGZ38-30, IGZ38-30-S1 .................................................. 2 - 16
  IG351-10 ...........................................................................2 - 21
  IGZ51-20-S3 ......................................................................2 - 23

Controllers for Oil+Air Lubrication System ......................................................... 2 - 27
  Application ........................................................................2 - 27
  Overview ...........................................................................2 - 27
  Function ..............................................................................2 - 27
  Installation ...........................................................................2 - 28
  Operation .............................................................................2 - 28
  Display of Failures .............................................................2 - 29
  IGF54-20 .............................................................................2 - 30
  IGF54-20 ............................................................................2 - 31
  IGF54-20-S1, IGF54-20-S3, IGF54-20-S4 .............. 2 - 34

Controllers for Systems with Progressive Feeders ........................................... 2 - 38
  Application ........................................................................2 - 38
  Overview ...........................................................................2 - 38
  Function ..............................................................................2 - 39
  Installation ...........................................................................2 - 39
  Operation .............................................................................2 - 40
  Display of Failures .............................................................2 - 40
  EXZT2A03 ........................................................................2 - 42
  EXZT2A06 ........................................................................2 - 44
  IGZ51-20 ............................................................................2 - 46
  IGZ51-20-S2 .....................................................................2 - 50
  IGZ51-20-S7 .....................................................................2 - 54
  IGZ51-20-S8 .....................................................................2 - 58

Controllers for Combined Circulation and Piston Feeder Systems .................. 2 - 62
  Application ........................................................................2 - 62
  Overview ...........................................................................2 - 62
  Function ..............................................................................2 - 63
  Installation ...........................................................................2 - 63
  Operation .............................................................................2 - 63
  Failure Messages ...............................................................2 - 64
  IZ361-30 .............................................................................2 - 65

Pulse Monitors .............................................................................2 - 68
  Application ........................................................................2 - 68
  Overview ...........................................................................2 - 68
  Function ..............................................................................2 - 68
  Installation ...........................................................................2 - 68
  Operation .............................................................................2 - 68
  Failure Messages ...............................................................2 - 69
  EWT2A01, EWT2A01-S1 ................................................ 2 - 70
  EWT2A04, EWT2A04-S1 ................................................ 2 - 73

Controllers for Chain Lubrication Systems ....................................................... 2 - 77
  Application ........................................................................2 - 77
  Overview ...........................................................................2 - 77
  Function ..............................................................................2 - 77
  Installation ...........................................................................2 - 78
  Operation .............................................................................2 - 78
  Failure Messages ...............................................................2 - 79
  IZ52-20 .............................................................................2 - 80
EC Declaration of Conformity

Für die folgend bezeichnete Einrichtung:

Universitätsarbeitsgeräte
LC3000-E471, LC3000-E+472, LC3000-M+471, LC3000-M+472

wird hiermit bestätigt, daß sie den wesentlichen Anforderungen entspricht, die in den in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten festgelegten Richtlinie 89/336/EWG, genehmigt durch:

Elektromagnetische Verträglichkeit 89/336/EWG, genehmigt durch:
Bundeskabinett, 30.06.1990

Elektrisches Betriebsmittel zur Verwendung innerhalb bestimmter Spannungsgrenzen (Niederspannungs-Richtlinie) 73/23/EWG, genehmigt durch:
Bundeskabinett, 28.02.1991

Maschinen 98/37 EG

Kraftfahrzeug 72/245/EG

genehmigt durch:
Bundeskabinett, 15.06.1972

Teil 1

Anhang zur EG-Konformitätserklärung KE 000057

Die Übereinstimmung wurde festgestellt

a) durch Anwendung übereinstimmender, europäischer Normen

b) durch Anwendung übereinstimmender, nationaler Normen

c) durch Anwendung übereinstimmender, internationalen Normen

d) durch Anwendung übereinstimmender, gesetzlicher Vorschriften

e) durch Anwendung übereinstimmender, technischen Regelwerke

Elektromagnetische Verträglichkeit

Maschinen 98/37/EG

Niederspannung 73/23/EG

Folgende Geräte wird die Konformität mit den eingerichteten Richtlinien erklärt:


WILLY VOGEL AKTIONSSELSCHAFT

Mietzschstraße 537, 12277 Berlin • Postfach 269169, 12201 Berlin

Vertreten durch

[Unterschrift]

[Unterschrift]

Berlin, den 19. Februar 2001

Die Anhängen sind Bestandteil dieser Erklärung.

Diese Erklärung bezieht sich auf die Übereinstimmung mit den genannten Richtlinien, behält jedoch keine Zustimmungs-Eigenschaften.

Die Bestätigungen und die vorliegenden Dokumente sind zu betrachten.

Die Interessen der bezeichnungen Produkte sind so weit wie möglich der Produkterklärungen, die die Maschinen, Fähigkeiten, z. z. möglichst der Produkt erfüllt wurden, den Bestimmungen und Vorschriften der anwendbaren Richtlinien entspricht.

Die Hersteller der Produkte werden von der technischen Netzspannung, wie die Bestimmung von den Unterlagen für die technische Netzspannung und auf die technische Netzspannung aufgewiesen.

WILLY VOGEL AKTIONSSELSCHAFT

Mietzschstraße 537, 12277 Berlin • Postfach 169169, 12201 Berlin

19. Februar 2001

[Unterschrift]

[Unterschrift]
Universal Controller for
Industrial Lubrication Systems

General Operating Manual
Introduction

The product described in this manual is a control and monitoring device for VOGEL central lubrication systems installed in stationary industrial plants. It is either supplied as a component of VOGEL compact lubrication systems or individually for installation in a control cabinet.

The universal controller is the basis of all new control and monitoring devices and can also be installed to replace any of the controllers for cabinet installation that were used so far. Since the control functions may differ greatly depending on plant and application, different device types based on the universal controller are offered. Functionally these correspond to the controllers so far employed. The previous designations for individual devices have to a large extent remained. Table A – 1 (appendix) contains a list of the available device types.

The VOGEL universal controller for industrial lubrication systems has been made in conformity with the generally recognized rules of technology and the applicable safe working practices and the rules for accident prevention. To ensure trouble-free operation and prevent hazard, we kindly ask you to read the present manual carefully and observe the notes contained in it.

Safety Instructions

The VOGEL universal controller for industrial lubrication systems is designed for operation on industrial direct or alternating current supply (see Specifications). Other applications are not allowed.

Only trained specialists capable of recognizing the hazard in connection with touching of live components are allowed to install and connect the device. The local connecting conditions and the applicable rules (e.g. DIN, VDE standards) must be observed.

If devices are improperly connected, substantial material and personal damage may be the consequence.

All adjustments on the device must be performed exclusively by qualified personnel. Qualified personnel has been trained, instructed and specifically ordered by the owner to perform the work.

Unauthorised alteration of the device and use of unapproved spare parts and auxiliaries are not allowed.

The housing of the device must not be opened.

If the device is failing, turn to a VOGEL service station (see chapter Service).
Notes Concerning this Manual

This operating manual is subdivided into three parts. The first part contains a general description of the universal controller as well as basic instructions for installation, operation and use as replacement. The second part contains information on the differences between the individual device types. The third part contains important tables providing an overview.

Use the table of contents to locate the desired information promptly and successfully.

Please take note of the symbol shown below. It calls attention to special situations:

⚠️ Text marked with this sign alerts to special hazard or work that must be performed with caution.

Please consider that this manual is an integral part of the device and should be handed to the new owner if the device is sold.

Applications

The universal controller is intended to control and monitor VOGEL central lubrication systems in stationary industrial plants. It must only be used for the purpose outlined in this manual.

We do not assume liability for damages resulting from unintended use of the device. The same applies if the device is used in faulty condition, or if the device is altered although WILLY VOGEL AG has not granted permission.

Table 1 - 1. Versions of the VOGEL Universal Controller for Industrial Lubrication Systems

<table>
<thead>
<tr>
<th>Designation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device type E+471</td>
<td>Housing for installation in control cabinet, operating voltage selectable 100..120 V AC or 200..240 V AC</td>
</tr>
<tr>
<td>Device type I+471</td>
<td>Housing installed in compact system, operating voltage selectable 100..120 V AC or 200..240 V AC</td>
</tr>
<tr>
<td>Device type E+472</td>
<td>Housing for installation in control cabinet, operating voltage 20..24 V AC or DC</td>
</tr>
<tr>
<td>Device type I+472</td>
<td>Housing installed in compact system, operating voltage 20..24 V AC or DC</td>
</tr>
</tbody>
</table>
Versions, Designation

The VOGEL universal controller for industrial lubrication systems is available in four versions (table 1 - 1). The designations E and I refer to the installation location of the unit, e.g. I(nternal) inside a compact lubrication system or E(external) for installation in a control cabinet.

The designations 471 and 472 indicate the operating voltage range (voltage code). Different from the designations previously used, only these two voltage codes are referenced. An overview of the voltage codes previously used and the new designations is found in table A - 2 in the appendix.

Scope of Supply

The VOGEL universal controller is supplied either installed in a compact lubrication system (version I) or individually for installation in a control cabinet (version E).

The scope of supply of version E includes:

- a universal controller in the configuration ordered
- two jumpers for selection of the operating voltage range (only version E + 471)
- an operating manual
Design and Function

Design

Figure 1 - 1 shows the design of the VOGEL universal controller, version E, with its installation dimensions.

On the front of the device, the operating display (1) and the service interface (4) are located. On the version I, the operating display is separated from the housing and connected to the device by means of a flat ribbon cable. The display and operating elements of the display are described in chapter Operation.

The terminal rails (2) for the electrical connections are located on top and underside of the unit. The screws (3) fastening the connecting cables are accessible from the front of the unit. The designations of the connections are printed on the display membrane.

Figure 1 - 2 shows a VOGEL compact lubrication system with installed universal controller, version I. Only the operating display with the LCD display and the operating keys are accessible. The display and operating elements of the display are described in chapter Operation.

Figure 1 - 1. VOGEL Universal Controller for Industrial Lubrication Systems, Version E
1  Operating display
2  Terminal rail
3  Fastening screws
4  Service interface
5  Slot for assembly rail (assembly rail EN 50022-35 x 7,5)
Function

The VOGEL universal controller is equipped with high-performance electronics capable of handling diverse tasks in connection with the control of VOGEL central lubrication systems. Which functions the device will perform depends on the device type configured – please refer to the chapters for the device type used.

The manual settings that can be made also depend on the device type. The settings are saved in a non-volatile data memory; they are thus retained even if supply power fails or the unit is separated from the supply.

Figure 1 - 2. Operating Display of VOGEL Universal Controller for Industrial Lubrication System, Version I, Installed in Compact System
Terminal Assignment

Figure 1 - 3 and Table 1 - 2 are providing an overview of the terminal assignment for the universal controller.

24 V Voltage outputs
The connections labelled + and - conduct 24 V direct current voltage generated in the controller. This voltage may be used to supply the inputs I1 through I5, or 3-wire initiators.

24 V Inputs
The inputs I1 through I5 are designed for control at 24 V. The direct current voltage generated by the controller is to be used.

Inputs
All inputs as well as the 24 V supply connections are galvanically separated from the operating voltage (L1, N) and the relay outputs relay d1, d2, and d3.

Outputs
All outputs are relay contacts. They are potential-free and galvanically separated from the operating voltage. Relay d2 has an change-over contact, relays d1 and d3 are normally open contacts.

Figure 1 - 3. Terminal Assignment for Universal Controller
### Table 1 - 2. Overview of Terminal Assignment

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Designation</th>
<th>Function</th>
<th>Terminal</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 2, 3</td>
<td>L1</td>
<td>Supply power, phase</td>
<td>1, 2, 3</td>
<td>L1/L+</td>
<td>Operating voltage 1 +24 V</td>
</tr>
<tr>
<td>4</td>
<td>B1</td>
<td>Jumper 1</td>
<td>4</td>
<td>NC</td>
<td>not connected</td>
</tr>
<tr>
<td>5</td>
<td>B2</td>
<td>Jumper 2</td>
<td>5</td>
<td>NC</td>
<td>not connected</td>
</tr>
<tr>
<td>6, 7, 8</td>
<td>N</td>
<td>Supply power, neutral conductor</td>
<td>6, 7, 8</td>
<td>N/M</td>
<td>Operating voltage 2 M (0 V)</td>
</tr>
<tr>
<td>9</td>
<td>C</td>
<td>Support terminal for motor capacitor potential-free</td>
<td>9</td>
<td>C</td>
<td>Support terminal for motor capacitor potential-free</td>
</tr>
<tr>
<td>10, 11</td>
<td>d1</td>
<td>Potential-free normally closed contact, relay 1</td>
<td>10, 11</td>
<td>d1</td>
<td>Potential-free normally closed contact, relay 1</td>
</tr>
<tr>
<td>12, 13</td>
<td>d3</td>
<td>Potential-free normally open contact, relay 3</td>
<td>12, 13</td>
<td>d3</td>
<td>Potential-free normally open contact, relay 3</td>
</tr>
<tr>
<td>14</td>
<td>d2</td>
<td>Potential-free operating contact, relay 2</td>
<td>14</td>
<td>d2</td>
<td>Potential-free operating contact, relay 2</td>
</tr>
<tr>
<td>15</td>
<td></td>
<td>Potential-free change-over contact, relay 2</td>
<td>15</td>
<td></td>
<td>Potential-free change-over contact, relay 2</td>
</tr>
<tr>
<td>16</td>
<td></td>
<td>Potential-free resting contact, relay 2</td>
<td>16</td>
<td></td>
<td>Potential-free resting contact, relay 2</td>
</tr>
<tr>
<td>17, 20, 24</td>
<td>+</td>
<td>Output electronic operating voltage +24 V</td>
<td>17, 20, 24</td>
<td>+</td>
<td>Output electronic operating voltage +24 V</td>
</tr>
<tr>
<td>21, 25</td>
<td>-</td>
<td>Reference potential of electronic operating voltage</td>
<td>21, 25</td>
<td>-</td>
<td>Reference potential of electronic operating voltage</td>
</tr>
<tr>
<td>18</td>
<td>I1</td>
<td>Input terminals</td>
<td>18</td>
<td>I1</td>
<td>Input terminals</td>
</tr>
<tr>
<td>19</td>
<td>I2</td>
<td></td>
<td>19</td>
<td>I2</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>I3</td>
<td></td>
<td>22</td>
<td>I3</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>I4</td>
<td></td>
<td>23</td>
<td>I4</td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>I5</td>
<td></td>
<td>26</td>
<td>I5</td>
<td></td>
</tr>
</tbody>
</table>
Assignment of Inputs and Outputs
The assignment of the inputs and outputs depends on the device type. Information on this is found in the connection diagrams in the respective chapter for your device type.

Additionally, a sticker with information on the device type and the assignment of the inputs and outputs is affixed on the top of the controller. Figure 1 - 4 shows an example of such a sticker with explanations. Table 1 - 3 contains explanations of the abbreviations used on the sticker.

Table 1 - 3. Explanation of Abbreviations in the Input and Output Assignments

<table>
<thead>
<tr>
<th>Inputs</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abbreviation</td>
<td>Meaning</td>
</tr>
<tr>
<td>BK</td>
<td>operating contact</td>
</tr>
<tr>
<td>DS</td>
<td>pressure switch (pressure build-up)</td>
</tr>
<tr>
<td>DS2</td>
<td>pressure switch (pressure build-down)</td>
</tr>
<tr>
<td>DS_L</td>
<td>pressure switch (air)</td>
</tr>
<tr>
<td>DK</td>
<td>manual trigger, deletion of failure messages</td>
</tr>
<tr>
<td>Gbr</td>
<td>transducer</td>
</tr>
<tr>
<td>MK</td>
<td>machine contact</td>
</tr>
<tr>
<td>MKPV</td>
<td>machine contact/ pause time extension</td>
</tr>
<tr>
<td>MKUe</td>
<td>machine contact monitoring</td>
</tr>
<tr>
<td>PV</td>
<td>pause time extension</td>
</tr>
<tr>
<td>ReSt</td>
<td>restart</td>
</tr>
<tr>
<td>ZS</td>
<td>cycle switch</td>
</tr>
<tr>
<td>S1E0</td>
<td>contact lubrication pause</td>
</tr>
<tr>
<td>--</td>
<td>not used</td>
</tr>
</tbody>
</table>

Figure 1 - 4. Sticker with Information about the Input and Output Assignments
1 Device type
2 Assignment of inputs
3 Assignment of outputs
Installation

The controller may only be installed by trained specialists who are capable of recognizing the hazards in connection with touching life components.

The controller may only be adjusted by trained specialists.

Since the controller version I is supplied as an integral part of a compact system, only the installation of the version E of the controller is described in the following.

First check in which operating voltage range the unit is to be operated. For operation on 100 – 120 V AC the two jumpers supplied must be used to connect L1 to B1 and B2 to N.

Fasten the controller to the assembly rail in the control cabinet and connect the inputs and outputs according to the connection diagram of the device type. The connection diagrams are found in the individual chapters for the device types.

To be able to enter control parameters such as operating mode or pause time via the operating display, the unit must be connected to power. Input of parameters is described in the following chapter.

Note that the universal controller must be connected to power before you can change parameters.

Power must be switched on or off instantaneously.

When power is applied, the unit starts a functional sequence depending on the device type. Notes on this sequence are contained in the chapters on the individual device types.

Check the function of the unit on the basis of the status messages appearing on the display.
Operation

The universal controller, version I, installed in the compact system must only be operated by trained specialists, who are capable of recognizing the hazards in connection with touching life components, unless the controller has a separate power supply that has been installed by a trained specialist for the purpose of programming, while all other components that could be touched are disconnected from power.

Display Structure

Figure 1 - 5 shows the operating display with its display and operating elements.

Table 1 - 4. Overview of Display and Operating Elements

<table>
<thead>
<tr>
<th>Illustration</th>
<th>Designation</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>LCD display</td>
<td>LCD display</td>
<td>Display function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Status display: indicates conditions of inputs and outputs.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Parameter display: indicates the set and changeable parameters.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Info display: indicates device type loaded and software version.</td>
</tr>
<tr>
<td>Operating</td>
<td>Operating voltage LED</td>
<td>Is on when operating voltage is applied to the unit.</td>
</tr>
<tr>
<td>Failure LED</td>
<td></td>
<td>Is on when a failure has occurred.</td>
</tr>
<tr>
<td>DK button 1</td>
<td></td>
<td>1. Triggers intermediate lubrication cycle.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Deletes a failure message.</td>
</tr>
<tr>
<td>Select button</td>
<td></td>
<td>Change to parameter display, select parameter values to be displayed or</td>
</tr>
<tr>
<td></td>
<td></td>
<td>changed.</td>
</tr>
<tr>
<td>Up button</td>
<td></td>
<td>Change to info display, change parameter values.</td>
</tr>
<tr>
<td>Down button</td>
<td></td>
<td>Change parameter values.</td>
</tr>
</tbody>
</table>

The display elements are the 8-digit LCD display (1) and the LEDs (2). Operating elements are the push-buttons (3). Table 1 - 4 provides an overview of the elements.

Figure 1 - 5. Operating Display

1 LCD display
2 Light emitting diodes (LED)
3 Push buttons
4 Service interface
LEDs
If the green LED is on, operating voltage is present.
If the red LED is on, this generally indicates an error situation.

LCD Display
The 8-digit LCD display serves several display functions:

Status display:
Indicates conditions of inputs and outputs.

Info display:
Indicates device type loaded and software version.

Display of input functions:
In most device types, the functions of the inputs (normally open contact or normally closed contact) can be set here.

Parameter display:
Indicates the set and changeable parameters.
The basic display function is the status display. From it, the parameter display or info display can be called up.

The Status Display
In the status display, the conditions of the inputs and outputs of the controller are shown. It is the standard display and always active when operating voltage is applied.

Figure 1 - 6 shows the display structure for the status display. Only configured outputs or inputs are shown. The configuration of the inputs and outputs depends on the device type. The meaning of the symbols is explained in table 1 - 5.

The Info Display
The device type and firmware version of the controller can also be called up at the display.

Call up the info display by pressing the button in the status display.

If a designation shown is more than 8 digits long, the remaining characters are shown, when you press the button once more.

When you press again, the program leaves the information display mode and the input functions are displayed.

Table 1 - 5. Symbols in the Status Display

<table>
<thead>
<tr>
<th>Status Display of Normally Open Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>![symbol] normally open contact/normally closed contact - open</td>
</tr>
<tr>
<td>![symbol] normally open contact/normally closed contact - closed</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Status Display of Change-Over Contacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>![symbol] change-over contact in operating position</td>
</tr>
<tr>
<td>![symbol] change-over contact in resting position</td>
</tr>
</tbody>
</table>
Display of input functions:

The display of the input functions is called up by pressing the ➤ key in the information screen.

The designation of the first input that can be changed and the symbol for the function value appears (Fig. 1 - 7).

First press the ➤ key repeatedly to call up the display of the input functions. As soon as the first input function is displayed, the function value can be changed by pressing the ➤ key.

⚠️ Altering the input functions may lead to malfunctions of the central lubrication system, causing substantial consequent damage.

To change to the next changeable input function, press the ➤ key again.

The basic setting of the input functions depends on the device type, this also applies to which input function can be altered. Further information is found in the corresponding chapters on the device types.

On some devices only the function of the filling level warning switch can be altered. The input designation “WS” is displayed in this case.

Adjusting the input functions

In most device types, the function values of the inputs (normally open contact or normally closed contact) can be altered. To allow this,

<table>
<thead>
<tr>
<th>Display value</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP10E00I</td>
<td>pause time 10 (10*10^2) pulses</td>
</tr>
<tr>
<td>TP01E02M</td>
<td>pause time 100 (1*10^2) minutes</td>
</tr>
<tr>
<td>TU15E01S</td>
<td>monitoring time 150 (15*10^1) seconds or 2.5 minutes</td>
</tr>
</tbody>
</table>

The Parameter Display

You can call up the parameter display from the status display by pressing the ➤ button. To save space, the parameter values are displayed in exponential format.

\[100 = 1*10^2 = 1 \ E 02\]

The following examples illustrate how to read the display.
### Table 1 - 6. Overview of Display Options in the Parameter Display*

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Parameter designation</th>
<th>Value range</th>
<th>Display View</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BA</td>
<td>operating mode</td>
<td>A, B, C, D, E</td>
<td>A, B, C, D, E</td>
<td></td>
</tr>
<tr>
<td>TP</td>
<td>pause time</td>
<td>1 - 990 000</td>
<td>01 E 00 - 99 E 04</td>
<td>M(utes)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>S(ecs)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>I (pulses)</td>
</tr>
<tr>
<td>TU</td>
<td>monitoring time</td>
<td>1 - 99 000</td>
<td>01 E 00 - 99 E 03</td>
<td>S(ecs)</td>
</tr>
<tr>
<td>TN</td>
<td>dwell time</td>
<td>0 - 99 000</td>
<td>00 E 00 - 99 E 03</td>
<td>S(ecs)</td>
</tr>
<tr>
<td>TV</td>
<td>prelubrication time</td>
<td>1 - 990 000</td>
<td>01 E 00 - 99 E 04</td>
<td>S(ecs)</td>
</tr>
<tr>
<td>I1</td>
<td>limit value 1</td>
<td>1 - 250 000</td>
<td>01 E 00 - 25 E 04</td>
<td>*0,01 I (pulses/minute)</td>
</tr>
<tr>
<td>I2</td>
<td>limit value 2</td>
<td>1 - 250 000</td>
<td>01 E 00 - 25 E 04</td>
<td>*0,01 I (pulses/minute)</td>
</tr>
<tr>
<td>I3</td>
<td>limit value 3</td>
<td>1 - 250 000</td>
<td>01 E 00 - 25 E 04</td>
<td>*0,01 I (pulses/minute)</td>
</tr>
<tr>
<td>TL</td>
<td>pump run time</td>
<td>1 - 15</td>
<td>01 E 00 - 15 E 00</td>
<td>S(ecs)</td>
</tr>
<tr>
<td>TK</td>
<td>MK pulse monitoring</td>
<td>1 - 120</td>
<td>01 E 00 - 12 E 01</td>
<td>S(ecs)</td>
</tr>
<tr>
<td></td>
<td>time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MI</td>
<td>MK pulse transmission</td>
<td>1 - 25</td>
<td>01 E 00 - 25 E 01</td>
<td></td>
</tr>
<tr>
<td>NH</td>
<td>signal edge (number</td>
<td>1 - 30</td>
<td>1 – 30</td>
<td></td>
</tr>
<tr>
<td></td>
<td>strokes)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NI</td>
<td>number of lubrication</td>
<td>1 - 99 000</td>
<td>01 E 00 - 99 E 03</td>
<td>I (pulses)</td>
</tr>
<tr>
<td></td>
<td>pulses</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>VZ</td>
<td>prelubrication cycles</td>
<td>0 - 99</td>
<td>00 E 00 - 99 E 00</td>
<td></td>
</tr>
</tbody>
</table>

* Type and size of the lubrication system must be considered when the parameter settings are determined.
Setting Parameters

Type and size of the lubrication system must be considered when the parameter settings are determined.

For all settings influencing the pump run time, the maximum on-times of the motors and valves must be considered.

To set parameters, press the button in the parameter display, until the value to be set flashes.

When the parameter displayed cannot be changed, the value does not flash on the display. Which parameters can be changed, depends on the device type.

Select the desired value by pressing or . Invalid parameter values, e.g. outside the admissible ranges listed in table 1 - 7, will not be accepted. Instead the default value will appear.

After entering the parameter value press the button. The entire display flashes to confirm that the value entered has been accepted.

To quit the parameter display, keep pressing the button, until the display changes to the status display. The new parameters generally are activated when the new pause begins.

An exception is change of the operating mode (BA). It is activated only after the controller has been switched off and back on. Before that the entire display flashes to confirm that the operating mode has been changed. However, the controller will continue to function normally.

### Table 1 - 7. Changing Parameters

<table>
<thead>
<tr>
<th>Step</th>
<th>Push-button</th>
<th>Display</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press</td>
<td>TP18E00I The parameter value to be changed flashes.</td>
</tr>
<tr>
<td>2</td>
<td>Press</td>
<td>TP20E00I The parameter value is reached.</td>
</tr>
<tr>
<td>3</td>
<td>Repeat steps 1 – 2, until all parameter values have been set.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Press</td>
<td>TP20E02I The entire display flashes.</td>
</tr>
<tr>
<td>5</td>
<td>Repeat steps 1 -4 until all parameter values have been set.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>press</td>
<td>UNSTARTED Change to status display.</td>
</tr>
</tbody>
</table>
Use as Replacement

The controller may only be replaced by trained specialists who are capable of recognizing the hazards in connection with touching life components.

The controller may only be adjusted by trained specialists.

If you wish to replace an existing controller with a universal controller, please observe the following notes.

Before replacing the unit, check if the local supply voltage agrees with the voltage indicated on the new controller.

Note the parameter values adjusted in the old controller. Which values must be noted, depends on the device type; please turn to the respective device type description. If necessary, label all wires to be disconnected and reconnected to the new unit, such as WS, DS, DS2, MK, DK, +, - etc.; on the wires to be connected to the relays d1, d2 and d3, also note the respective terminal numbers.

Now remove the old controller and replace it with the universal controller. Connect the inputs and outputs according to their previous functions. The assignment of inputs and outputs is indicated on the sticker on top of the device or is listed in the chapter on the respective device type.

Ensure that you have correctly adjusted the operating voltage as described in the chapter Assembly; then only connect the unit to power.

Power must be switched on or off instantaneously.

Subsequently adjust the parameter values noted from the old controller at the keypad of the universal controller.

Note that the universal controller must be connected to power before you can change parameters.

Check the function of the unit on the basis of the status messages appearing on the display.
Failures

Failure Messages

If a failure occurs in the operation of the central lubrication system that is traced by the monitoring sensors, the controller will indicate the failure: the red failure LED will be on and the symbol of the respective input will appear and flash on the display.

The type of failure depends on the device type. Further information is found in the corresponding chapters on the device types.

After resolving the failure, delete the failure message by pressing the button.

Delete a failure message only after resolving the cause of the failure.

Table 1 - 8. Start Error

<table>
<thead>
<tr>
<th>Failure message on the LCD display</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td>ERR 1</td>
<td>no configuration has been loaded</td>
</tr>
<tr>
<td>ERR 2</td>
<td>checksum is faulty</td>
</tr>
<tr>
<td>ERR 3</td>
<td>wrong firmware</td>
</tr>
</tbody>
</table>

Device Failures

Device failures refer to the controller itself.

Start Error

A start error has occurred when the controller displays any of the failure messages listed in table 1 - 8 after power has been applied. In this case please turn to a VOGEL service station (chapter Service).

Other Failures or Damages

If your controller should not function as described in the chapter on the respective device type, please first check the correct installation of the controller and all connections, as well as the tightness of all lubricant supply lines.

Also check if the unit employed is suitable for the existing operating voltage, or if the voltage adjustment described in chapter Assembly has been carried out properly.

If this does not resolve the failure, please turn to a VOGEL service station.

The housing of the device must not be opened.

Maintenance and Repair

The universal controller is maintenance-free. Nonetheless, you should perform the following checks, to ensure continued proper functioning of the controller:

- Check the basic functions of the controller by pressing the button.
- Check the electrical connections.

Any further work must exclusively be performed by Vogel service technicians.
### Specifications

<table>
<thead>
<tr>
<th></th>
<th>Version +471</th>
<th>Version +472</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated input voltage Un</td>
<td>100...120 V or AC (200...240) V</td>
<td>20...24 V or AC 20...24 V</td>
</tr>
<tr>
<td>Input voltage range</td>
<td>0.85 Un to 1.1 Un (65...132 V / 170...264 V)</td>
<td>0.85 Un to 1.1 Un (17...26.4 V)</td>
</tr>
<tr>
<td>Rated input current</td>
<td>70 mA / 35 mA</td>
<td>75 mA, at maximum output load: 250 mA</td>
</tr>
<tr>
<td>Power consumption</td>
<td>8 W</td>
<td>5 W</td>
</tr>
<tr>
<td>Frequency range</td>
<td>50...60 Hz DC or 50...60 Hz</td>
<td>49...61 Hz DC or 49...61 Hz</td>
</tr>
<tr>
<td>Disengaging value</td>
<td>max. 10 % of Un</td>
<td>max. 10 % of Un</td>
</tr>
<tr>
<td>Reclosing time</td>
<td>1 s</td>
<td>1 s</td>
</tr>
<tr>
<td>Residual ripple of input voltage</td>
<td>not relevant DC: max. 5 %</td>
<td></td>
</tr>
<tr>
<td>Max. fusing</td>
<td>6.3 A</td>
<td>6.3 A</td>
</tr>
<tr>
<td>Max. switching current</td>
<td>5 A AC</td>
<td>5 A AC</td>
</tr>
<tr>
<td>Max. relay switching voltage</td>
<td>250 V AC</td>
<td>250 V AC</td>
</tr>
<tr>
<td>Overvoltage category to DIN VDE 0110</td>
<td>III</td>
<td>III</td>
</tr>
<tr>
<td>Rated voltage of inputs</td>
<td>24 V DC</td>
<td>24 V DC</td>
</tr>
<tr>
<td>Input impedance</td>
<td>2.4 kΩ +/-10 %</td>
<td>2.4 kΩ +/-10 %</td>
</tr>
<tr>
<td>Input level, low</td>
<td>0 V..+4 V</td>
<td>0 V..+4 V</td>
</tr>
<tr>
<td>Input level, high</td>
<td>+10 V..+24 V</td>
<td>+10 V..+24 V</td>
</tr>
<tr>
<td>Coincidence factor for inputs</td>
<td>max. 0.8</td>
<td>max. 0.8</td>
</tr>
<tr>
<td>Output voltage for inputs and external consumers</td>
<td>24 V DC +10% / -15%</td>
<td></td>
</tr>
<tr>
<td>MK input</td>
<td>max. input frequency pulse duty factor</td>
<td>30 Hz / 1:1</td>
</tr>
<tr>
<td>Conductors connected (flexible) with terminal sleeves with Twin terminal sleeves length on which to remove insulation</td>
<td>max. 2.5 mm² or 2<em>0.75 mm² max. 2</em>1.5 mm² 8 mm</td>
<td></td>
</tr>
<tr>
<td>Enclosure type (Version E)</td>
<td>IP30, terminals IP20</td>
<td></td>
</tr>
<tr>
<td>Protection class (Version E)</td>
<td>II</td>
<td></td>
</tr>
<tr>
<td>Rated isolation voltage</td>
<td>250 V AC</td>
<td></td>
</tr>
<tr>
<td>Contamination class</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Operating temperature</td>
<td>0 °C to 60 °C</td>
<td>25 °C to 70 °C</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>0 °C to 60 °C</td>
<td>-25 °C to 70 °C</td>
</tr>
<tr>
<td>Dimensions W x H x D (Version E)</td>
<td>approx. 70 mm x 75 mm x 110 mm</td>
<td></td>
</tr>
<tr>
<td>Voltage capacity to EN 61131-2 and EN 50178</td>
<td></td>
<td></td>
</tr>
<tr>
<td>supply voltage / relay contacts</td>
<td>1780 V</td>
<td>2830 V</td>
</tr>
<tr>
<td>supply voltage / electronics</td>
<td>2830 V</td>
<td></td>
</tr>
<tr>
<td>relay contacts / electronics</td>
<td>2830 V</td>
<td></td>
</tr>
<tr>
<td>EMC</td>
<td>noise resistance noise emission</td>
<td>EN 61000-6-2 EN 50081-1</td>
</tr>
<tr>
<td>Vibration resistance to EN 60068-2-6 Shock resistance to EN 60068-2-27</td>
<td>10 – 57 Hz; 0.075 mm (amplitude)</td>
<td>15 g; 11 ms (half-sine)</td>
</tr>
</tbody>
</table>
Controllers for Oil+Air Lubrication System

Application
The controllers described in this chapter are used for time or pulse-control of oil+air lubrication systems.

Overview
Table 2-18 lists the available VOGEL controllers for oil+air lubrication systems and their scope of functions.

Function
The controllers trigger lubrication at certain time intervals. The special feature of the controllers described in this chapter is their prelubrication function which has been adapted to the specific needs of oil+air lubrication systems. The functions available in this device series are outlined below. To which extent these functions are realized depends on the individual device type.

The Lubrication Cycle
A lubrication cycle is comprised of contact time (lubrication) and pause time (TP).

Prelubrication
A prelubrication is a contact time that directly follows-up of the device. If a failure occurs during the prelubrication, a failure message is output.

The Prelubrication Cycle
On some devices, a prelubrication cycle is triggered upon every power-up. During the prelubrication cycle the pump motor is switched on and several contact times are processed with short pauses in between. The number of contact times can be fixed or selected by the user, depending on the device type. At the end of the prelubrication cycle a pause time is started.

On some devices operating with power supply failure memory, triggering of a prelubrication cycle can be suppressed by setting the number of prelubrication cycles (VZ) to 0.

During the prelubrication cycle, failures are only indicated by flashing of the symbol of the respective input on the display and by interruption of the function (also see chapters Operation and Display of Failures).

The Pause Time
The pause time is the time between two contact times. The length of the pause can be determined in two ways, resulting in two different operating modes (BA) of the controllers (pulse transmitter or pulse counter). The operating mode can be adjusted manually at the unit (see chapter Operation - general part of the operating manual).

Operating Mode Pulse Transmitter
In this operating mode the controller determines the length of the pause by starting a contact time at an interval programmed by the user.

Operating Mode Pulse Counter
In this operating mode the pause time is determined by the machine, sending pulses to the controller while it operates. The pulses received at the machine contact (MK) are counted by the controller, and the contact time is started after a preset number of pulses. The number of pulses to be counted can be set by the user.

Table 2-18. Overview of VOGEL Controllers for Oil+Air Lubrication Systems

<table>
<thead>
<tr>
<th>Designation</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IG54-20</td>
<td>Pulse transmitter with fixed prelubrication cycles, adjustable pause time and power supply failure memory</td>
</tr>
<tr>
<td>IG54-20-S1</td>
<td>Pulse transmitter with freely selectable number of prelubrication cycles, pause time and dwell time, power supply failure memory</td>
</tr>
<tr>
<td>IG54-20-S3</td>
<td>Like S1, level monitoring switch as normally closed contact</td>
</tr>
<tr>
<td>IG54-20-S4</td>
<td>Pulse transmitter with freely selectable number of prelubrication cycles, pause time and dwell time, power supply failure memory as well as additional relay output for compressed air valve</td>
</tr>
</tbody>
</table>
The Contact Time
After time-out of the pause time, the controller triggers the lubrication, also referred to as contact time. The contact time is comprised of monitoring time (TU) and pump dwell time (TN).

Pressure Build-Up Monitoring Oil Pressure
During the contact time, the pump motor is first started and the pressure required for lubrication is built up in the lubrication lines. This process is monitored by a pressure switch (DS). The required pressure must be reached within a certain time, the monitoring time, otherwise the pump is switched off and a failure message is output.

Monitoring Time TU
The monitoring time is a time window for pressure build-up by the pump. If the required pressure is reached within the monitoring time, the latter is terminated. Thereafter the pump dwell time is started. The monitoring time is generally adjusted permanently and cannot be changed by the user.

Pump Dwell Time
The pump dwell time is the time during which the pump continues running after the required pressure has been built up in the lubrication lines, to ensure all lubrication points are supplied with lubricant even in very large central lubrication systems.

Pump Run Time Limit
The pump run time (TL) is limited in principle by the monitoring time.

Air Pressure Monitoring
With an additional pressure switch (DS_L) the air pressure in the compressed air line is monitored. If the pressure drops or if no pressure is built up in the first place, a failure message is output and the function sequence stopped.

Level Monitoring
The filling level of the lubricant reservoir is monitored by means of a level monitoring switch (WS). This switch can be configured as a normally closed contact or normally open contact; this must be considered when the device type is selected. If the level monitoring switch is configured as a normally closed contact, the signal lines leading up to the level monitoring switch are at the same time monitored for breakage of the wires.

As soon as the level in the lubricant reservoir drops below minimum, the function of the lubrication system is stopped and a failure message output.

Automatic Lubricant Refill
To some of the controllers two level monitoring switches (WS_L and WS_H) can be connected to allow control of automatic lubricant refill. If the lubricant level in the lubricant reservoir drops below the minimum, the relay d3 activates a valve or pump refilling lubricant until the maximum level is reached. If automatic lubricant refill fails, that is, if the level remains below the minimum level for a prolonged period, a failure message is output.

Power Supply Failure Memory (EEPROM)
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message. This allows the controller to continue the function on the basis of the device type upon the next power-up, and failure messages are not lost.

Installation
Install the controller in the control cabinet for a VOGEL central lubrication system as described in chapter Assembly in the general section of this operating manual.

As well please observe the notes in the description of the respective device type.

Operation

Switching On
The device is switched on, when the operating voltage is applied. When the operating voltage is present, the green operating voltage LED is on.

⚠️ Power must be switched on or off instantaneously.

Upon power-up the device begins the function sequence, generally it starts with a prelubrication cycle.
Controllers for Oil+Air Lubrication System

Prelubrication
On some devices prelubrication is started upon power-up. The pump motor is switched on and the failure message relay d2 is energised. Prelubrication is performed just like a standard contact time.

Prelubrication Cycle
On some devices a prelubrication cycle is started upon power-up. The pump motor is switched on and a number of lubrication runs is started with fixed pause times in between. During this time relay d2 remains de-energised and the failure LED is on, however, this does not indicate a failure.

At the end of the prelubrication cycle, a pause time is started, relay d2 is energised and the failure LED shuts off.

If a failure occurs during the prelubrication cycle, relay d2 remains de-energised and the failure LED is still on (also see chapter Display of Failures).

Pause Time
After time-out of the prelubrication, relay d1 is de-energised and the pump motor shut off.

Then the preset value for the pause time is read and the pause started. Subsequently contact time and pause time alternate.

Contact Time (Lubrication)
The contact time is started after time-out of the pause time. It is comprised of the time required for pressure build-up and the dwell time. At the beginning of the contact time, relay d1 is energised and the pump motor thereby switched on. As soon as the required pressure is reached, the monitoring time is terminated and the pump dwell time started. At the end of the dwell time, the next pause time begins.

Relay d2 in Normal Operation
When the operating voltage is applied and the device is operating without failures, relay d2 is always energised, except during the prelubrication cycle.

Intermediate Lubrication
Short pressing of the button during a pause triggers an intermediate lubrication. Intermediate lubrication is performed just like a standard contact time.

Switching Off
The device is switched off by separating it from the operating power supply.

Upon shut-off, the device must remain off for some time, before it can be switched on again (see reclosing time specifications).

Changing Parameters and Operating Mode
The change of parameters and the selection of the operating mode are described in chapter Operation in the general part of this operating manual. Parameter changes, such as change of the pause time, will become operative with the beginning of the next pause. A change of the operating mode will only become operative after the device is switched off and back on.

Operation with Power Supply Failure Memory
In case the power supply fails, the power supply failure memory saves the most important data of the controller, such as remaining pause time and a failure message.

After a power failure, the device generally starts with a prelubrication cycle. If this function has been deactivated, however, the start after return of power depends on the situation prevailing when the power failure occurred (see table 2 - 19).

Display of Failures
If a failure occurs, the red failure LED is on and the symbol for the respective input flashes on the display.

Oil Pressure Missing
If the pressure required is not built up in the main supply line during the monitoring time, that is, if the pressure switch DS is not activated, the failure LED will switch on and the pump motor will shut off. At the same time the symbol for input DS will flash on the display. The relays d1 and d2 are or remain de-energised. At the same time the function sequence is stopped.

Air Pressure Missing
An air pressure failure is present when the pressure switch DS2 is not activated during the
monitoring time, pump dwell time, or pause time, or if it is not activated within 5 seconds after power-up or after deletion of a failure message. A failure message is output and the function sequence is stopped. At the same time the symbol for input DS flashes on the display.

Low Filling Level
If the filling level in the lubricant reservoir drops too far, the level monitoring switch WS opens, causing an interruption of the current function sequence. The relays d1 and d2 are de-energised and the failure LED lights up. At the same time the symbol for input DS flashes on the display.

Failure of the Automatic Lubricant Refill
On devices with automatic lubricant refill, a failure message is output when the level remains below the minimum for a prolonged period. Relay d2 is energised, the failure LED lights up and the symbol for input WS L flashes on the display. The function sequence is stopped.

Relay d2 when Operation Fails
If a failure occurs, relay d2 remains de-energised. The function sequence remains interrupted, until the error has been resolved and the failure message has been deleted by pressing the \( \mathcal{O} \)-button.

Failure Message during a Prelubrication Cycle
If a failure occurs during a prelubrication cycle, the process is stopped and the symbol of the respective input flashes on the display. After deletion of the failure, the device continues the prelubrication cycle.

Deleting a Failure Message
Delete a failure message by pressing the \( \mathcal{O} \)-button after the cause of the failure has been re-solved. This triggers an intermediate lubrication.

![Delete a failure message only after resolving the cause of the failure.](image)

A level monitoring switch failure message can only be deleted, when a sufficient amount of lubricant has been refilled.

Table 2 - 19. Operation with Power Supply Failure Memory – Start Procedure upon Power Failure

<table>
<thead>
<tr>
<th>Situation at time of power failure</th>
<th>Procedure upon power-up</th>
</tr>
</thead>
<tbody>
<tr>
<td>During the monitoring time (before DS1 input is energised)</td>
<td>contact time</td>
</tr>
<tr>
<td>During the pump dwell time (after DS1 input has been energised)</td>
<td>pause time</td>
</tr>
<tr>
<td>During pause time</td>
<td>pause continues after reading of the remaining pause time from the power supply failure memory</td>
</tr>
<tr>
<td>During failure reported by pressure switch DS or DS2</td>
<td>prelubrication cycle</td>
</tr>
<tr>
<td>During failure reported by level monitoring switch WS</td>
<td>failure message remains stored</td>
</tr>
</tbody>
</table>
Operating Modes
The controller IG54-20 can only be used as pulse transmitter (operating mode A).

Scope of Functions
The IG54-2 features the functions listed below. The default and the adjustable parameters are listed in table 2 - 20.
- adjustable pause time
- pump run time limit
- oil pressure monitoring
- air pressure monitoring
- level monitoring
- power supply failure memory (EEPROM)

Input functions
On this device the input function of the level monitoring switch (WS) can be changed. The adjustment is described in section “Adjusting the input functions” in the chapter “Operation” of the general section of this manual.

Standard setting WS: S (normally open contact)

<table>
<thead>
<tr>
<th>Designation</th>
<th>Abbreviation</th>
<th>Default setting</th>
<th>Unit</th>
<th>Adjustment range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>operating mode</td>
<td>BA</td>
<td>A</td>
<td>not adjustable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pause time</td>
<td>TP</td>
<td>10 minutes</td>
<td>01 E 00 - 99 E 00 minutes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>monitoring time</td>
<td>TU</td>
<td>60 seconds</td>
<td>not adjustable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dwell time</td>
<td>TN</td>
<td>5 seconds</td>
<td>not adjustable</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Installation, First Operation
Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 15).

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.
Figure 2 - 15. Connection Diagram for IG54-20 and IG54-20-S1

L1/N operating voltage
B1/B2 jumper terminals for operating voltage (here shown: 200..240 V)
WS level monitoring switch (here shown: reservoir filled)
DS pressure switch (pressure build-up monitoring)
DS_L pressure switch (air pressure monitoring)
DK push-button
  1. intermediate lubrication
  2. delete failure
+ +24 V DC output
- 0 V DC output
d1 operating contact for lubricant supply pump (SMFP)
d2 change-over contact, command line
  resting contact: failure message (SIA) or prelubrication cycle
  operating contact: operation OK
SL1 signal lamp for „PUMP ON”
SL2 signal lamp for „FAILURE”
K pump motor contactor

*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.
IG54-20 Pulse Diagrams
(Time axis not true to dimensions)

Normal process

Pressure build-up failure (DS or DS_L)

Legend

TP2 = saved remaining pause time
TU = monitoring time
TN = pump dwell time
TP = pause time
TF = function sequence stopped
TLS = compressed air failure
TLA = compressed air build-down time
IG54-20-S1, IG54-20-S3, IG54-20-S4

Operating Modes
The controllers IG54-20-S1, IG54-20-S3, and IG54-20-S4 can only be used as pulse transmitters (operating mode B).

Scope of Functions
The controllers IG54-20-S1, IG54-20-S3, and IG54-20-S4 feature the functions listed below. The default and the adjustable parameters are listed in table 2 - 21.

IG54-20-S1
• adjustable pause time
• adjustable number of prelubrication cycles
• adjustable pump dwell time
• pump run time limit
• oil pressure monitoring
• air pressure monitoring
• level monitoring (normally open contact)
• power supply failure memory (EEPROM)

IG54-20-S3
Like IG54-20-S1, but
• level monitoring (normally closed contact)

IG54-20-S4
Like IG54-20-S3, but
• additional output d3 for compressed air valve

Table 2 - 21. Parameters of IG54-20-S1, IG54-20-S3, and IG54-20-S4

<table>
<thead>
<tr>
<th>Designation</th>
<th>Abbreviation</th>
<th>Default setting</th>
<th>Unit</th>
<th>Adjustment range</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>operating mode</td>
<td>BA</td>
<td>B</td>
<td>not adjustable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>pause time</td>
<td>TP</td>
<td>10 minutes</td>
<td>minutes</td>
<td>01 E 00 - 99 E 00</td>
<td>minutes</td>
</tr>
<tr>
<td>monitoring time</td>
<td>TU</td>
<td>60 seconds</td>
<td>seconds</td>
<td>not adjustable</td>
<td></td>
</tr>
<tr>
<td>dwell time</td>
<td>TN</td>
<td>5 seconds</td>
<td>seconds</td>
<td>00 E 00 - 99 E 00</td>
<td>seconds</td>
</tr>
<tr>
<td>prelubrication cycles</td>
<td>VZ</td>
<td>10</td>
<td></td>
<td>00 E 00 - 99 E 00</td>
<td></td>
</tr>
</tbody>
</table>

Input functions
On these devices the input function of the level monitoring switch (WS) can be changed. The adjustment is described in section “Adjusting the input functions” in the chapter “Operation” of the general section of this manual.

IG54-20-S1
Standard setting WS: S (normally open contact)

IG54-20-S3
Standard setting WS: O (normally closed contact)

IG54-20-S4
Standard setting WS: O (normally closed contact)
Installation, First Operation

Install the device in the control cabinet of a VOGEL central lubrication system as described in chapter operation (general part of this manual). Observe the connection diagram (figure 2 - 17).

After installation, input of parameters and applying the operating voltage, the device begins its function sequence with prelubrication.
Figure 2 - 17. Connection Diagram for IG54-20-S4

- **L1/N**: operating voltage
- **B1/B2**: jumper terminals for operating voltage (here shown: 200..240 V)
- **WS**: level monitoring switch (here shown: reservoir filled)
- **DS**: pressure switch (pressure build-up monitoring)
- **DS_L**: pressure switch (air pressure monitoring)
- **DK**: push-button
  - 1. intermediate lubrication
  - 2. delete failure
- **+**: +24 V DC output
- **-**: 0 V DC output
- **d1**: operating contact for lubricant supply pump (SMFP)
- **d2**: change-over contact, command line
  - resting contact: failure message (StA) or prelubrication cycle
  - operating contact: operation OK
- **d3**: release contact for compressed air valve (FGK)
- **SL1**: signal lamp for „PUMP ON“
- **SL2**: signal lamp for „FAILURE“
- **K**: pump motor contactor
- **Y1**: compressed air valve

*For connection to a 20..24 V AC supply please note fig. 1 - 3 on page 1 - 6.*
IG54-20-S4 Pulse Diagrams
(Time axis not true to dimensions, Darstellung nach Ablauf der Vorschmierzyklen)

Normal process

- Pump motor, relay (d1)
- Command track, relay (d2)
- Release relay (d3)
- Pressure switch Öl (noc) (DS)
- Pressure switch Luft (noc) (DS_L)
- Filling level switch (ncc) (WS)
- Push button (DK)

Pressure build-up failure (DS or DS_L)

- Pump motor, relay (d1)
- Command track, relay (d2)
- Release relay (d3)
- Pressure switch Öl (noc) (DS)
- Pressure switch Luft (noc) (DS_L)
- Filling level switch (ncc) (WS)
- Push button (DK)

Legend:
- TPV = last pause in prelubrication cycle
- TU = monitoring time
- TN = pump dwell time
- TP = pause time
- TF = function sequence stopped
- TLS = compressed air failure
- TLA = compressed air build-down time

Figure 2 - 18. Pulse Diagram for IG54-20-S4