Control and Monitoring Units

for Centralized Lubrication Systems

Functions and Operation of the Universal Control Unit

Versions of the SKF Universal Control Unit for industrial installations

Designation	Brief description
Model E+471	Housing for installation in switchgear cubicle, selectable operating voltage 100...120 V AC or 200...240 V AC
Model I+471	Housing installed in compact unit, selectable operating voltage 100...120 V AC or 200...240 V AC
Model E+472	Housing for installation in switchgear cubicle, selectable operating voltage 20...24 V AC or DC
Model I+472	Housing installed in compact unit, selectable operating voltage 20...24 V AC or DC

Our control units conform to generally applicable standards.

The product described in these instructions is a control and monitoring unit for centralized lubrication systems on stationary industrial installations. It is supplied either as a constituent part of SKF's compact lubrication units or individually for installation in a switchgear cubicle.

The Universal Control Unit is the foundation of all our new control and monitoring units, and it can also replace all the switchgear cubicle units currently in use.

Since the control functions can differ considerably depending on the installation and application, various models based on the Universal Control Unit are available with functions corresponding to those of currently used control units. The designations for the current individual models have, for the most part, been retained.

The Universal Control Unit for industrial lubrication systems is built to conform to the generally recognized standards. It also complies with applicable industrial-safety and accident-prevention, laws and regulations.

Application

The Universal Control Unit was designed to control and monitor centralized lubrication systems used only on stationary industrial installations. It may not be used on other types of installations.

We do not assume any liability for damages resulting from improper use of the unit. The same applies if modifications are made to the unit that have not been approved by SKF.

Versions, designation

The Universal Control Unit for industrial lubrication systems is available in four versions (see page 1). The designations **E** and **I** refer to the place the unit is used, i.e. **I for** internal installation in a compact lubrication unit or **E** for external installation in a switchgear cubicle.

The designations 471 and 472 reflect the operating voltage range (voltage key).

Scope of delivery

The Universal Control Unit is supplied either installed as part of a compact lubrication unit (version **I**) or individually for installation in a switchgear cubicle (version **E**).

The scope of delivery for version **E** includes:

- one Universal Control Unit with the configuration ordered,
- two cable jumpers for selection of the operating voltage range (version E+471 only),
- one set of operating instructions.

Overview of available control units

Designation	Application
EWT2A01-E EWT2A01-S1-E	Pulse monitoring unit
EWT2A04-E EWT2A04-S1-E	Pulse monitoring unit
EXZT2A02-E EXZT2A02-I	Single-line systems Piston distributors
EXZT2A03-E EXZT2A03-I	Single-line systems Piston distributors
EXZT2A05-E EXZT2A05-I	Progressive systems
EXZT2A06-E EXZT2A06-I	Progressive systems
EXZT2A07-E EXZT2A07-I	Single-line systems Piston distributors
IG351-10-E IG351-10-I	Electronic timer for centralized lubrication systems
IG38-30-I IGZ38-30-E IGZ38-30-I	Single-line systems Piston distributors
IGZ38-30-E IGZ38-30-I	Single-line systems Piston distributors
IG54-20-E IG54-20-I	Oil+air lubrication
IG54-20-S1-E IG54-20-S1-I	Oil+air lubrication
IG54-20-S3-E IG54-20-S3-I	Oil+air lubrication
IG54-20-S4-E IG54-20-S4-I	Oil+air lubrication

Designation	Application
IGZ36-20-E IGZ36-20-I	Single-line systems Piston distributors
IGZ36-20-S6-E IGZ36-20-S6-I	Single-line systems Piston distributors
IGZ38-M-10-E	Oil+air lubrication Single-line systems Piston distributors
IGZ51-20-E IGZ51-20-I	Progressive systems
IGZ51-20-S2-E IGZ51-20-S2-I	Progressive systems
IGZ51-20-S3-E IGZ51-20-S3-I	Single-line systems Piston distributors
IGZ51-20-S7-E IGZ51-20-S7-I	Progressive systems
IGZ51-20-S8-E IGZ51-20-S8-I	Progressive systems
IZ361-30-E IZ361-30-I	Circulating and distributor lubrication
IZ38-30-I IGZ38-30-E IGZ38-30-I	Single-line systems Piston distributors
IZ52-20-E IZ52-20-I	Chain lubrication

See important product usage information on the back cover.

Safety pointers

The Universal Control Unit for industrial lubrication systems is designed for operation on industrial DC or AC power mains (see Technical Data).
Any other use is not permitted.

The electrical connections for the unit may only be made by trained and qualified staff who are able to recognize and minimize the risk of shock hazards. Attention must be paid to local operating conditions and applicable regulations (e.g. DIN, VDE).

Improperly connected equipment can cause extensive property damage and serious personal injury.

Any adjustments to the unit may only be made by qualified personnel. Qualified personnel are persons who have been selected and adequately trained the owner of the systems.

Unauthorized modification of the unit and non-genuine SKF spare parts and aids are not permitted.

The unit's housing must not be opened.

If the unit malfunctions, please contact an authorized SKF Lubrication Systems distributor.

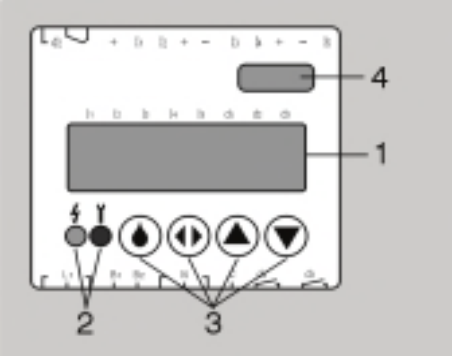
Operation

The Universal Control Unit installed in an internal compact unit, version I, may only be operated by qualified staff who are able to recognize and minimize the risk of shock hazards.

Note:
There are no shock hazards if the control unit has a separate power supply that has been installed by trained staff for parameterization purposes and all the other exposed parts are dead.

Structure of the operator displays

The illustration shows the operator interface with its display and control elements. The display elements are the 8-place LC display (1) and the LED displays (2). The pushbuttons (3) are the control elements. The table provides an overview of the display and control elements.



1 LC display
2 Light-emitting diodes (LED)
3 Pushbuttons
4 Service interface

LED display

A burning green LED shows that the power for the unit is on.

If the red LED lights up, that usually indicates a fault state.

Overview of display and control elements

Element	Designation	Function
	LC display	Displays function Status display: shows the states of the inputs and outputs Parameter display: shows the set and adjustable parameters Info display: shows the type of unit and loaded software version
	Power LED	Lights when power to the unit is on
	Fault LED	Lights in the event of a fault
	DK button	Trips intermediate lubrication Clears an error message
	Select button	Change to parameter display, allowing for selection of parameter values to be displayed or changed
	UP button	Change to info display, allowing for changes to parameter values
	Down button	Changes to parameter values

LC display

The 8-place LC display has various display functions:

Status display:
Shows states of the inputs and outputs.

Info display:
Shows the type of unit and software version.

Parameter display:
Shows the set and adjustable parameters.

The status display is the basic display mode. From there it is possible to change to the parameter display or info display mode.

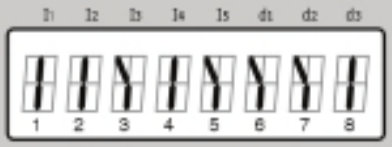
The status display

The status display shows the status of the control unit's inputs and outputs. The standard display is always active when power is applied to the unit.

Only configured outputs or inputs are displayed. The configuration of the inputs and outputs depends on your type of unit.

Example:
Breakdown of the LC status displays

Status display



Pos. 1–5 Inputs I1 to I5
Pos. 6–8 Outputs d1 to d3

Symbols of the status display

NO contact displays:


NO/NC contact open


NO/NC contact closed

Changeover contact displays:


Changeover contact in energized position


Changeover contact in de-energized position

The info display

The type of unit and firmware version of the controller can likewise be shown via the LC display.

The info display changes to from the status display by pressing the ▲ button.

If the designation is more than eight places long, the rest is shown by pressing the ▲ button in the display once again.

The info display mode can be quitted by pressing ▲ three times.

The parameter display

By pressing the ◆ button, it is possible to move from the status display to the parameter display.
For reasons of space, the parameter values are displayed in exponential notation.

$100 = 1*10^2 = 1\ E\ 02$

The following examples show how to read the displays.

Dispaly value	Meaning
TP10E00I	interval time 10 ($10*10^0$) pulses
TP01E02M	interval time 100 ($1*10^2$) minutes
TP15E01S	monitoring time 150 ($15*10^1$) seconds or 2.5 minutes

Breakdown of the LC parameter display

Parameter display

Pos. 1–2 Parameter designation
Pos. 3–4 Base value
Pos. 5 Symbol E(xponent)
Pos. 6–7 Exponent value
Pos. 8 Unit

Parameter display possibilities *)

LC display	Parameter designation	Value range	Unit
BA	Mode of operation	A, B, C, D, E	
TP	Interval time	01 E 00 - 99 E 04	M(inutes) / S(econds) / I(pulses)
TU	Monitoring time	01 E 00 - 99 E 03	S(econds)
TN	Delay time	00 E 00 - 99 E 03	S(econds)
TV	Lead time	01 E 00 - 99 E 04	S(econds)
I1	Limit value 1	01 E 00 - 25 E 04	*0.01 I(pulses/minutes)
I2	Limit value 2	01 E 00 - 25 E 04	*0.01 I(pulses/minutes)
I3	Limit value 3	01 E 00 - 25 E 04	*0.01 I(pulses/minutes)
TL	Pump running time	01 E 00 - 15 E 00	S(econds)
TK	MK pulse monitoring timet	01 E 00 - 12 E 01	S(econds)
MI	MK pulse scaling	01 E 00 - 10 E 00	
NH	Signal edges (number of strokes)	1 - 30	
NI	Number of lube pulses	01 E 00 - 99 E 03	I(pulses)
VZ	Prelubrication cycles	00 E 00 - 99 E 00	

**) Take the type and size of lubrication system into account when setting the parameters.*

Adjustment of parameters

Take the type and size of lubrication system into account when setting the parameters.

Pay attention to the maximum ON times of the motors and valves in the case of all settings that have an impact on the pump running time.

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

If the displayed parameter cannot be changed, only a static display of the value will be shown. Which parameters can be changed will depend on your type of unit.

Select the desired value by pressing ▲ or ▼. It is not possible to enter parameter that exceed the range of values shown in the overview above. Instead, the display will be reset to the preset value.

Press the ⏀ button after entering the parameter value. The entire display flashes, confirming that the entered value has been accepted.

To leave the parameter display, press the ⏀ button until the status display is displayed. The new parameters usually take effect when the next interval begins.

One exception is when the mode of operation (BA) is changed. It only takes effect after the unit has been switched off and restarted. Before the unit is switched off, the entire display flashes after the mode is changed. But the normal sequence of functions is still assured.

Changing parameters

Step	Button	Display	
1	Press ⏀		The parameter value to be changed flashes
2	Press ▲ or ▼ until		the desired parameter value is reached
3	Repeat steps 1 – 2 until all the parameter values have been set.		
4	Press ⏀		the entire display flashes
5	Repeat steps 1 – 4 until all the parameters have been set.		
6	Press ⏀		Change to status line

Replacing an Existing Control Unit

The control unit may only be replaced by qualified staff who are able to recognize and minimize the risk of shock hazards.

The unit may only be replaced or adjusted by trained and qualified staff.

If you want to replace an existing control unit with the Universal Control Unit, please observe the following pointers.

Before you exchange the units, check whether the mains voltage is the same as that indicated on the new control unit.

Make a note of the parameter values on the unit to be replaced. Which values are involved will depend on your type of unit. Please consult the respective description shipped with the unit for this information.
If necessary, label all the cable conductors to be reconnected with the previous terminal designations like, for instance, WS, DS, DS2, MK, DK, +, –, etc.
The conductors to be reconnected to relays d1, d2 and d3 must be additionally labeled with the corresponding terminal numbers.

Now remove the control unit and replace it with the Universal Control Unit. Connect the inputs and outputs to match their previous functions. The configuration of the inputs and outputs can be seen from the sticker attached to the top of the unit or from the chapter applying to your type of unit in the shipped manuel.

Make sure the voltage selection described in the assembly chapter in the shipped manuel has been done correctly and only then connect the unit to the power supply.

The power must switched on and off quickly.

Then use the keyboard on the Universal Control Unit to transfer the parameter values from the old control unit.

Please remember that the Universal Control Unit has to be connected to the power supply before you can change the parameters.

Check the status display to find out whether the unit is functioning.

Faults

Fault displays
If a fault detected by one of the monitoring sensors should occur while the centralized lubrication system is in operation, the control unit will display the fault. The red fault LED will light up and the symbol for the respective input will flash on the display.

Which fault is involved will depend on your type of unit. You will find further information on this point in the corresponding chapter for your type of unit.

After the fault has been remedied, clear the fault display by pressing the ⓘ button.

Clear an error message only after its cause has been remedied.

Equipment faults
Equipment faults are malfunctions that affect the control unit itself.

Start faults
A start fault is involved when the control unit displays one of the listed error messages after the power is turned on. In such a case, please contact an authorized SKF Lubrication Systems distributor.

Error message on LC display	Meaning
ERR1	No configuration loaded
ERR2	Checksum wrong
ERR3	Wrong firmware

Other faults or damages
If your control unit does not function as described in the respective chapter covering your type of unit, please check first whether the unit and all the leads have been correctly installed and whether all the lubricant lines are tight.

Also check whether the unit you are using is designed for the mains voltage available and whether you have correctly selected the voltage.

If you are unable to remedy the fault in this way, please contact an authorized SKF Lubrication Systems distributor.

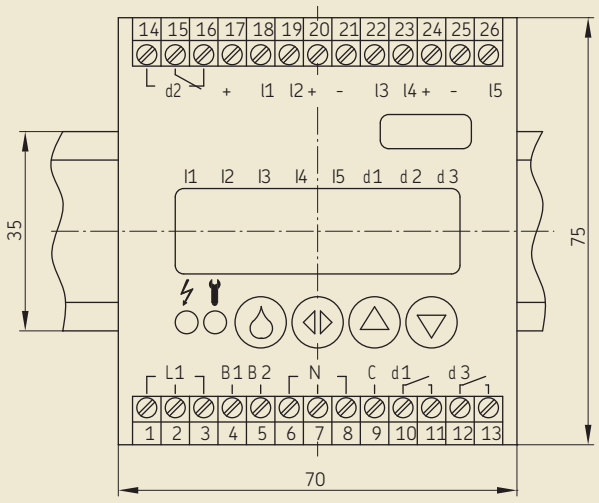
In no case, should the housing of the unit be opened.

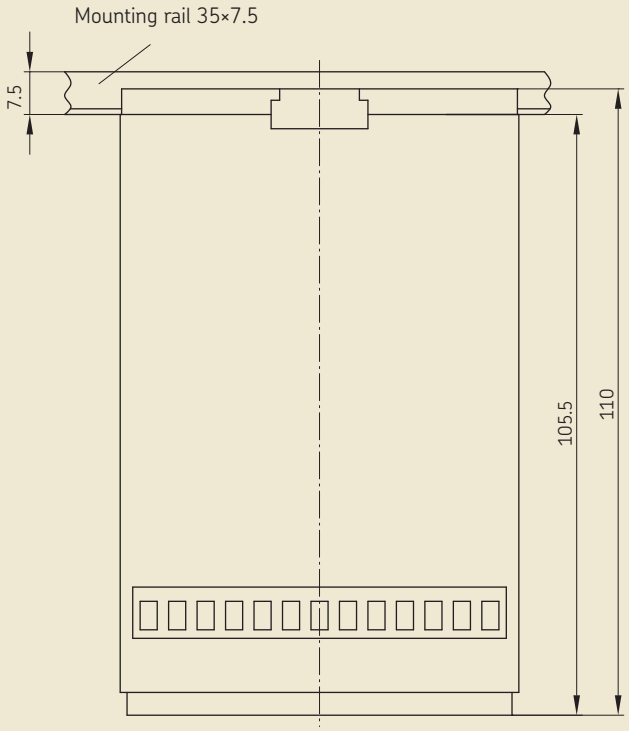
Maintenance and repairs

The Universal Control Unit requires virtually no maintenance. The only thing required for you to perform the following checks at regular intervals to ensure proper functioning of the control unit:

- Check the control unit's basic functions by pressing the ⓘ button.
- Check the electrical connections.

Any additional work may only be done by a SKF Lubrication Systems employee.





Technical Data Version +471 / +472

Rated input voltage Un
Version +471 . . . . . 100...120 V AC or 200...240 V AC
Version +472 . . . . . 20...24 V DC or AC

Rated value of input voltage
Version +471 . . . . . 0.85 Un to 1.1 Un (85...132 V / 170...264 V)
Version +472 . . . . . 0.85 Un to 1.1 Un (17...26.4)

Rated frequency
Version +471 . . . . . 50...60 Hz
Version +472 . . . . . DC or 50...60 Hz

Rated value of frequency
Version +471 . . . . . 49...61 Hz
Version +472 . . . . . DC or 49...61 Hz

Release value of Un. . . . . max. 10%
Recovery time . . . . . 1 s

Residual ripple of input voltage
Version +471 . . . . . not applicable
Version +472 . . . . . DC: max. 5%

Max. fusing . . . . . 6.3 A
Max. switching current . . . . . 5 A AC
Max. relay switching voltage . . . . 250 V AC
Overvoltage category to DIN VDE 0110 III
Rated voltage of inputs . . . . . 24 V DC
Input impedance . . . . . 2.4 KΩ ±10%
Input level low . . . . . 0 V...+4 V
Input level high . . . . . +10 V...+26.4 V

Coincidence factor for the inputs . . . . . max. 0.8

Output voltage for inputs and external loads . . . . . 24 V DC +10% / –15%

Rated output current ("+" outputs) . . . . 110 mA
of that figure for external loads . . . . . max. 60 mA

MK input, max. input frequency. . . . . 30 Hz
Pulse duty factor 1:1

Conductor connection (flexible)
with tubular end sleeves . . . . . max. 2.5 mm^2 or 2× 0.75 mm^2
with twin tubular end sleeves . . . . . max. 2× 1.5 mm^2
stripped length . . . . . 8 mm

Type of enclosure (version E) . . . . . IP 30, IP 20 terminals
Safety class (version E) II
Rated insulation voltage . . . . . 250 V AC
Pollution degree 2
Operating temperature . . . . . 0 to +60 °C
Storage temperature . . . . . –25 to +70 °C
Dimensions BxHxT (version E) . . . . . approx. 70 mm × 75 mm × 110 mm

Voltage endurance to EN 61131-2 and EN 50178
Power supply / relay contacts . . . . . 1780 V
Power supply / electronics. . . . . 2830 V
Relay contacts / electronics . . . . . 2830 V

EMV
Immunity . . . . . EN 61000-6-2
Emitted interference. . . . . EN 500081-1

Dynamic strength to EN 60068-2-6 . . . 10–57 Hz; 0.075 mm (amplitude)
Impact resistance to EN 600068-2-27 . . 15 g; 11 ms (half-sine)

Order No. 1-1700-1-EN
Subject to change without notice! (07/2014)

Important product usage information
All products from SKF may be used only for their intended purpose as described in this brochure and in any instructions. If operating instructions are supplied with the products, they must be read and followed.
Not all lubricants are suitable for use in centralized lubrication systems. SKF does offer an inspection service to test customer supplied lubricant to determine if it can be used in a centralized system. SKF lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbars) by more than 0.5 bar at their maximum permissible temperature.
Hazardous materials of any kind, especially the materials classified as hazardous by European Community Directive EC 67/548/EEC, Article 2, Par. 2, may only be used to fill SKF centralized lubrication systems and components and delivered and/or distributed with the same after consulting with and receiving written approval from SKF.

Further brochures
Control units

for progressive systems	1-1700-2-EN
for oil+air lubrication	1-1700-3-EN
for single-line systems	1-1700-4-EN

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