Operating Manual

Evaluation Unit AE16 Light
and
Rope Load Sensor LS-Light

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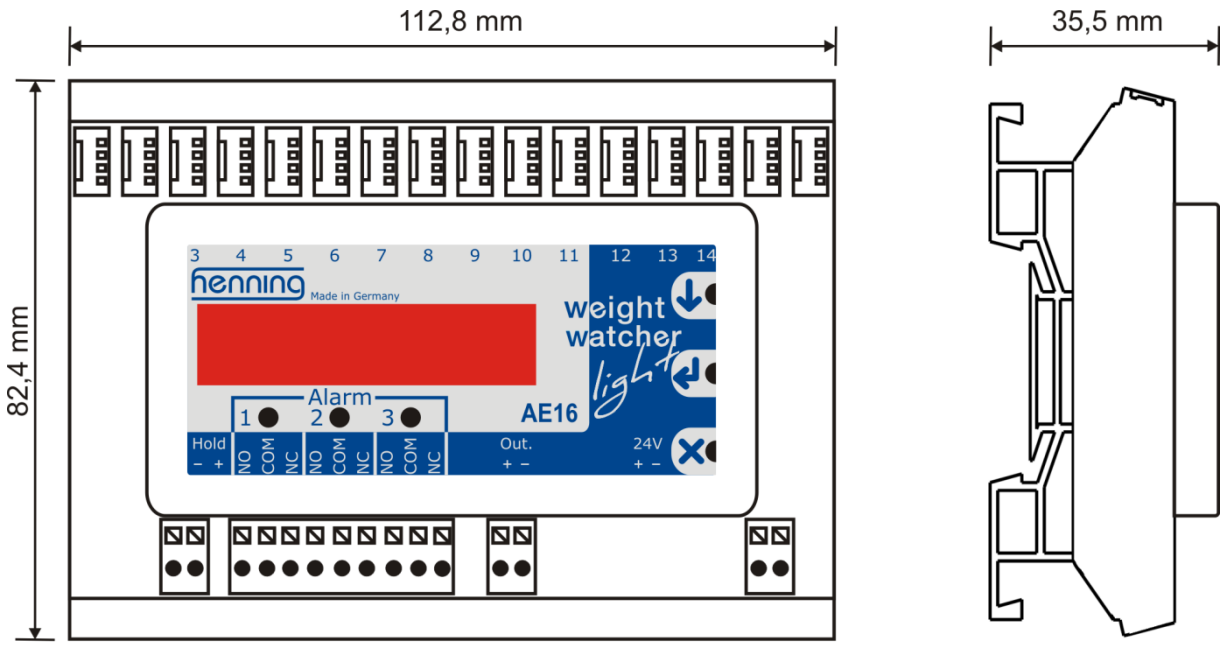
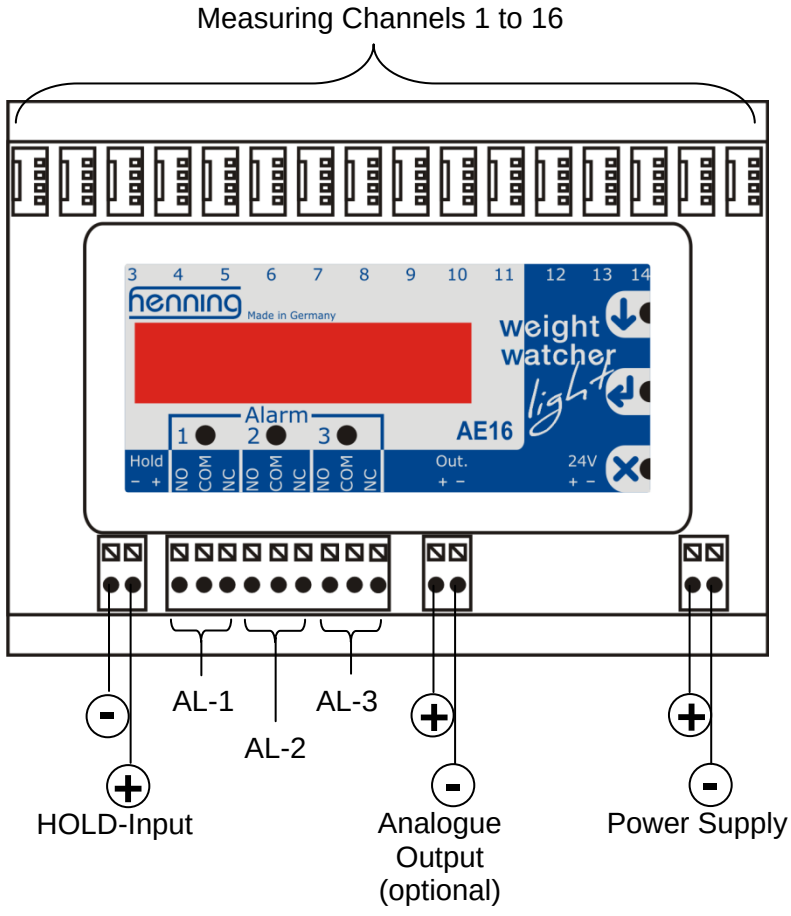
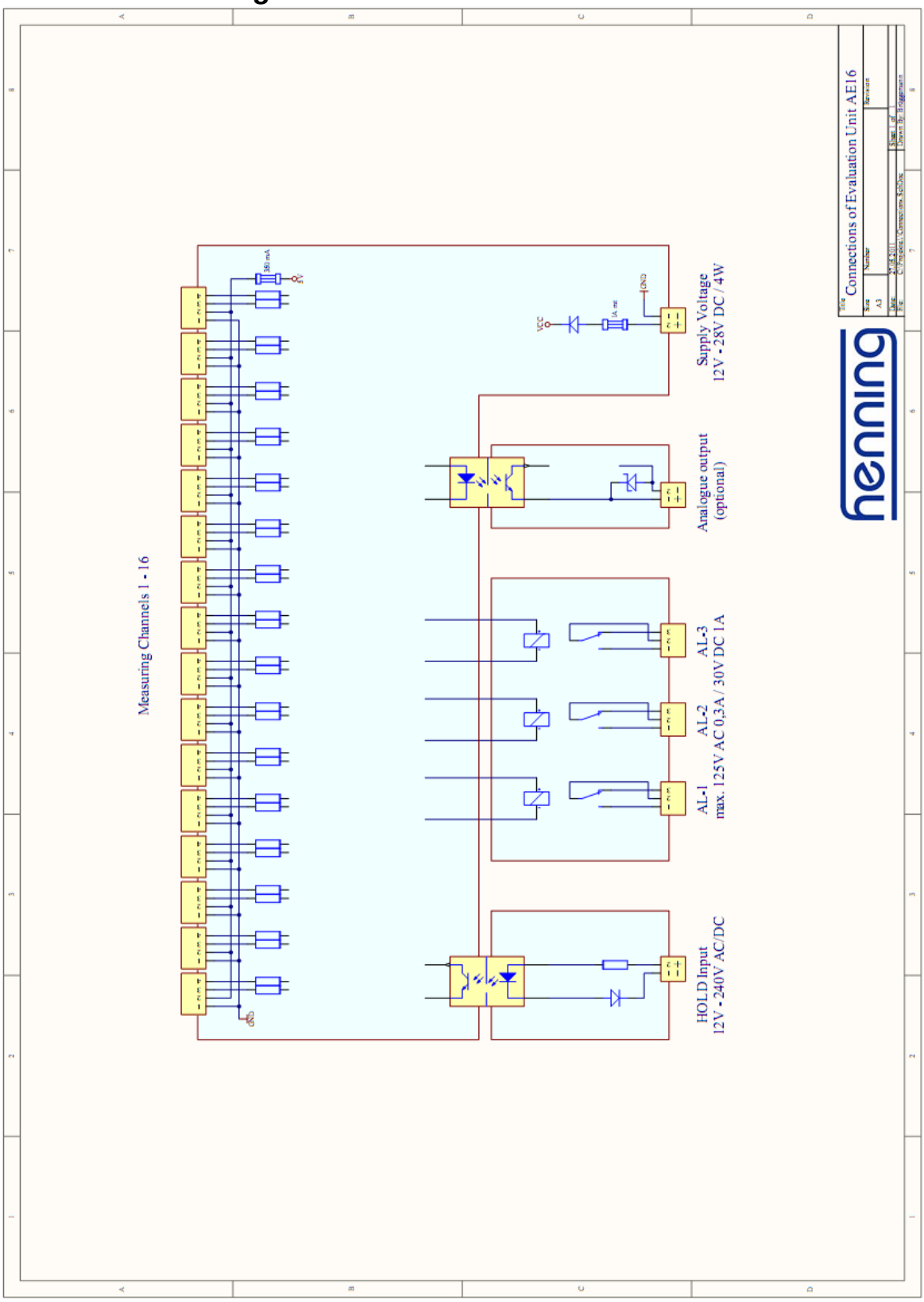
1. Dimensions





2. Connection Diagram



3. Alarm Relays

AL-1 (change-over contact)

Changes state as soon as the load limit adjusted by AL-1 is exceeded.

AL-2 (change-over contact)

Changes state as soon as the load limit adjusted by AL-2 is exceeded.

AL-O (change-over contact)

Changes state as soon as the load limit adjusted by AL-3 is exceeded.

4. HOLD-Function

The HOLD-input responds to alternating and direct voltages between 12V and 230V. Due to friction at the guide rails etc., loads measured during travelling might heavily fluctuate. This will prevent the alarm from putting out any alarm as long as the HOLD-input is supplied with voltage (e.g. travelling signal).

5. How to Access a Parameter

Weightwatcher light is provided with a menu offering access to the adjustable parameters.

This key is pressed to browse through the menu items. After selecting a menu item, it is used to navigate through the sub-menu. For parameters, it helps you set the parameter-value desired.

This key is pressed to select a menu item displayed, or to apply the value set for a parameter.

This key is pressed to quit the current menu item or parameter without applying the set value. By repeatedly pressing this button, you will return to displaying the current total load in the car.

Attention:
Weightwatcher light AE16 automatically returns to its home-position displaying the current total load in the car, and will do that after one minute without any push of a button, regardless of which menu-item had been selected beforehand.
After ten minutes without any push of a button it changes into the energy-saving mode, i.e. the display goes off for being reactivated by the next push of a button.

6. How to Adjust a Parameter

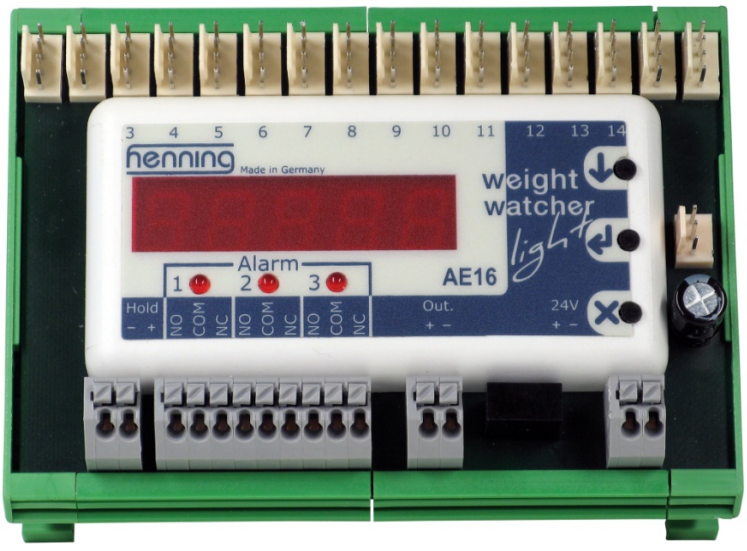
1.) Press button ↓ to navigate through the parameters until the one to be adjusted is displayed.

2.) Press button ↵ to select this parameter.

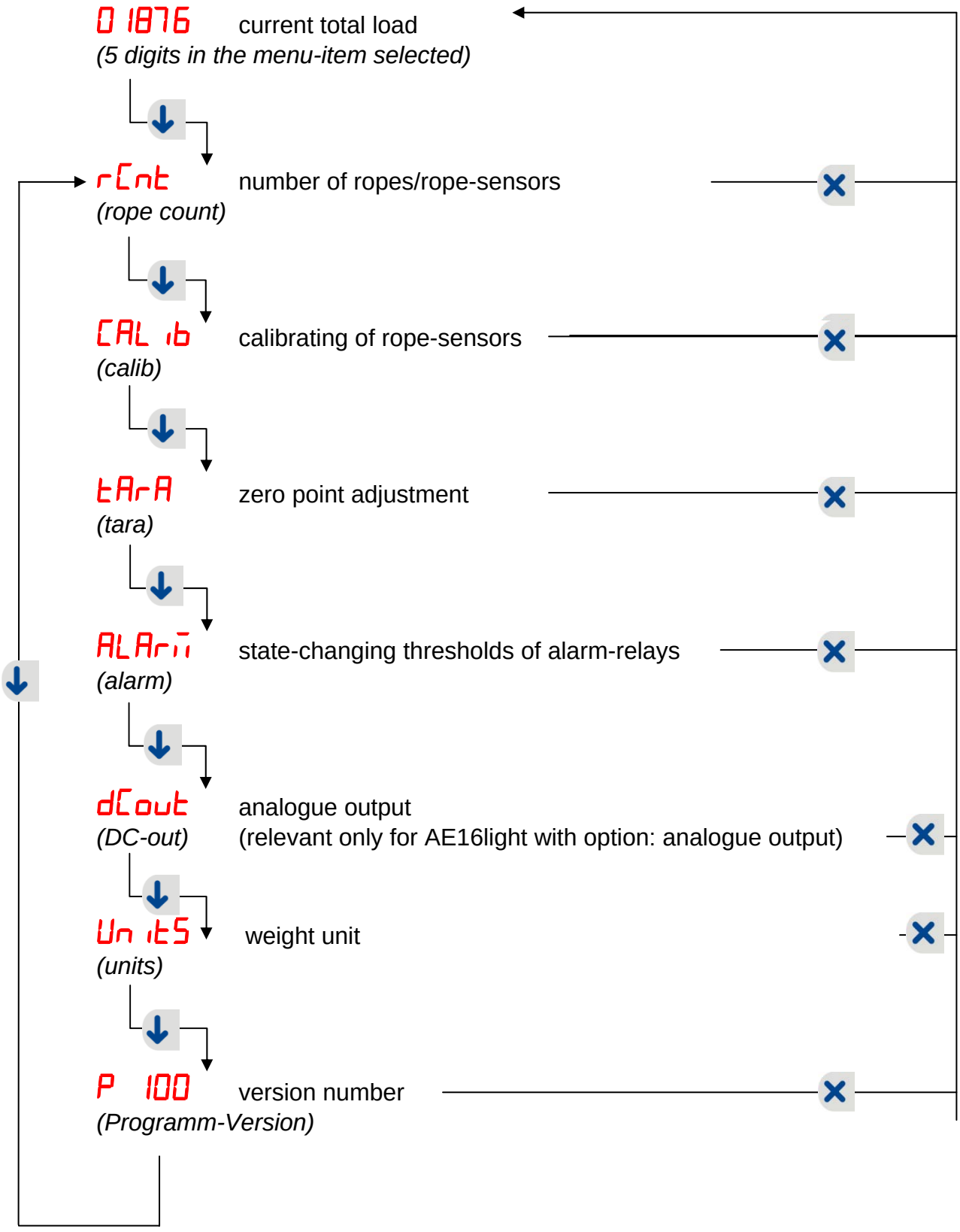
3.) Press button ↓ to navigate to the value desired for the currently flashing digit.
Press button ↵ to change to the next digit.

4.) After setting the last digit, press button ↵ again. After that the whole figure will be flashing.

5.) Press button ↵ once more to apply the adjusted parameter.



7. Scheme of Menu



8. How to Adjust the Number of Rope Sensors

a) By navigate to menu-item rCnt (rope count) and select it by pressing .

b) Follow the instructions of item 6 „How To Adjust A Parameter“ and adjust the correct number of rope-sensors.

c) It is possible at any time to quit this menu-item by pressing .

Attention:
It is inevitable to adjust the true number of rope-sensors as otherwise AE16 light would trace missing sensors and switch to the error-mode by activating all alarm-relays.

9. How to Calibrate the Load Measuring

Leaving the pre-adjusted menu-item Un itS unchanged means that the loads are to be entered in terms of percent of the nominal load, such as for example 100% for full load and 105% for overload.

Take the following steps to calibrate the evaluation unit of WeightWatcher light:

1. Mount the rope-sensors LS-light to the ropes.
2. Connect sensors to evaluation unit AE16light
3. Connect AE16light to a power supply ranging between 12V and 28V DC
4. Calibrate the evaluation unit AE16 both under full load and zero-load conditions.
   a. **How to Calibrate Zero Load**
      Purpose of this function is to compensate the weight of the empty cabin.
      Take the following steps:
      i. By navigate to menu-item CAL ib and select it by pressing . Then navigate by to menu-item ZEroC and select it by pressing . The standard value (refer to Un itS) is 000°0 (0% load, i.e. empty cabin). As soon as you will have adjusted the last digit, the whole figure will be flashing.

ii. Apply it by pressing  . After that a countdown will be running from 99999 to 00000. At 00000 the current weight of the car will be measured. It goes without saying that at that moment there must not be anything in the cabin or on the car roof that does not belong there under normal operation conditions (tools!), and that there must not stay any person in the cabin or on the car roof in order not to warp the zero load parameter.

b. **How to Adjust Full load**
Take the following steps:

i. By  navigate to menu-item CAL Ib and select it by pressing  . Then navigate by  to menu-item LoAdC and select it by pressing  . After that adjust on the display an arbitrary load to be loaded into the cabin. Unless you changed the standard of menu-item Un itS enter this load in terms of a percentage of the nominal load, i.e. 100% (100%), if you are loading the nominal load, or 75% (075%) if you are going to load ¾ of the nominal load only. As soon as you will have adjusted the last digit, the whole figure will be flashing.

ii. Apply it by pressing  . After that a countdown will be running from 99999 to 00000. At 00000 the current weight of the car including load will be measured. It goes without saying that at that moment there must not be anything additional in the cabin or on the car that does not belong there under normal operation conditions (tools!), and that there must not stay any person in the cabin or on the car roof in order not to warp the full load parameter.

iii. As from now on calibration of the rope-sensors is completed and in effect.

10. Alarm Limits

Alarm limit: a designation that corresponds to the load limit in the cabin, which – if exceeded – will change the state of the alarm relay. After changing the state of the alarm-relay, the corresponding status-LED will be luminating.

AL-1 (freely programmable load)

Changes its state, if the load limit adjusted by parameter AL- 1 is exceeded.

AL-2 (freely programmable load)

Changes its state, if the load limit adjusted by parameter AL-2 is exceeded.

AL-3 (freely programmable load)

Changes its state, if the load limit adjusted by parameter AL-3 is exceeded.

How to Adjust the Alarm Limits:

1. By ↓ navigate to menu-item ALArm and then press ↵.
2. Now – in the same manner – navigate to the alarm limit to be adjusted (AL- 1, AL-2 or AL-3) and select it by pressing ↵.
3. By ↓ navigate to the desired value of the currently flashing digit and select it by pressing ↵. This will at the same time make the next digit flash.
4. After having adjusted the last digit and accordingly pressed ↵, the whole figure will be flashing.
5. **Press ↵ once more to apply the parameter.**
6. You can quit this menu-item at any time by pressing ✕.

Attention:

Unless you changed the standard setting of menu-item UnitS_ the alarm limits are to be adjusted in terms of percentage, i.e. 100% for full load and 105% for overload.

11. How to Adjust the Analogue Output (Option)

Parameter dCout is meant to adjust the weight the analogue output shall provide the maximum output value of 20 mA for. This menu-item consists of two sub-items to be adjusted separately:

- By parameter LoAd the load is to be adjusted, the analogue output shall provide the maximum output value (20 mA) for.
- Parameter oFFS serves for switching a Live Zero on resp. off.
- Ajusting this option to on means that 0 kg rope-load measured corresponds to an analogue output signal of 4 mA.

  Switching this option off by oFF means that 0 kg rope-load measured corresponds to an analogue output signal of 0 mA.

12. How to Adjust the Display

Menu-item Un itS offers two options. Weights and alarm limits will be displayed according to the option you choose.

- Prcnt *(Percentage)* — Weights are all displayed in terms of percentage. (**preset standard**)
  Full load equals 100%
  Empty cabin equals 0%
- LoAd *(Load)* — Weights are displayed in terms of load. No need to set a measuring unit.

13. Electric Characteristics

Evaluation Unit AE16light

Supply Voltage	12 V – 28 V DC
Power Consumption	< 0,8 W
Fuse	1 A mT
HOLD-Input	12V-230 V AC/DC
Relay outputs	3
max. switching voltage	250 V AC / 220 V DC
max. starting current	2 A
max. continuous load current	30 V DC 1 A 125 V AC 0,3 A
max. switching capacity (resistive load)	62,5 VA
max. switching capacity (inductive load)	62,5 VA
min. switching load DC	10 mV DC 0,01 mA
Analogue output (option)	
galvanically separated	yes
output current	4 mA – 20 mA bzw. 0 mA – 20 mA

14. Fault Messages

All 3 Alarm-LEDs are luminating

This means that at least one rope load sensor failed, the incorrect number of rope load sensors in menu-item rCnt is adjusted, or the sequence of rope load sensors as connected to the evaluation unit was mixed up (to be connected to the evaluation unit from left to right).

15. How to Install Rope Load Sensors LS-light

For each suspension rope a rope load sensor has to be provided.

1.) Find the Best Position

The best position on the rope to mount the rope load sensor meets the following conditions:

- The sensor shall not mechanically touch on any other component throughout the whole travel distance.
- The rope section the sensor is to be clipped to shall be straight and completely intact.
- The section chosen shall be free from any mechanical effect that might be traced back to other previously mounted rope sensors.
- A rope section of at least 10 cm has to be left free between rope-joint and sensor.

2.) Clip the Load Sensor on to the Rope

Push the cylindric pin out to its backstop and put the sensor on the rope. Make sure that the rope lays close in the groove of the load sensor throughout the whole length.

3.) Secure the Clip of the Load Sensor

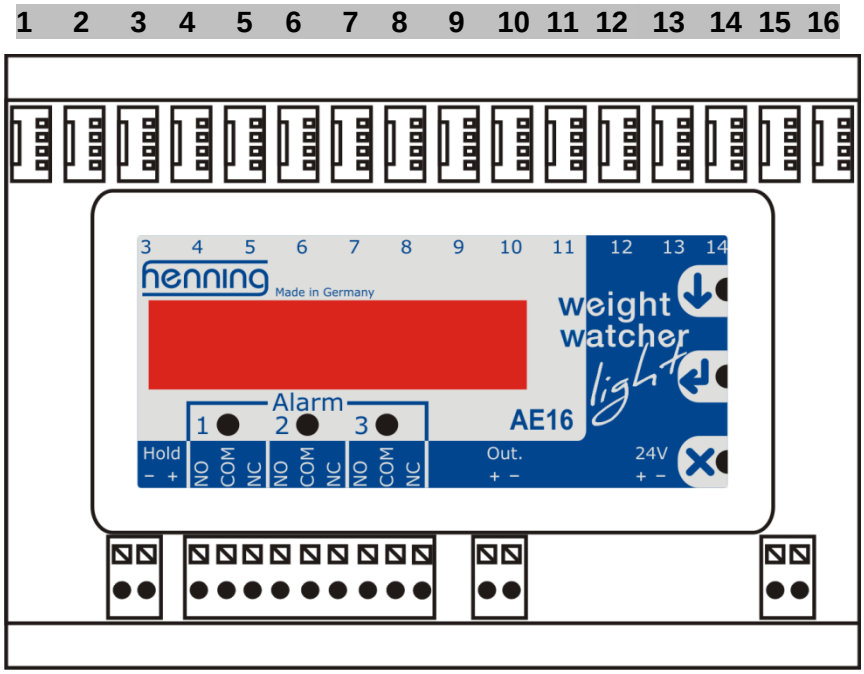
Push the cylindric pin in again and through the opposite hole of the clip. Hold it in that position while tightening the screw M5 by a socket spanner, whereas the screw comes to sit in the pocket hole of the sensor. Tighten the screw until the rope is visibly excursed and lies in close contact with the sensor (you will sense the growing stamina of the rope).

4.) Secure The Screw

Secure the screw by tightening the nut with spring washer.

4.) Connect the Rope Load Sensors to Evaluation Unit AE16light

One after the other, the rope load sensors are to be connected to evaluation unit AE16 light, starting with sensor-socket 1, top left in the casing:



Take steps 1 to 4 for every rope load sensor to be connected.

Attention:
To receive precise measuring results, never clip rope load sensors to already excursed rope sections. Only take intact rope sections.

16. Operation Instructions in Brief

1.) Install evaluation unit at an appropriate place.
2.) Mount rope load sensors (refer to item 15)
3.) Adjust number of rope load sensors (refer to item 8)

By navigate to menu-item rCnt and set the number by scrolling with and applying the figure with . Confirm the adjustment by pressing 2 times.

4.) Calibrate evaluation unit AE16light with empty cabin (refer to item 9).

By navigate to menu-item CAL ib select sub-item 2EroC and confirm by . The preset standard (see Un itS) is 000%o (0% cabin load, i.e. empty cabin). After setting the last digit, the whole figure will be flashing until you confirm it by pressing . After that a countdown will be running from 99999 to 00000. At 00000 the current weight of the cabin will be measured. At that moment there mustn't be anybody in the cabin or on the car roof , in order not to warp the measurement. Furthermore make sure that you didn't leave any tools in the cabin or on the car roof, nor any other things that don't belong there during normal operation.

5.) Calibrate evaluation unit AE16light with loaded cabin (nominal load) (refer to item 9).

By navigate to menu-item CAL ib select sub-item LoAdC and confirm by . Now you can adjust on the display an arbitrary load that you will load into the cabin. Unless you changed the preset menu-item Un itS, you will have to enter the load in terms of percentage, i.e. 100% (100%o), if you load the nominal load, or 75% (075%o), if you load ¾ of the nominal load for example. After setting the last digit, the whole figure will be flashing until you confirm it by pressing . After that a countdown will be running from 99999 to 00000. At 00000 the current weight of the cabin (including load!!) will be measured. At that moment there mustn't be anybody in the cabin or on the car roof , in order not to warp the measurement. Furthermore make sure that you didn't leave any tools in the cabin or on the car roof, nor any other things that don't belong there during normal operation, except the load for calibration.

6.) Adjust the alarm limits (see item 10)

By navigate to the alarm limit and confirm by . Scroll by to the value desired, then press to adjust the state-changing limit. Press 2 times to confirm the adjustment.

7.) Connect the control lines to the according relays and make sure that you accordingly choose the make- resp. break-contact.

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