

Speaking Station LV30

Ordering data

Designation	Type	Item no.
Speaking station with cable entries	LV 30	125 300 50 AX
Speaking station with plug connectors (socket / socket)	LV 30	125 300 51 AX
Speaking station with plug connectors (socket / plug)	LV 30	125 300 52 AX



- **Cost-efficient speaking station with 2 loudspeakers**
- **Clearly audible, reliable intercommunication and signalling**
- **Emergency operation (intercommunication) by means of batteries integrated into each LV30 in the event of a power failure**
- **Rechargeable NiCd battery (8.4 V / 180 mAh)**
- **Visual indication of DC-supply voltage**
- **Connection of the DC-wires: protected against polarity reversal**
- **Connection of the WL-wires: protected against polarity reversal**
- **Protection type: I M 1 EEx ia I**

Configuration

The electronic equipment of the speaking station realised in SMD technology is incorporated into a steel sheet enclosure of protection degree IP 54 and fixed to the swivelling front cover of the LV30 enclosure. The electronic equipment consists of two module housings encapsulated in sealing compound. The bottom housing contains the battery charging circuit, the loudspeaker and microphone amplifiers. The top housing accommodates the plug-in rechargeable NiCd battery pack.

This integrated battery on the one hand enables a high volume while consuming only an inferior amount of power from the system line, and, on the other hand, it enables the temporary emergency operation of the speaking station

after shutdown of the supply voltage due to e.g. an increased methane content or a supply voltage failure.

(If the device is supplied through a power supply circuit of category I M 2, protection type EEx ib I or of category I M 2, protection type EEx ia I within a correspondingly approved intrinsically safe system, the user will be responsible for this power supply circuit to be shut down in the event of an explosive atmosphere (increased methane content), and thus for the DC connections (DC1, DC2) of the device to be de-energized. The circuits still kept operable, which are supplied with power through the internal battery of the device, conform to category I M 1, protection type EEx ia I.)

The two LV30 loudspeakers are integrated into the housing on the left and right side.

The buttons for intercommunication, control room alert and signalling as well as the integrated microphone are flush mounted. In addition, these talk, control room alert and signalling buttons are colour-marked (talk button = blue; control room alert button = yellow; signal button = red).

Through two PG16 cable entries (optionally: two 6-pole plug connectors, according to the design type socket / socket or socket / plug connector) the connecting cable is led into the interior of the enclosure and connected to the related terminals.

Function description

When used for instance in a L111 intercom system between the L11-H2 main station and the L11-E2 end unit, the speaking stations LV30 will be integrated into the connecting line. The LV30 features a built-in microphone which is activated when the talk button is pressed. The subsequently installed microphone amplifier amplifies the signals recorded via the microphone up to such an extent that afterwards it is possible to inject them at a nominal level of -6 dB into the WL (LF)-wire pair of the connecting line.

The microphone sensitivity can be varied by means of an internal potentiometer. In as-supplied condition, this potentiometer is set to a centre position.

All further LV30 speaking stations linked to the connecting line emit these signals through their built-in loudspeakers. In that case, the nominal level of the volume will be approx. 105 dB(A) at 1m distance.

An internal potentiometer allows to adjust the volume. In as-supplied condition, this potentiometer is set to max. volume.

In addition to the talk button, the speaking station LV30 is equipped with a signal button and a control room alert button. When the signal button is pressed, a signal tone of 1980 Hz (-6dB) will be emitted, when the control room alert button is pressed, a control room alert tone of 420 Hz (-6dB) is emitted onto the WL (LF)-wire pair. While the signal tone serves for signalling purposes, the control room alert tone can be used as a calling tone to call e.g. a WL200-switchboard by activating this button in a previously defined sequence.

As a function check, the signal tone will also be shortly emitted (ca. 100ms) through the loudspeakers of the emitting station after the signal

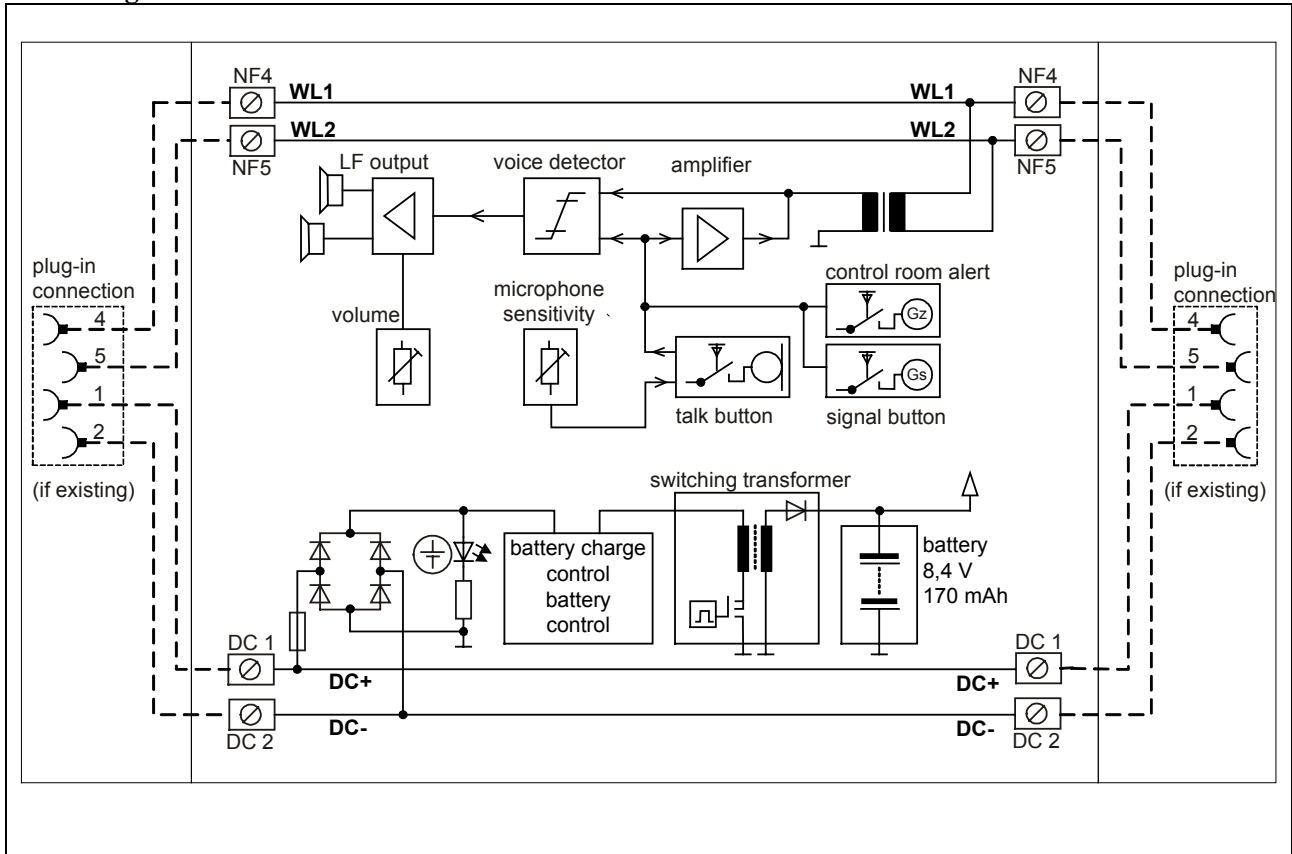
button (1980 Hz) has been pressed. The output stage for activating the LV30 loudspeakers is controlled via a voice detector. This device features a transformer decoupled connection to the WL (LF)-wire pair of the connecting line.

In the case of AC levels with a value of > 60 mV on the WL (LF)-wire pair of the connecting line, the voice detector responds and activates the LV30 output amplifiers. With signal levels < 40 mV, the voice detector is deactivated and shuts down the output amplifier with an OFF delay (OFF delay ca. 1 s).

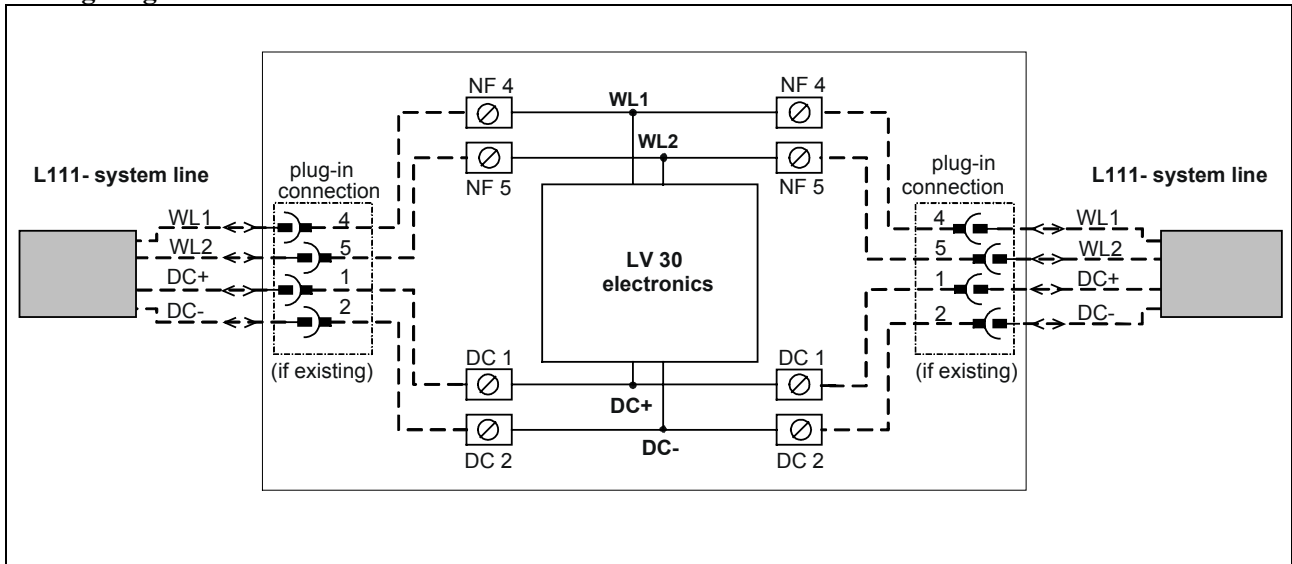
The battery of the speaking station is charged through an internal switching transformer with constant energy which is drawn from the supply voltage energizing the DC-input terminals (8 to 12V).

The front cover of the speaking station LV30 is equipped with a built-in visual DC-monitoring indicator (red LED). If there is a supply voltage on the DC-wires of the connecting line, the indicator light will be on (red LED).

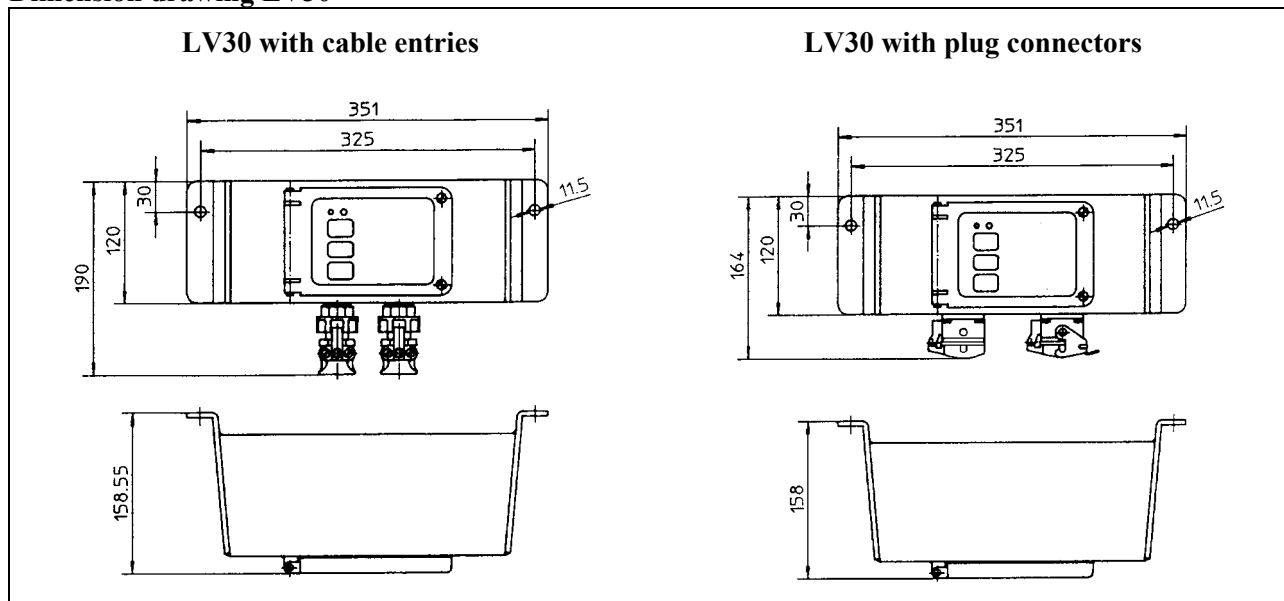
Block diagram LV30



Wiring diagram



Dimension drawing LV30



Technical data LV30

Designation Speaking station

Type LV30

Supply circuit (DC-wire pair)

Voltage U_i 13 V_{DC}
 Effective internal capacity C_i negligible
 Effective internal self-inductance L_i negligible

Nominal ratings:

Connecting terminals for the DC-wires of the connecting line

Terminal DC 1 + 12 V_{DC} up to 8 V_{DC}

Terminal DC 2 0 V_{DC}

Connecting terminals for the DC-wires of the connecting line (with plug-in connection, if existing)

Connection 1 + 12 V_{DC} up to 8 V_{DC}

Connection 2 0 V_{DC}

Note:

The connection of the WL-wires is configured so as to offer polarity reversal protection. An interchange of terminal DC 1 with terminal DC 2 or of connection 1 with connection 2 is permitted.

LF circuit (WL(LF)-wire pair)

Voltage U_o 6 V
 Amperage I_o 26 mA
 Nominal voltage 385 mV at 600 Ω (-6 dBm)

Connecting terminals for the WL-wires of the connecting line

Terminal NF 4 WL1

Terminal NF 5 WL2

Connections for the WL-wires of the connecting line (with plug-in connection, if existing)



Connection 4 WL1

Connection 5 WL2

Note:

The connection of the WL-wires is configured so as to offer polarity reversal protection. An interchange of terminal NF 4 with terminal NF 5 or of connection 4 with connection 5 is permitted.

Technical data LV30

Transmission level	-6 dBm (± 1 dB) at 600 W on the WL(LF)-wire pair in the case of intercom, signal and control room alert
Frequencies	
Voice	300 Hz up to 10 kHz
Signalling tone	1980 Hz
Control room alert tone	420 Hz
Voice detector	
Voice detector activated	Signal voltage ≥ 60 mV on the WL(LF)-wire pair of the connecting line
Voice detector deactivated	Signal voltage < 40 mV on the WL(LF)-wire pair of the connecting line
OFF delay for the output amplifier of ca.	1 sec
Battery	
NiCd battery	8.4 V / 180 mAh
Power consumption	$< 30 \mu\text{A}$ in quiescent condition via battery ca. 300 mA with loudspeaker activated
Control elements	
Buttons for:	intercom, signal tone and control room alert tone
Visual indicators	
DC-supply monitoring (red LED)	The indicator light will be on, if there is a supply voltage on the DC-wires of the connecting line.
Enclosure	Steel sheet, colour: orange
Enclosure protection degree	IP 54 acc. to IEC 529
Cable entries	2 x PG16
Optional plug-in connections	2 x 6-pole plug-in connection (socket/socket) or (socket/plug)
Operating position	at choice
Operating conditions	Preferrably within firedamp mine environments
Operating mode	100 % ED
Temperature range	
- operation	0°C to + 40°C
- storage	- 25°C to + 50°C
- transport	- 25°C to + 50°C
Dimensions	See dimension drawing
Weight	ca. 8.2 kg
Storage	The batty integrated into the speaking stations LV30 is subject to self-discharge. After extended storage periods the battery should be recharged to ensure that the speaking station LV30 will imme- diately be operable after installation.
Test and approval	
- type of protection	I M 1 EEx ia I
- approval no.	DMT 02 ATEX E 097
Marking	
The nameplate is marked as follows:	
Company	FHF Bergbautechnik D-42551 Velbert
Type	LV30  I M 1 EEx ia I DMT 02 ATEX E 097  0158 0 $\leq T_a \leq + 40^\circ\text{C}$ F. No.... test...(initials, month/year)

Warning and Safety Advice

<p>The apparatus is a flameproof device of safety-class group I.</p> <p>Please pay particular attention to the following warning and safety advice:</p>
<p>The apparatus is to be connected and installed in accordance with the specified installation instructions by qualified personnel, taking into account the protection type indicated.</p>
<p>If the device is supplied with power through an appropriately approved intrinsically safe power supply circuit of category I M2, protection type EEx ib I or category I M 2, protection type EEx ia I, the user will be responsible for this power supply circuit to be shut down in the event of an explosive atmosphere (increased methane content) and thus for the DC+ and DC- battery charging connections to be de-energized. The circuits still kept operable which are supplied with power by the internal battery of the device conform to category I M 1, protection type EEx ia I.</p>
<p>The interconnection with other electric equipment must be separately certified.</p>
<p>The device may only be connected and operated with the specified voltage. The polarity specifications are to be observed.</p>
<p>Replace faulty components only by the appropriate genuine spare parts.</p>
<p>Make sure the housing is not damaged. Do not operate faulty devices, shut them off immediately.</p>
<p>If the device is operated in an industrial installation, the rules for the prevention of accidents for electrical installations and equipment of the association of the industrial employer's social insurance against occupational accidents shall be observed.</p>
<p>The device may only be operated under the specified ambient conditions. Unfavourable ambient conditions may damage the appliance, possibly jeopardising the user's life as a result. Unfavourable ambient conditions may be:</p> <ul style="list-style-type: none"> • moisture, dust (observe type of protection) • air humidity too high (> 75% rel., condensing) • inflammable gases, vapours, solvents not covered by the protection class of the device. • ambient temperatures too high (> + 40°C) • ambient temperatures too low (< 0°C).
<p>The ambient temperature specified for the device may not be exceeded or failed to be reached during operation, storage and transport.</p>
<p>Only use the cable glands/entries specified by the manufacturer.</p>
<p>The extension and the installation of further parts is not permitted.</p>
<p>Repair work may only be realised by the manufacturer or by a person authorized by the manufacturer. Subsequently, a new routine test for the device must be carried out.</p>
<p>Make sure the device is protected against damage during transport, storage and when not in use. Disconnect the battery to prevent its premature discharge.</p>
<p>Devices that have been operated outside intrinsically safe installations and, in particular, have been supplied with power by a non-intrinsically safe power supply may not be operated in explosive areas due to possible previous damage.</p>
<p>Preferably, the device is mounted horizontally, with the cable glands and plug connectors facing downwards at the bottom side. When mounting the device, it is to be ensured that the device will not be used as climbing aid and thus be damaged. If required, additional measures must be taken to protect the device against falling objects.</p> <p>It must be ensured that the apparatus allows easy access and operation.</p> <p>It must be ensured during the mounting that the substructure features an adequate carrying capacity.</p>

Warning and Safety Advice

Any faulty connection lines on the devices shall be replaced.

Attention:

Disregarding the above points will nullify the explosion protection. The device then represents a danger to the life of the operator and may cause a hazardous atmosphere to explode.

The device features a high sound level. Do not go too near to the activated loudspeaker in order to avoid hearing impairment.

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