Low level limiter

SMLC2

for use with the level probe: EL030 or EL19-2
or the multirodprobes EL963 and MS015A/B

SIL 3

Edition 08/2021
D-08-B-51037-EN-01

INSTALLATION AND OPERATING INSTRUCTIONS

Product philosophy

Thank you for placing your trust in IGEMA and deciding in favour of one of our high-quality products.

For more than 100 years, measuring and control systems have been developed, produced and sold worldwide under the IGEMA brand name.

“Steam is our passion” and we offer you the entire programme for the safe and economic operation of your plants, especially in the steam and condensate sector.

Please read the installation and operating instructions carefully to ensure a safe and reliable operation.

In addition to the information on installation and operation, you will also find important information on maintenance, care, safety and value retention of your measuring and control system.

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1. Important safety instructions

KEEP THESE INSTALLATION AND OPERATING INSTRUCTIONS IN A SAFE PLACE!

Commissioning as well as maintenance and repair work may only be carried out by qualified persons in compliance with the installation instructions given in this operating manual. The correct installation, commissioning, maintenance and operation of the device presupposes that the person in charge is familiar with measurement and control systems and complies with the general installation and safety instructions. In addition, the correct and intended use of tools and the handling of safety devices must be ensured. Unqualified persons must not be assigned the above tasks!

IGEMA GmbH accepts no liability for damage to property or personal injury caused by unqualified persons or by failure to observe these installation and operating instructions. If no sufficiently qualified person can be found, IGEMA GmbH can be commissioned with the installation/maintenance.

1.1 Symbols used in these instructions

In the following installation and operating instructions, safety instructions are marked with the following symbols:

 Danger	This symbol and signal word refer to a potentially hazardous situation which could result in death or injuries if ignored.
 Caution electrical voltage	This symbol and signal word indicate live parts with an immediate danger of death from electric shock.
 Caution hot	This symbol with a signal word indicates a potentially hazardous situation that can result in severe burns and scalds all over the body.

Caution	This symbol and signal word refer to a potentially hazardous situation which could result in personal injury, property and environmental damage if ignored.
Caution	This symbol and signal word refer to a potentially hazardous situation which could result in damage to the equipment if ignored.
Info	This symbol indicates useful information and recommendations as well as measures that will prolong the value of your measuring and control system.

1.2 Intended use of the device

Caution

Use these installation and operating instructions, the identification on the rating plate (see 7.5) and the technical data sheet to check whether the device is suitable for the intended use/application. The device complies with the requirements of the European Pressure Equipment Directive 2014/68/EU.

The device may only be used to indicate fill levels on containers.

The maximum values of the pressure and temperature range of the device must be checked before installation. If the maximum allowable operating values of the device are lower than those of the system on which it is to be installed, protective instruments for the device, such as pressure reducers or similar, must be provided to avoid limit situations. The device may only be used in accordance with the information in these installation and operating instructions or for the parameters and applications agreed in the supply contract. (see rating plate, 7.5) The operator of the direct water level indicator is obliged to familiarise himself on the compatibility of the medium and the device. In case of doubt, contact the relevant installation manager or site manager.

The correct installation position ion of the device must be observed! Before installing the IGEMA product on boilers or containers, it is essential to remove all protective covers and, if necessary, the protective film from rating plates.

1.3 Safety at work

Danger

Before installation or carrying out maintenance work on the device, safe access must be ensured and a secure working area with sufficient lighting must be defined and marked out. Always use lifting equipment for heavy loads!

Before starting any work, carefully check which liquids or gases are or have been in the pipeline. (flammable substances, irritating substances, substances hazardous to health) When opening or dismantling the device, residues of the medium can escape. Subsequent fumes are also possible in unpressurized and cold systems. Use designated PPE such as safety goggles and respiratory protection!

Special attention must be paid to the condition of the environment around the installation or maintenance site. Be aware of e.g.: potentially explosive atmospheres, lack of oxygen in tanks and pits, dangerous gases/liquids, extreme temperatures, hot surfaces, fire hazard (e.g. during welding) and moving machine and system components. Protect yourself from excessive noise by taking the required protective measures.

For all maintenance work or new installations, on new or existing boilers or vessels, it is imperative to check that the boiler or vessel has been depressurised and that the pressure has been safely reduced to atmospheric pressure. In principle, no system should be regarded as unpressurized even if indicated by pressure measuring devices such as pressure gauges or sensors. When releasing the pressure, make sure that no persons are in the release area. Carefully check whether you and/or other persons in the vicinity need PPE to protect yourself from external influences such as high and low temperatures, radiation, noise, danger to eyes, loose objects that can fall down or chemicals.

There is always a risk of injury when handling large and/or heavy equipment. Observe the load handling regulation as a minimum requirement for working with loads. Avoid handling the device with your own physical force, e.g. by lifting, pulling, carrying, pushing or supporting it, especially to prevent back injuries. Use lifting equipment to move heavy and bulky equipment in accordance with Article 1, Section 2 of the German Load Handling Regulation (LasthandhabV).

Caution hot!

Under normal operating conditions the surface of the device can become very hot! Under the maximum operating conditions, the surface temperature can exceed 320°C. After shutting off or, if necessary, shutting down the boiler, wait until the temperature has normalized to room level. To avoid the risk of burns and scalds, always use PPE including safety goggles!

1.4 Safety instructions for this device

Caution

These installation and operating instructions are an integral part of the device and must be forwarded to the responsible departments "Goods inward, Transport, Installation, Commissioning and Maintenance". They must be kept in such a way that the technical staff have access to these documents at all times. If the device is passed on to a third party, these installation and operating instructions must also be included in the national language of the third party.

Avoid shocks and hard contact during transport, as this can lead to damage. During intermediate storage, the device must be kept dry and secured against damage.

When servicing the unit, make sure to avoid sharp-edged parts. There is a risk of cutting hands and arms! Always wear work gloves when changing level limiter.

When returning goods to IGEMA GmbH, the applicable safety and environmental laws according to GGVSEB [German ordinance on the national and international carriage of dangerous goods by road, rail, and inland waterways] must always be observed. If there are any risks to health or the environment due to residues or the device has a mechanical defect this must be indicated when returning the device and the necessary precautionary measures must be taken. If the returned goods are devices that have come into contact with or contain hazardous substances, a safety data sheet must be enclosed, and the goods must be clearly marked. In addition, the hazardous substance must be reported to the logistics service provider.

1.5 Exclusion of liability

IGEMA GmbH Mess- und Regelsysteme will assume no liability if the above regulations, instructions and safety precautions are not observed and followed. If they are not expressly listed in the installation and operating instructions, changes to an IGEMA device are carried out at the risk of the user.

2. Contents of packing

1 SMLC2 controll unit*
1 probe EL030, EL19-2, EL963 oder MS015A/B* resp.
1 set of installation and operating instructions
* The content depends on the order.

3. Use in compliance with regulations

The self-monitoring low level limiter SMLC2 in conjunction with the level probes EL03 or EL19-2, EL963, MS015A or MS015B, is a level limiter, a safety accessory according to:

EU-Directive 2014/68/EU

DIN EN 12952-11 DIN EN 12953- 9

DIN EN 61508 -1/ -2/ -3 DIN EN 61326-1

DIN EN 61010-1

The limiter meets the requirements for own fault detection under SIL3.

Type aproval certificates:

Type aproval due to PED / Certificatnumber: 01 202 931-B-16-0021

Type aproval due to SIL / Registrationnumber: 44 799 13775204

The limiter is used for monitoring a minimum fill level e.g., in steam boilers. If the liquid level falls below the minimum fill level the limiter must reliably switch off the boiler's burner control so that no overheating of the boiler can occur and thus injury to people or damage to installations is prevented. The prescribed minimum fill level in the boiler dependents on the system and is given by the boiler manufacturer. Measuring of the liquid level is carried out via the probes EL030, EL19-2, EL963 or MS015A/B (see corresponding assembly and operating instructions) which are fitted in the boiler or mounting flange.
When operating a steam boiler system with limited supervision and also when operating without constant supervision the required maintenance procedures must be carried out self-monitored via control equipment on the limiter.
The permanet self-monitoring ensures the safety function. Thus a test button is not neccessary.

Probes for use with SMLC2:

Name	PS	TS	Anschluss	Electrode length
EL030	32 bar	239°C	G ½"	125mm – 1700mm
EL19-2	200 bar	367°C	G ½"	130mm – 1700mm
EL963	8 bar	175°C	Flange	130mm
MS 015A	32 bar	239°C	G 1"	60mm – 1500mm
MS 015B	32 bar	239°C	G 1½"	60mm – 1500mm

4. System description

4.1 Function

The SMLC2 low level limiter works in conjunction with the IGEMA EL030, EL19-2, EL963, or MS015A/B level probes on the basis of the conductive fill level method of measurement whereby the electric conductivity of the medium is used. The conductivity of the medium is measured in µS/cm. For this method of measurement to function reliably a minimum conductivity of the substance to be measured is required.
The conductive method of measurement makes two statements: electrode submerged or electrode emerged or switch point reached or not reached. Before installation the length (observe thermal elongation) of the electrode must be adjusted to the desired switching points, e.g. for switching off burner and interrupting the safety circuit.
The limiter determines the current liquid level (electrode submerged / electrode emerged) in the boiler. If all conditions for correct operation are met, the safety chain for the steam generator is enabled (burner can switch on). On detection (level has fallen below minimum level) the output “pre-alarm” is switched on immediately and the red LED starts to flash (1Hz). Should this state be present for longer than the alarm delay time set (4s, 8s, 12s, 16s), the output of the safety chain will be switched off (safe operation mode) and the LED “ALARM” (red) remains permanently lit.
The factory setting for the alarm delay time is 4s.
To avoid faulty trips, e.g. due to foam or turbulent surface, the detection state is assumed not before the electrode is permanently submerged for 1,5s.
In the event of a fault (e.g. broken cable, electronics malfunction, ...) the safety chain is switched off immediately.
Safe operating mode, during which the output contacts of the device go into rest position, corresponds at the same time to the de-energised state of the limiter.

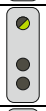
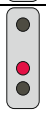
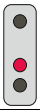
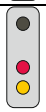

Danger

So that after a fault the burner control does not start up again of its own accord, manual locking (latching) of the burner must be carried out on site. It is not a component of the limiter.

The general function of the limiter SMLC2 is displayed by the lighting of the green LED "POWER”. The input stage of the SMLC2 compares the values of the insulation and the limiter electrodes. Thus, besides the normal operationg stage, low level detection and triggering of the insulation surveillance are implemented. Malfunctions of the measuring cable (e.g. short circuit or cable break) will be detected, too.
The power flowing via the contacts of the safety chain is limited in the SMLC2 by a 4 amp fuse protection by which sticking of the contacts is prevented.

The self-monitoring system is capable of identifying any possible first failure the moment it occurs and switching off the downstream relays. Failure to detect a fault is therefore impossible.
The self-monitoring is a periodic overall test of the device and takes place every 2sec as a fully automatic process. This test is a background job and only an error detection will be displayed. Because of this special first failure safe design manual tests are not necessary so there are no test switches on the SMLC2.

4.2 LED-Display

	Permanent green LED: normal operating mode	sound operation
	Flashing green LED (1 Hz): low voltage	Uv < 180V
	Permanent red LED: Level has been below electrode for more than 4 (8, 12, 16) sec. Returns to normal operating mode, if electrode is longer than 2 sec in water again.	Low water (LLW)
 	Flashing red LED for 4..16s (1 Hz): Resistance of insulation electrode below threshold for > 5 sec. Subsequently: permanent red LED. Returns to normal operating mode, if resistance of insulation electrode above threshold again.	Insulation electrode stained
	Permanent red and yellow LEDs: RAM/ROM/CPU test faulty; 2nd processor does not answer. Return to normal operation mode if failure corrected.	System failure
	permanent red LED together with flashing (1 Hz) yellow LED: Short circuit or cable break.	Fault in measuring cable

5. Assembly and Installation

The limiter is supplied in a plastic plug-in housing for fitting into switch cabinets. The housing is designed for quick fitting with a spring catch for the standard 35 mm carrier rail and for screw fixing on a mounting plate.

Info

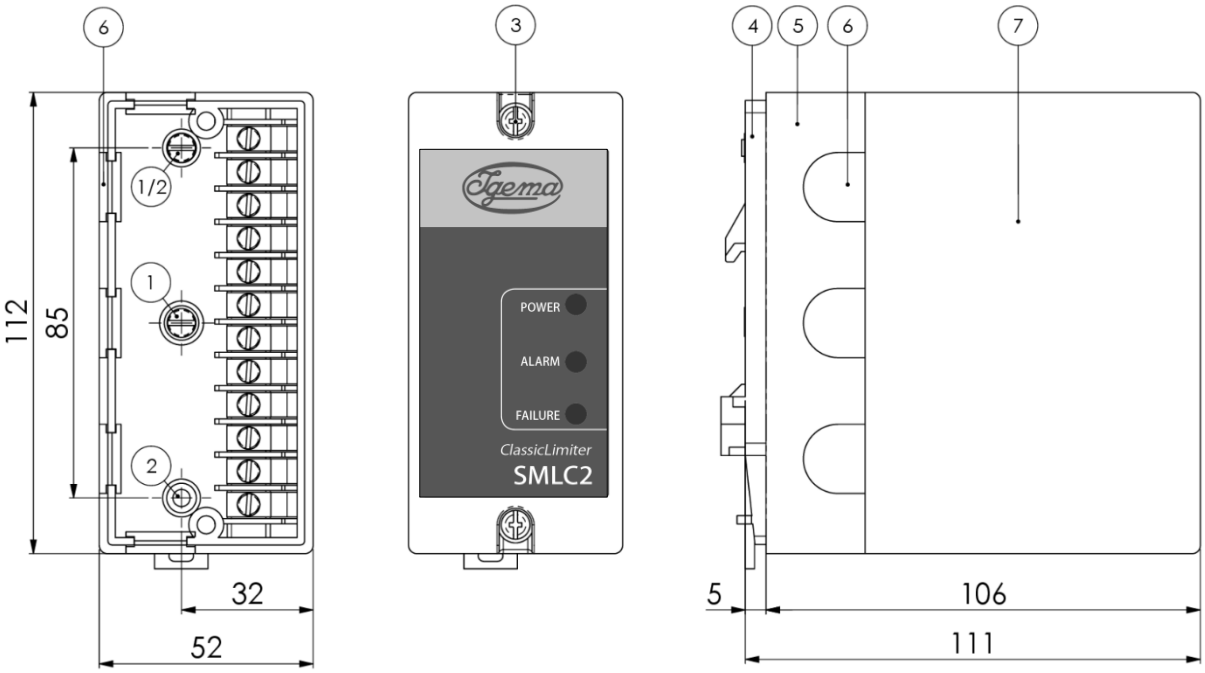
If the unit is used in environments with increased exposure to vibration (e.g. marine), fixed installation on the mounting plate should be selected.

5.1 Installation dimensions and descriptions

Base
with connection terminals

Front view

Side view



1 Screws for quick fitting

2 Holes, ø 4,3 mm, srew fixing on the mountig plate

3 Fixing screws

4 quick fitting with spring catch

5 Base

6 Cable feedthrough

7 Electronic housing

5.2 Installation

Caution electrical voltage

Ensure protection class in accordance with current regulations.

Quick fitting for standard 35 mm carrier rail

- Fix device on standard carrier rail by means of the quick fitting with spring catch (4).
- Release fixing screws (3) and pull electronic housing (7) from base (5).
- Do electrical connection (see chap. 5.3).

Without snap fixing

- Release fixing screws (3) and pull electronic housing (7) from base (5)
- Release screws (1) and remove quick fitting (4).
- Drill through the marked point (2) in the base (5) with ø 4.3 mm drill bit.
- Fit base (5) on mounting plate with two M4 screws.
- Do electrical connection (see chap. 5.3).

5.3 Electrical connection

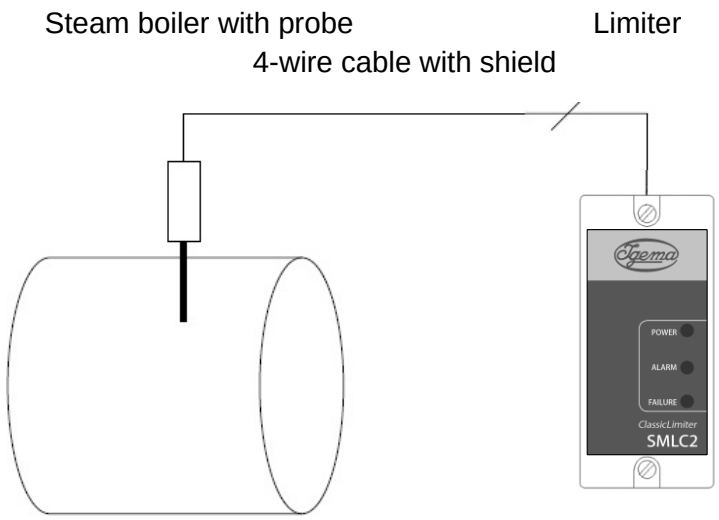
Caution electrical voltage

The device terminal strip is live during operation!!
Before working on the device disconnect it from the mains!!

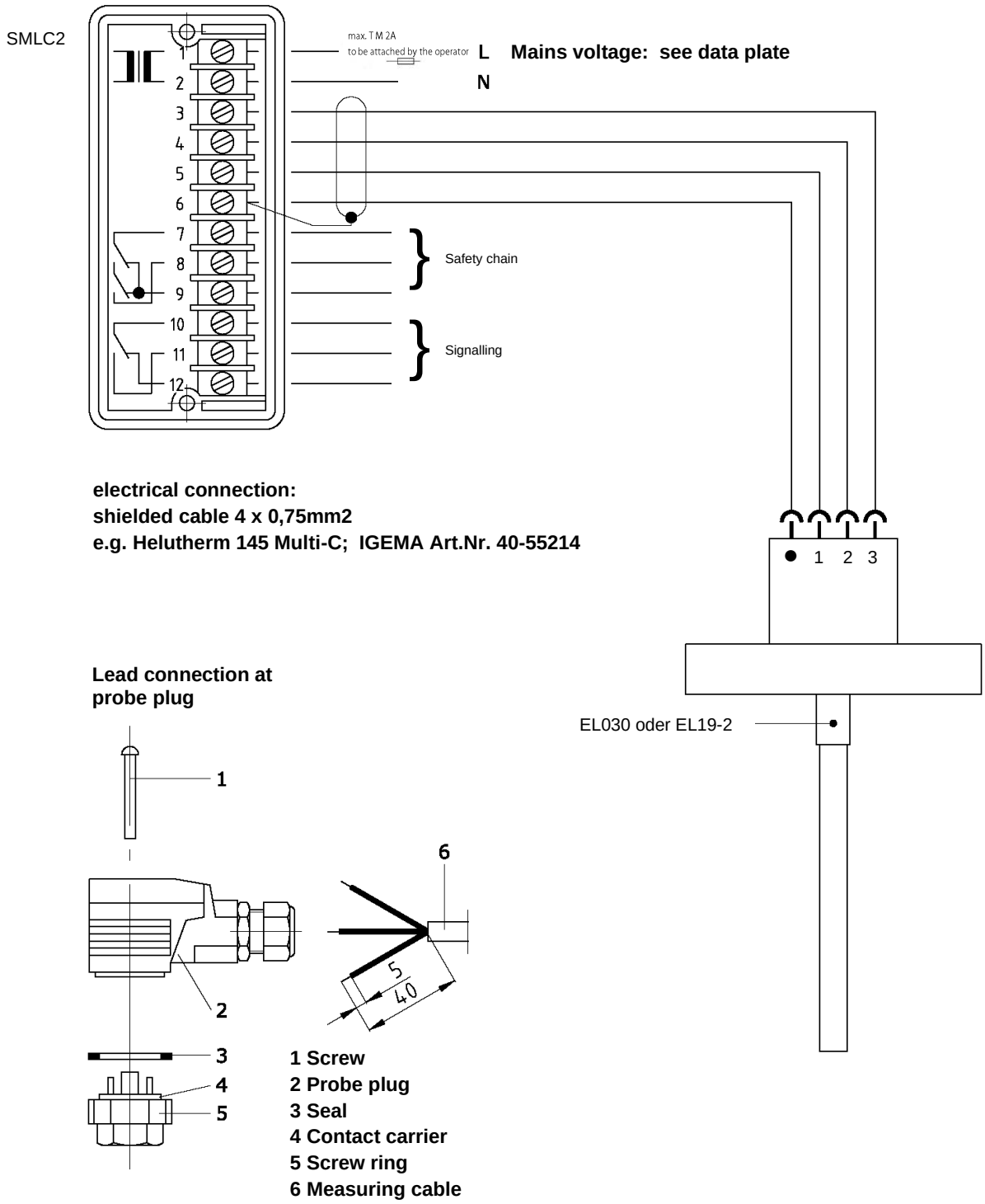
Caution

The device must be protected mains-side by the operator with a max. T M 2A fuse!

5.3.1 Schematic diagram



5.3.2 Assignment plan



In the normal operating condition (safety chain closed; burner ON) the output contacts 7 and 8 or 10 and 12 (pre-alarm OFF) are closed.
The configuration of the terminals is printed at the back of the housing.
(EL968 and MS015A/B: check separate Installation and Operating instructions)

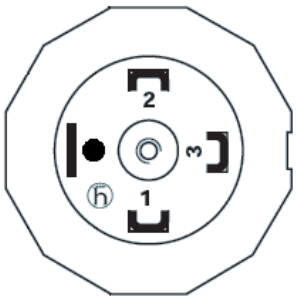
5.3.3 Procedure

- Pierce or pull out cable feedthrough (6) and feed connection cable through. Check supply voltage. See name plate for allowable voltage. Use shielded connection and control cable (4 x 0,75 mm²) to the electrode (z.B. Helutherm 145 Multi-C - IGEMA Art.No. 40-55214).
- Length of connecting line max. 100 m.
- Only connect shielding on the SMLC2 control unit (terminal 6). After electrical connection - with device disconnected from the mains - put hood (7) on holder (5) and tighten fastening screws (3).

Caution

During installing it must be considered whether the cable used is UV-resistant and that the UV protection is ensured on the installation side if necessary.
The cable must not come into contact with heat-conducting parts.

The probe is equipped with a plug connector (4-pole).



1 Measuring electrode
2 insulation electrode 2
3 insulation electrode 1
● GND

For aligning the probe plug to the local circumstances, the upper nut can be released (Ø 33.5mm). In doing so care must be taken not to move the plug in the probe!! (AF24).
The inner part can be carefully turned into the correct position.
On refitting care must be taken that the seal is correctly seated! Retighten the upper nut without moving the plug in the probe.

Caution

For connecting probe and controller pre-fabricated cables in various lengths are available as accessories. If pre-fabricated cables are not used the connection plugs must be wired according to the wiring plan.

5.4 Fitting the electrode

Danger

It is essential to remove the protective tube for transport before installation!

Danger

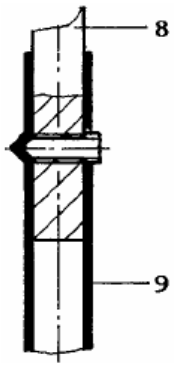
If several electrodes are screwed into a flange the probe plugs (2) and the associated probes should be labelled to prevent confusion!

EL968 and MS015A/B: check separate Installation and Operating instruction

Danger

Always depressurise the boiler /water column and allow it to cool down before installation, dismantling or servicing the probe!
The Probe is hot during operation! Severe burns at hands or arms are possible. During dismantling of the probe steam or hot water may escape! Severe burns of the whole body are possible.

Fixing the electrode extension (9)

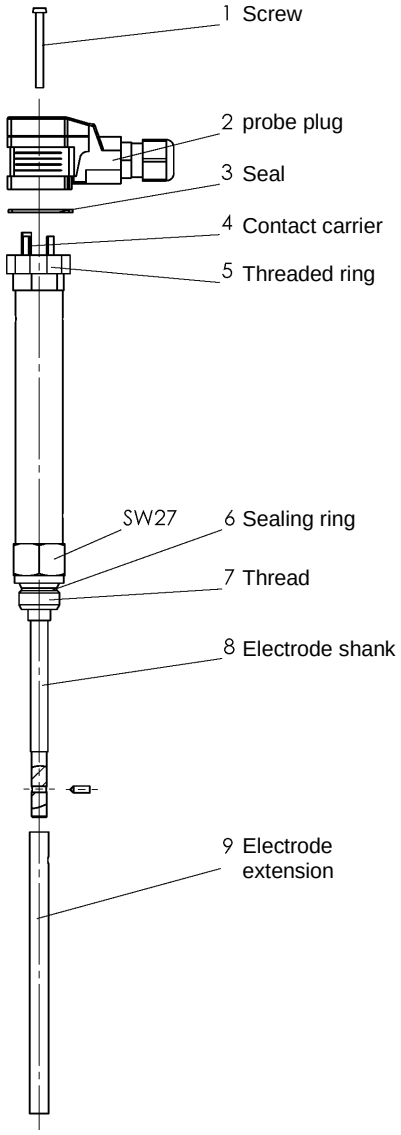


Push the electrode extension (9) approx. 30 mm over the electrode shank (8) until the ø 4.3 mm hole matches the threaded hole in the electrode shank.

Screw up both parts by means of the enclosed M4 set screw with AF2 hexagon socket.

Shortening the electrode extension (9)

- Remove the electrode extension (9) by unscrewing the grub screw (see info at next page).
- Carefully clamp electrode extension (9) directly at the point to be shortened and shorten it carefully with a suitable tool. Do not distort the electrode extension! Debur cut surface of the extension before assembling.



Danger

When commissioning the boiler, check the screw connection of the probe in the flange for tightness and retighten if necessary!

Caution

Extension of an electrode extension is not permitted!

Caution

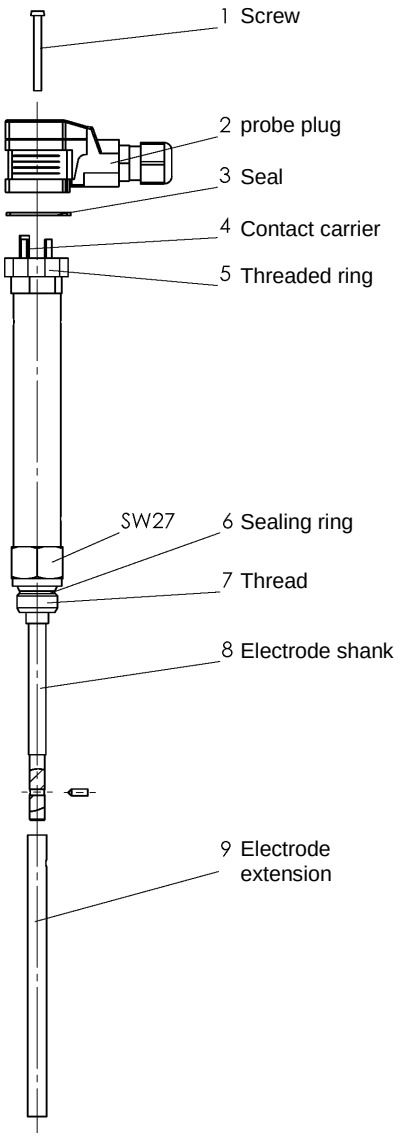
Do not heat insulate probe head - all parts above the thread (7)!

Info

If probe EL030 is used in environments with increased exposure to vibration (e.g. marine), it should be noted that the electrode extension has been mounted and secured by the manufacturer. Thus it does not need to be fixed.

Screwing in the probe

- Release screw (1) and pull off probe plug (2)
- Clean and check sealing surfaces
- Insert (new) sealing ring (6)
- Lubricate thread (7) with heat-resistant solid lubricant (e.g. graphite).
- Screw in probe and tighten, max. tightening torque Md=140 Nm.
- Make electrical connection only after installation in the boiler.



Do not seal thread with PTFE strip or the like!

When commissioning the boiler, check the probe screw connection in the flange for leaks and retighten if necessary!

Removal of the probe

- Release screw (1) and pull off probe plug (2)
- Unscrew the probe carefully.

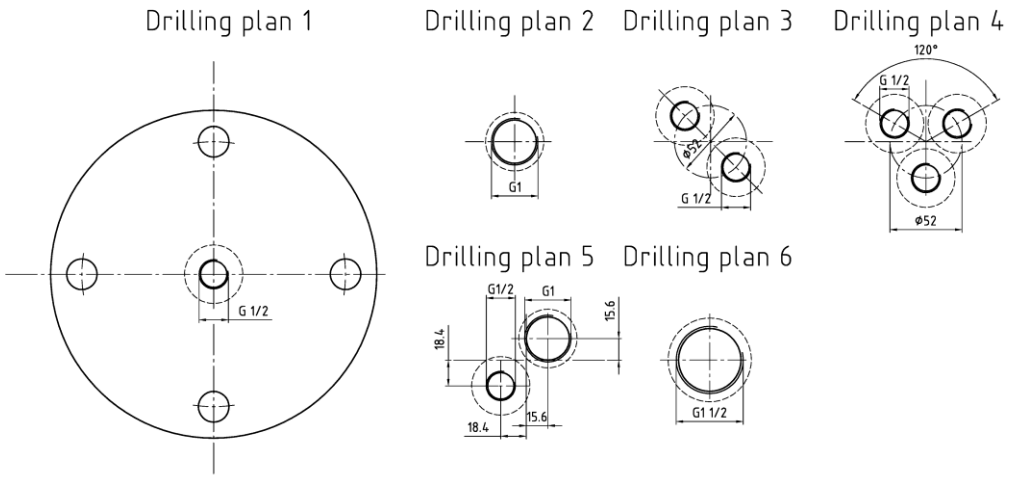
5.5 Fixing elements for mounting probes

The flanges, seals, screws and nuts listed in the table below are designed in accordance with DIN EN 12952 und 12953.

Flanges according to DIN

PN	DN	DIN	Form	Threaded hole	Material
40	50	EN1092-1	A	according to drilling plan 1	1.0460
63		EN1092-1	B2		
100 / 160		EN1092-1			
40	100	EN1092-1	A	according to drilling plan 1,3,4,5	1.0460
63		EN1092-1	B2		
100 / 160		EN1092-1			

Drilling plans 1-6



Seals according to DIN

PN	DN	DIN	Material
40	50	EN 1514-1 IBC	Graphite with plain metal insert
63		2697	RSt 37-2/ 0.5 graphite
100 / 160			
40	100	EN 1514-1 IBC	Graphite with plain metal insert
63		2697	RSt 37-2/ 0.5 graphite
100/160			

Screws according to DIN

PN	DN	DIN	Quantity	Dimension	Material
40	50	976	4	M16 x 75	1.7709
63				M20 x 100	
100/160				M24 x 110	
40	100	976	8	M20 x 90	1.7709
63				M24 x 110	
100/160		2510		LM27 x 145	Ck 35

Nuts according to DIN

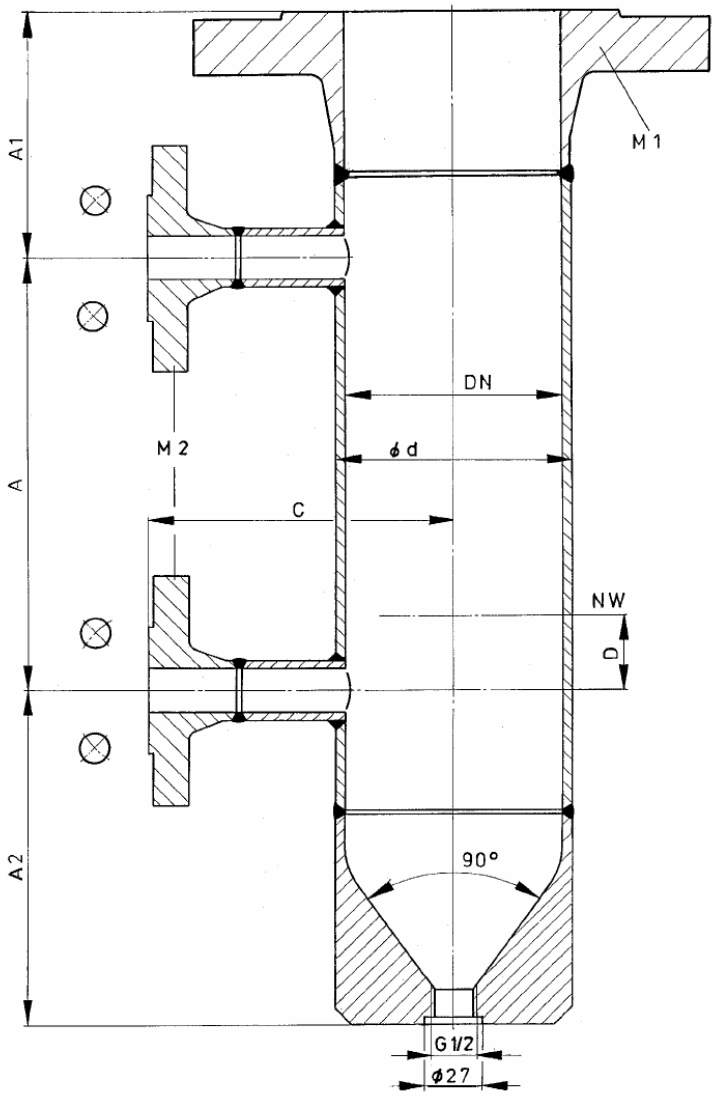
PN	DN	DIN	Quantity	Dimension	Material
40	50	EN 24032	8	M16	1.7258
63				M20	
100/160				M24	
40	100	EN 24032	16	M20	1.7258
63				M24	
100/160		2510		NFM27	C 35

5.6 Mounting in the water column


Caution

If shut-off valves are mounted between the process connections of the water column and the boiler supports, an electric locking system (end switch) has to be installed. A drain valve should be mounted to the water column.

Illustration of water column



Materials

Flange	1.0460
Pipes	St35.8 / 16 Mo 3 (according to pressure range)

Stainless steel and ASME-compliant materials upon request.

Construction dimensions

PN	DN	Construction dimensions min. mm				
		∅d	C	D	A1	A2
16	50	60,3	115	15	85	100
25						
40						
63			135		100	
100					105	
160					115	
16	100	114,3	140	15	100	150
25						
40						
63			160		140	160
100					155	
160					165	

Process connection M1

PN	DN	DIN	DIN sealing form
16	50 100	DIN EN 1092-1 Type 11	Form B1
25			
40			
63			Form B2
100			
160			

Process connection M2

PN	DN	DIN	DIN sealing form
16	20	DIN EN 1092-1 Type 11	Form B1
25			
40			
63	25		Form B2
100			
160			

On request ASME-compliant flanges, weld-on ends or DIN or ASME-compliant socket welding on the process connection M2 are also an option.

6. Configuration

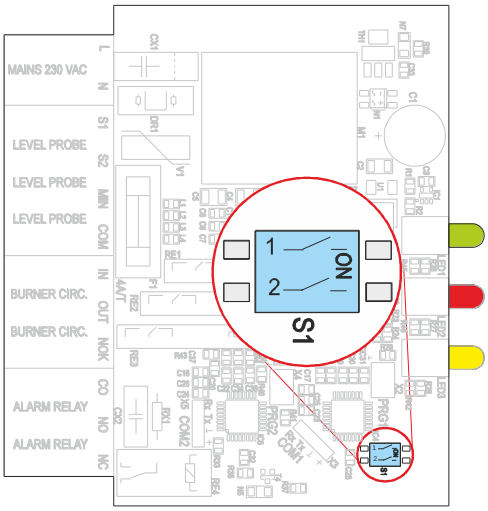
Caution

The preset switch-off time of 4 sec can be changed. It is to be agreed upon with the local expert.

Setting the switch-off time:

- Open SMLC2. To do this, release the fixing screws (3) and pull the hood (7) off the holder (5) –with the device disconnected from the power supply (see chap. 5.1)
- After unlatching the back plate, pull the circiut board out of the hood (7). At the circuit board you find a two-pole DIP switch on the right side below the LEDs (see diagram). The switch off time can be adjusted as shown in the table:

DIP-switch		Switch-off time
1	2	
on	on	4 s
off	on	8 s
on	off	12 s
off	off	16 s



7. Technical data

7.1 Device data - controller

Production according to:	EU-Directive 2014/68/EU, Annex III Modules B+D (Category IV)
Certificate No. EC-Type-Examination PED:	01 202 931-B-16-0021
CE ID No.:	0035
Safety Integrity level:	SIL3
Applied Standards:	DIN EN 12952-11: 2007, DIN EN 12953- 9: 2007, DIN EN 61508-1/ -2/ -3: 2010, DIN EN 61326-1: 2006 DIN EN 61010-1
Supply voltage:	230V AC (-15% +10%), 50/60Hz*

Power consumption:	3VA
Measuring cable (data exchange):	shielded connection cable to probe 4x0,75 mm² (e.g. Helutherm 145 Multi-C; IGEMA Art. No. 40-55214)
Electrical connection:	12 pole screw terminal strip
Protection class:	IP40 in accordance with EN 60529 (according to EN 12953-9 / EN 12952-11, protection class IP54 must be ensured in the boiler area. A control cabinet installation is required.)
Device fuse:	short-circuit-proof transformer
Allowable ambient temperature:	0°C bis 55°C
Self-test:	every 2sec
Total length of measuring cable:	max. 100m
Electrical conductivity of the liquid:	0,5 µS/cm ≤ æ ≤ 10.000 µS/cm

* 110V as per request

7.2 Device data - probe

Probe		EL 030		EL 19-2				
Nominal pressure	PN	25	40	63	100	160	250	320
Max. allowable pressure	PS [bar]	20	32	50	80	100	160	250
Max. allowable temp.	TS [°C]	214	239	265	296	312	346	367
Construction dimension Y [mm]		> 125		> 130				
Mechanical connection		Thread G ½"						
Power connection		Plug connection with screw terminals, strain relief						
Screw cable connection		M16X1,5						
Protection class according to DIN VDE 0470		IP 65						
Max. all. ambient temp. at the plug		100°C						

Construction dimension Y [mm]	EL 030 / EL 19-2	
1.700	with protective tube > DN 80,	vertical installation position
800	with protective tube DN 50,	vertical installation position
800	with protective tube DN 50/ 100,	installation position inclined up to 45°

Electrode	EL 030	EL 19-2
Insulator	**PTFE**	**Ceramic**
Plug	**Polyamide (glass fibre reinforced)**	
Sealing ring	**Soft iron**	
Probe housing	**Stainless steel**	
Probe rod	**Stainless steel**	
Probe extension	**Stainless steel**	

The lifetime of the probe depends on the operating conditions and the condition of the boiler water.

Caution

For this purpose, the probe must be checked for damage, wear and deposits at regular intervals and cleaned eventually.

7.3 SIL- characteristics

HFT 0

Type B

Low demand mode: PFD $2{,}05*10^{-5}$

High demand mode: PFH $5{,}18*10^{-8}$ 1/h

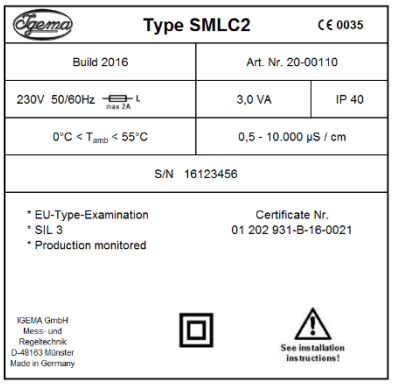
Proof-Test_Intervall: T1 8760 h

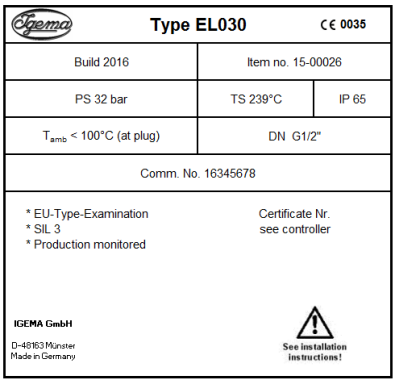
7.4 Maximum ratings of potential free contacts

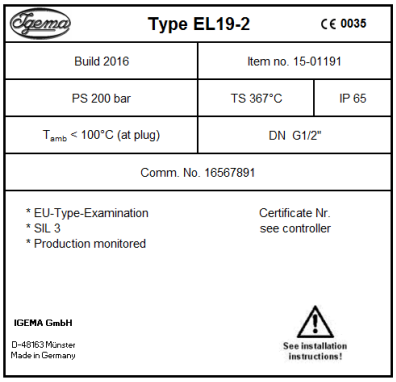
Safety chain	Switching voltage (max.)	250 V AC	25 V DC
	Switching current (max.)	4 A* ohmic	4 A
		Inductive / larger loads: Use contactor!	
Additional fault reporting	Switching voltage (max.)	250 V AC	max. 25 V DC
	Switching current (max.)	4 A* ohmic	4 A
		Inductive / larger loads: Use contactor!	

- In the case of the pre-alarm output, the NC and NO contacts are led out and are not fused. The alarm output (safety chain of the burner) is equipped with a 4A microfuse to prevent the contacts from sticking in case of overcurrent. The load must be reduced accordingly compared to the maximum values of the relays.

7.5 Data plate



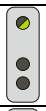
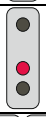
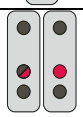
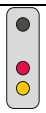




8. Fault analysis and rectification

Danger

The device terminal strip is live during operation!!
Before working on the device disconnect it from the mains!!

	flashing green LED (1Hz): low voltage	Uv < 180V	check power supply
	permanent red LED	low water (LLW)	check feed water
	flashing red LED for 4..16s (1 Hz / DIP-switch) followed by permanent red LED	insulation electrode stained	clean probe electrodes
	permanent red and yellow LEDs	system failure	restart controller by disconnecting from and reconnecting to power supply; change controller
	permanent red LED together with flashing (1Hz) yellow LED	fault in measuring cable (short circuit or cable break)	check measuring cable

Check cap 4.2, too

This high-quality IGEMA product was designed, manufactured and tested with the application of the QM System guidelines in accordance with DIN EN ISO 9001:2015.

If the device supplied indicates transport damage or gives cause for complaint in spite of our final quality control, please contact our SERVICE department on telephone *+49 2501 92424-0*.

9. Declaration of Conformity

Declaration of Conformity

Declaration of Conformity in accordance with the EU-Directives
2014/68/EU,
2014/35/EU,
2014/30/EU

The Company:
IGEMA GmbH
Antwerpener Str. 1
48163 Münster
Germany

declares as manufacturer, that the product:

„ClassicLimiter // LW Water level limiter"
as limiter with safety function
Product type:
"SMLC2" with the probes
EL030, EL19-2, EL963, MS015A, MS015B
complies with the directives
and has been subjected to the following conformity assessment procedure:

Category IV, Modules B and D

Applicable standards:
EN 12952-11; EN 12953-9
EN 61508; EN 61326-1
EN 61010-1

Notified Body for the modules:
TÜV-Rheinland Industrieservice GmbH
Am Grauen Stein
51105 Köln
Deutschland
Identification no.: 0035

Münster, 05. 09. 2017

H. Gartenbröker
Managing Director

Dr. C. Hummel
Team leader R&D

10. Certificates

PED Type Examination:

Certificate

EC-Type-Examination

in accordance with Directive 97/23/EC

Certificate No.:	**01 202 931-B-16-0021**
Name and address of the manufacturer:	**IGEMA GmbH** **Antwerpener Str. 1** **48163 Münster** **GERMANY**
	It is herewith certified that the EC-Type Example mentioned below meets the requirements of the Directive 97/23/EC.
Tested acc. to Directive 97/23/EC:	**EC-Type-Examination (Module B)**
Test report No.:	W 71 2016 B2 from 2016/07/11
Description of Type Example:	**Water level limiter for low water level, as a limiting device for shell boilers, Water-tube boilers and auxiliary installations acc. to EN 12952-11 and EN 12953-9**
Type:	SMLC2 with level electrode devices EL 030, EL 19-2, EL 963, MS015-A or MS015-B
Production Site:	IGEMA GmbH Antwerpener Str. 1 48163 Münster GERMANY
Valid until:	2026 / 07

The CE marking must not be affixed and the Declaration of Conformity not be issued prior to completion of the corresponding conformity assessment procedure according to Directive 97/23/EC.

Cologne, 2016-07-11 Dipl.-Ing. V. Ruff

TÜVRheinland Notified Body 0035 Industrial Services

TÜV Rheinland-Certification Body
for Pressure Equipment
TÜV Rheinland Industrie Service GmbH
Notified Body, ID-No. 0035
Am Grauen Stein, D-51105 Köln

TÜV Rheinland Energy GmbH
Am Grauen Stein, 51105 Köln, Germany, Tel. +49-221/806-0, Fax +49-221/806-1354, e-mail: tuevat.de.tuv.com D-011-Rev9

www.tuv.com

TÜVRheinland®
Precisely Right.

SIL 3 Certificate:

TÜV NORD

ZERTIFIKAT
CERTIFICATE

Hiermit wird bescheinigt, dass das unten beschriebene Produkt der Firma
This certifies that the product mentioned below from company

IGEMA GmbH
Antwerpener Straße 1
48163 Münster
Deutschland

die Anforderungen der folgenden Prüfunterlage(n) erfüllt.
fulfills the requirements of the following test regulations.

Geprüft nach: *Tested in accordance with:*	**EN 61508:2010 (SIL 3)**
Beschreibung des Produktes: (Details s. Anlage 1) *Description of product:* *(Details see Annex 1)*	**Selbstüberwachender Niedrigwasserstandbegrenzer SMLC2** *Selfmonitoring Low Water limiter SMLC2* **Selbstüberwachender Niedrigwasserstandbegrenzer LMC2** *Selfmonitoring Low Water limiter LMC2* **Selbstüberwachender Hochwasserstandbegrenzer SMHC2** *Selfmonitoring High Water limiter SMHC2 that operates with IGEMA Level Probes*
Bemerkungen: *Remarks:*	**Die Geräte funktionierten in Verbindung mit IGEMA Niveausonden** *This product operates with IGEMA Level Probes*

Dieses Zertifikat bescheinigt das Ergebnis der Prüfung an dem vorgestellten Prüfgegenstand. Eine allgemein gültige Aussage über die Qualität der Produkte aus der laufenden Fertigung kann hieraus nicht abgeleitet werden.
This certifies the result of the examination of the product sample submitted by the manufacturer. A general statement concerning the quality of the products from the series manufacture cannot be derived there from.

Registration No. / *Registrier-Nr.* 44 799 13775204
Test Report No. / *Prüfbericht Nr.* 3529 8249
File reference / *Aktenzeichen* 80003033479

Gültigkeit / *Validity*
von / *from* 2021-08-10
bis / *until* 2026-08-09

Zertifizierungsstelle der
TÜV NORD CERT GmbH

Essen, 2021-08-10

TÜV NORD CERT GmbH Langemarckstraße 20 45141 Essen www.tuev-nord-cert.de technology@tuev-nord.de

Please also pay attention to the information stated overleaf
Bitte beachten Sie auch die umseitigen Hinweise

11. Annex

Devices necessary for a system without permanent surveillance (72h):

Device	Alternative	Operating conditions	EN	ASME
direct water level gauge*	---	always	yes	yes
direct water level gauge	2 oblique water level gauges**	always	yes	yes
LLW-Limiter	---	always	yes	no
LLW-Limiter	---	24h	yes	no
Level control	---	24h+72h	yes	yes
HHW-prevention	---	24h+72h	yes	no
TDS limitation	---	72h	yes	no

* Direct level gauges are devices where the level of the boiler water can be read directly visually (by eye)

** 1x can be fulfilled by signaling during level control.
(The table is to be read summatively from top to bottom.)

IGEMA GmbH

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