

PRODUCT MANUAL



ABUS Load indicator system

LIS-SV



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Original Operating Instructions

ABUS

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GENERAL INFORMATION

THIS SECTION APPLIES TO ANYONE WHO LIFTS LOADS USING THE CRANE, PERFORMS WORK ON THE CRANE, OR WORKS NEARBY.

AT THE START

USING THIS PRODUCT MANUAL

The following symbols are used in this product manual:



DANGER TO PERSONS!

This warning notice indicates hazards for persons.



DANGER FROM ELECTRIC SHOCK!

This warning notice indicates hazards for persons due to incorrect handling of the electrical system and electricity.



DANGER FROM LOAD DROP!

This warning notice describes hazardous situations that can lead to the suspended load falling.



NOTICE OF POSSIBLE DAMAGE!

This notice describes situations in which a component could be damaged.



This is an instruction regarding an action and prompts you to perform a work step.

- This is the result of an action and describes what happens on the device.
- This is a list.

ONLY WITH...

A section that appears in a box framed by a dashed line is only applicable for certain types, versions or options. The condition to which the section applies is specified at the beginning in the heading "Only with..."

INSTRUCTIONS FOR THE PRODUCT MANUAL

Read the product manual through carefully before beginning work. Also be sure to observe additional product manuals for accessories and components.

Afterwards, keep the product manual available in the vicinity of the crane. It must be accessible to all who work with or on the crane.

In the case of reselling or hiring out, always provide the product manual together with the crane.

PROPER USE

The ABUS load indicator system LIS-SV is a load measurement and evaluation system designed for hoists and crane installations. The LIS-SV is intended especially for use in hoist control systems. Its main function is overload protection by means of direct measurement of the weight of the load being raised. An optional load population recorder can be used to log the actual operating mode of the hoist. The LIS-SV is designed especially for use in establishing the total load and monitoring up to three hoists per crane. The typical use of the LIS-SV is overload protection on cranes with a total load that is less than the sum of the individual load capacities of the hoists, or when using a load indicator on the crane and/or in the control system.

REGULATIONS

The installation has been built and tested according to European standards, rules and regulations applicable at the time of its manufacture. The conventions applied during design and construction are specified in the Declaration of Conformity or the Declaration of Incorporation. The conventions must also be observed for installation, operation, inspection and maintenance, as must the applicable occupational health and safety regulations.



DANGER TO PERSONS!

Non-observance of the regulations can result in the death of persons or serious accidents.

To ensure that the work can be performed safely, thorough instruction in regard to this product manual and the regulations is necessary.

Which provision applies in individual cases will greatly depend on the crane's use and the national regulations. Review and observe all applicable and current regulations, including the occupational health and safety regulations. Refer also to the Declaration of Conformity or Declaration of Incorporation.

WARRANTY

- ABUS assumes no liability for damages that were caused by improper use, inadequately trained personnel, incorrect performance of work, nor for any changes, reconstruction or other modification of the crane or crane components which were not approved by ABUS.
- Safe operation of the crane or crane components is only guaranteed if original ABUS replacement parts are used.

INSTRUCTIONS REGARDING SAFETY

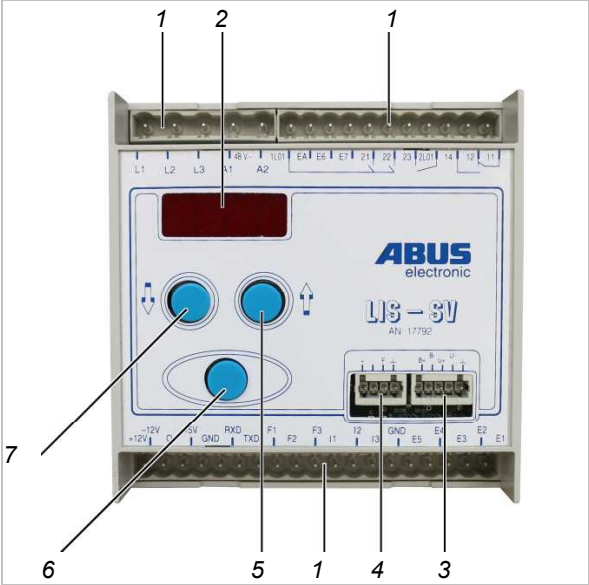
Observe these instructions for safe handling of the crane. Special hazard notices are located in the corresponding sections in which the danger arises.

- Before commissioning, it must be checked that the wiring of the installation conforms to the wiring diagram.
- Before working on the crane, disconnect the power line and wait at least four minutes until the voltage has dissipated.
- Only have trained electricians perform the work on the crane electrical system!
- Changes that impair safety, as well as extensions and modifications, are prohibited and may only be carried out by ABUS. Opening the LIS-SV is prohibited!
- Wrong parameterisation and settings could lead to a possible overload of the crane, causing a load drop.
- If the LIS-SV is incorrectly connected, the LIS-SV itself or other components could be damaged.

THE LIS-SV

DESCRIPTION OF THE DEVICE

LIS-SV:



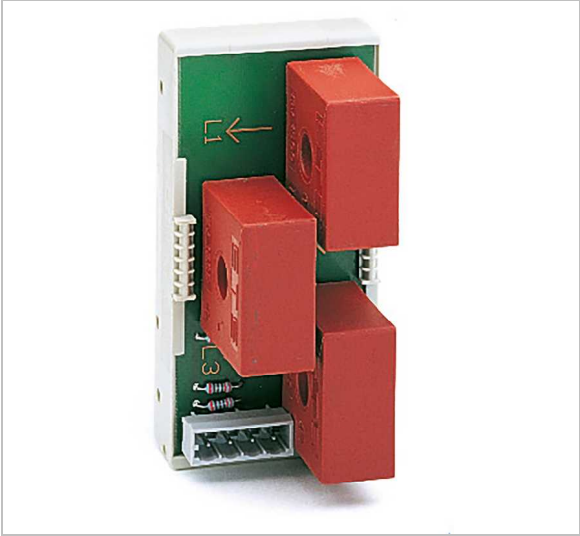
- 1: Pin multipoint connector
- 2: Display
- 3: Measurement bolt connection
- 4: Device interface connection (frequency signal and operating voltage of the measurement bolt)
- 5: Arrow button “up”
- 6: Enter
- 7: Arrow button “down”

LIS-FC:



- 8: LIS-FC (option)

Current transformer module:



PERFORMANCE FEATURES

Load indicator system LIS-SV:

- The LIS-SV is a microcontroller-controlled system for load measurement and evaluation on hoists.
- The evaluation is made by means of strain gauges in a measurement bolt, which are attached on the respective hoist. The measurement bolt serves as a transducer which emits a signal converted into a load-proportional frequency.
- The main function of the LIS-SV is overload protection of the hoist. The message of an overload can be sent visually as well as acoustically. The switching points of the overload protection can be set to maximally 110% of the maximum load capacity. The switching points can be set variably in 2% steps.
- Lifting the load with a sudden jolt is prevented by the switch-off of the fast lifting speed in the event of a rapid load increase.
- The LIS-SV can additionally output status or error messages.
- The load population recorder (option) shows the theoretical service life of the crane, its actual hours of use, the number of operating hours and the crane's remaining service life.
- The LIS-SV galvanically isolates the signals at the inputs from those at the outputs.
- The automatically controlled regenerative braking during lowering increases the service life of the brakes.
- The permanent monitoring of the motor current with commensurate switching of the contactors extends the service life of the contactors.
- The hoist motor always starts at slow lifting speed and switches to fast lifting speed only after a set time has elapsed, thus preventing a rapid load increase and reducing the start-up current.
- Two or more hoists can be monitored in parallel operation.
- For operation with frequency converter, see product manual "ABULiner Lifting/Lowering".

Current transformer module:

- An external current transformer module performs the current detection to ensure the functioning of the control, for example, if the contactors stick.
- The type of current transformer module depends on the rated current of the hoist motor at fast lifting speed.
- There is a current transformer module for each cable drum.

Load display (optional):

- The suspended load can be shown through an integrated display in the pendant control or through a load display on the crane.
- The load is displayed to four digits.
- The accuracy is between -5% to +5% of the load capacity.
- The load display also shows error messages.
- For further details on the load display, see product manual "Load and status display for crane and trolley".

Tare (option):

- The load display of the crane can be reset to zero using "Tare". This allows a differential measurement to be made, e.g. in order not to include the weight of a crosshead.
- Tare is only available in connection with a load display.
- Tare can be used for each hoist individually, as well as for the total load. The tare function is always applied to the value of the selected hoist.
- In the case of an overload, the tare value is deleted and the load is displayed!

The signal converter LIS-FC (option):

- The signal converter LIS-FC is usually used in an expansion of the system for two or three hoists, or for the use of a control with central contactor box.
- The signal converter LIS-FC converts the measured voltage of the measurement bolt (in mV) to a load-proportional frequency signal (in Hz). This signal is free of interference and thus ensures reliable signal transmission.
- The signal converter LIS-FC is used if the line length is greater than 4.5 m, since otherwise the signal can no longer be transmitted.

TECHNICAL DATA

LIS-SV

LIS-SV			
Operating voltage A1, A2	230 V ±10%	110 V ±10%	48 V ±10%
Input voltage E1 – E7, EA	230 V ±10%	110 V ±10%	48 V ±10%
Measurement range L1, L2, L3	0 V – 627 V		
Current transformer module, input	0 V – 7.24 V		
Mains frequency	50 Hz – 60 Hz		
Switching contacts	250 V, 8 A		
Power consumption	Max. 15 VA		
Ambient temperature	-20 °C to +55 °C		
Output voltage load display	5 V, max. 250 mA		
Display signal Q	Serial data log ±12 V		
Feed voltage for encoder B+, B-	10 V, at max. 10 mA		
Input voltage U+, U-	0 mV – 20 mV		
Relative humidity	5% – 85%, non-condensing		

Signal converter LIS-FC

LIS-FC			
Operating voltage A1, A2	230 V ±10%	110 V ±10%	48 V ±10%
Mains frequency	50 Hz – 60 Hz		
Power consumption	approx. 4 VA		
Ambient temperature	-20 °C to +55 °C		
Feed voltage for encoder B+, B-	10 V, at max. 10 mA		
Input voltage U+, U-	0 mV – 12 mV		
Output voltage F	±12 V		
Output frequency F	500 Hz – 30 kHz		

DISPOSING OF THE LIS-SV

If the LIS must be disposed of:

- ➔ Dismantle the LIS components as far as possible.
- ➔ Observe local regulations concerning disposal and recycling.
- ➔ Dispose of the individual parts sorted by material in an environmentally sound manner.
 - Remove electronic assemblies and dispose of in accordance with local regulations for scrap electronic parts.
 - The plastic housing should be recycled with plastic waste.

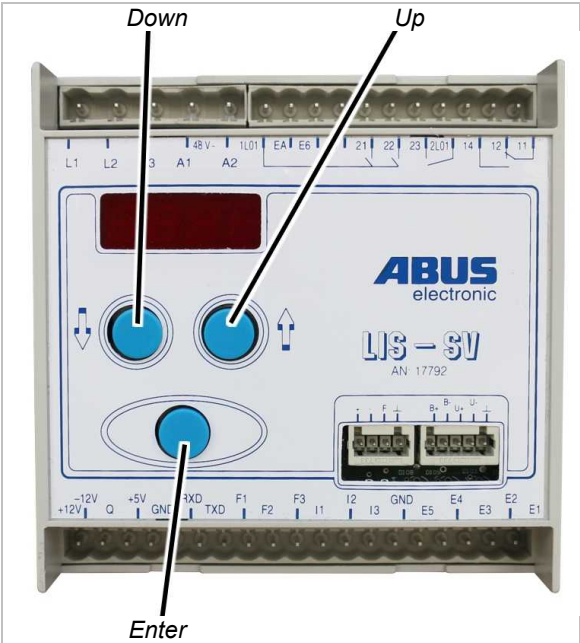


This product or electrical device may not be disposed of at the end of its service life with regular domestic waste.

OPERATING THE LIS-SV

All settings and displays in the main menu (parameter level) of the LIS are shown through parameters. Each parameter is shown on the display as a two-digit or three-digit number. Most parameters have a value that can be displayed or adjusted.

BUTTON FUNCTIONS



- Enter:
Brief pressing during input of a value or a number: jumps to the next digit.
Brief pressing within a parameter: saves the changed value.
Brief pressing during input of the code: confirms the code.
Holding pressed within a parameter: opens the display for entering the code to change the value.
Holding pressed after entering the PIN: opens the parameter level.
- Up and down arrow buttons:
In the parameter level: selects a parameter.
When entering a value: input of numbers.

ENTERING NUMBERS

Note
The input of numbers always follows the same principle, regardless of whether the input concerns parameter values, the code or the PIN number. There are always only 4 digits displayed, since the display can only show 4 digits. However, larger numbers can also be entered. In this case, the digits after the decimal are pushed out of the display and are thus no longer visible.

- ➔ Input the first digit with the arrow buttons.
- ➔ Briefly press Enter to jump to the next digit.
- ➔ Repeat the procedure for the input of the next digits.

Setting option:

The table shows an example of the setting options for the parameter P 6.1. For some parameters however, the setting options are also prescribed. With regard to the load capacity, 100 t can also be entered, for example.

Example P 6.1:

Display	Position	Setting option
0.000	1st digit	0 – 97
0.000	2nd digit	0 – 9
0.000	3rd digit	0 – 9
0.000	4th digit	0 – 9

Setting a two- or three-digit number at the first position:

If the number changes from single-digit to two-digit or three-digit, the decimal in the display is moved by one or two places. The decimal places are then pushed out of the display, since only 4 digits can be displayed.

The input of the numbers always begins on the right with the third decimal place.

Value to be entered	Input in the LIS	Display in the LIS
1250 kg	1.250	1.250
10,250 kg	10,250	10.25
100,000 kg	100,000	100.0

Example, single digit:



➡ Input the value 1250 kg with the arrow buttons and press Enter.

Example, two digits:



➡ Input the value 10,250 kg with the arrow buttons and press Enter.

OPENING THE PARAMETER LEVEL

ONLY WITH LOAD POPULATION RECORDER

With an LIS with load population recorder, the load population recorder can be read before calling up the parameter level. The reading of the load population recorder can be skipped by briefly pressing Enter.



- ➡ Hold Enter pressed until “Code” appears in the display.
- While Enter is held pressed, the current operating hours are briefly displayed.

Reading the load population recorder:

- ➡ Hold Enter pressed.
- ➡ Enter code **2223**.
- ➡ Press Enter briefly.
- The current values of the load population recorder are displayed. See “P 5.2 Reading the load population recorder”, page 20.

Skipping the load population recorder:

- ➡ If the load population recorder is not to be read out, this section may be skipped.



- ➡ Press Enter briefly.
- “P - nr.” is shown in the display.



➡ Hold Enter pressed.

➡ Enter PIN **0055**.



➡ Hold Enter pressed until P 0.0 appears in the display.

- The parameter level is opened.

In the parameter level, the control signals "Lift" and "Lower" are generally disabled, unless it is specifically noted in the corresponding parameter that Lift/Lower is enabled.

➡ Select the desired parameters with the arrow buttons and carry out the settings.

If an incorrect code was entered:

The code or the PIN number may be entered incorrectly a maximum of three times in succession. At the fourth incorrect entry, the LIS is locked and [no] appears in the display.

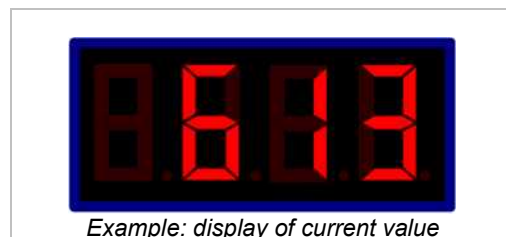


Note

The LIS continues working with the last entered values. To be unlocked, the LIS must be sent in. In this case, contact your ABUS Service representative. See page 48.

CHANGING VALUES

For some parameters, the values can be changed in the parameter level. In this case, the current value is always initially shown, which can then be changed. To prevent unintended changes, the code **1443** must be entered prior to changing the value.



- A parameter is opened.
- The current value is displayed.

➡ Hold Enter pressed until "Code" appears in the display.

➡ Enter code **1443**.

➡ Press Enter briefly.

➡ Enter the value.

➡ Press Enter briefly.

- "SP" is briefly shown on the display.
- The value is saved.

CLOSING THE PARAMETER LEVEL

The parameter level must always be exited with the parameter P 9.9 so that the values are saved and the overload protection is activated again!



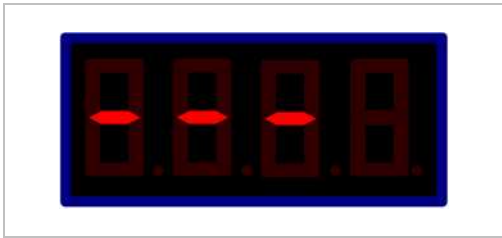
➡ Select parameter P 9.9 with the arrow buttons.

➡ Press Enter briefly.

- The parameter level is closed.

DISPLAY IN OPERATING MODE

Standby mode:



- Continuous bar from left to right through the display.

“Lift” control signal:



- Bars run from bottom left toward top right through the display (rising staircase curve).

“Lower” control signal:



- Bars run from top left toward bottom right through the display (descending staircase curve).

OVERVIEW OF PARAMETERS

Note

In the first operating level, the load population recorder is read. The specified parameters are located on the second parameter level. Access to the third parameter level is reserved for ABUS!

Parameter	Setting range	Name	See
P 0.0	0 t – 320 t	Setting maximum load capacity	Page 16
P 1.0	0 t – 180 t	Setting maximum load capacity of device's own hoist	Page 16
P 2.0	0 t – 180 t	Setting maximum load capacity of hoist at input F2	Page 16
P 3.0	0 t – 180 t	Setting maximum load capacity of hoist at input F3	Page 16
P 4.0	0% – 110%	Setting the switching point of the overload protection for the total load of the crane	Page 17
P 4.1	0% – 110%	Setting the switching point of the overload protection for device's own hoist	Page 17
P 4.2	0% – 110%	Setting the switching point of the overload protection for hoist at input F2	Page 17
P 4.3	0% – 110%	Setting the switching point of the overload protection for hoist at input F3	Page 17
P 4.40	0% – 110%	Setting the second load-controlled switching point for the total load of the crane	Page 18
P 4.41	0% – 110%	Setting the second load-controlled switching point for device's own hoist	Page 18
P 4.42	0% – 110%	Setting the second load-controlled switching point for the hoist at input F2	Page 18
P 4.43	0% – 110%	Setting the second load-controlled switching point for the hoist at input F3	Page 18
P 4.5	0% – 110%	Setting the load-controlled switching point on the current transformer module	Page 19
P 5.0		Without function	
P 5.01		Setting the "rapid load increase" sensitivity	Page 19
P 5.1	In h	Showing the theoretical service life	Page 20
P 5.2	In h	Reading the load population recorder	Page 20
P 5.3		Test at the inspection before initial commissioning	Page 21
P 5.4		Performing device diagnosis	Page 21
P 5.5		Deleting values	Page 23
P 5.6	1 – 9999	Setting the current correction factor	Page 23
P 5.7	0, 1, 2	Setting the operation on a twin hoist	Page 23
P 5.8	0, 1	Enabling operation with ABUS synchronization control system	Page 24
P 5.10	P 5.11 – P 5.99	Enabling operation with ABULiner frequency converter (see product manual "ABULiner Lifting/Lowering")	Page 24
P 9.9		Exiting the parameter level	Page 24

Parameter	Setting range	Name	See
P 1.1	In kHz	Performing a zero point adjustment for device's own hoist	Page 25
P 1.2		Setting with test load for device's own hoist	Page 25
P 1.3	0 Hz – 64,999 kHz	Reading or entering the zero point frequency for device's own hoist	Page 26
P 1.4	0 Hz – 64,999	Reading or entering the gain factor for device's own hoist	Page 27
P 2.1	In kHz	Performing a zero point adjustment for hoist at input F2	Page 25
P 2.2		Setting with test load for hoist at input F2	Page 25
P 2.3	0 Hz – 64,999 kHz	Reading or entering the zero point frequency for hoist at input F2	Page 26
P 2.4	0 Hz – 64,999	Reading or entering the gain factor for hoist at input F2	Page 27
P 3.1	In kHz	Performing a zero point adjustment for hoist at input F3	Page 25
P 3.2		Setting with test load for hoist at input F3	Page 25
P 3.3	0 Hz – 64,999 kHz	Reading or entering the zero point frequency for hoist at input F3	Page 26
P 3.4	0 Hz – 64,999	Reading or entering the gain factor for hoist at input F3	Page 27
P 6.1	10 h – 124,000 h	Entering the theoretical service life	Page 27
P 6.2	0 h – 124,000 h	Entering starting value	Page 28
P 6.3		Deleting values (including load population recorder)	Page 28
P 6.4	0 h – 21,845 h	Showing actual hours of use S	Page 28
P 6.5	0 h – 65,535 h	Showing operating hours Ti	Page 28
P 7.00	0 t – 408 t	Showing load display of total load	Page 29
P 7.01	0 t – 127 t	Showing load display of device's own hoist	Page 29
P 7.02	0 t – 127 t	Showing load display of hoist at input F2	Page 29
P 7.03	0 t – 127 t	Showing load display of hoist at input F3	Page 29
P 7.1	0 Hz – 65,535 kHz	Showing measurement frequency of device's own hoist	Page 29
P 7.2	0 Hz – 65,535 kHz	Showing measurement frequency at input F2	Page 29
P 7.3	0 Hz – 65,535 kHz	Showing measurement frequency at input F3	Page 29
P 7.4		Without function	
P 7.5	0 A – 185 A	Showing motor current	Page 29
P 7.6	0 V – 627 V	Showing mains voltage	Page 30
P 7.61	In V	Mains voltage analysis	Page 30
P 7.7	0 Hz – 120 Hz	Showing motor frequency	Page 31
P 8.0		Password for parameter level 3	Page 31
P 9.9		Exiting the parameter level	Page 31

INSTALLING AND CONNECTING

THIS SECTION APPLIES TO ANYONE WHO WORKS ON THE CRANE PRIOR TO ITS USE.

The end user of the crane is responsible for the proper qualifications of the commissioning personnel.



DANGER TO PERSONS!

Persons can be injured if the crane is incorrectly put into operation.

If personnel other than that of the ABUS company are employed to perform the crane commissioning, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed commissioning work done by unqualified personnel.

ABUS recommends having the commissioning work performed by the ABUS assembly team.

CONNECTING THE CRANE WITH LIS-SV



Connect according to the wiring diagram.

CHECKING THE FACTORY SETTING



Lift the test load.



Compare the value that the LIS-SV shows on the load display or in the corresponding parameters for the load display (P 7.00, P 7.01, P 7.02, P 7.03).

If the deviation is greater than -5% to +5%, the corresponding parameters must be adjusted!

In this case, it is necessary to adjust the respective parameters of the respective hoist, or new measurements must be made. See page 25.

READING AND SETTING THE LIS-SV

If the LIS-SV is not preset or the settings need to be adapted, the corresponding parameters must be adjusted.

P 0.0 SETTING THE MAXIMUM LOAD CAPACITY

In this parameter you enter the maximum load capacity of the crane. If only one hoist is evaluated, the maximum load capacity is always the same as the maximum capacity of the device's own hoist.

Note

For an evaluation of the total load, the maximum load capacity of the entire crane may be less than the sum of the individual load capacities of the hoists. This is the case, for example, if the LIS-SV monitors the total load and the individual load capacities are greater than the maximum load capacity of the crane (e.g. 5 t (5 t/3 t)).

- ➔ Select parameter P 0.0 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Enter the maximum load capacity of the crane with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

P 1.0/P 2.0/P 3.0 SETTING THE MAXIMUM LOAD CAPACITY OF THE HOIST

In these parameters you enter the maximum load capacity of the respective hoists.

If the hoist is not present, no maximum load capacity needs to be entered in the corresponding parameter. In this case, the corresponding parameter has the value 0.

Note

Parameter P 3.0 cannot be set if a value is saved under P 5.11. If a value is saved in P 5.11, the LIS-SV is activated for operation with the ABULiner frequency converter. In this case, P 5.11 must first be set to 0. See product manual "ABULiner Lifting/Lowering".

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 1.0 for device's own hoist
 - P 2.0 for the hoist at input F2
 - P 3.0 for the hoist at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Enter the maximum load capacity of the respective hoist with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

P 4.0 SETTING THE SWITCHING POINT OF THE OVERLOAD PROTECTION FOR THE TOTAL LOAD OF THE CRANE

In this parameter you set the switching point for the overload protection of the total load of the crane. The setting is entered as a percentage lying between 0% and 110% of the entered maximum load capacity of the crane. The value can be set in 2% steps.

With multiple hoists, the entered value must be identical for all hoists, since the overload protection is for the total load and thus the load of the crane. All hoists switch off accordingly at the point the entered value is exceeded and the overload protection goes into overload status. At the same time, the LIS-SV displays the currently measured load and flashes once per second.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.0 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the maximum load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

P 4.1/P 4.2/P 4.3 SETTING THE SWITCHING POINTS OF THE OVERLOAD PROTECTION OF THE INDIVIDUAL HOISTS

In these parameters you can set the switching points of the overload protection of the individual hoists. The parameters always refer to the device's own hoist, meaning the hoist on which the device just set is installed (connected at input F1) and up to two additional hoists at input F2 and F3. The value lies between 0% and 110% of the maximum load capacity and can be set in 2% steps.

The corresponding hoist at the respective input switches off after the saved value is exceeded, and the overload protection goes into overload status. At the same time, the LIS-SV displays the load and flashes once per second.

- ➔ Select the corresponding parameters with the arrow buttons:
 - P 4.1 for device's own load signal (input F1)
 - P 4.2 for the load signal at input F2
 - P 4.3 for the load signal at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 2% and 110% of the maximum load capacity of the respective hoist.
- ➔ Press Enter briefly.
 - The value is saved.

P 4.40 SETTING THE SECOND LOAD-CONTROLLED SWITCHING POINT FOR THE TOTAL LOAD OF THE CRANE

In this parameter you set the second load-controlled switching point for the total load of the crane in the range from 0% to 110% of the maximum load capacity. The value can be set in 2% steps.

The second load-controlled switching point is activated through the switching of input EA on the LIS-SV. This enables, for example, implementation of partial load ranges (reduced maximum load capacity of the main girder, e.g. on the edge), which are switched by a cross-type limit switch.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.40 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

P 4.41/P 4.42/P 4.43 SETTING THE SECOND LOAD-CONTROLLED SWITCHING POINT OF THE HOISTS

In this parameter you can set the second load-controlled switching points of the individual hoists. The parameters always refer to the device's own hoist, meaning the hoist on which the device just set is installed (connected at input F1) and up to two additional hoists at input F2 and F3. The value lies between 0% and 110% of the maximum load capacity of the hoist and can be set in 2% steps.

The corresponding hoist at the respective input switches off after the saved value is exceeded, and the overload protection goes into overload status. At the same time, the LIS-SV displays the load and flashes once per second.

The second load-controlled switching point of the overload protection is activated through the switching of input EA on the LIS-SV. This enables switching of e.g. a signal lamp that lights up in the event of an overload.

The set value always refers to the setting of the maximum load capacity in P 1.0 for input F1, P 2.0 for input F2 or P 3.0 for input F3.

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 4.41 for device's own load signal (input F1)
 - P 4.42 for the load signal at input F2
 - P 4.43 for the load signal at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the load capacity of the respective hoist.
- ➔ Press Enter briefly.
 - The value is saved.

P 4.5 SETTING THE LOAD-CONTROLLED SWITCHING POINT ON THE CURRENT TRANSFORMER MODULE

In this parameter you set the load-controlled switching point for the total load in the range from 0% to 110% of the maximum load capacity. The value can be set in 2% steps.

In contrast to parameter P 4.40, the load-controlled switching point is not implemented through the output TxD - EA on the LIS-SV, but rather through the external current transformer module. If the set value is exceeded, the relay switches on the circuit board of the current transformer module.

This load-controlled switching point is used to switch functions potential-free.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current saved value is displayed.
- ➔ Set the desired value between 0% and 110% of the maximum load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

P 5.01 SETTING THE “RAPID LOAD INCREASE” SENSITIVITY

In this parameter you set the sensitivity of the hoist response to lifting with a sudden jolt. When lifting with a sudden jolt occurs, the hoist switches from fast lifting back to slow lifting speed until the rapid load increase is over.

The value has no unit of measurement and can be set between 20 and 255. In this range, 20 is very sensitive and 255 is the lowest sensitivity.

Note

The parameter can only be accessed with a special code! Whenever adjustment of the rapid load increase is necessary, contact your ABUS Service representative. See page 48.

- ➔ Select parameter P 5.01 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
 - The current value is displayed.
- ➔ Hold Enter pressed until “Code” appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code.
- ➔ Press Enter briefly.
- ➔ Input the value with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

P 5.1 SHOWING THE THEORETICAL SERVICE LIFE

This parameter shows the full-load hours of the relevant classification according to FEM in which the hoist is classified.

If the load population recorder is not active, **0000** is displayed.

Classification according to FEM		Full-load hours
1Dm	M1	100
1Cm	M2	200
1Bm	M3	400
1Am	M4	800
2m	M5	1600
3m	M6	3200
4m	M7	6300
5m	M8	12,500

- ➔ Select parameter P 5.1 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.
- ➔ Press Enter briefly.
 - P 5.1 appears on the display.

P 5.2 READING THE LOAD POPULATION RECORDER

This parameter enables you to read out the data of the load population recorder.

This parameter can be called up through the parameter level, or directly from the display in operating mode. See "Opening the parameter level", page 10.

The load population recorder contains a total of 6 values.

Value	Meaning
1	Theoretical service life D
2	Actual hours of use S
3	Factor of the load spectrum Kmi
4	Operating hours Ti
5	Remaining service life
6	Starting value

- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **2223**.
- ➔ Press Enter briefly.
 - The load population recorder shows the first value.
- ➔ Briefly press Enter each time to go to the next digit.
- ➔ Hold Enter pressed to exit the load population recorder.
 - The LIS is in operating mode.
 - P 5.2 is displayed.

P 5.3 TEST AT THE INSPECTION BEFORE INITIAL COMMISSIONING

Note

This function is normally used by the expert for the test before initial commissioning.

The overload protection is deactivated in this parameter! After 45 minutes the parameter closes automatically and the overload protection is reactivated.



DANGER DUE TO DEACTIVATED OVERLOAD PROTECTION!

The overload protection is deactivated in this parameter.

This can lead to an overload of the crane. This in turn means the raised load could fall and kill or injure people!

Do not overload the crane and always operate it with caution.

Display	Function
1	Lifting/Lowering disabled
2	Slow lifting/lowering enabled
3	Slow and fast lifting/lowering enabled
4	Slow and fast lifting/lowering enabled Second load-controlled switching point bypassed
5	Not assigned

- ➔ Call up parameter P 5.3 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the first value from the table is displayed.
- ➔ Press Enter briefly to switch between the values.
- ➔ Check functions.
- ➔ Hold Enter pressed.
 - P 5.3 appears on the display.

P 5.4 PERFORMING DEVICE DIAGNOSIS

This parameter is used to manually switch the relays of the LIS. The control signal can also be checked at the inputs E1 to E7 and EA.

Note

The parameter is divided into 3 areas:

- Test of the relays for the outputs
- Test of the second load-controlled switching point
- Test of the inputs E1 – E7, EA

The hoist does not lift and lower if this parameter is active!

- ➔ Select parameter P 5.4 with the arrow buttons.
- ➔ Press Enter briefly.
 - “Code” is displayed.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Call up the next switching points in the table one after another by pressing Enter.

The different switching points in the table allow the relays for the outputs and inputs to be checked. Checking the second load-controlled switching point is not yet possible.

Test of the relays for the outputs

Test point	Status of the switching contacts				Display	Remark	Error case display
	Lift	Lower	Fast	Monitoring			
-- 0 -	0	0	0	0	0001	All relays in standby	0000
-- 1 -	1	0	0	0	1000	Relay for "Lift" switched	1001
-- 2 -	0	1	0	0	0100	Relay for "Lower" switched	0101
-- 3 -	0	0	1	1	0011	Relay for "Fast" switched	0010

Test of the second load-controlled switching point

-- 4 -

Test for the second load-controlled switching point: not currently active!

-- 5 -

Test of the inputs E6/E2/E7/EA

Test point	Status of the inputs				Display	Remark	Error case display
	E6	E2	E7	EA			
-- 6 -	0	0	0	0	4000	No signal at the inputs Monitoring OK	0000
	1	0	0	0	0001	Signal at input for "Lift"	4000
	0	1	0	0	0020	Signal at input for "Lower"	4000
	1	0	1	1	0301	Signal at input for "Fast/Lift"	4000
	0	1	1	1	0320	Signal at input for "Fast/Lower"	4000

Test of the inputs E5/E4/E3/E1

Test point	Status of the inputs				Display	Remark	Error case display
	E5	E4	E3	E1			
-- 7 -	0	0	0	1	0005	Signal at input E1 evaluated. (Only with total load)	0000
	0	0	1	0	0060	Signal at input E3 evaluated. (Only with tare)	0000
	0	1	0	0	0700	Signal at input E4 evaluated. (Only with two trolleys in joint operation)	0000
	1	0	0	0	8000	Signal at input E5 evaluated. (Only with two trolleys in joint operation)	0000

P 5.5 DELETING VALUES

This parameter enables you to delete all values except those of the load population recorder.

- ➔ Call up parameter P 5.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - “Code” is displayed.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
 - “LOE” appears flashing in the display.
- ➔ Press Enter and hold it pressed.
 - All values except the load population recorder are deleted!

P 5.6 SETTING THE CURRENT CORRECTION FACTOR

In this parameter you enter the correction factor of the current transformer modules from ABUS. Take the values from the following table.

Measuring range	IN [A] current transformer module	Correction factor	Article number
0	3	0115	19683
I	8	0306	9743
II	16	0613	9744
III	23	0873	9745
IV	36	1381	9746
V	60	2344	9747
VI	136	5169	19682

- ➔ Select parameter P 5.6 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
 - The current value is displayed.
- ➔ Hold Enter pressed.
- ➔ Enter value from the table with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

P 5.7 SETTING THE OPERATION ON A TWIN HOIST

With this parameter you set the time-delayed switching on of the hoists in order to prevent a simultaneous high start-up current in the hoist motors. The parameter can be set with the values 0, 1 and 2.

Value	Meaning
0	Fast lifting speed without additional time delay
1	0.5 s time delay
2	1 s time delay

- ➔ Select parameter P 5.7 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Hold Enter pressed until “Code” appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Depending on area of use, select the following setting with the arrow buttons:

Mode of operation	Device 1	Device 2
1 hoist	0	---
2 hoists working in parallel	1	1
Operation on a twin hoist	1	2

- ➔ Press Enter briefly.
 - The entered value is saved.

P 5.8 ENABLING OPERATION WITH ABUS SYNCHRONIZATION CONTROL SYSTEM

This parameter is used to enable the ABUS synchronization control system. For correct operation of an ABUS synchronization control system, the parameter must be set to the value 1.

- ➔ Select parameter P 5.8 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Set the parameter for activating the synchronization control system to the value 1 using the arrow buttons.
- ➔ Press Enter briefly.
- ➔ The entered value is saved.

P 5.10 ENABLING OPERATION WITH ABULINER FREQUENCY CONVERTER

This parameter enables the parameter level for setting the LIS-SV on the ABULiner frequency converter. After enabling, the parameters P 5.11 to P 5.99 can be accessed.

See product manual "ABULiner Lifting/Lowering".

P 9.9 EXITING THE PARAMETER LEVEL

The parameter level must always be exited with the parameter P 9.9 so that the values are saved and the overload protection is activated again!



- ➔ Select parameter P 9.9 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter level is closed.

P 1.1/P 2.1/P 3.1 PERFORMING A ZERO POINT ADJUSTMENT

With these parameters the zero point adjustment for the respective hoists 1, 2 and 3 is performed. In doing this, it is determined which measured value the LIS-SV should measure with empty load hook using the measurement bolt on the wire rope hoist.

Note

During the measurement, no test load or lifting tackle is allowed to hang from the hook.

- ➔ Select the corresponding parameters with the arrow buttons:
- P 1.1 for device's own load signal (input F1)
 - P 2.1 for the load signal at input F2
 - P 3.1 for the load signal at input F3



- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.



- ➔ Press Enter briefly.
- After pressing Enter, "MESS" appears on the display.
 - After 2 s the value of the measured frequency with empty load hook appears on the display.
- ➔ Hold Enter pressed until the corresponding parameter (P 1.1/P 2.1/P 3.1) appears.
- The respective parameter can only be exited if the measured frequency value is greater than 0.100 kHz.
- The measured value is saved.

P 1.2/P 2.2/P 3.2 SETTING WITH TEST LOAD

With these parameters, it is determined which measured value the LIS-SV should measure with a known test load using the measurement bolt on the wire rope hoist. The LIS-SV uses this value and the zero point adjustment to calculate a proportional function (load line), which in later operation is used to calculate the respective current load from the measured value of the measurement bolt.

Note

To set the test load, a test load with known weight is required. The test load should be 80% of the maximum load capacity.

The test load must be at least 40% of the maximum load capacity. If a setting is made with a test load between 40% and 80% of the maximum load capacity, this must be noted in the test log book.

The closer the test load is to the maximum load capacity, the more accurate will be the displayed weight of the load.

- ➔ Select the corresponding parameters with the arrow buttons:
- P 1.2 for device's own load signal (input F1)
 - P 2.2 for the load signal at input F2
 - P 3.2 for the load signal at input F3



- ➔ Press Enter briefly.
- "Last" is shown on the display.



- ➔ Hold Enter pressed until **0.000** is displayed.
- ➔ Enter the weight of the known test load from right to left.



- ➔ Press Enter briefly.
 - A continuous staircase curve from the bottom toward the top is shown on the display.
- ➔ Lift test load until it is hanging freely.
The test load should hang with little movement.



- ➔ Press the emergency stop button.
 - After 3 s "MESS" is shown on the display.
 - After 5 s the measured frequency for the test load is shown on the display.
- ➔ Unlock the emergency stop switch.
 - Six values are displayed after the measurement:
 - Frequency with the current test load
 - Gain factor
 - Zero point frequency
 - Difference value between test load and zero point
 - Load capacity
 - Value of the test load
- ➔ Briefly press Enter each time to go to the next digit.
- ➔ Hold Enter pressed.
 - The values are saved.

P 1.3/P 2.3/P 3.3 READING OR ENTERING THE ZERO POINT FREQUENCY

With these parameters you can read or enter the value of the frequency [in kHz] in the zero point for the respective hoist. The value lies between 0.5 kHz and 1 kHz so that in the event of a broken wire the value can drop to "0" and the LIS-SV will detect the missing signal.

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 1.3 for device's own load signal (input F1)
 - P 2.3 for the load signal at input F2
 - P 3.3 for the load signal at input F3
- ➔ Press Enter briefly.
 - The current saved value is displayed.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Enter a value from 0.5 kHz to 1 kHz.
- ➔ Press Enter briefly.
 - The entered value is saved.

P 1.4/P 2.4/P 3.4 READING OR ENTERING THE GAIN FACTOR

With these parameters you can read or enter the value of the gain factor for the respective hoist. The gain factor is the angle of the load lines from which the LIS-SV calculates the weight of the suspended load using the zero point frequency and the measurement frequency. These parameters are also used to set the slope of the load lines.

Note

Entering or changing a known measured value is only necessary when a device is exchanged. In this case, known measured values from an old device can be transferred to the new device, or measured values from another hoist can be entered. Otherwise the value is not to be changed!



DANGER FROM LOAD DROP DUE TO OVERLOAD!

Changing the gain factor leads to overload of the crane.

If a value deviating from the measured value in "Setting with test load" is entered, this will lead to an overload of the crane. This in turn means the raised load could fall and kill or injure people!

Do not enter any value that deviates from the measured value!

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 1.4 for device's own load signal (input F1)
 - P 2.4 for the load signal at input F2
 - P 3.4 for the load signal at input F3
- ➔ Press Enter briefly.
 - The current saved value is displayed.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Enter the measured or read out value.
- ➔ Press Enter briefly.
 - The entered value is saved.

P 6.1 ENTERING THE THEORETICAL SERVICE LIFE

This parameter is used to define the theoretical service life based on the classification according to FEM and to activate the load population recorder.

If the load population recorder is not active, **0000** is displayed.

Note

The load population recorder can only be activated by ABUS. If the load population recorder is required, contact your ABUS Service representative. See page 48.

Classification according to FEM		Full-load hours
1Dm	M1	100
1Cm	M2	200
1Bm	M3	400
1Am	M4	800
2m	M5	1600
3m	M6	3200
4m	M7	6300
5m	M8	12500

- ➔ Select parameter P 6.3 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Enter the theoretical service life as per the classification according to FEM using the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

P 6.2 ENTERING THE STARTING VALUE

In this parameter you can enter a starting value [in h] which is used to calculate the remaining service life by subtraction from the theoretical full-load hours. The starting value specifies the already used full-load hours of the hoist.

This parameter is used if, for example, a new LIS-SV is inserted on an existing hoist.

Level	
1	Display of saved starting value
2	Input of new starting value

- ➔ Select parameter P 6.2 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and "STA" is briefly displayed.
 - The current starting value is displayed.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Input the starting value with the arrow buttons.
- ➔ Press Enter briefly.
 - The starting value is saved.

P 6.3 DELETING VALUES (INCLUDING LOAD POPULATION RECORDER)

This parameter enables you to delete all values, including the load population recorder. This is only possible with a special code!

Note

The load population recorder can only be deleted with a special code. If deletion is required, contact your ABUS Service representative. See page 48.

- ➔ Call up parameter P 6.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - "Code" is displayed.
- ➔ Hold Enter pressed.
- ➔ Enter code.
- ➔ Press Enter briefly.
 - All values including the load population recorder are deleted!

P 6.4 SHOWING ACTUAL HOURS OF USE S

This parameter shows the value of the actual hours of use [in h].

- ➔ Select parameter P 6.4 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.
- ➔ Press Enter briefly.
 - P 6.4 appears on the display.

P 6.5 SHOWING OPERATING HOURS TI

This parameter shows the operating hours [in h].

- ➔ Select parameter P 6.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.
- ➔ Press Enter briefly.
 - P 6.5 appears on the display.

P 7.00 SHOWING LOAD DISPLAY OF TOTAL LOAD

This parameter shows the total load [in t]. The displayed value can lie between 0 t and 408 t.

- ➔ Select parameter P 7.0 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.

P 7.01/P 7.02/P 7.03 SHOWING LOAD DISPLAY OF HOIST

These parameters show the load of the respective hoist [in t]. The displayed values can lie between 0 t and 127 t.

- ➔ Select the corresponding parameters with the arrow buttons:
 - P 7.01 for device's own hoist
 - P 7.02 for the hoist at input F2
 - P 7.03 for the hoist at input F3
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.

P 7.1/P 7.2/P 7.3 SHOWING MEASUREMENT FREQUENCY

These parameters show the load-proportional frequency of the measurement bolt [in kHz] of the respective input. The displayed values can lie between 0 kHz and 65,535 kHz.

- ➔ Select the corresponding parameters with the arrow buttons:
 - P 7.1 for device's own load signal (input F1)
 - P 7.2 for the load signal at input F2
 - P 7.3 for the load signal at input F3
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.

P 7.5 SHOWING MOTOR CURRENT

With this parameter you can read the motor current [in A]. The measurement can only be made with the motor running. After switching off the motor, the display remains unchanged until a new measurement is made. The crane is therefore functional in this parameter and can lift/lower.

The displayed value can lie between 0 A and 185 A.

- ➔ Select parameter P 7.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and 00.00 is shown in the display.
- ➔ Press "Lift" or "Lower".
 - The current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.

P 7.6 SHOWING MAINS VOLTAGE

With this parameter you can read the mains voltage [in V]. After switching off the motor, the display remains unchanged until a new measurement is made. The crane is functional in this parameter and can lift/lower.

The displayed value can lie between 0 V and 627 V.

- ➔ Select parameter P 7.6 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.

P 7.61 MAINS VOLTAGE ANALYSIS

This parameter is used for simple and fast diagnosis and measurement of the mains voltage curve at the start of fast lifting speed. The measurement is performed with the motor running, and the crane is therefore functional in this parameter and can lift/lower.

The crane should be positioned as far as possible from the feed unit of the conductor system so that the voltage drop on the conductor system is also measured.

A total of 10 values of the mains voltage are measured [in V]. At the start of the fast lifting speed, the mains voltage is measured every 50 ms.

- ➔ Position the crane as far as possible from the feed unit of the conductor system.
- ➔ Attach test load.
- ➔ Lift test load 2 s with slow lifting speed and then switch to fast lifting speed for at least 2 s.
- ➔ Select parameter P 7.61 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
 - The first value is displayed.
- ➔ To go to the next value, press Enter briefly.

Value	
1	Mains voltage which was measured at slow lifting speed 50 ms before switching to fast lifting speed.
2	Mains voltage which was measured at the time point of switching from the slow to the fast lifting speed.
3 to 10	Mains voltage which was measured thereafter in intervals of 50 ms.

For a mains voltage of altogether 400 V, the allowed deviation of the measured values from the data sheet is maximally -6.5%. These values must not fall below this limit!

Next, the parameter level must be called up again in order to exit the parameter:

- ➔ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➔ Open the parameter level.
- ➔ Exit the parameter level via P 9.9.
- ➔ Set down the test load.

P 7.7 SHOWING MOTOR FREQUENCY

This parameter shows the motor frequency [in Hz].
The displayed value can lie between 0 Hz and 120 Hz.
This parameter is only active in connection with
"ABULiner Lifting/Lowering"!

- ➡ Select parameter P 7.7 with the arrow buttons.
- ➡ Press Enter briefly.
 - The parameter is opened and the current value is displayed.

Next, the parameter level must be called up again in order to exit the parameter:

- ➡ Hold Enter pressed until "Code" or "P-nr" appears in the display.
- ➡ Open the parameter level.
- ➡ Exit the parameter level via P 9.9.

P 8.0 PASSWORD FOR PARAMETER LEVEL 3

Access reserved exclusively for ABUS!

P 9.9 EXITING THE PARAMETER LEVEL

The parameter level must always be exited with the parameter P 9.9 so that the values are saved and the overload protection is activated again!



- ➡ Select parameter P 9.9 with the arrow buttons.
- ➡ Hold Enter pressed.
 - The parameter level is closed.

ILLUSTRATION OF THE PRINCIPLE: MONITORING THE TOTAL LOAD FOR A CRANE WITH TWO TROLLEYS

ONLY WITH MONITORING OF THE TOTAL LOAD

When a total load is to be monitored, the values of the respective “other” hoist must either be entered or measured as well on both hoists so that these can be saved in the respective LIS-SV.

The following parameters are used to measure the respective “other” hoist:

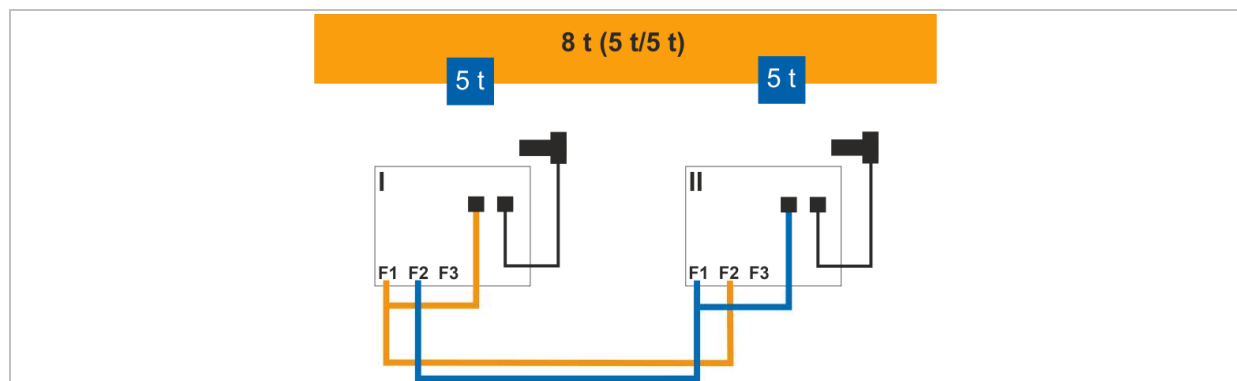
- In parameter P 1.1 and P 1.2 the value for the device's own hoist is measured.
- In the parameters P 2.1 and P 2.2 the values of the respective “other” hoist are measured and saved.

The following parameters are used to enter the values of the respective “other” hoist:

- The measured values under parameters P 1.1 and P 1.2 can be read under parameter P 1.3 or P 1.4 in the respective device's own hoist.
- In the parameters P 2.3 and P 2.4 the values of the respective “other” hoist are measured and saved.

ENTERING VALUES FOR OTHER HOISTS

- ➔ Check the assignment according to the wiring diagram and the carry out the parameterisation according to the input assignment.



Designation	Parameter	Trolley I ■	Trolley II ■
Maximum load capacity of the total load	P 0.0	8	8
Maximum load capacity of the trolley at input F1	P 1.0	5	5
Maximum load capacity of the trolley at input F2	P 2.0	5	5
Switching point of the overload protection of the total load	P 4.0	110	110
Switching point of the overload protection at input F1	P 4.1	110	110
Switching point of the overload protection at input F2	P 4.2	110	110
Zero point adjustment at input F1	P 1.1	0.638	0.873
Setting with test load, trolley I	P 1.2	5.187	8.000
Zero point frequency at input F2	P 2.3	0.873	0.638
Gain factor at input F2	P 2.4	8.000	5.187

ILLUSTRATION OF THE PRINCIPLE: MONITORING THE TOTAL LOAD FOR A CRANE WITH THREE TROLLEYS

ONLY WITH MONITORING OF THE TOTAL LOAD

When a total load is to be monitored, the values of the respective "other" hoists must either be entered or measured as well on all hoists so that these can be saved in the respective LIS-SV.

The following parameters are used to measure the respective "other" hoists:

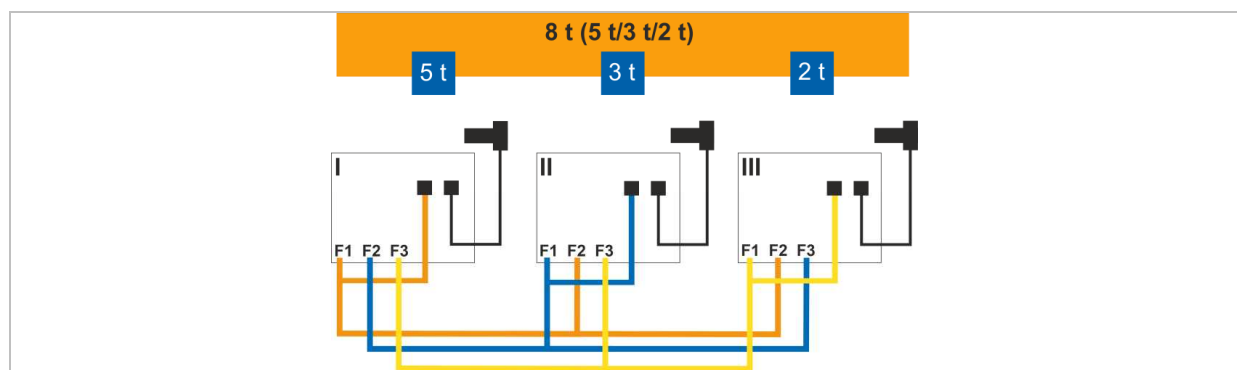
- In parameter P 1.1 and P 1.2 the value for the device's own hoist is measured.
- In the parameters P 2.1 and P 2.2, as well as P 3.1 and P 3.2, the values of the respective "other" hoists are measured and saved.

The following parameters are used to enter the values of the respective "other" hoists:

- The measured values under parameters P 1.1 and P 1.2 can be read under parameter P 1.3 or P 1.4 in the respective device's own hoist.
- In the parameters P 2.3 and P 2.4 or P 3.3 and P 3.4, the values of the respective "other" hoists are entered.

ENTERING VALUES FOR OTHER HOISTS

- ➔ Check the assignment according to the wiring diagram and the carry out the parameterisation according to the input assignment.



Designation	Parameter	Trolley I ■	Trolley II ■	Trolley III ■
Maximum load capacity of the total load	P 0.0	8	8	8
Maximum load capacity of the trolley at input F1	P 1.0	5	3	2
Maximum load capacity of the trolley at input F2	P 2.0	3	5	5
Maximum load capacity of the trolley at input F3	P 3.0	2	2	3
Switching point of the overload protection of the total load	P 4.0	110	110	110
Switching point of the overload protection at input F1	P 4.1	110	110	110
Switching point of the overload protection at input F2	P 4.2	110	110	110
Switching point of the overload protection at input F3	P 4.3	110	110	110
Zero point adjustment at input F1	P 1.1	0.638	0.873	0.753
Setting with test load, trolley I	P 1.2	5.187	8.000	6.203
Zero point frequency at input F2	P 2.3	0.873	0.638	0.638
Gain factor at input F2	P 2.4	8.000	5.187	5.187
Zero point frequency at input F3	P 3.3	0.753	0.753	0.873
Gain factor at input F3	P 3.4	6.203	6.203	8.000

MAINTENANCE

THIS SECTION APPLIES TO ANYONE WHO MAINTAINS, REPAIRS OR MODIFIES THE CRANE.

The end user of the crane is responsible for the selection and proper qualifications of the maintenance personnel.



DANGER TO PERSONS!

Persons can be injured if the crane is incorrectly serviced.

If personnel other than that of the ABUS company are employed to perform maintenance on the crane, it is the end user's responsibility to ensure that these persons are adequately qualified. Follow the procedures described here precisely.

Examples of qualified persons:

- Persons with comprehensive knowledge from specialist training in engineering and in the electrical systems of cranes.
- Persons with sufficient experience in the operation, installation and maintenance of cranes.
- Persons with comprehensive knowledge regarding the relevant technical rules, directives and safety regulations applicable in the respective country.
- Persons receiving regular training from ABUS.

ABUS assumes no liability for damage due to incorrectly performed maintenance work done by unqualified personnel.

ABUS recommends having the maintenance work performed by ABUS Service.

INSTRUCTIONS REGARDING SAFETY WHEN PERFORMING MAINTENANCE WORK

Observe the following safety instructions for any maintenance work on the crane with LIS:

- Switch off the mains switch. Secure the switch to ensure it cannot be turned back on accidentally.
- Unplug the mains disconnecter plug from the socket on the crane panel. Secure the socket with a padlock to ensure it is not plugged back in accidentally.
- Use suitable lifting platforms and fall protection equipment.
- Adequately cordon off the operating range around the lifting platform.
- Switch off any other cranes using the same crane track or cranes working above or below the crane undergoing maintenance. Secure the switches to ensure they cannot be turned back on accidentally. Otherwise, other cranes could overturn the hoisting platform or crash into the crane undergoing maintenance.
- Notify personnel in the area that maintenance work will be performed.
- Only have trained electricians perform the work on the crane electrical system!
- Even after the emergency stop button has been pressed, life-threatening high voltages are still present in the panels.

CORRECTING ERRORS ON THE LIS-SV

If the LIS-SV is not working or functions other than as expected, a malfunction on the LIS-SV may be the cause.

ERRORMESSAGES AFTER DEVICE START

In the event of malfunctions on the LIS-SV:

Malfunctions on the LIS-SV are indicated by error messages on this display.

Error message	Fault	Remedy
Err 0	Do not exceed the maximum load capacity. P 1.0 greater than P 0.0 or P 0.0 greater than the sum of P 1.0 + P 2.0 + P 3.0	Check P 0.0, P 1.0 and, if necessary, P 2.0 and P 3.0.
Err 1	The zero point frequency or gain factor for the device's own hoist is not set.	Check P 1.3 and P 1.4. A value greater than 0 must be set. Carry out a precise setting using P 1.1 and P 1.2.
Err 2	The zero point frequency or gain factor for the hoist at input F2 is not set, although a load capacity was entered in P 2.0.	Check P 2.3 and P 2.4. A value greater than 0 must be set. Carry out a precise setting using P 2.1 and P 2.2.
Err 3	The zero point frequency or gain factor for the hoist at input F3 is not set, although a load capacity was entered in P 3.0.	Check P 3.3 and P 3.4. A value greater than 0 must be set. Carry out a precise setting using P 3.1 and P 3.2.
Err 4	Current correction factor was not entered.	Set parameter P 5.6 according to the current range of the current transformer module.
Err 6	Frequency in the zero point is less than 0.100 kHz.	Check input F1. Check wiring of the measurement bolt.
Err 5, Err 9	Error in the data transfer.	Restart of the software. If this is unsuccessful, the LIS-SV must be replaced.
Err 8	Error during saving of data.	Replace the LIS-SV.
F1	The frequency at input F1 is smaller than the saved value for the zero point.	Use P 7.1 to check whether the frequency is detected and, if necessary, carry out a zero point adjustment with empty hook.
	Value of the zero point frequency is incorrect due to, for example, performing the measurement with a test load in the hook.	Perform the measurement of the zero point frequency again with empty hook.
	Measurement bolt is defective.	Check measurement bolt and replace if necessary.
	LIS-SV power pack is faulty.	Replace the LIS-SV.
F2	The frequency at input F2 is smaller than the saved value.	Check connection between F1 and F2. Use P 7.2 to check whether the frequency is detected and, if necessary, carry out a zero point adjustment with empty hook.
F3	The frequency at input F3 is smaller than the saved value.	Check connection between F1 and F3. Use P 7.3 to check whether the frequency is detected and, if necessary, carry out a zero point adjustment with empty hook.
00.00	Overload switch-off with empty hook.	Check P 4.0/P 4.1/P 4.2/P 4.3 and set to 110%. Likewise check additional switch-off point. If EA is not assigned, set the parameter to 110%.
[no]	The PIN or code was entered 4 times incorrectly.	Request a returns form through ABUS Service and send it in to unlock the device.

Error message	Fault	Remedy
Test not OK	Malfunction of the LIS-SV	Request a returns form through ABUS Service and send it in.
- - H2	Not an error message but a status message: "One of the other hoists has stopped". Status message only occurs for reciprocal monitoring of the hoists during joint operation. This prevents e.g. a tilted position.	If this is not the case: check signals at input E5.
Switch-off during fast lifting speed, display shows "ABUS"	Voltage drop. Power line dimensions too small.	Read out P 7.61. Check power line and boost if necessary.
Value greater than 110% of load capacity, flashing	For overload the display flashes in 1 Hz cycles and for overcurrent twice per second at 0.5 Hz.	For overload: Set down the load. For overcurrent: Wait 3 min. Afterward the function is enabled again. If overcurrent occurs repeatedly, the current consumption of the motor should be checked.
Undefined sign on the load display	The Q and GND wires are interchanged. Power line faulty.	Check the assignment. Check the power line.
Value flashes	Motor current display Overload - display value greater than 110%, flashing.	Motor mechanically hampered, e.g. by the brake not opening, a blocked gear unit or defective ball bearing. Contactor faulty, loose connection, faulty current collector.
Display is dark	Display operating voltage has dropped out. Plug contacts between main and display circuit boards oxidised by aggressive ambient conditions. LIS-SV power pack is faulty.	Replace the LIS-SV.

ERROR MESSAGES WHEN SETTING

Error message	Fault	Remedy
Err 0	P 1.0 is not set.	Enter the maximum load capacity of the device's own hoist in P 1.0.
Err 1	The zero point frequency or gain factor of the device's own hoist is not set.	Check P 1.3 and P 1.4. A value greater than 0 must be set. Carry out a precise setting using P 1.1 and P 1.2.
Err 2	P 2.0 is not set, although P 2.3/P 2.4 is greater than 0.	Enter the maximum load capacity for the hoist at input F2 in P 2.0.
Err 3	P 3.0 is not set, although P 3.3/P 3.4 is greater than 0.	Enter the maximum load capacity for the hoist at input F3 in P 3.0.
Err 4	Current correction factor was not entered.	Set parameter P 5.6 according to the current range of the current transformer module.
Err 7	When setting with test load, it was detected that the frequency difference to the zero point frequency was too small.	Repeat the setting with a larger test load. Replace measurement bolt if necessary.
F1	The zero point adjustment was carried out with load in the hook (e.g. lifting tackle).	Perform the zero point adjustment with empty load hook.
[no]	The PIN or code was entered 4 times incorrectly.	Request a returns form through ABUS Service and send it in to unlock the device.

REPLACING THE LIS-SV

If the LIS is faulty, it must be replaced.

Note

When replacing the LIS, note and compare the operating voltage of the crane and LIS.

The LIS can be damaged by an incorrect operating voltage.

READING OUT VALUES

If the LIS is in standby mode:

- ➔ Press Enter briefly.
 - The operating hours are displayed.

In operating mode “Lift” or “Lower”:

- ➔ Press “Lift” or “Lower”.
 - The current value of the operating hours counter is shown on the display for 3 s.



- ➔ Note down the operating hours.
- ➔ Only with load population recorder:
Note down the value from the load population recorder. See “P 5.2 Reading the load population recorder”, page .20
- ➔ Note down the values from the parameters P 1.3, P 1.4, P 2.3, P 2.4, P 3.3 and P 3.4.

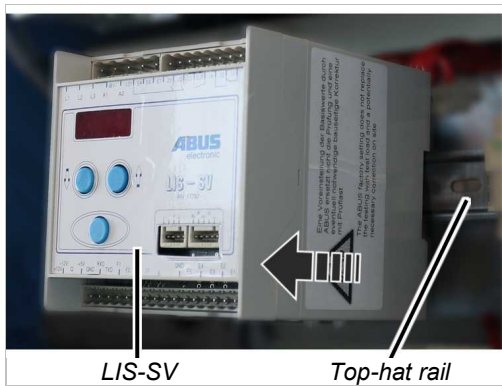
DISASSEMBLING THE LIS-SV



- ➔ De-energise the crane.
- ➔ Detach the connector of the measurement bolt and the connector of the device interface from the LIS-SV.

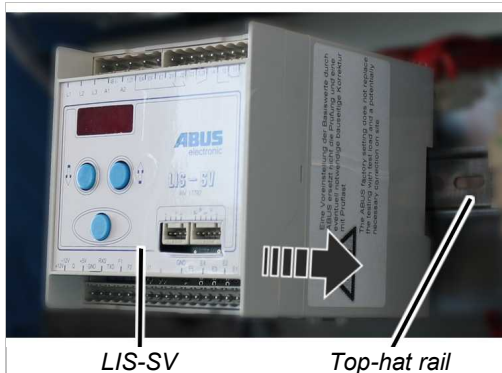


- ➔ Detach the bush multipoint connector from the pin multipoint connector of the LIS-SV.

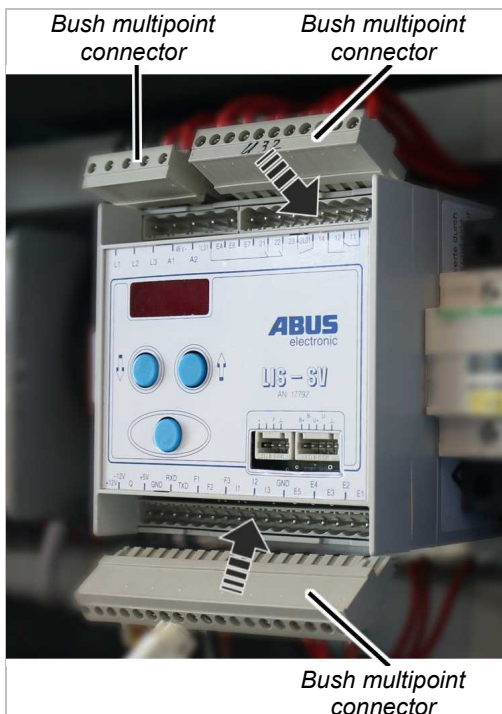


- ➔ Pull the LIS-SV from the top-hat rail.
- ➔ Take the LIS-SV out of the hoist panel.

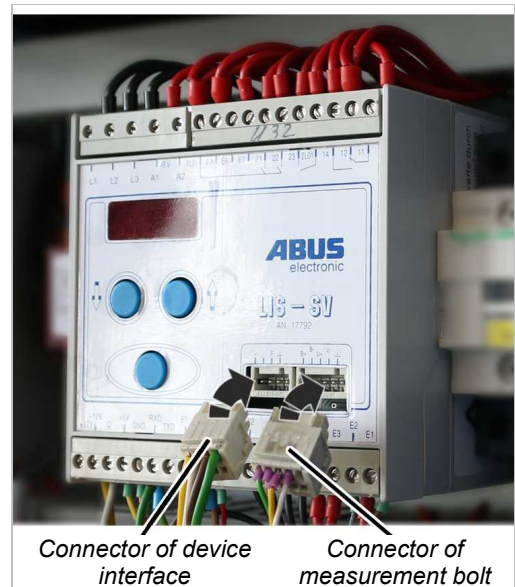
ASSEMBLING THE LIS-SV



- ➔ Insert the new LIS-SV in the hoist panel.
- ➔ Push the LIS-SV onto the top-hat rail until it clicks in place.



- ➔ Insert the bush multipoint connector on the pin multipoint connector of the LIS-SV.



- ➔ Insert the connector of the measurement bolt and the connector of the device interface into the LIS-SV.

TRANSFERRING VALUES

- ➔ Switch the crane on.
 - ➔ Only with load population recorder:
Enter starting value under parameter P 6.2.
 - ➔ Transfer values from the old LIS-SV into the new LIS-SV.
- If the values cannot be adopted, a zero point adjustment must be performed.
- See "Entering default settings", page 40.
- ➔ Write the operating hours and value of the load population recorder on the housing of the new LIS-SV.

ENTERING DEFAULT SETTINGS

OPENING THE PARAMETER LEVEL

ONLY WITH LOAD POPULATION RECORDER

With an LIS with load population recorder, the load population recorder can be read before calling up the parameter level. The reading of the load population recorder can be skipped by briefly pressing Enter.



➡ Press Enter briefly.

- "P - nr." is shown in the display.



➡ Hold Enter pressed.

➡ Enter PIN **0055**.



➡ Hold Enter pressed until P 0.0 appears in the display.

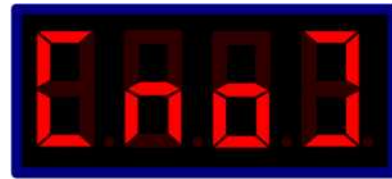
- The parameter level is opened.

In the parameter level, the control signals "Lift" and "Lower" are generally disabled, unless it is specifically noted in the corresponding parameter that Lift/Lower is enabled.

➡ Select the desired parameters with the arrow buttons and carry out the settings.

If an incorrect code was entered:

The code or the PIN number may be entered incorrectly a maximum of three times in succession. At the fourth incorrect entry, the LIS is locked and [no] appears in the display.



Note

The LIS continues working with the last entered values. To be unlocked, the LIS must be sent in. In this case, contact your ABUS Service representative. See page 48.

ENTERING THE MAXIMUM LOAD CAPACITY (P 0.0)

In this parameter you enter the maximum load capacity of the crane. If only one hoist is evaluated, the maximum load capacity is always the same as the maximum capacity of the device's own hoist.

Note

For an evaluation of the total load, the maximum load capacity of the entire crane may be less than the sum of the individual load capacities of the hoists. This is the case, for example, if the LIS-SV monitors the total load and the individual load capacities are greater than the maximum load capacity of the crane (e.g. 5 t (5 t/3 t)).

- ➔ Select parameter P 0.0 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Enter the maximum load capacity of the crane with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

ENTERING THE MAXIMUM LOAD CAPACITY OF THE HOIST (P 1.0/P 2.0/P 3.0)

In these parameters you enter the maximum load capacity of the respective hoists.

If the hoist is not present, no maximum load capacity needs to be entered in the corresponding parameter. In this case, the corresponding parameter has the value 0.

Note

Parameter P 3.0 cannot be set if a value is saved under P 5.11. If a value is saved in P 5.11, the LIS-SV is activated for operation with the ABULiner frequency converter. In this case, P 5.11 must first be set to 0. See product manual "ABULiner Lifting/Lowering".

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 1.0 for device's own hoist
 - P 2.0 for the hoist at input F2
 - P 3.0 for the hoist at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Enter the maximum load capacity of the respective hoist with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

SETTING THE SWITCHING POINT OF THE OVERLOAD PROTECTION OF THE TOTAL LOAD (P 4.0)

In this parameter you set the switching point for the overload protection of the total load of the crane. The setting is entered as a percentage lying between 0% and 110% of the entered maximum load capacity of the crane. The value can be set in 2% steps.

With multiple hoists, the entered value must be identical for all hoists, since the overload protection is for the total load and thus the load of the crane. All hoists switch off accordingly at the point the entered value is exceeded and the overload protection goes into overload status. At the same time, the LIS-SV displays the currently measured load and flashes once per second.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.0 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the maximum load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

SETTING THE SWITCHING POINTS OF THE OVERLOAD PROTECTION OF THE HOISTS (P 4.1/P 4.2/P 4.3)

In these parameters you can set the switching points of the overload protection of the individual hoists. The parameters always refer to the device's own hoist, meaning the hoist on which the device just set is installed (connected at input F1) and up to two additional hoists at input F2 and F3. The value lies between 0% and 110% of the maximum load capacity and can be set in 2% steps.

The corresponding hoist at the respective input switches off after the saved value is exceeded, and the overload protection goes into overload status. At the same time, the LIS-SV displays the load and flashes once per second.

- ➔ Select the corresponding parameters with the arrow buttons:
 - P 4.1 for device's own load signal (input F1)
 - P 4.2 for the load signal at input F2
 - P 4.3 for the load signal at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 2% and 110% of the maximum load capacity of the respective hoist.
- ➔ Press Enter briefly.
 - The value is saved.

ONLY WITH SECOND SWITCHING POINT**SETTING THE SECOND SWITCHING POINT OF THE TOTAL LOAD (P 4.40)**

In this parameter you set the second load-controlled switching point for the total load of the crane in the range from 0% to 110% of the maximum load capacity. The value can be set in 2% steps.

The second load-controlled switching point is activated through the switching of input EA on the LIS-SV. This enables, for example, implementation of partial load ranges (reduced maximum load capacity of the main girder, e.g. on the edge), which are switched by a cross-type limit switch.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.40 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

SETTING THE SECOND SWITCHING POINTS OF THE HOISTS (P 4.41/P 4.42/P 4.43)

In this parameter you can set the second load-controlled switching points of the individual hoists. The parameters always refer to the device's own hoist, meaning the hoist on which the device just set is installed (connected at input F1) and up to two additional hoists at input F2 and F3. The value lies between 0% and 110% of the maximum load capacity of the hoist and can be set in 2% steps.

The corresponding hoist at the respective input switches off after the saved value is exceeded, and the overload protection goes into overload status. At the same time, the LIS-SV displays the load and flashes once per second.

The second load-controlled switching point of the overload protection is activated through the switching of input EA on the LIS-SV. This enables switching of e.g. a signal lamp that lights up in the event of an overload.

The set value always refers to the setting of the maximum load capacity in P 1.0 for input F1, P 2.0 for input F2 or P 3.0 for input F3.

- ➔ Select the corresponding parameters with the arrow buttons.
 - P 4.41 for device's own load signal (input F1)
 - P 4.42 for the load signal at input F2
 - P 4.43 for the load signal at input F3
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Set the value between 0% and 110% of the load capacity of the respective hoist.
- ➔ Press Enter briefly.
 - The value is saved.

ONLY WITH LOAD-CONTROLLED SWITCHING POINT**SETTING THE LOAD-CONTROLLED SWITCHING POINT (P 4.5)**

In this parameter you set the load-controlled switching point for the total load in the range from 0% to 110% of the maximum load capacity. The value can be set in 2% steps.

In contrast to parameter P 4.40, the load-controlled switching point is not implemented through the output TxD - EA on the LIS-SV, but rather through the external current transformer module. If the set value is exceeded, the relay switches on the circuit board of the current transformer module.

This load-controlled switching point is used to switch functions potential-free.

The set value always refers to the setting of the maximum load capacity under P 0.0.

- ➔ Select parameter P 4.5 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current saved value is displayed.
- ➔ Set the desired value between 0% and 110% of the maximum load capacity of the crane.
- ➔ Press Enter briefly.
 - The value is saved.

ENTERING THE CURRENT CORRECTION FACTOR (P 5.6)

In this parameter you enter the correction factor of the current transformer modules from ABUS. Take the values from the following table.

Measuring range	IN [A] current transformer module	Correction factor	Article number
0	3	0115	19683
I	8	0306	9743
II	16	0613	9744
III	23	0873	9745
IV	36	1381	9746
V	60	2344	9747
VI	136	5169	19682

- ➔ Select parameter P 5.6 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
 - The current value is displayed.
- ➔ Hold Enter pressed.
- ➔ Enter value from the table with the arrow buttons.
- ➔ Press Enter briefly.
 - The value is saved.

SETTING THE OPERATION ON A TWIN HOIST (P 5.7)

With this parameter you set the time-delayed switching on of the hoists in order to prevent a simultaneous high start-up current in the hoist motors. The parameter can be set with the values 0, 1 and 2.

Value	Meaning
0	Fast lifting speed without additional time delay
1	0.5 s time delay
2	1 s time delay

- ➔ Select parameter P 5.7 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Depending on area of use, select the following setting with the arrow buttons:

Mode of operation	Device 1	Device 2
1 hoist	0	- - -
2 hoists working in parallel	1	1
Operation on a twin hoist	1	2

- ➔ Press Enter briefly.
 - The entered value is saved.

ONLY FOR OPERATION WITH ABUS SYNCHRONIZATION CONTROL SYSTEM

If the hoist has an ABUS synchronization control system, this must be set.

SETTING THE ABUS SYNCHRONIZATION CONTROL SYSTEM (P 5.8)

This parameter is used to enable the ABUS synchronization control system. For correct operation of an ABUS synchronization control system, the parameter must be set to the value 1.

- ➔ Select parameter P 5.8 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter is opened and the current value is displayed.
- ➔ Hold Enter pressed until "Code" appears in the display.
- ➔ Hold Enter pressed.
- ➔ Enter code **1443**.
- ➔ Press Enter briefly.
- ➔ Set the parameter for activating the synchronization control system to the value 1 using the arrow buttons.
- ➔ Press Enter briefly.
- ➔ The entered value is saved.

ONLY FOR OPERATION WITH FREQUENCY CONVERTER

For operation with frequency converter, see product manual "ABULiner Lifting/Lowering".

PERFORMING A ZERO POINT ADJUSTMENT (P 1.1/P 2.1/P 3.1)

With these parameters the zero point adjustment for the respective hoists 1, 2 and 3 is performed. In doing this, it is determined which measured value the LIS-SV should measure with empty load hook using the measurement bolt on the wire rope hoist.

Note

During the measurement, no test load or lifting tackle is allowed to hang from the hook.

➔ Select the corresponding parameters with the arrow buttons:

- P 1.1 for device's own load signal (input F1)
- P 2.1 for the load signal at input F2
- P 3.1 for the load signal at input F3



➔ Hold Enter pressed until "Code" appears in the display.

➔ Hold Enter pressed.

➔ Enter code **1443**.



➔ Press Enter briefly.

- After pressing Enter, "MESS" appears on the display.
- After 2 s the value of the measured frequency with empty load hook appears on the display.

➔ Hold Enter pressed until the corresponding parameter (P 1.1/P 2.1/P 3.1) appears.

The respective parameter can only be exited if the measured frequency value is greater than 0.100 kHz.

- The measured value is saved.

SETTING THE OVERLOAD PROTECTION WITH TEST LOAD (P 1.2/P 2.2/P 3.2)

With these parameters, it is determined which measured value the LIS-SV should measure with a known test load using the measurement bolt on the wire rope hoist. The LIS-SV uses this value and the zero point adjustment to calculate a proportional function (load line), which in later operation is used to calculate the respective current load from the measured value of the measurement bolt.

Note

To set the test load, a test load with known weight is required. The test load should be 80% of the maximum load capacity.

The test load must be at least 40% of the maximum load capacity. If a setting is made with a test load between 40% and 80% of the maximum load capacity, this must be noted in the test log book.

The closer the test load is to the maximum load capacity, the more accurate will be the displayed weight of the load.

➔ Select the corresponding parameters with the arrow buttons:

- P 1.2 for device's own load signal (input F1)
- P 2.2 for the load signal at input F2
- P 3.2 for the load signal at input F3



➔ Press Enter briefly.

- "Last" is shown on the display.



➔ Hold Enter pressed until **0.000** is displayed.

➔ Enter the weight of the known test load from right to left.



- ➔ Press Enter briefly.
 - A continuous staircase curve from the bottom toward the top is shown on the display.
- ➔ Lift test load until it is hanging freely.

The test load should hang with little movement.



- ➔ Press the emergency stop button.
 - After 3 s "MESS" is shown on the display.
 - After 5 s the measured frequency for the test load is shown on the display.
- ➔ Unlock the emergency stop switch.
 - Six values are displayed after the measurement:
 - Frequency with the current test load
 - Gain factor
 - Zero point frequency
 - Difference value between test load and zero point
 - Load capacity
 - Value of the test load
- ➔ Briefly press Enter each time to go to the next digit.
- ➔ Hold Enter pressed.
 - The values are saved.

EXITING THE PARAMETER LEVEL

The parameter level must always be exited with the parameter P 9.9 so that the values are saved and the overload protection is activated again!



- ➔ Select parameter P 9.9 with the arrow buttons.
- ➔ Press Enter briefly.
 - The parameter level is closed.

ABUS SERVICE

ONLY IN GERMANY

- ➔ If available, have the product number, serial number and customer number handy.
- ➔ Call the ABUS Service Centre:
 - Phone: +49-2261-37-237
- ➔ If calling outside the usual business hours, leave a message on the answering machine.
 - ABUS Service will return your call promptly.
- ➔ If necessary, send a description of the problem by fax or e-mail:
 - Fax: +49-2261-37-265
 - E-mail: service@abus-kransysteme.de

ONLY OUTSIDE GERMANY

- ➔ Call the local ABUS branch or crane service partner.

Your local ABUS branch or crane service partner will provide details of contact data, contacts and availability.

DECLARATION OF CONFORMITY

This declaration is valid as a Declaration of Conformity in terms of the machinery directive of Appendix II 1A.

Manufacturer	ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany	
Product	ABUS Load indicator system LIS-SV in series design	
Year of construction	From 2000	
Order number and serial number	See title page	
Person responsible for putting together the special technical documentation	Michael Müller Technical Documentation Department manager ABUS Kransysteme GmbH Sonnenweg 1 51647 Gummersbach, Germany	
We hereby declare that the product specified above complies with all requirements in the EU directives listed here in the version applicable at the time of issuance.	2006/42/EG 2014/35/EU 2014/30/EU	Machinery Low voltage Electromagnetic compatibility
In particular, the harmonised standards and national standards, directives and specifications and any other applicable standards have been applied.	EN 13849 EN ISO 12100 EN 60204 T32 EN 61000-6-4 EN 61000-6-2	Safety of machinery – Safety-related parts of control systems Safety of machinery – General principles – Risk assessment and risk reduction Electrical equipment of machines, requirements for hoisting machines Electromagnetic compatibility, emitted interference Electromagnetic compatibility, interference immunity

Technical documentation is available in full.

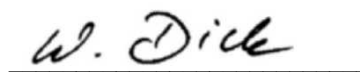
The corresponding operating manuals are available in the national language of the user.

With our department for "Technical Documentation", we have committed ourselves to submitting the specific documentation for the incomplete machine in response to a reasoned request by the market surveillance authorities.

Gummersbach, 25 October 2023

Development of electrical technology

Willi Dick



Signature of the authorised person

The content of this declaration complies with EN ISO 17050.

ABUS Kransysteme GmbH supports a quality management system in accordance with DIN EN ISO 9001.

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