



Low Water Level Limiter DLL

With CAN- connection,
for use with level probes: DP111, DP121 or the:
multi-rod probe DP114



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.

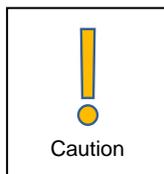
1.1 Symbols used in these instructions

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.

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

1.2 Intended use of the device



Use these installation and operating instructions, the identification on the rating plate (see 5.6) 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, 5.6) 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, alignment and flow direction 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 and sight glasses.

1.3 Safety at work



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.

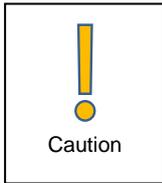
For all maintenance work or new installations, on new or existing boilers or vessels, it is imperative to check that the boiler or vessel has been depressurised and that the pressure has been safely reduced to atmospheric pressure. In principle, no system should be regarded as unpressurized even if indicated 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).



Under normal operating conditions the surface of the device can become very hot! Under the maximum operating conditions, the surface temperature can exceed 350°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



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, check for damage. There is a risk of cutting hands and arms! Wear work gloves!

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 the packaging

- 1 DLL evaluation unit
- 1 Installation and operating instructions

3 Use in compliance with regulations

In conjunction with the DP111 or DP121 level probe or the DP114 multiple probe, the self-monitoring DLL low water level limiter is a “limiter with safety function” in accordance with:

EC Directive 2014/68/EU

EN 12952-11

EN 12953- 9

EN 61508 -1/ -2/ -3

EN 61326-1/-3-2

EN 61010-1

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

Type approval certificates:

Type approval due to PED / Certificatenummer: 01 202 931-B-12-0012

Type approval due to SIL / Registrationnummer: 44 207 12 389245-001

The limiter is used for monitoring a water minimum fill level in steam boilers. If the water level falls below the minimum (water 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 water fill level in the boiler is dependent on the system and is given by the boiler manufacturer. Measuring the water level is carried out via the probes DP111, DP114 or DP121 (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.

4. System Description

4.1 Function

The DLL low water level limiter works in conjunction with the Igema DP111, DP114 or DP121 level probes on the basis of the conductive fill level method of measurement whereby the electric conductivity of the water medium is used. The conductivity of the medium is measured in $\mu\text{S}/\text{cm}$. 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 can supply one or two limiter probes, which can be fitted in the boiler, with power and evaluate their signals. The serial numbers of the probes used must be entered in the limiter so that it can communicate with these probes.

With the aid of the measurement data received from the probe electronics the limiter determines the current water 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 off immediately and the LED “FAILURE” starts to flash. Should this state be present for longer than the alarm delay time set, the output of the safety chain will be switched off (safe operation mode) and the LED “FAILURE” remains permanently lit. If it is necessary to switch off the safety chain immediately, the safety chain must in addition be passed via the “pre-alarm” output.

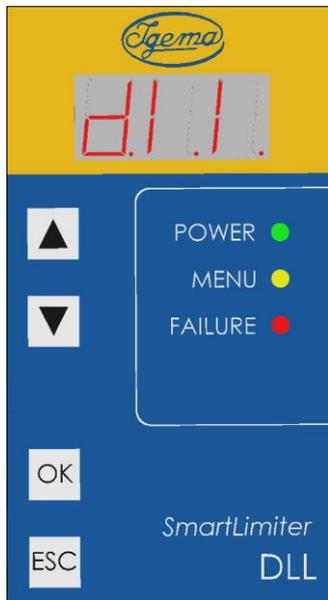
In the event of a **fault** (e.g. broken cable, probe faulty, ...) the safety chain is switched off immediately.

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.



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.

4.2 Operating panel



- Seven segment display.
- 3 control LEDs, arranged on the right vertically.
- 4 control buttons, arranged on the left vertically.

LED 1 (green)	POWER	flashes if power supply of limiter or probe(s) faulty
LED 2 (Yellow)	MENU	flashes or lights up in menu mode
LED 3 (red)	FAILURE	flashes (pre-alarm) or lights up (alarm)

When the limiter and the probes are working correctly, **d.l.l.** appears in the display. During a pre-alarm the display indicates **121** and FAILURE LED flashes. In the event of the alarm ("FAILURE") and the triggering of the safety chain the display indicates **120**. The corresponding red LED lights up.

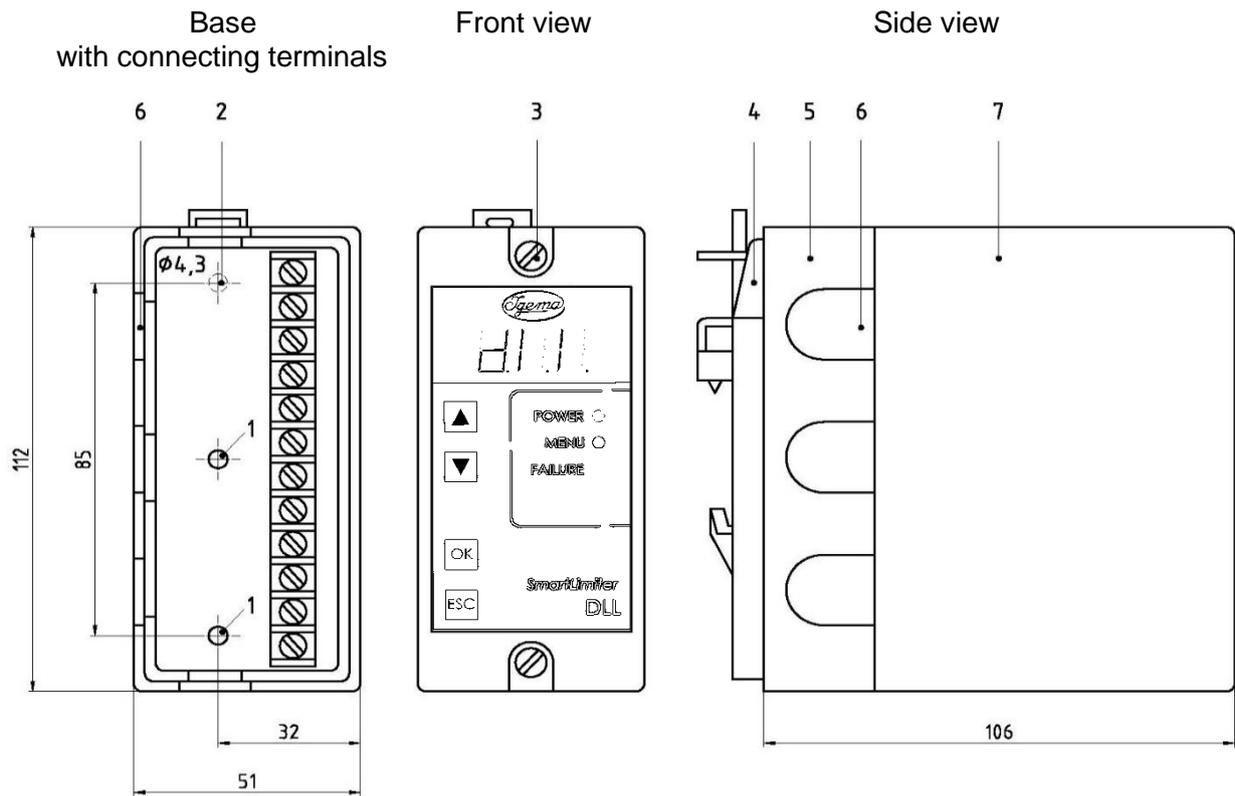
4.3 Error messages

Errors of limiter and probes are displayed in the 7-segment display number-coded and 3-digit. For analysis and error correction see Chap. 10.

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 DIN EN 50022 standard 35 mm carrier rail and for screw fixing on a mounting plate.

5.1 Installation dimensions and descriptions



- 1 Screws for snap fastening
- 2 Holes, \varnothing 4.3 mm
- 3 Fixing screws
- 4 Snap fastening
- 5 Holder
- 6 Cable feedthroughs
- 7 Hood

5.2 Installation



Ensure protection class in accordance with current regulations

- With snap fastening for standard DIN EN 50022 35 mm carrier rail

Fix device on standard carrier rail by means of the snap fastening (4).

Release fixing screws (3) and pull hood (7) from holder (5).

- Without snap fastening

Release fixing screws (3) and pull hood (7) from holder (5).

Release screws (1) and remove snap fastening (4). Drill through the marked point (2) in the holder (5) with \varnothing 4.3 mm drill bit.

Fit holder (5) on base plate with two M4 screws.

5.3 Electrical connection



The device terminal strip is live during operation!!

Before working on the device disconnect it from the mains!!

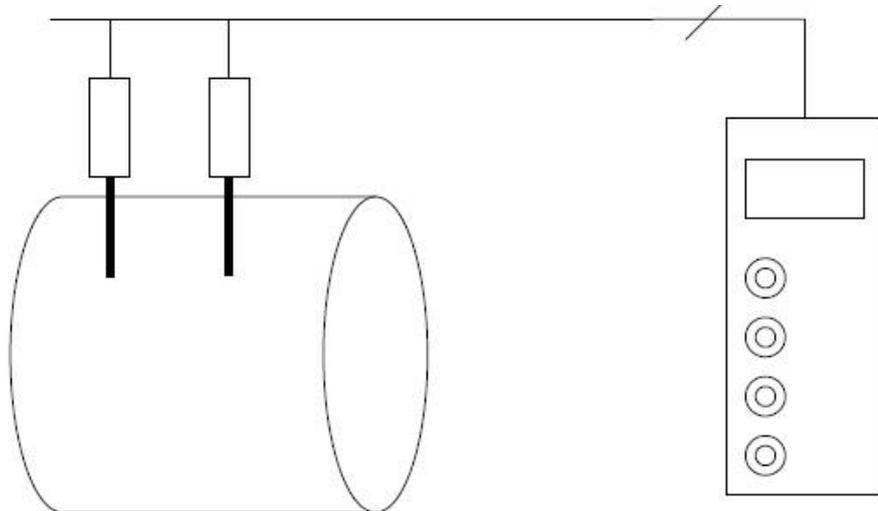


The device must be protected mains-side by the operator with a max. T M 2A fuse!

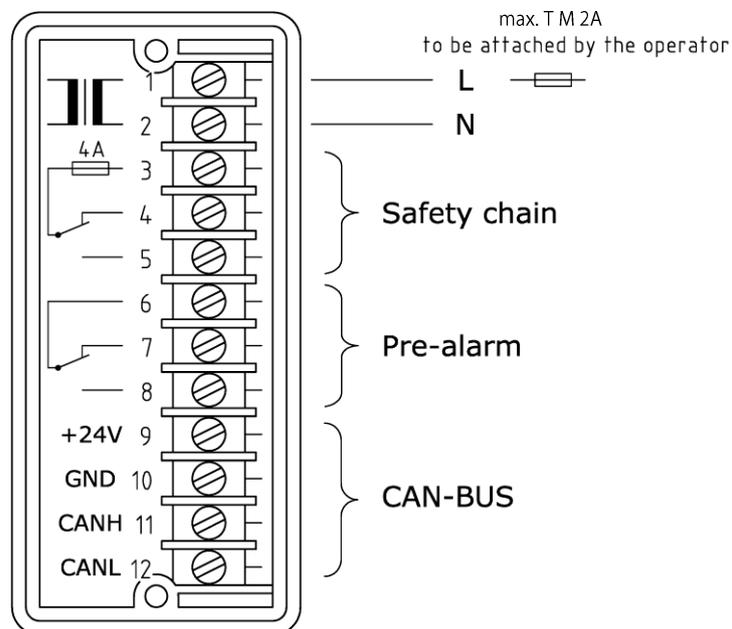
If inductive consumers are connected, voltage peaks occur when switching off. For this reason connected inductive consumers (e.g. contactor) must be provided additionally with an RC circuit: e.g. 0.1 μ F / 100 Ω .

5.3.1 Schematic diagram

Steam boiler with probes with probe electronics CAN bus cable Limiter



5.3.2 Assignment plan limiter



In normal operating condition (safety chain closed; burner ON) output contacts 3 and 5 or 6 and 8 (pre-alarm OFF) are closed.

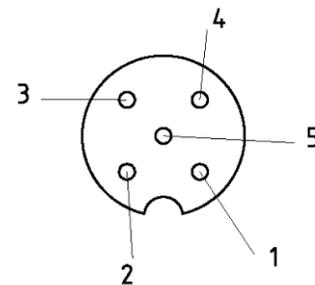
5.3.3 CAN bus cable limiter - probe

For the CAN bus cable, a multi-core, pairwise-twisted shielded control cable (e.g. UNITRONIC® BUS CAN 2x2x0.34mm²) must be used. The side for the connection to the limiter is fitted with end sleeves. For the connection to the probe a socket is used.

Connection layout:

M12 socket; 5-pole; A-coded

Evaluator		socket
CAN bus 9	+24V	2
CAN bus 10	GND	3
CAN bus 11	CANH	4
CAN bus 12	CANL	5
not connected	shielding	1



Only CAN bus capable IGEMA control units and probes may be operated on this CAN bus control cable.

The **total length** of the bus line must be a maximum of 250m.



During installing it must be considered whether the CAN bus 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.

If cables provided from IGEMA are used the following colour code is effective:

Controller terminal	Assignment CAN-Bus	Labelling & colour code plug / socket		Lead colour CAN-Bus-cable Art.-Nr.: 40-10110 bis 40-10114	Lead colour data cable Colour code according to DIN 47100 Art.-Nr.: 35-10058
9	+24V	2	RD	RD	GN
10	0V	3	BK	BK	YE
11	CANH	4	WH	WH	WH
12	CANL	5	BU	BU	BN
	Screen	1		Screen	Screen

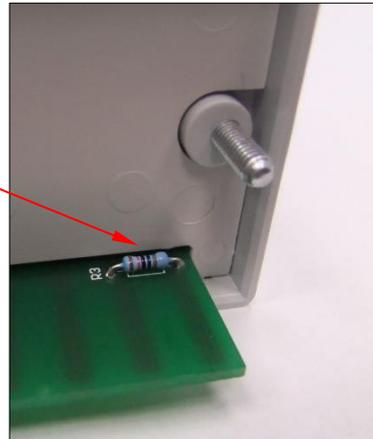
5.3.4 Connecting several controllers

If several IGEMA controllers are operated on one CAN bus, the connecting terminals for the CAN bus must be switched in series to the individual controllers.

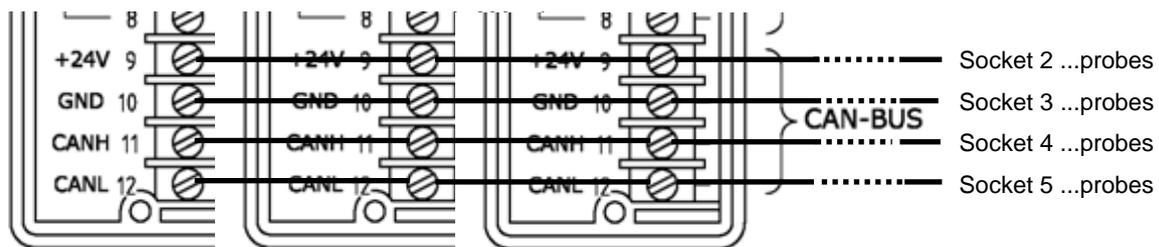
They must not be connected in a star configuration!

Complete wiring must be established!

Only the last evaluator at the end of the bus may have the 120Ω terminator. On all the other controllers that are attached to the same CAN bus this resistor is to be removed. (authorised change!)



The serial connection is to be observed:



5.3.5 Connecting probes

The probes are fitted with plug connections (M12, 5-pole, A-coded). They are linked via the CAN bus cable with the controllers.

Within a flange a short connecting cable can be used. For connection to another flange a correspondingly long cable must be used.

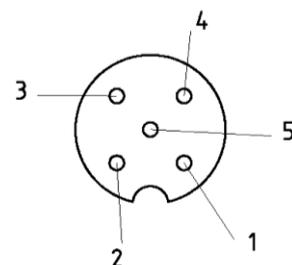
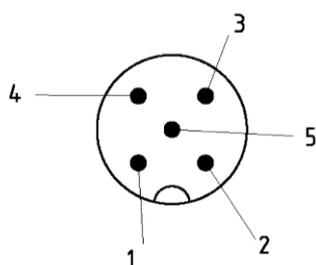
Here too serial connection is again to be observed. The last probe is given the terminator (terminator plug).

Input (e.g. from the controller)

M12 plug; 5-pole; A-coded

output (e.g. to further probes)

M12 socket; 5-pole; A-coded



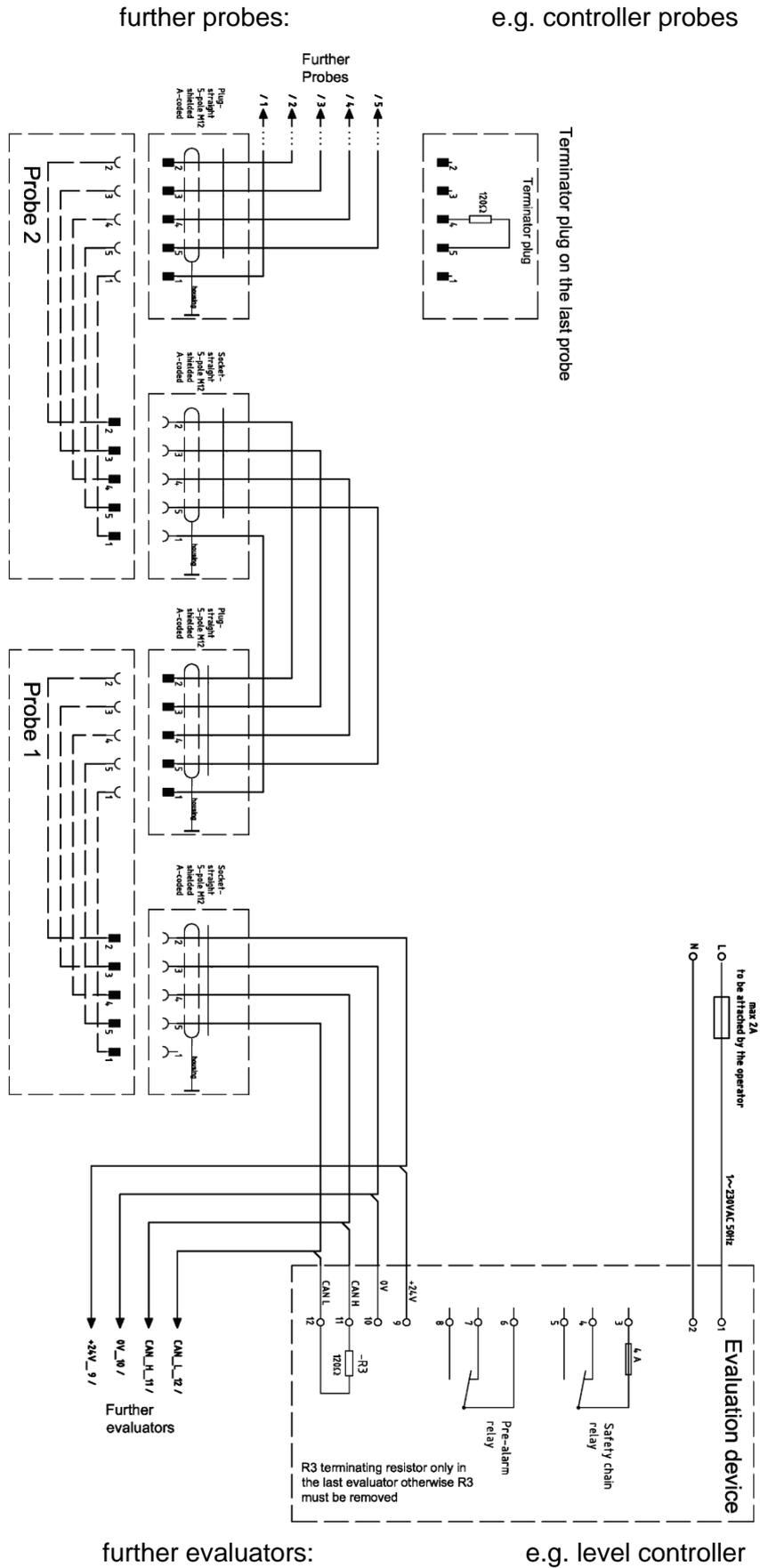
- 1 Shielding
- 2 +24V
- 3 GND
- 4 CANH
- 5 CANL

Terminating resistor (terminator plug) 120Ω:



The short-circuit-proof 24V voltage of the CAN bus is designed exclusively for the supply to the probes and must not be used for the external supply of further devices.

5.3.6 Overview wiring diagram





For connecting the bus devices prefabricated control cables in various lengths are available as accessories (see Appendix). If prefabricated control cables are not used the connection plugs must be wired according to the wiring plan.



At the last probe, a 120Ω terminator must be attached as bus termination.



We recommend carrying out the CAN bus wiring boiler-wise so that during maintenance work (e.g. probe replacement) or malfunctions (e.g. broken wire) not all boilers are affected.

6. Configuration via menu

6.1 Basic Information

The DLL menu is structured in three main levels: Main level 1 | Main level 2 | Main level 3
The menu is accessed by pressing the “OK” key. While the operator is in the configuration menu, the associated yellow LED flashes or lights up.

With the keys “▲” or “▼” you can choose between the menu items of the respective level.

By pressing the “OK” key you will get to the next level down or confirm the entry.

By pressing the “ESC” key you can get to the next level up or out of the menu without the current entry being saved (with OK confirmed entries are already saved and remain so).

Automatic menu exits after 2 minutes if no key operation is carried out (cf. “ESC”).

6.2 Schema

| --- 1. ---

| | - 1.1. |- Temperature of probe 1

| | - 1.2. |- Temperature of probe 2 (see 3.4.!) |

| --- 2. ---

| | - 2.1. |- Test alarm (000 Normal state “▲” 001 Test alarm)
Caution safety chain may be triggered!

| --- 3. ---

| | - 3.1. |- Password input

| --- |-----**After entering valid password**-----

| | - 3.2. |- Waiting time between pre-alarm and alarm

| | - 3.3. |- Programming the CAN node address

| | - 3.4. |- Programming the number of probes

| | - 3.5. |- Programming the serial number of probes 1 (see data plate)

| | - 3.6. |- Programming the serial number of probes 2 (see 3.4.!) |



The password is: **123** (The password provides protection against unintended changes. It does not provide protection against ill-natured changes.)



The pre-set switch-off time of 3 seconds can be changed (max. 25s).
On putting into operation please check factory setting.



Entering the serial numbers is only possible if controller and probe are connected by the bus and the system is in an operational state.

6.3 Numerical entry

The digits in the segment where the dot is flashing can be changed by the keys “▲” und “▼”. The desired number is confirmed by “OK”. Then the next place (segment with flashing dot) can be entered.

For multi-digit numbers the numbers move to the left and if need be out of the display.

6.4 Example: serial number entry

Under the menu item 3.5. if there is not yet a serial number set, you will find a 0.00, if not you will see the first 3 digits of the previously set number.

Now in this example we enter the number 11031234. It starts on the left. The first digit on the left can be changed and this is signalled by the flashing dot. With the “▲” key the 1. is selected. This is confirmed with “OK”.

Display: → 1 0. 0

The decimal point of the middle digit flashes. Here again with “▲” you enter the next digit of the serial number (1) and confirm. Now on the left of the display you will see a 1 0. 0 and the middle decimal point continues to flash. This is because the digit has been moved one place to the left as can be seen below. The grey field is the visible area of the display.

Display: → 11 0. 0

The 3rd digit is a 0. , so we only need to confirm.

Display: → 110 0. 0

Now the 4th place of the serial number is entered. This is the 3. . Then confirm.

Display: → 1103 0. 0

This is continued analogously up to the 8th and last digit of the serial number. The last digit is then shown on the right in the display, which is again signalled by the flashing decimal point.

Display: → 11031234.

The input is completed with “OK”. You are again in the corresponding submenu.

7. Special features of System Setup

When setting up the “SmartLine” Igema boiler monitoring and control system the following must be observed:

The various components* of the CAN system have node addresses. The node addresses of the **controllers** are set by the company:

- | | |
|--|---------|
| - LW limiter: | node 01 |
| - HW limiter: | node 06 |
| - 2-point controller: | node 11 |
| - continuous fill level recording: | node 16 |
| - conductivity recording (limiting): | node 21 |
| - conductivity recording (desalination): | node 26 |

After the probe serial number is entered, the probe receives a node address from the corresponding controller. The **first** LW limiter probe would be given e.g. the node address 02 (01 (controller) +1) while the **second** 2-point probe is given the node address 13 (11 (controller) +2).

For each controller 4 node addresses are reserved for probes.



We recommend building up the system successively. The next device with probes should not be connected until the first device is running perfectly. This also makes it easier to locate any faults.



The node addresses of controllers must be changed if several controllers of the same type are used on a CAN bus system!! This takes place with the aid of the menu item **3.3.**

Not connecting a second device of the same type until after the installation of all the other “initial devices” is to be recommended. Then the next account address recognised as free by the 2nd controller can be used and not e.g. the 11 for a second limiter. Here a 2-point controller would then have to be reconfigured to 16. This would continue for the complete installation. Any desired free node address outside the predefined addresses can also be used.



A template for the system installation is stored in the appendix.

8. Emergency Operation

In a low water limiter system with 2 level probes it is permissible to continue to operate the system provisionally in emergency operation under constant supervision with one probe.

For this operation the following actions are to be taken:

- Note the start of the emergency operation in the boiler log.
- In the configuration menu of the evaluation device reduce the number of probes to 1 and enter the serial number of the functioning level probe as the 1st serial number
- The system must not be left unattended when working in emergency mode.
- Replace the faulty probe immediately.
- In the configuration menu of the evaluation device increase the number of probes back up to 2 and enter the serial number of the level probe replaced as the 2nd serial number
- Note the end of the emergency operation in the boiler log.

9. Technical Data

9.1 Device data

Component identification mark:	01 202 931-B-12-0012
CE ID no:	0035
Manufacture in accordance with:	EU Directive 2014/68/EU, Annex III, Modules B+D (Category IV)
Applied standards:	DIN EN 12952-11, DIN EN 12953- 9, DIN EN 61508 -1/ -2/ -3, DIN EN 61326-1, DIN EN 61326-3-2, DIN EN 61010-1
Supply voltage:	230V AC (-15% +10%), 50/60Hz
Power consumption:	3VA
Data exchange:	CAN bus in accordance with DIN ISO 11898, CANopen protocol
Electrical connection:	12-pole Screw terminal strip
Protection class	IP40 in accordance with DIN EN 60529 (protection class IP54 is to be ensured in the boiler area)
Device fuse:	63 mA/T
Allowable ambient temperature:	0°C to 55°C
Supply voltage probes:	short-circuit-proof, 24V / 2W
Self-test:	every 3sec
Service life probe:	The service life of the probe depends on the operating conditions and state of the boiler water.
Total length of CAN bus:	max. 250m
Electrical conductivity of the liquid:	$0.5 \mu\text{S/cm} \leq \rho \leq 10,000 \mu\text{S/cm}$

9.2 SIL approval data

Low demand mode:

$$\text{PFD}_{\text{probe}} = 1.09 \cdot 10^{-6}$$

$$\text{PFD}_{\text{evaluator}} = 3.43 \cdot 10^{-4}$$

$$\text{PFD}_{\text{total}} = 3.44 \cdot 10^{-4}$$

High demand mode:

$$\text{PFD}_{\text{probe}} = 1.50 \cdot 10^{-9} \text{ 1/h}$$

$$\text{PFD}_{\text{evaluator}} = 7.97 \cdot 10^{-8} \text{ 1/h}$$

$$\text{PFD}_{\text{total}} = 8.12 \cdot 10^{-8} \text{ 1/h}$$

Proof-Test_Interval $T_1 = 8760 \text{ h}$

9.3 Maximum ratings of potential free contacts

Limit and Failure relay	Switching voltage (max.)	250 V AC	24 V DC
	Switching current (max.)	4 A ohmic	4 A
		inductive / higher loads: use contactor	

9.4 Data plate

		Type DLL		CE 0035	
Build 2016		Art. Nr. 20-10000			
230V 50/60Hz  L max. 2A		3,0 VA	IP 40		
0°C < T _{amb} < 55°C		0,5 - 10.000 µS / cm			
S/N 12050002		CAN: 24V DC 2W			
<ul style="list-style-type: none"> * EU-Type-Examination * SIL 3 * Production monitored 		Certificate Nr. 01 202 931-B-12-0012			
IGEMA GmbH Mess- und Regeltechnik D-48163 Münster Made in Germany				 See installation instructions!	

10. Fault analysis and rectification



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

In operation various error states are indicated in the display. These error codes can be assigned to possible causes of error with the following tables.

Every error code (except “8.8.8”; “121”) causes the safety chain to be switched off to safe mode.

Evaluation device malfunctions:

Error code	Cause	Remedial Action
000	Fault in the ADC converter	Replace device
001	Malfunction of the 24 Volt supply of the evaluation device	Replace device
002	Malfunction in the probe supply voltage	Check CAN cable for fault; Replace device
004 / 005	Safety chain relay faulty	Replace device
006	Pre-alarm relay faulty	Replace device
007	SIL3 error	Replace device
010	No serial number entered	Enter valid serial number
8.8.8. (flashing)	Segments in display faulty	Replace device
120	Safety cut-out / below minimum water level	Ensure supply of water
121	Pre-alarm for safety cut-out / below minimum water level	Ensure supply of water

Probe malfunctions:

If the probe electronics report malfunctions, they will also be displayed. By using the “▲” key it can be identified which probe the malfunction comes from.



Thus, for example if only one probe is connected but 2 probes are set, the 106 is displayed as error code. By pressing the “▲” key, it is then displayed on which probe the evaluator has a time-out. In this example a 002 is used. When checking probe 2 it will be determined that no probe 2 is connected.

Error code	Description	Cause	Remedial Action
102	Fault in the probe hardware; Insulation monitoring safety electrode	e.g. broken cable, hardware fault Electrode overgrown	Replace probe Clean electrode, if necessary. replace probe
104	Incorrect probe type recognised	e.g. DP211 probe (HW probe) on DLL (LW limiter)	allocate appropriate probe
105	Probe temperature too high, occurs with $T_{\text{probe}} \geq 105^{\circ}\text{C}$	Ambient temperature of probe probably too high	Carry out heat insulation measures at the flange not at the electronics part
106	CAN bus time-out Malfunction	e.g. broken cable, incorrect probe serial number bus leads CANL and CANH interchanged CAN bus configuration (terminators) incorrect, ...	Check wiring; Check probe serial number; check terminator configuration
107	Insulation monitoring safety electrode	Electrode overgrown	Clean electrode, if necessary. replace probe
108	SIL3 error	Hardware fault	Replace probe
120	Safety cut-out /	Level in boiler below minimum	Ensure supply of water
121	Pre-alarm for cut-out	Level in boiler below minimum	Ensure supply of water



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 by return.

11. 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:

„SmartLimiter // LW Water level limiter“

as limiter with safety function

Product type:

“DLL” with the probes

DP111, DP121, DP114

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

12. Appendix

List of accessories:

Connecting cable probe-probe	50cm	Art.no.: 40-10110
Connecting cable probe-probe	500cm	Art.no.: 40-10111
Connecting cable probe-probe	1000cm	Art.no.: 40-10112
Connecting cable evaluator-probe	1500cm	Art.no.: 40-10113
Connecting cable evaluator-probe	3000cm	Art.no.: 40-10114
Terminating resistor (terminator plug)		Art.no.: 40-10118

Minimum components of an Igema system:

Evaluator – cable (evaluator probe) – probe – terminator plug

With several probes include the corresponding connecting cables (probe-probe) in the order (only one terminator is needed!).

Required devices for system setup (72hr operation):

Device	Alternative	Operating conditions	EN	ASME
Direct water level gauge*	---	always	yes	yes
Direct water level gauge	2 indirect gauges**	always	yes	yes
LW limiter	---	always	yes	no
LW limiter	---	24h	yes	no
Fill level control	---	24h+72h	yes	yes
Overfill protection	---	24h+72h	yes	no
Conductivity limitation	---	72h	yes	no

* Direct level gauges are devices by which the boiler water fill level can be directly read optically (with the eye).

** 1x can be met by signalling during fill level control.
(the table is to be read in summary from top to bottom)

System setup with Igema devices:

Equipment	Alternative	
Direct water level gauge	---	Water level gauge
Direct water level gauge	---	Water level gauge
	1. Indirect level gauge 2. Indirect level gauge	<i>"Fill level control"</i> DCC + DP411 (low pressure system) /// differential pressure (high pressure system)
LW limiter	---	DLL ("Channel 1") + DP111 (LP) /// DP121 (HP)
LW limiter	---	DLL ("Channel 2") + DP111 (LP) /// DP121 (HP)
Fill level control* (2-point)	---	DCU ("Channels 1+2") + DP311 + DP311 (LP) /// DP321 + DP321 (HP)
Overfill protection*	---	DLL ("Channel 3") + DP311 (LP) /// DP321 (HP) or DLH + DP211 /// DP221 (HP)
Fill level control** (continuous)	---	DCC + DP411 (LP)
Overfill protection**	---	DLH + DP211 (LP)

* Version 1

** Version 2

System setup / allocation table:

Node address		Device	Serial number
01			
	02		
	03		
	04		
	05		
06			
	07		
	08		
	09		
	10		
11			
	12		
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	40		

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