

Instruction Manual for NivuMaster L-2 Measurement Device

(Original Instruction Manual – German)



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Translation

If the device is sold to a country in the European Economic Area (EEA.), this instruction handbook must be translated into the language of the country in which the device is to be used.

Should the translated text be unclear, the original instruction handbook (German) must be consulted or the manufacturer contacted for clarification.

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Names

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1.2 Declaration of Conformity

EC Declaration of Conformity

pursuant to

- the EC Low Voltage Directive 73/23/EEC, Annex III
- the EC EMC Directive 89/336/EEC, Annex I and II

We hereby declare that the design of the

Description: **Measuring device NivuMaster L-2 with sensor**

as delivered complies with the above regulations and following EC directives and DIN EN standards:

Directive/ Standard	Title
73/23/ EC	EC Low Voltage Directive
EN 61010-1	Safety requirements for electrical equipment for measurement, control and laboratory use – Part 1: General requirements
89/336/EG	EC EMC Directive
EN 55022	
EN 61000-4-2	
EN 61000-4-3	
EN 61000-4-4	
EN 61000-4-5	
EN 61000-4-6	
EN 61000-4-8	
EN 61000-6-1	
EN 61000-6-3	

Unauthorised changes to the device invalidate this declaration.

Eppingen, July 23th 2007

.....
Heinz Ritz
Head Quality Management

2 Overview and use in accordance with the requirements

2.1 Overview



- 1 LED indicators
- 2 Terminal clamp housing
- 3 RS232 (RJ12)
- 4 Cable gland
- 5 Optional ultrasonic sensor e.g. P-03

Fig. 2-1 Overview

2.2 Overview L-2 with display



- 1 Display
- 2 Terminal clamp housing
- 3 RS232 (RJ12)
- 4 Cable gland
- 5 Keypad
- 6 Relay Indicator
- 7 Optional ultrasonic sensor e.g. P-03

Fig. 2-2 Overview L-2 with display

2.3 Use in accordance with the requirements

The measuring device Type NivuMaster L-2 incl. the accompanying sensors is an ultrasonic measurement device for the detection of distance, empty space and fill level. Here the allowed maximum values, as specified in chapter "Specifications", must be strictly kept. All cases which vary from these conditions and are not passed by NIVUS GmbH in writing are left at owner's risk.



The device is exclusively intended to be used for purposes as described above.

Modifying or using the devices for other purposes without the written consent of the manufacturer will not be considered as use in accordance with the requirements.

Damages resulting from this are left at user's risk.

The device is designed for a lifetime of approx. 10 years. After that period an inspection in addition with a general overhaul has to be made..



For installation and initial start-up the conformity certificates and test certificates of the respective authorities must be followed.

2.4 Specifications

Transmitter

Power Supply	115 V AC / 230 V AC +5 % / -10 %; 50/60 Hz 10-28 V DC, 10 W maximum power (typically 5 W)
Fuses	50 mA at 200 – 240 V AC, 100 mA at 90 - 120 V AC
Accuracy	0.25 % of the measured range or 6 mm (whichever is greater)
Resolution	0.1 % of the measured range or 2 mm (whichever is greater)
Rate Response	fully adjustable
Wallmount enclosure	Material: Polycarbonate, flammability rating UL94HB Weight: Wall Mount: approx. 1000g, IP 66 Dimensions: 130mm x 130mm x 60mm
Cable Entries	underside fitted with 3x M20 suitable for cables 6-12 mm
Ex Approval (optional)	Only in conjunction with NivuMaster P-Series sensors with according approval for Zone 1/2
Temperature (Electronics)	-20° C to +50° C
Echo Processing	DATEM (D igital A daptive T racking of E cho M ovement) Software
Inputs	1 Sensor connectable (P-03 to P-40)
Outputs	- digital output: RS232 interface full duplex - Relay outputs: 2 x SPDT (single pole double throw) 10 mA/12 V DC to 2 A/240 V AC at ohmic load Optional - 0/4 to 20 mA galvanically isolated output (up to 150 V) load 1 k Ω (adjustable) 0.1% resolution - RS485 interface (for MOD-/ProfiBus)
Programming	- with display and keypad - PC programming via RJ12 Western socket in terminal clamp housing (RS232) - optional operation set/handheld programmer (for model without display)

3 General Notes on Safety and Danger

3.1 Danger Notes

3.1.1 General Danger Signs



Cautions

are framed and labelled with a warning triangle.



Notes

are framed and labelled with a "hand".



Danger by electric voltage

is framed and labelled with the Symbol on the left.



Warnings

are framed and labelled with a "STOP"-sign.

For connection, initial start-up and operation of the NivuMaster L-2 the following information and higher legal regulations (e.g. in Germany VDE), such as Ex-regulations as well as safety requirements and regulations in order to avoid accidents, must be kept.

All operations, which go beyond steps to install, to connect or to program the device, must be carried out by NIVUS staff only due to reasons of safety and guarantee.

3.1.2 Special Danger Notes



Please note that due to the operation in the waste water field transmitter, sensors and cables may be loaded with dangerous disease germs or hazardous substances. Respective precautionary measures must be taken to avoid damage to one's health.

3.2 Device Identification

The instructions in this manual are valid only for the type of device indicated on the title page.

The nameplate is fixed on the bottom of the device and contains the following:

- Name and address of manufacturer
- CE label
- Type and serial number
- Year of manufacture

It is important for queries and replacement part orders to specify type, year of manufacture and order number of the respective transmitter or sensor. This ensures correct and quick processing.



This instruction manual is a part of the device and must be available for the user at any time.

The safety instructions contained within must be followed.



It is strictly prohibited to disable the safety contrivances or to change the way they work.

3.3 Installation of Spare Parts and Parts subject to wear and tear

We herewith particularly emphasize that replacement parts or accessories, which are not supplied by us, are not certified by us, too. Hence, the installation and/or the use of such products may possibly be detrimental to the device's ability to work.

Damages caused by using non-original parts and non-original accessories are left at user's risk.

3.4 Turn-off Procedure



For maintenance, cleaning and repairs (authorized staff personnel only) the device has to be disconnected from mains.

3.5 User's Responsibilities



In the EEA (European Economic Area) national implementation of the framework directive 89/391/EEC and corresponding individual directives, in particular the directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work, as amended, are to be observed and adhered to.

In Germany the Industrial Safety Ordinance of October 2002 must be observed.

The customer must (where necessary) obtain any local **operating permits** required and observe the provisions contained therein.

In addition to this, he must observe local laws and regulations on

- personnel safety (accident prevention regulations)
- safety of work materials and tools (safety equipment and maintenance)
- disposal of products (laws on wastes)
- disposal of materials (laws on wastes)
- cleaning (cleansing agents and disposal)
- environmental protection.

Connections:

Before operating the device the user has to ensure, that the local regulations (e.g. for electric supply) on installation and initial start-up are taken into account, if this is both carried out by the user.

4 Functional Principle

4.1 General

The NivuMaster L-2 is an ultrasonic measurement device for the detection of filling levels.

Freely programmable relays, a galvanically isolated mA-output and a standard RS232 interface (optional galvanically isolated mA output or RS485 interface) are available for data output.

If an ultrasonic sensor is connected the transmitter sends an impulse to the sensor. The ultrasonic sensor, which is installed vertical to the material surface, creates an ultrasonic impulse. The sound is reflected by the measurement medium, received by the sensor as an echo and transmitted to the NivuMaster L-2. The unit calculates the distance from the sensor to the medium to be measured by using the run time between sending and receiving the echo. Then the calculated value can be emitted as desired (e.g. as level or space).

The new DATEM echo analysis software ensures a reliable measurement. It is very simple to mute disturbing echoes thanks to the possibility to select the "true echo".

Depending on the sensor type the NivuMaster L-2 is able to cover measurement ranges from 0.125 m up to 40 m of liquids and bulk solids.

The relays are freely programmable and can be programmed to execute various alarm functions or just a simple pump change. The NivuMaster L-2 has a galvanically isolated 0/4-20mA output which can be used to connect external displays or to transmit measurement values to an SPS.

This output is freely adjustable too.

It is possible to connect the NivuMaster with a PC or a Laptop via the RS232 interface. This enables to transmit echo profiles and measurement values with the appropriate software.

Programming the NivuMaster L-2 is made by using the keypad. The model without display and keypad can be programmed via PC software simulating a handheld programmer on the PC screen. A hardware handheld programmer with display and keypad is optionally available. The parameter settings will be held even in case of power failures.

4.2 Device Variations

There is only one model of the NivuMaster L-2 available.

4.2.1 Transmitter

The transmitters vary in terms of different sensor types to be connected. The current type of device is indicated by the article number, which can be found on a weatherproof label on the top of the enclosure.

From this article key the type of device can be specified.

NM	NivuMaster transmitter for ultrasonic level measurement; incl. programming software* and connection cable. Power Supply: 230 V AC and 24 V DC					
	Type Measurement Mode					
	x-	L-2	Level, Trend			
			Relays: free programmable alarm functions			
	Hardware		Relays	Output 0/4-20 mA	Input 4-20 mA	Measurement Channel
	2101		2	1	0	1
	Construction / Enclosure					
	660		IP66 Enclosure without keypad and display			
	66T		IP66 Enclosure with keypad and display			
	0001 6M0		IP66 Enclosure without keypad and display with data logging function			
Language / Menus						
DE		German				
EN		English				
FR		French				
NM	x-					

Fig. 4-1 Type key for NivuMaster L-2 transmitter

4.2.2 Ultrasonic Sensors for NivuMaster L-2

The NivuMaster sensors are available with various options.
The sensor type can be specified from the article key.
The article number can be found on the sensor label.

NMS-	Type	Measurement Range
	P03	0.125 to 3 m for fluids (additionally 1" thread on front side)
	PM3	0.07 to 2.4 m for fluids (incl. Weatherproof cover and flood protection head)
	PS6	0.20 to 6 m for fluids
	P06	0.30 to 6 m for fluids
	P10	0.30 to 10 m for fluids
	P15	0.50 to 15 m for fluids
	P25	0.60 to 25 m for fluids
	P40	1.2 to 40 m for fluids
	Sensor Cable Length	
	05	5m
	10	10m
	20	20m
	30	30m
	50	50m
	99	100m
	xx	Special cable length upon request
	Construction	
	0	Standard (sensor material Valox)
	Approvals	
	0	none
	E	Ex zone 1 (EEx m II T6)
	Z	Ex zone 0 (only in conjunction with Ex zone 0 transmitter)
	Extensions	
	0	none
	1	Soft foam coated sensor face not for P03, PM3, PS6
	2	SUB - Flood protection head 1" only for P03
	3	SUB - flood protection head 86 mm only for PS6, P06, P10 and P15
	4	Teflon coated sensor face
NMS-		0

Fig. 4-2 Type key for ultrasonic sensors

5 Storing, Delivery and Transport

5.1 Receipt

Please check your delivery according to the delivery note for completeness and visible intactness immediately after receipt. Any damage in transit must be instantly reported to the carrier. An immediate, written report must be sent to NIVUS GmbH Eppingen as well.

Please report any delivery incompleteness in writing to your representative or directly to NIVUS Eppingen within two weeks.



Mistakes cannot be rectified later!

5.1.1 Delivery

The standard delivery of the NivuMaster L-2 measurement system contains:

- the instruction manual with the declaration of conformity. Here, all necessary steps to correctly install and to operate the measurement system are listed.
- a NivuMaster, Type L-2 incl. programming software and connection cable

The respective ultrasonic sensor must be ordered separately (e.g. P-03).

More accessories depending on order. Please check with delivery note.

5.2 Storing

The following storing conditions must be strictly kept:

Transmitter:	max. temperature:	+ 70°C
	min. temperature:	- 30°C
	max. humidity:	80 %, non-condensing
Sensor:	max. temperature:	+90°C (+75°C in Ex Zone)
	min. temperature:	- 40°C
	max. humidity:	100 %

The devices must be protected from corrosive or organic solvent vapors, radioactive radiation as well as strong electromagnetic radiation.

5.3 Transport

Sensor and Transmitter are conceived for harsh industrial conditions. Despite this do not expose them to heavy shocks or vibrations.

Transportation must be carried out in the original packaging.

5.4 Return

The units must be returned at customer cost to NIVUS Eppingen in the original packaging.

Otherwise the return cannot be accepted!

6 Installation

6.1 General

For electric installation the local regulations in the respective countries (e.g. VDE 0100 in Germany) must be referred to.



The NivuMaster L-2 power supply must be separately protected by a 6 A slow-blow fuse and has to be isolated from other facility parts (separate turn-off, e.g. by using an automatic cut-out with >B< characteristics).

Before feeding the rated voltage the transmitter and sensor installation must be correctly completed. The installation should be carried out by qualified personnel only. Further statutory standards, regulations and technical rulings have to be taken into account.

All outer circuits, wires and lines connected to the device must have a minimum isolation resistance of 250 kOhm. If the voltage exceeds 42 V DC a minimum isolation resistance of 500 kOhm is required.

The section dimension of the power supply wires must be 0.75 mm² (0.03 in²) minimum and must be in accordance to IEC 227 or IEC 245. The device protection rating is IP 66/NEMA 4.

The maximum switching voltage on the relay contacts must not exceed 250 V. According to Ex-protection it must be checked if the devices power supplies must be integrated into the facility's emergency shutdown conception.

6.2 Transmitter Installation and Connection

6.2.1 General

The mounting place for the NivuMaster L-2 transmitter has to be selected according to certain criteria.

Please strictly avoid:

direct sunlight (use weatherproof cover if necessary)

- heat emitting objects (max. ambient temperature: +40°C (104°F))
- objects with strong electromagnetic fields (e.g. frequency converters)
- corrosive chemicals or gas
- mechanical shocks
- vibrations
- radioactive radiation
- installation close to footpaths or travel ways

Please note during installation that electronic components may be destructed caused by electrostatic strokes. Due to this make sure to have sufficient earthing devices in order to avoid too high electrostatic charge.

6.2.2 Enclosure Dimensions

The transmitter is available as wall mount version only.

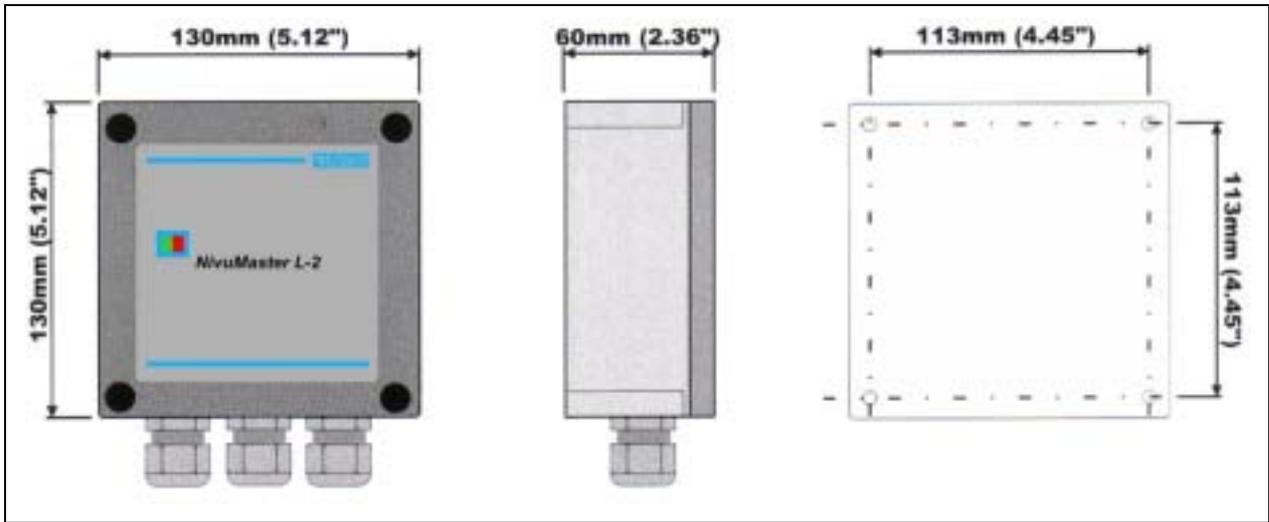


Fig. 6-1 Wall Mount Enclosure

6.2.3 Transmitter Connection

General

Please note during installation that electronic components may be destructed caused by electrostatic strokes. Due to this make sure to have sufficient earthing devices in order to avoid too high electrostatic charge.



Before the first connection it is necessary to have a slight pressure on the screw of the clamping connection to ensure its safe opening and a correct connection.



Please lock the terminal clamp housing of the wall mount enclosure with the supplied cover and the screws in order to avoid water or dirt from leaking in. The degree of protection cannot be guaranteed if the cover is not correctly locked.

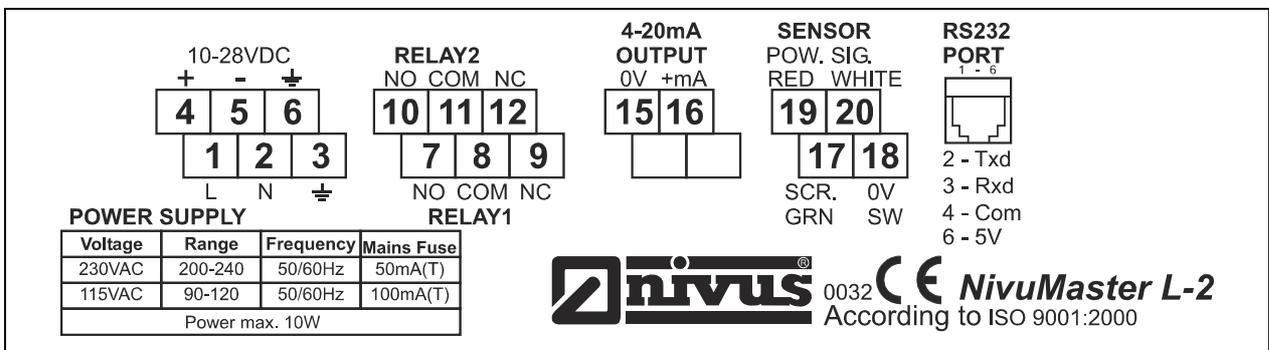


Fig. 6-2 Terminal clamp wiring wall mount enclosure NivuMaster L-2

6.2.4 NivuMaster L-2 Power Supply

The NivuMaster L-2 can operate from mains 115/230 V AC as well as from a 10 to 28 V DC power source.

The maximum power consumption is 10 W.



Before feeding the rated voltage please ensure the voltage selector to be set correctly.

6.2.5 Sensor Connection



Faulty connections or the use of unspecific cables may cause errors or even measurement failures.

The connection to the transmitter is made in the sensor terminal block area. Connect an ultrasonic sensor as follows:

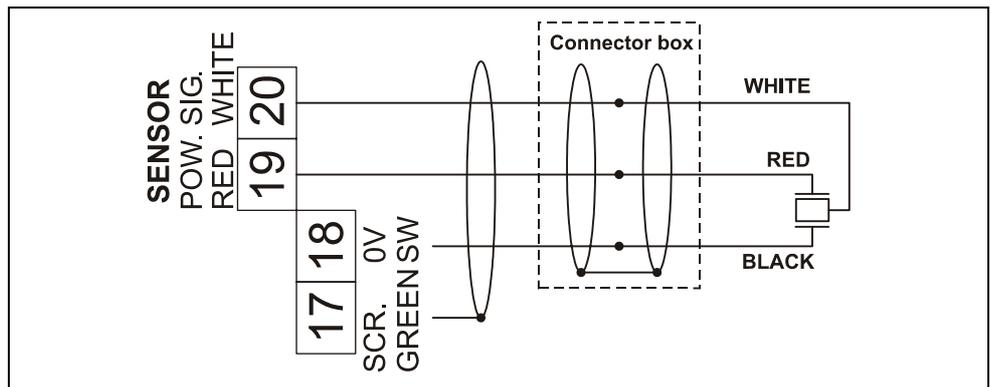


Fig. 6-3 Connecting a P-series ultrasonic sensor



To extend the sensor line use a shielded 3-wire cable (e.g. LIYCY 4 x 0,75mm²).

6.2.6 Sensor Connection in Ex -Areas

The NivuMaster L-2 has to be installed out of Ex-Areas.

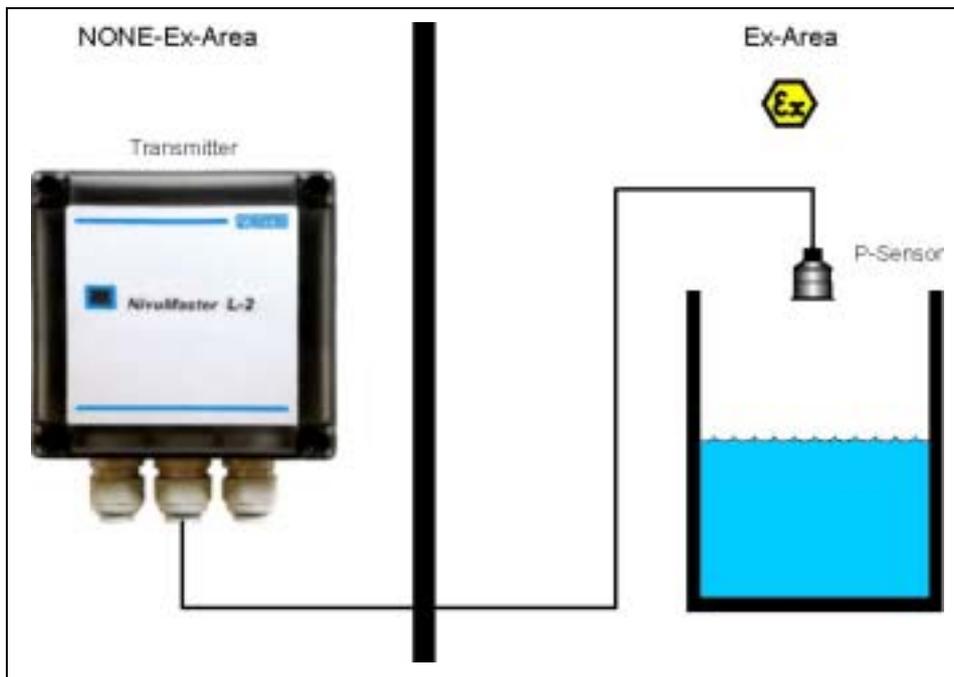


Fig. 6-4 Connection within E-Area

For use in Ex areas Zone 1 or 2 use a sensor which is approved according to ATEX specifications in conjunction with a 4000 A fuse (used in any NivuMaster as standard).



Important:
please observe sensor labelling !!!!!

6.2.7 RS232 Interface

The RS232 interface is available via an RJ-45 socket on the terminal block.

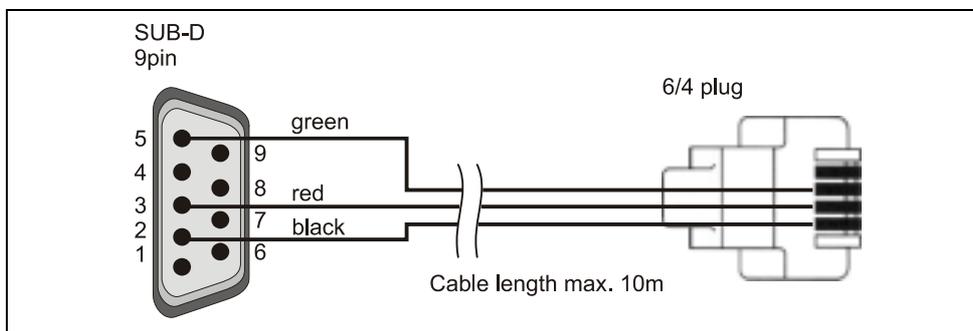


Fig. 6-5 Connection from NivuMaster to PC.

Remark:

You can use the RS232 interface to read out various data and parameters directly. Use a terminal software to do this.

The interface settings are as follows:

transmission rate: 19200 Baud; 8 data bits; no parity; 1 stop bit

6.3 Overvoltage Protection

In order to protect the NivuMaster L-2 it is necessary to equip power supply as well as the mA output with overvoltage protection devices.

NIVUS recommends the types EnerPro 220Tr or EnerPro 24Tr (at 24V DC) for the power supply and type DataPro 2x1 24/24Tr for the mA output.

The sensor can be protected against overvoltage with a SonicPro.

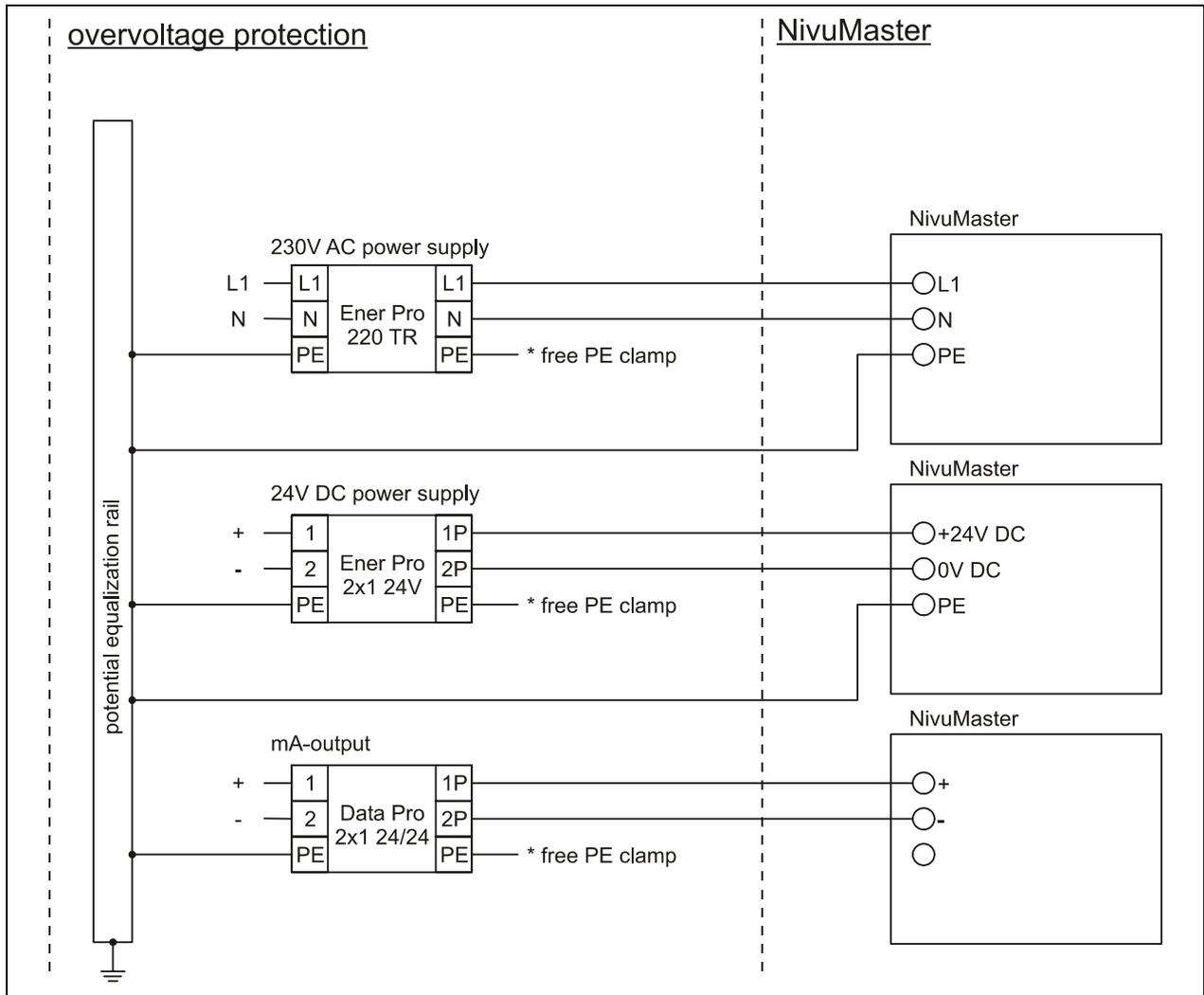


Fig. 6-6 Connecting overvoltage protection



Please note the non-reversed connection of the DataPro / EnerPro (p-side to transmitter) as well as a correct, straight wiring supply. Ground (earth) must lead to the unprotected side..

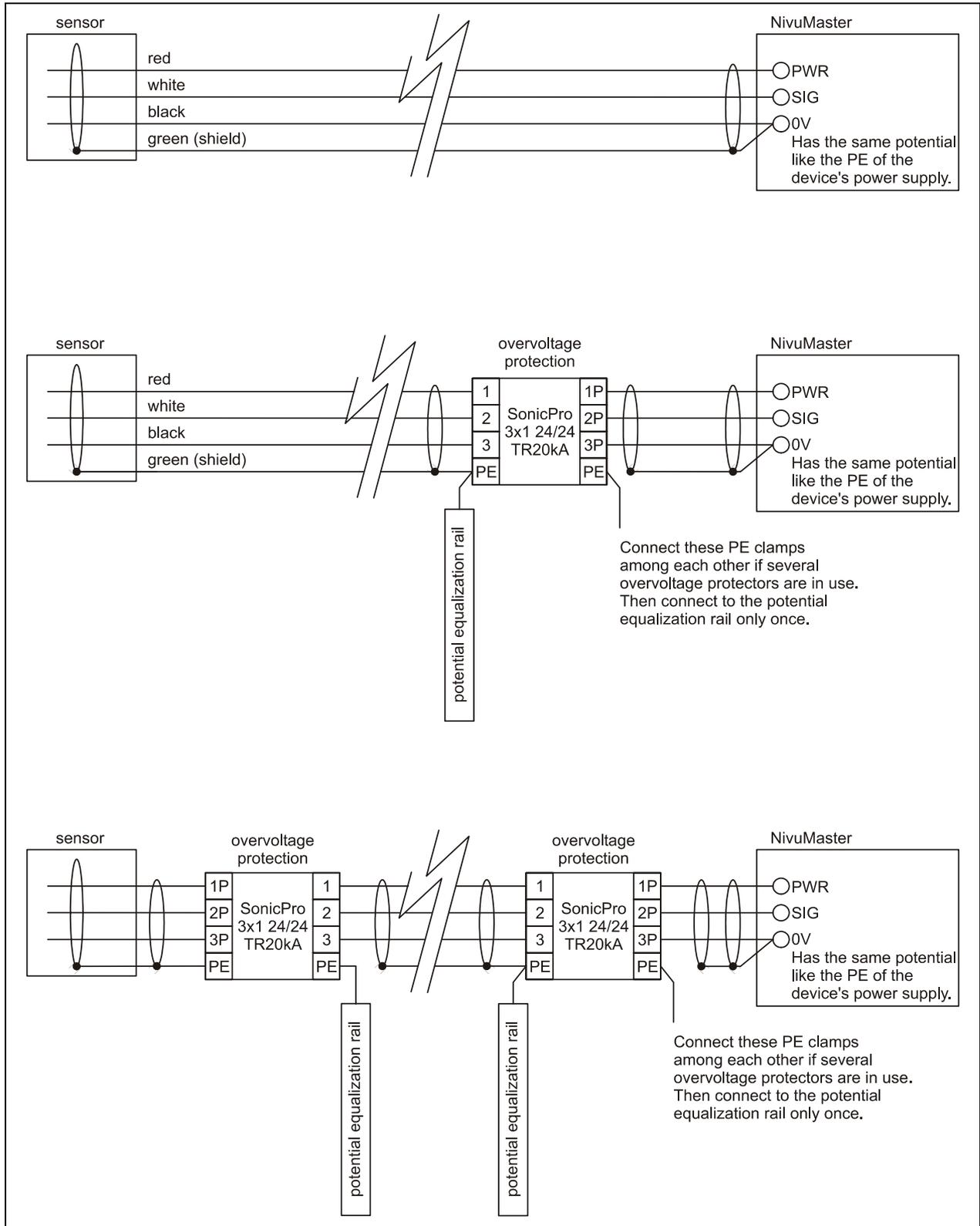


Fig. 6-7 Connecting overvoltage protection to sensor input



Please note the non-reversed connection of the SonicPro (p-side to transmitter) as well as a correct, straight wiring supply. Ground (earth) must lead to the unprotected side.

6.4 Application Example

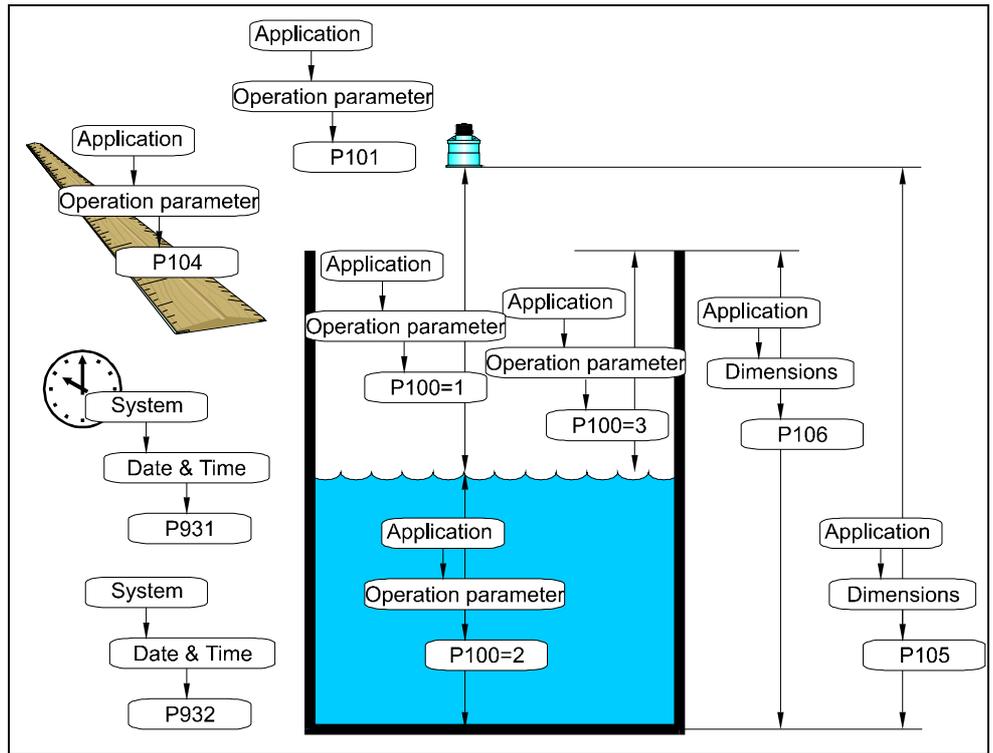


Fig. 6-8 Application example level measurement

Basic Parameters

Application	
Operation parameter	
P100 = 2	Volume
P101 = 2	Sensor P-06
P102 = 1	Liquids
Dimensions	
P104 = 2	units cm
P105 = 400	Distance Sensor to zero 400cm.
P106 = 370	Max. level 370cm
P107 = 30	Near blanking 30cm
P108 = 20	Far blanking 20%
Stability	
Damping	
P870 = 200	Max. change for filling at 200cm/Min.
P871 = 300	Max. change for emptying at 300cm/Min.
Relay programming	
(also see example relay programming Chapter 8.7)	
mA - Output	
Range	
P830 = 2	4-20mA
Assingmant	
P831 = 0	mA relates to setting in P100



The easiest way to determine the zero point is to completely empty the tank or the basin. The distance is measured by the NivuMaster and the detected value will be entered in P105 as zero point.

7 Initial Start-up

7.1 General

Notes to the user

Before you connect and operate the NivuMaster L-2 you should strictly follow the notes below!

This instruction manual contains all necessary information to program and to operate the device.

It is addressed to qualified technical personnel who have appropriate knowledge about measurement technology, automation technology, information technology and waste water hydraulics.

If any problems regarding installation, connecting or programming should occur please contact our technical division or our service center.

General Principles

The initial start-up is not allowed until the installation is finished and checked. To exclude faulty programming this instruction manual must be read before the initial start-up. Please get used to operate the NivuMaster L-2 via the handheld programmer or a PC by reading the instruction manual before you begin to program the device.

After transmitter and sensor are connected (see chapters 6.2.3 and 6.2.5) the parameters are set.

The operation of the NivuMaster L-2 is such that unfamiliar users (without any instructions or manuals) can carry out all fundamental tasks for easy and safe operation of the device.

For extensive programming, difficult hydraulic conditions, lack of qualified personnel or if a setup and error protocol should be required please contact the NIVUS Service Centre. Our initial start-up service is at your disposal at any time.

7.2 Handheld Programmer

In order to modify or to look at parameters you must use a handheld programmer.

PC Handheld Programmer

An optional software for the handheld programmer is optionally available on CD for the NivuMaster L-2 measurement system. Put the CD into your CD-ROM drive and install the software by following the instructions on the screen. After successful installation connect PC and L-2 via the serial port or connect the RS232 interface with the RJ12 socket. This socket is on the inside of the NivuMaster on the terminal block. Double-clicking the „Handheld Programmer“ icon will automatically connect PC and device. After that the screen below briefly is indicated and after successful connection the current measurement values are displayed depending on selected measurement mode and device.

Select from COM ports 1...4 by right-clicking on the virtual handheld programmer keypad.

Operating the handheld programmer software enables you to use the virtual keypad by clicking on the respective „key“.

You can enter numeric values directly via your PC keyboard alternatively. In this case „Enter“ corresponds to >E< on the L-2, „Esc“ to >C<.



Fig. 7-1 Virtual handheld programmer of the PC Software

Handheld Programmer with Display (optional)

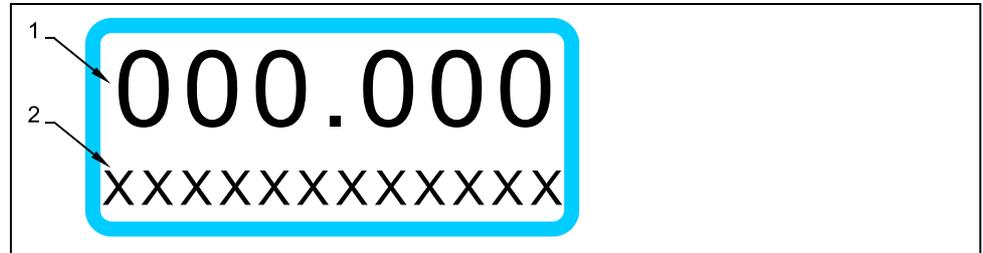
The optional handheld programmer with display can be used to program any number of L-2 units and is operated similar to the PC software. Connect the handheld programmer via the RS232 interface with the RJ12 socket on the inside of the NivuMaster by using the accompanying cable. You can see a message similar to the one in the PC software. After successful connection the current measurement values are displayed depending on selected measurement mode and device.



The keypad of the handheld programmer with display is exactly the same as the keypad of the virtual handheld programmer of the PC software.

7.3 Display Screens

The displays described below refer to the PC screens of the operation set as well as to the handheld programmer with display.



1. Main Display 6 digits

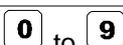
- Operation Mode:** indicates the current measurement value or the measurement value which was activated via the info keys.
- Program Mode:** indicates the parameters and their contents.
- Simulation Mode:** indicates the simulated measurement value.

2. Auxiliary Display 12 digits alphanumeric display with scroll function.

- Operation Mode:** indicates the measurement units selected in P104 or short-term changes of the relay status, as well as messages and screens to be called up by using the info keys.
- Program Mode:** indicates functional descriptions of parameters, suggestions for entries and their description.

7.4 Operation Basics

The entire operation is made menu driven supported by graphics. The table below describes the functions of the keys. We distinguish between functions of the operation mode and the program mode.

Keys	Operation Mode	Program Mode
	no function	no function
	indicates echo quality, echo strength, noise, average/peak values and temperature	no function
	no function	resets parameters to default setting
	indicates the mA value at the output	no function
	indicates empty space, filling level, distance and tendency rate	toggles relay setpoints between units of measure and % of span
	no function	jump back to a higher menu level and cancel faulty entries
	no function	move to the left on the menu levels and browse forward through parameters
	no function	move to the right on the menu levels and browse backward through parameters
	confirm the code to switch to program mode.	confirmation of entries (menu points, parameter contents) and NivuMaster questions
	no function	entry of negative values
	indicates device type and software revision	entry of decimal point
	1997 – code entry	entry of numeric values

7.5 Before turning on the Device

Before turning on the device please really check the following:

- Is the NivuMaster L-2 installed correctly?
- Is the power supply correctly wired?
- Is the ultrasonic sensor installed according to the instructions?
- Are the relays properly connected and programmed correctly?
- Is the voltage selector properly set ?

When turning on the NivuMaster L-2 the device is in operation mode. If the sensor is connected the distance between sensor and material will be displayed as soon as the correct sensor has been set in P101 (standard P-06).

8 Parameter Setting

8.1 Quick Start

A quick start function is available for standard applications.

During the programming procedure the user is asked for relay functions but has no influence on the assignment of relay functions to a certain relay.

In practical use this often causes problems because the relays are wired before the initial start-up. Answer with NO if the unit asks questions about alarm or control functions in this case while using the quick start function. The relays can be programmed separately without any problems afterwards. The advantage of the quick start is especially that the NivuMaster guides the user to all important parameters. For experienced users the quick start does not have many advantages

8.2 Parameter Setting Basics

1997 Enter this number as access code for the NivuMaster L-2. Then confirm this code by pressing „E“.



Do not give the code to unauthorized persons and do not leave it next to the device or do not note it down on the unit. The code protects from unauthorized access.

After finishing the parameter mode the unit proceeds operating with the values set before. After approx. 20-30 seconds the NivuMaster L-2 is ready for operation again.



This instruction manual describes all programming options of the NivuMaster L-2. The standard version has 1 analog output and 2 relay outputs available.

After having installed sensor and transmitter (see chapters before) activate the unit's power supply.

8.3 Operational Modes

The NivuMaster L-2 has 3 different operational modes.

8.3.1 Operation Mode

The L-2 will turn to operation mode either after turning the unit on or after setting the parameters in program mode. Here the respective question "Operate?" must be confirmed by pressing the ENTER key. In operation mode the transmitter detects the measurement value set in P100 such as distance, empty space or fill level. All programmed relays turn **On** or **Off** on reaching the switch thresholds according to their settings. The value on the mA output represents the measurement value if not otherwise set.

Additional data can be requested by using the hotkeys during operation.

8.3.2 Program Mode

All adjustment and parameter settings are made in program mode. You can navigate from the operation mode to the program mode by entering the code. This is made as follows:

1997 Press these keys and confirm with ENTER.



If no entry is made within 15 minutes when in program mode the NivuMaster automatically turns back to operation mode.

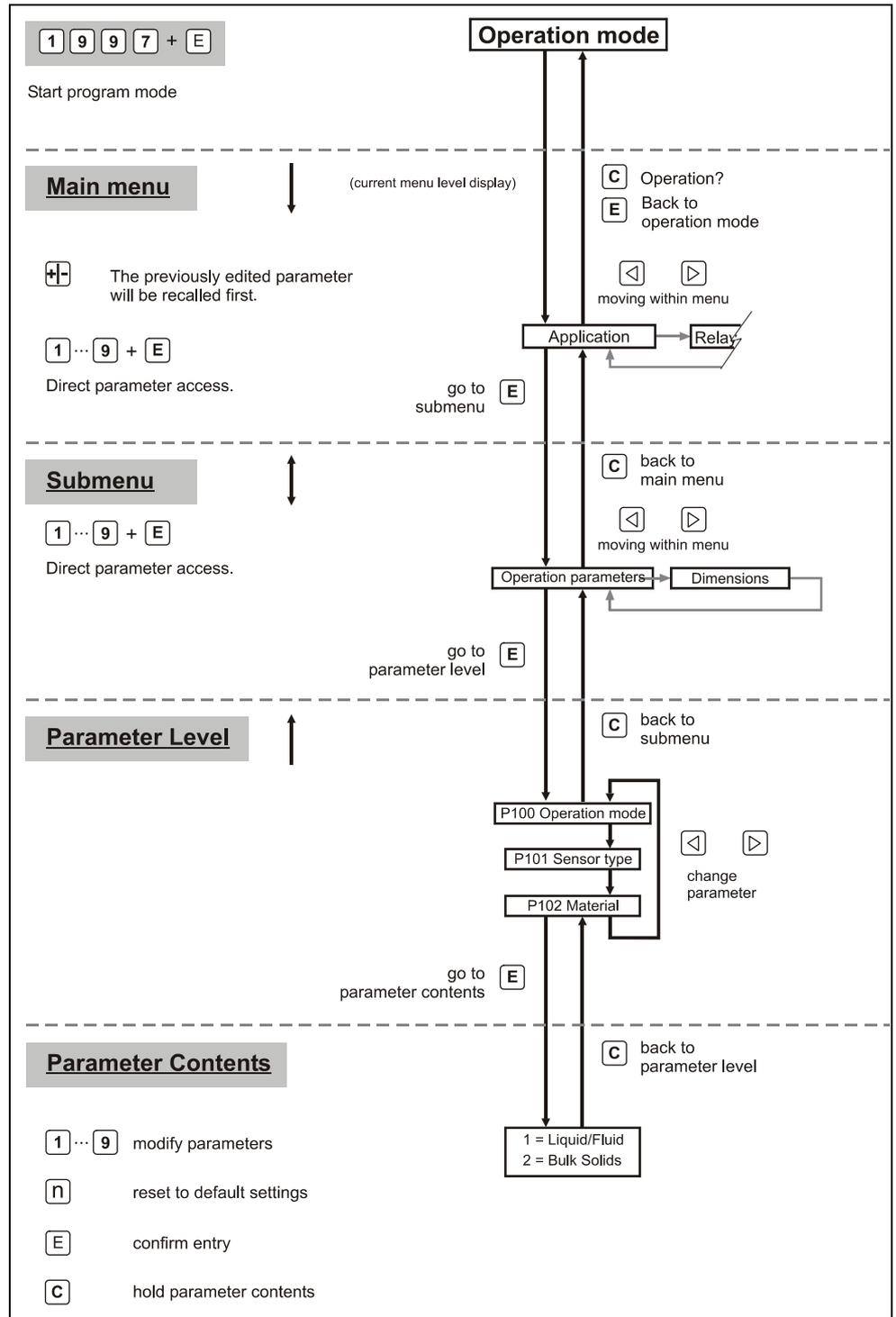


Fig. 8-1 Operating the device

8.3.3 Simulation and Test Mode

The simulation mode is for emulating various operational conditions independent of the filling level. This enables you to verify applications for their correct function.

During simulation there is a choice of whether the relays will change state ("hard test") or not ("soft test").

There are two simulation modes, "automatic" and "manual".

"Automatic" simulation will move the level up and down between empty level and maximum span, whereas "manual" simulation will allow you to move the level up and down using the arrow keys.

Pressing the C key will terminate the simulation. The unit turns back to program mode.

8.4 Program Mode Start

To start the program mode you need the PC operation set or the handheld programmer with display.

1997 Press these keys.

The message >Code?< is displayed and by entering each number indicates > - <. Pressing the ENTER key will confirm the code. The screen >please wait< is indicated followed by the first point of the main menu: >Quick Start<.

8.5 Parameter Reset

Parameter P930 enables you to reset all parameters to default. It is recommended to ensure that all parameters are at their default values before each initial start-up.

When in main menu press the keys > **9 3 0** < to call up the parameters. This will indicate the message > **Par. Select** < on the display. After pressing the key > **0** < and > **Reset Param.** < will be displayed. Entering > **1** < and subsequently ENTER will activate the function. By confirming the question < **Enter when ok** < the parameters will be reset. While executing > **Please wait**< and after that > **P930 Reset Param.**< is indicated.

The C key takes you back to the main menu. The unit is now ready to be programmed.

8.6 Back to Operation Mode

Pressing C repeatedly will bring you to the question > **Operate?**<, no matter on which menu level you are.

Pressing the ENTER key will confirm you to navigate to operation mode.

8.7 Relay Programming



All relay switch points are entered as filling levels (referring to the zero point set in P105). These are independent of the operational mode set in P100.

Please note in the following examples:

The switching cycles of the relays are not taken into account in the programming (P217/227). The failsafe behaviour was left on default setting.

8.7.1 Filling Level Alarm

High Alarm

Relay programming		
Relay No. 1		
P210 = 1		Alarm relays in power spacing operation
P211 = 1		Level alarm
P212 = 2*		Max. Alarm
P213 = 2(m)		switch point 1
P214 = 1,8 (m)		switch point 2

* if a relay is set as high alarm, the higher value is used as "ON" point and the lower value as "OFF" point independent of the switch point entries in P213 and P214.

Relay programming		
Relay No. 1		
P210 = 1		Alarm relays in power spacing operation
P211 = 1		Level alarm
P212 = 1*		universal alarm as Max. alarm
P213 = 2,0 (m)		Switch point on
P214 = 1,8 (m)		Switch point off

* if a relay is set as general alarm, P213 is always the "ON" point and P214 is the "OFF" point.

Low Alarm

Relay programming		
Relay No. 1		
P210 = 1		Alarm relays in power spacing operation
P211 = 1		Level alarm
P212 = 4*		Min. Alarm
P213 = 0,5 (m)		switch point 1
P214 = 0,7 (m)		switch point 2

* if a relay is set as low alarm, the lower value is used as "ON" point and the higher value as "OFF" point independent of the switch point entries in P213 and P214.

Relay programming	
Relay No. 1	
P210 = 1	Alarm relays in power spacing operation
P211 = 1	Level alarm
P212 = 1*	universal alarm as Min. alarm
P213 = 0,5 (m)	Switch point on
P214 = 0,7 (m)	Switch point off

* if a relay is set as general alarm, P213 is always the "ON" point and P214 is the "OFF" point.

8.7.2 Error Report

Relay programming	
Relay No. 1	
P210 = 1	Alarm relays in power spacing operation
P211 = 4	Alarm at echo loss
P809 = 2 (Min.)	time from recognition of the fault till the relay switches.

9 Parameter

The default setting of the parameters is marked with an > **F=** < or written in **bold letters**.

Main Menu

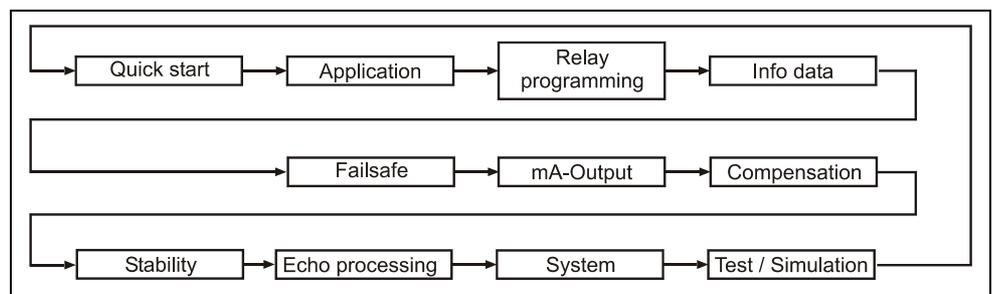


Fig. 9-1 Program Overview "Main Menu"

9.1 Applications

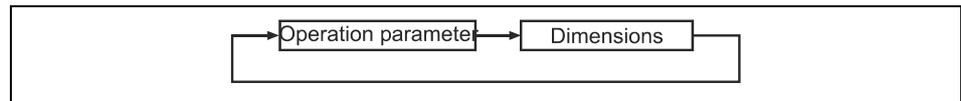


Fig. 9-2 Overview “Applications“

Operational Parameters

No.	Parameter	Description
100	Mode of Operation	select the value to be displayed. 0=OFF; 1=distance ; 2=filling level; 3=empty space
101	Sensor Type	enter the selected sensor. 1=P-03; 2=P-06 ; 3=P-10; 4=P-15; 5=P-25; 6=P-40, P-S6

Dimensions

No.	Parameter	Description
104	Measurement Units	select the units. 1=metre ; 2=cm; 3=mm; 4=feet; 5=inches
105	Zero Point	sets the distance between sensor face and empty point. F=6 m
106	Span	sets the maximum distance from the zero point to the maximum material level F=5.7 m . The span is assigned to the mA output automatically. It is automatically set to be equal to the zero point less the near blanking distance, when you set the empty level.
107	Near Blanking Distance	sets the distance from the sensor face that is not measurable. It cannot be set to less than the default value, but can be increased F=0.3 m (with P-06 sensor)
108	Far Blanking Distance	sets the range by which the span is increased in percent. This enables to correctly evaluate echos below the zero point. F=20 %

9.2 Relay Programming

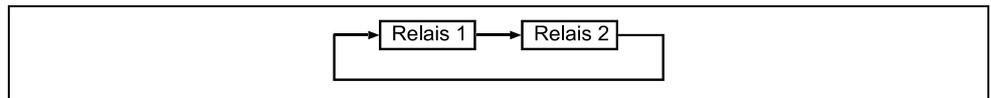


Fig. 9-3 Overview “Relay Programming“

The relay functions for relay no. 1 are described as follows.

This applies for relay no. 2 respectively.

relay no.1: P210 to 218

relay no.2: P220 to 228

Relay 1

Programming Alarm Functions

No.	Parameter	Description
210	R1 Type	determines the relay function
	0 = no function	the relay is de-energised when turned off. This condition corresponds to the relay position indicated in the wiring diagram.
	1 = Alarm	relay is programmed as an alarm relay, which will de-energise ON and energise OFF. This will ensure an alarm is raised if the power fails to the unit.
211	R1 Function	determines to which measurement unit or value the alarm refers to.
	0 = OFF	Relay has no function
	1 = Filling Level	the “ON” and “OFF” points to be set refer to the measured filling level.
	2 = Temperature	the “ON” and “OFF” points to be set refer to the temperature measured on the sensor.
	3 = Loss of Echo	alarm is raised if the failsafe timer P809 expires. No setpoints are required.
	4 = Loss of Clock	alarm is raised if the real time clock fails. No setpoints are required.
212	R1 Alarm Type	alarm start determines the functions of the following switching points P213 and P214 if P211 = 1 or 2. No function if P211 = 3 or 4.
	1 = General	relay goes “ON” on P213 and goes “OFF” on P214.
	2 = High	relay goes “ON” when the value rises to the higher filling level and goes “OFF” when the value lowers to the lower filling level independent of the settings in P213 and P214.
	3 = High-High	same as 2 = High, but different identifier.

	4 = Low	relay goes "OFF" when the value rises to the higher filling level and goes "ON" when the value lowers to the lower filling level independent of the settings in P213 and P214.
--	---------	--

No.	Parameter	Description
212	5 = Low-Low	same as 4 = Low, but different identifier.
	6 = In bounds	relay goes "ON" if value is inside the zone between the two setpoints in P213 and P214.
	7 = Out of bounds	relay goes "ON" if value is outside the zone between the two setpoints in P213 and P214.
213	R1 Switch Point 1	entry of filling level – (e.g. if P212 = 1 then "ON" point)
214	R1 Switch Point 2	entry of filling level – (e.g. if P212 = 1 then "OFF" point)
217	R1 Switching Cycles	indicates the number of relay switching cycles.
218	Error Mode	sets the relay behaviour in case of error. 0=Default (P808); 1=Hold; 2=De-Energise; 3=Energise

Programming Control Functions

No.	Parameter	Description
210	R1 Type	Determines relay operation mode.
	0 = no function	The relay is in idle condition if turned off. This condition is equal to the relay position specified in the wiring diagram.
	2 = Control	All control functions operate according to working current principle, i.e. the relay will be energized in control condition.
211	R1 Function1	Determines which reading or value the alarm is related to.
	0 = OFF	Relay has no function.
	1 = Gen. Alarm	Relay will turn ON at P213 and turns OFF at P214.
212	R1 Alarm Type	Determines extended control functions.
	1 = fixed setting	Relay will turn ON at P213 and turns OFF at P214.
	2 = Alternating	Cyclic pump change (alternating), all pumps (group) will operate always on reaching the switching points.
213	R1 Switching Point 1	Enter the fill level – (e.g. if P211 = 1 then ON switching point)

Nr.	Parameter	Beschreibung
214	R1 Switching Point 2	Enter the fill level – (e.g. if P211 = 1 then OFF switching point)
217	R1 Switching Cycles	Indicates the number of relay switching cycles.
218	Error Mode	Determines the relay behaviour in case of error. 0=default setting (P808) ; 1=hold; 2=de-energise; 3=energise

Relay 2

Relays no.2: P220 to 228

9.3 Data Log

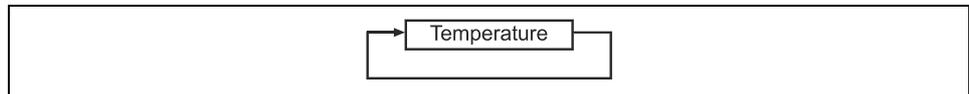


Fig. 9-4 Overview “Data Log“

Temperature

No.	Parameter	Description
580	Minimum Temperature	shows the minimum temperature recorded.
581	P580 Date	shows the date when the minimum temperature was recorded.
582	P580 Time	shows the time when the minimum temperature was recorded.
583	Maximum Temperature	shows the maximum temperature recorded.
584	P583 Date	shows the date when the maximum temperature was recorded.
585	P583 Time	shows the time when the maximum temperature was recorded.
586	Current Temperature	shows the current temperature being recorded.

9.4 Error Mode

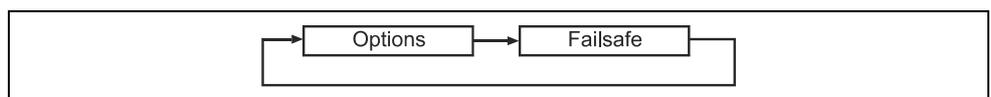


Fig. 9-5 Overview “Error Mode“

Options

No.	Parameter	Description
801	Decimal Places	F=2

Error Mode (Failsafe)

No.	Parameter	Description
P808	Failsafe Mode	sets how display and mA output shall react in case of error (e.g. loss of echo) after the failsafe time has expired. 1=Hold – remains at the last known value. 2=Max – display and mA output will fail to the maximum value. 3=Min – display and mA output will fail to the minimum value.
809	Failsafe Time	in the event of a failsafe condition occurring the failsafe timer determines the time before failsafe mode is activated. F=1 minute

9.5 mA Output

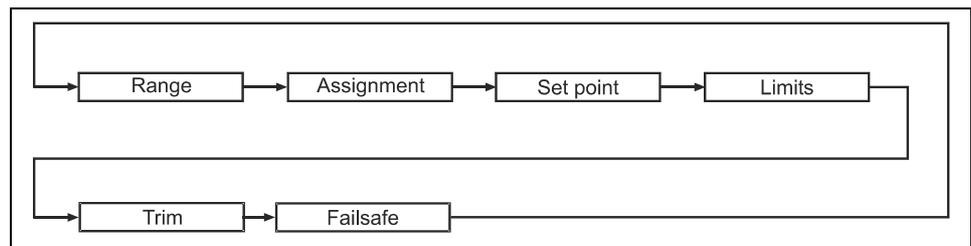


Fig. 9-6 Overview “mA Output“

Output Range

No.	Parameter	Description
830	mA Range	0=mA output disabled 1=0-20mA → 0% =0mA / 100% = 20mA (refers to P831) F=2=4-20mA → 0%=4mA / 100% = 20mA (refers to P831) 3=20-0mA → 0%=20mA / 100% = 0mA (refers to P831) 4=20-4mA → 0%=20mA / 100% = 4mA (refers to P831)

Assignment

No.	Parameter	Description
831	mA Assignment	0=mode (P100); 1=distance 2=level 3=space

Setpoint

No.	Parameter	Description
834	Output Low Level	F=0 in unit P104
835	Output High Level	F=span P106 in unit P104

Limits

Sets the lowest or highest values that the mA output will drop or rise to.

No.	Parameter	Description
836	Output Low Limit	F=0 mA (enter in mA)
837	Output High Limit	F=20 mA (enter in mA)

Trim

No.	Parameter	Description
838	Output Low Trim	F=0,00 -> enter offset in \pm mA
839	Output High Trim	F=0,00 -> enter offset in \pm mA

Failsafe

No.	Parameter	Description
840	Output Failsafe Mode	0=value from P808 1=Hold 2=Min. 3=Max.

9.6 Compensation

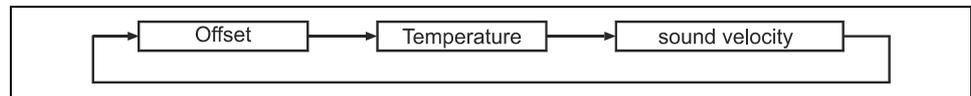


Fig. 9-7 Overview "Compensation"

Offset

No.	Parameter	Description
851	Measurement Offset	enter the measurement offset. This value will affect the mA output and the relay setpoints. F=0

Temperature

No.	Parameter	Description
852	Temp. Source	1= automatic 2= fixed (P854)
854	Fixed Temp.	F= 20° C
*857	Temperature Calibr.	F= current temperature recorded on the sensor.
* In order to avoid faulty measurements always perform temperature calibration in case of using cables longer than 100 m. Can be applied only using code „552621“.		

Sound velocity

No.	Parameter	Description
860*	Ultrasonic Transit time	F=342, 720 m/s (at 20° C)
* Can be applied only using code „552621“.		

9.7 Stability

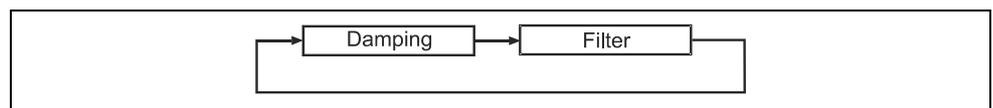


Fig. 9-8 Overview “Stability“

Damping

No.	Parameter	Description
870	Fill Damping	determines the maximum rate in unit/min. at which the unit will respond to an increase in level. F=10 m/min (lower values = higher damping) (higher values = lower damping)
871	Empty Damping	determines the maximum rate in unit/min. at which the unit will respond to a decrease in level. F=10 m/min (lower values = higher damping) (higher values = lower damping)

The damping affects the mA output only. It has no effects on the evaluation velocity of the NivuMaster L-2. If the measurement lags behind the level despite low damping, this is caused by the velocity of the echo evaluation. This velocity can be modified via service parameters.

Filter

No.	Parameter	Description
881	Fixed Distance	width of measurement window. Each before and after measurement value. F=0,2m Overall width = 0.4m = 0.2m + 0.2m

9.8 Echo Processing

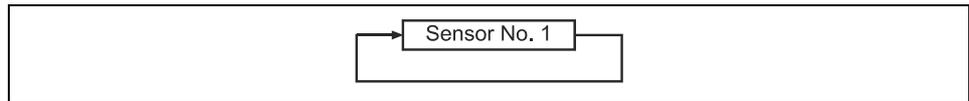


Fig. 9-9 Overview “Echo Processing”

Sensor No. 1

No.	Parameter	Description
900	Status No.1	shows the current sensor status. 0=ok; 1=inactive; 2=error; 3=no sensor
901	Echo Confidence 1	shows the echo confidence in %. Percentage of confidence that the echo reporting the level is the correct one.
902	Amplitude 1	shows the amplitude level of the returned echo.
903	Average Noise	shows the average noise level.
904	Peak Noise	shows the peak noise level.
905	Sensitivity 1	sets the minimum value of the DA-TEM base line. F=5.0 dB

9.9 System

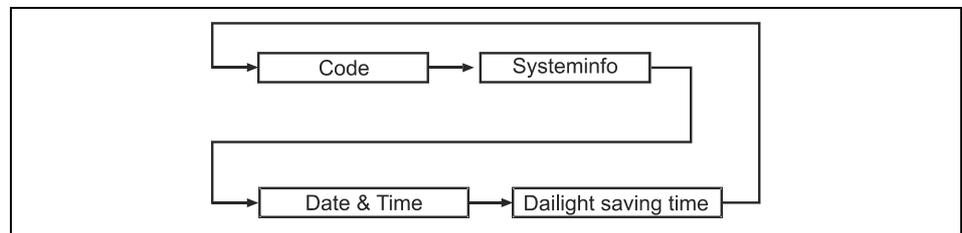


Fig. 9-10 Overview “System”

Code

No.	Parameter	Description
921	Enable Code	enables or disables the passcode. 1= enabled ; 0=disabled, access to program mode via E key in this case.
922	Passcode	changes the access code to another value. F=1997

System Information

No.	Parameter	Description
926	Software Revision	shows the software revision.
927	Hardware Revision	shows the hardware revision (boards)
928	Serial Number	shows the internal serial number
929	Site Identification	allows to give each unit an individual reference number. F=1
930	Parameter Reset	resets parameters to default values. 0=no; 1=yes

Date & Time

No.	Parameter	Description
931	Date	shows the current date.
932	Time	shows the current time
933	Date Format	allows to alter the format of the date 1=DD:MM:YY; 2=MM:DD:YY; 3=YY:MM:DD D=day; M=month; Y=year

Daylight Saving Time

No.	Parameter	Description
970	DST Enable	enable daylight saving time? 0=no; 1=yes
971	DST Difference	time difference between standard time and daylight saving time. F=+1 hr.
972	DST Start Time	sets the time of day at which DST will start. F=02:00 am
973	Start Day	sets the day of the week at which DST is to start. 2=Mo; 3=Tu; 4=We; 8=Su
974	Start Week	sets the week of the month to start DST. 1=week1; 2=week2; 3=week3; 4=week4; 5=last week
975	Start Month	select the month to start DST. 1=Jan; 2=Feb; 3=Mar ;12=Dec.
976	DST End Time	sets the time of day that DST is to end. F=02:00 am
977	End Day	sets the day of the week to end DST. 2=Mo; 3=Tu; 4=We; 8=Su
978	End Week	select the week of the month at which DST is to end. 1=week1; 2=week2; 3=week3; 4=week4; 5=last week.
979	End Month	sets the month in which DST will end. 1=Jan; 2=Feb;..... 10=Oct;...12=Dec.

9.10 Test / Simulation

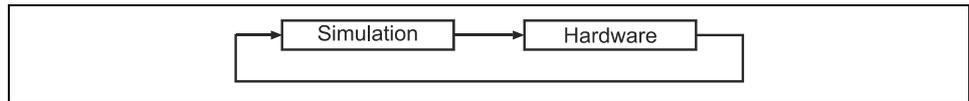


Fig. 9-11 Overview "Test / Simulation"

Simulation

No.	Parameter	Description
980	Simulate	0=off ; 1=manual soft; 2=auto soft; 3=manual hard; 4=auto hard
981	Increment	sets the amount of simulation increment; F=0.25m
982	Rate	sets the rate at which the level will move up and down; F=1 Min.

Hardware

No.	Parameter	Description
992	Output Test	forces a specific current on to the mA output. F=0.00 mA
993	Relay Test	1=relay 1 enable/disable; 2=relay 2 enable/disable
994	Sensor Test	checks the sensor line; 0=off ; any other key=sensor fires 100 impulses

10 Service Parameters



The service parameters must be selected directly and cannot be called up via the menu.

Sensor

You can affect the run of the DATEM line (mask line) with >Set DATEM 1<. Enabling the parameter will erase the setting of the previous mask line. In order to take a closer look on how the function operates you need the NivuMaster Ultra PC evaluation software.

No.	Parameter	Description
20	Set DATEM 1	0 = Cancel action can be cancelled by entering 0.
		1 = Mask The DATEM line will be stretched over the raw echo within the entire measurement range. This may be necessary if e.g. in standard applications the target is situated out of the measurement range on the initial start-up
		2 = Default Due to the sensor type the DATEM line will be reset to factory value. After that the unit begins to mute any false echos prior to the effective echo.



The DATEM line should be reset to default (2) in principle by using parameter P20 before each initial start-up.

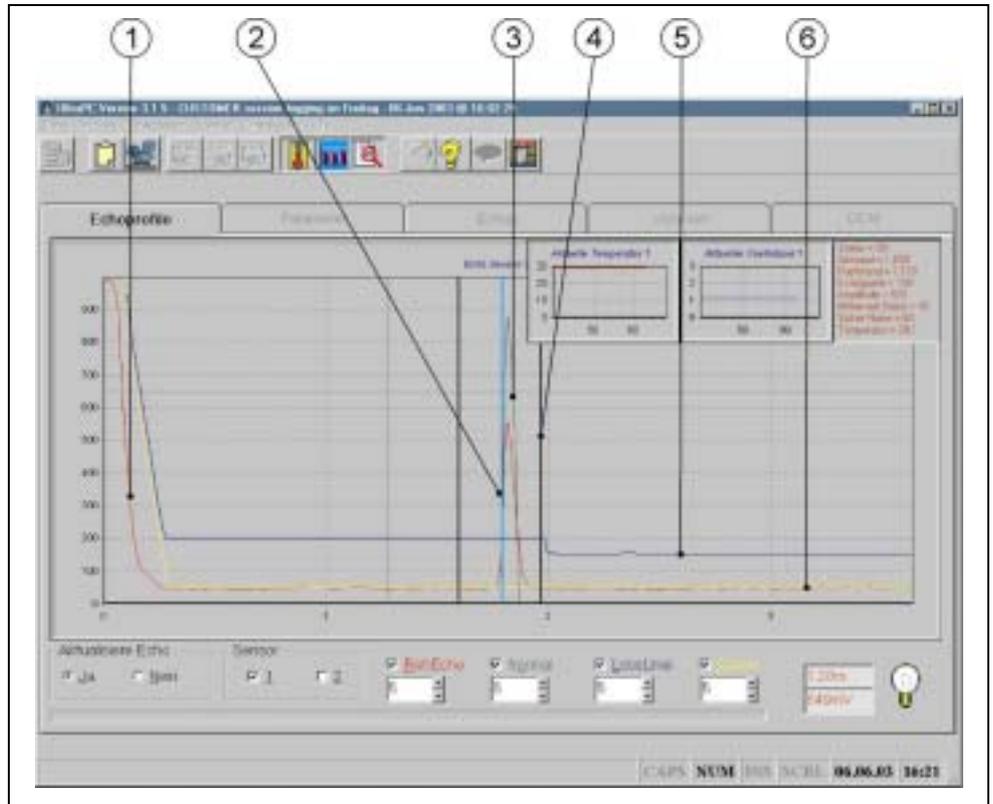
No.	Parameter	Description
21	Select Echo	entry: value in pre-set unit (P104). distance of „correct“ echo measured from sensor face in the selected unit.



Parameter P21 is required if e.g. a higher level than the current level is put out. You then can set the "correct" distance to the material on the NivuMaster. All interferences before will be masked out and muted.

11 Echo Profiles

Screenshot NivuMaster Software Ultra-PC



- 1 Raw Echo (red trace)
- 2 Measurement
- 3 Normalisation (green trace)
- 4 Gate
- 5 Loss Limits (blue trace)
- 6 Datem (yellow trace)

Fig. 11-1 Echo profile

12 Description of Errors

12.1 Troubleshooting

Symptom:	Cause:	What to do:
No function on turn-on.	No power supply	Check power supply voltage and fuse (on AC operation only, on DC operation a temperature fuse is used).
	If the power supply is in proper condition maybe the unit is defect.	Please contact NIVUS GmbH.
The NivuMaster indicates a level reading above the current filling level.	Large interference echo (e.g. caused by conductor, pipe or filling) above the current level disables the "correct" echo to be evaluated.	Entering the "correct" level as distance from the sensor in parameter 21 will mute the interference before the sensor (see chapter 10 Service Parameters). Basically it is recommended to place the sensor in a way that the effective echo can be evaluated without the help from service parameters. Further it must be taken into account to avoid the sound beam to cross feeder flows.
The NivuMaster indicates a level reading below the current filling level.	The NivuMaster evaluates a double echo (multiple reflexion). This phenomenon mainly appears at measurements in closed standpipes or narrow vessels. The acoustic energy cannot escape from here causing a very high number of double echos.	The evaluation mode of the NivuMaster L-2 must be modified. To do this please contact NIVUS GmbH.
	The "correct" echo is too close to the sensor face. It disappears within the near blanking distance area (P107) and thus cannot be processed. This will cause a double echo to be indicated.	Check the near blanking distance (P107) of the sensor and adjust if necessary. It cannot be set to less than default value. If adjustment is not possible re-install the sensor a little higher or physically reduce the maximum filling level.

12.2 Error Messages

Message:	Cause:	Remedy:
No Sensor	No sensor connected or cable break in sensor line.	Wiring correct? Check terminal clamps. Is the ultrasonic sensor still "firing"? Does the sensor supply clock signals? Check sensor supply voltage: it must be set to 24 V DC on the clamps. At least 18 V DC are required for the sensor to ensure correct operation. If the voltage difference is too high you eventually must use a cable with lower damping or higher diameter instead.
Error	The unit is in failsafe status. This means that an error has exceeded the bounds of the failsafe time set in P809.	Check sensor for correct function. Check failsafe mode and eventually increase failsafe time (P809).
Echo Loss	The NivuMaster cannot detect a sufficient echo to fit into the range of programmed criteria.	Check programming. Investigate echo profiles by using NivuMaster PC software and fix the reason for echo loss.
	The sensor used has not enough transmitting power.	Use a sensor type with higher performance or install the sensor a little lower if possible.

12.3 LED Status / Error Messages (model without display and keypad)

Green	Red	Run Mode
OFF	OFF	No power supply to unit or power-save mode
Constantly ON	Constantly ON	Internal error
flashing slowly	flashing slowly	Sensor error
OFF	flashing slowly	Failsafe / loss of echo
flashing slowly	OFF	operating status, normal operation

13 Resistances

The sensor technology is resistant to normal domestic sewages, dirt and rain water as well as mixed water from municipalities and communities. Also in many industrial plants (e.g. Huels, BASF etc.) the resistance does not present any problems. The sensor technology nevertheless is not resistant to all substances and substance mixtures.



Basically, there are dangers in chloride media as well as various organic solvents!

It has to be taken into account, that for substance mixtures (simultaneous existence of several substances) there is a possibility of occurrence of catalytic effects under certain circumstances, that would not occur in single substances. These catalytic effects cannot be completely checked due to the infinitely high possibility of variations.

Please, contact in case of doubt your NIVUS representation and request a free material test for long time test.

14 Maintenance and Cleaning



Please note that due to operation in the waste water field transmitter, sensors and cables may be loaded with dangerous disease germs. Respective precautionary measures must be taken to avoid damage to one's health.

The NivuMaster L-2 is conceived to be practically free of maintenance and material wear.

Clean the transmitter enclosure if necessary with a dry, lint-free cloth. For heavy pollution NIVUS recommends the use of surface-active agents.

Use of abrasive cleansing agents is not allowed.



When cleaning the enclosure surface with a wet cloth first disconnect the device from mains.

If the ultrasonic sensor has to be de-installed due to cleaning purposes, the transmitter must be turned off before. This is to ensure the mask line to be kept in its current status. Otherwise it may adapt to the "incorrect" environmental conditions of being de-installed.

Please strictly observe on installing the sensor that the position is the same as on de-installation. If not, this may result in faulty measurements.



Never use hard objects like wire brushes, rods, scrapers or similar to clean the sensor. The use of a water jet is allowed up to a pressure of 4 bar max. (see Sensor) only (e.g. spray with water hose). The use of high pressure cleaners may lead to measurement failures and thus is not allowed.

15 Emergency

In case of emergency

- press the emergency-off button of the superordinated system or
- disable the power supply.

16 Dismantling/Disposal

The device has to be disposed according to the local regulations for electronic products.

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19 Parameter List

No.	NivuMaster L-2; Parameters	Entry
100	Mode of Operation 1=Distance ; 2=Filling Level; 3=Empty Space	
101	Sensor Type 1=P-03; 2=P-06 ; 3=P-10; 4=P-15; 5=P-25; 6=P-40	
104	Measurement Units 1=Metre ; 2=cm; 3=mm; 4=feet; 5=inches	
105	Zero Point F=6.00 m	
106	Span F=5.70 m	
107	Near Blanking Distance F=0.30 m	
108	Far Blanking Distance F=20 %	
210	Relay 1 Type 0=OFF ; 1=Alarm	
211	Relay 1 Function 0=OFF ; 1=Filling Level; 2=Temperature; 3=Loss of Echo; 4=Loss of Clock	
if P211 = 1 or 2. If P211 = 3 or 4, parameters P212 - P214 do not have any functions		
212	Relay 1 Alarm Type 1=General ; 2=High; 3=High-High; 4=Low; 5=Low-Low; 6=In Bounds; 7=Out of Bounds	
213	Relay 1 Switch Point 1 "ON" point or high switch point (alarm in bounds/out of bounds)	
214	Relay 1 Switch Point 2 "OFF" point or low switch point (alarm in bounds/out of bounds)	
217	Relay 1 Switching Cycles	
218	Relay 1 Error Mode (Failsafe) 0=Default (P808) ; 1=Hold; 2=De-Energise; 3=Energise	
220	Relay 2 Type 0=OFF ; 1=Alarm	
221	Relay 2 Function 0=OFF ; 1=Filling Level; 2=Temperature; 3=Loss of Echo; 4=Loss of Clock	
if P221 = 1 or 2. If P221 = 3 or 4, parameters P222 - P224 do not have any functions		
222	Relay 2 Alarm Type 1=General ; 2=High; 3=High-High; 4=Low; 5=Low-Low; 6=In Bounds; 7=Out of Bounds	
223	Relay 2 Switch Point 1 "ON" point or high switch point (alarm in bounds/out of bounds)	
224	Relay 2 Switch Point 2 "OFF" point or low switch point (alarm in bounds/out of bounds)	
227	Relay 2 Switching Cycles	
228	Relay 2 Error Mode (Failsafe) 0=Default (P808) ; 1=Hold; 2=De-Energise; 3=Energise	

No.	NivuMaster L-2; Parameters	Entry
580	Minimum Temperature Read only	
581	P580 Date Read only	
582	P580 Time Read only	
583	Maximum Temperature Read only	
584	P583 Date Read only	
585	P583 Time Read only	
586	Current Temperature Read only	
801	Decimal Places F=2	
808	Error Mode (Failsafe) 1=Hold ; 2=Max.; 3=Min.	
809	Failsafe Time F=1 Minute	
830	mA Range 0=OFF; 1=0-20mA; 2=4-20mA ; 3=20-0mA; 4=20-4mA	
831	mA Assignment 0= Mode (P100) ; 1=Distance; 2=Level; 3=Space	
834	Output Low Level F=0,00 m	
835	Output High Level F=Span	
836	Output Low Limit F=0 mA	
837	Output High Limit F=20 mA	
838	Output Low Trim F=0.00 mA	
839	Output High Trim F=0.00 mA	
840	Output Failsafe Mode 0=Value from P808 ; 1=Hold; 2=Min.; 3=Max	
851	Measurement Offset F=0 m	
852	Temp. Source 1=Automatic ; 2= Fixed	
854	Fixed Temp. F=20° C	
857	Temperature Calibr. F=Current Temperature recorded on the Sensor	

No.	NivuMaster L-2; Parameters	Entry
870	Fill Damping F=10 m/min	
871	Empty Damping F=10 m/min	
881	Fixed Distance F=0.2m	
900	Status No.1 (Read only! 0=OK ; 1=Inactive; 2=Error; 3=No Sensor)	
901	Echo Confidence Read only!	
902	Amplitude Read only!	
903	Average Noise Read only!	
904	Peak Noise Read only!	
905	Sensitivity F=5.0 dB	
921	Enable Code 0 = No; 1 = Yes	
922	Passcode F=1997	
926	Software Revision Read only!	
927	Hardware Revision Read only!	
928	Serial Number Read only!	
929	Site Identification F = 1	
930	Parameter Reset 0 = No; 1 = Yes	
931	Date F = DD:MM:YY	
932	Time F = HH:MM	
933	Date Format 1=DD:MM:YY ; 2=MM:DD:YY; 3=YY:MM:DD	
970	Enable Daylight Saving Time? 0=No; 1=Yes	
971	DST Difference F= 01:00 hr.	
972	DST Start Time F = 02:00 am	
973	Start Day 2 = Monday; 3 = Tuesday; 4 = Wednesday; 5 = Thursday; 6 = Friday; 7 = Saturday; 8 = Sunday	
974	Start Week 1 = Week 1; 2 = Week 2; 3 = Week 3; 4 = Week 4; 5 = last Week	
975	Start Month 1=Jan.;2=Feb.; 3=March ;4=April;5=May;6=June;7=July;8=Aug.;9=Sep.;10=Oct.;11=Nov.;12=Dec.	
976	DST End Time F=02:00 am	

No.	NivuMaster L-2; Parameters	Entry
977	Ende Day 2 = Monday; 3 = Tuesday; 4 = Wednesday; 5 = Thursday; 6 = Friday; 7 = Saturday; 8 = Sunday	
978	Ende Week 1 = Week 1; 2 = Week 2; 3 = Week 3; 4 = Week 4; 5 = last Week	
979	Ende Month 1=Jan.;2=Feb.;3=March;4=April;5=May;6=June;7=July;8=Aug.;9=Sep.; 10=Oct. ;11=Nov.;12=Dec	
980	Simulate 0=Off ; 1=Manual Soft; 2=Auto Soft; 3=Manual Hard; 4=Auto Hard	
981	Increment F=0.25m	
982	Rate F=1 Min.	
992	Output Test F = 0.00 mA	
993	Relay Test 1 = Relay1 enable/disable; 2 = Relay2 enable/disable	
994	Sensor Test 0 = Off; any other Key = Sensor fires 100 Impulses	

EU Konformitätserklärung

EU Declaration of Conformity

Déclaration de conformité UE

NIVUS GmbH
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Für das folgend bezeichnete Erzeugnis:

For the following product:

Le produit désigné ci-dessous:

Bezeichnung:	Multifunktionaler Messumformer NivuMaster
<i>Description:</i>	<i>Multi-functional measurement transmitter</i>
<i>Désignation:</i>	<i>Convertisseur de mesure multifonctionnel</i>
Typ / Type:	NMx-xxxx...

erklären wir in alleiniger Verantwortung, dass die auf dem Unionsmarkt ab dem Zeitpunkt der Unterzeichnung bereitgestellten Geräte die folgenden einschlägigen Harmonisierungsvorschriften der Union erfüllen:

we declare under our sole responsibility that the equipment made available on the Union market as of the date of signature of this document meets the standards of the following applicable Union harmonisation legislation:

nous déclarons, sous notre seule responsabilité, à la date de la présente signature, la conformité du produit pour le marché de l'Union, aux directives d'harmonisation de la législation au sein de l'Union:

- 2014/35/EU
- 2014/30/EU
- 2011/65/EU

Bei der Bewertung wurden folgende einschlägige harmonisierte Normen zugrunde gelegt bzw. wird die Konformität erklärt in Bezug auf die nachfolgend genannten anderen technischen Spezifikationen:

The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:

L'évaluation est effectuée à partir des normes harmonisées applicable ou la conformité est déclarée en relation aux autres spécifications techniques désignées ci-dessous:

- EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
- EN 61326-1:2013

Diese Erklärung wird verantwortlich für den Hersteller:

This declaration is submitted on behalf of the manufacturer:

Le fabricant assume la responsabilité de cette déclaration:

NIVUS GmbH
Im Täle 2
75031 Eppingen
Germany

abgegeben durch / represented by / faite par:

Ingrid Steppe (Geschäftsführerin / Managing Director / Directeur général)

Eppingen, den 21.10.2022

Gez. *Ingrid Steppe*

UK Declaration of Conformity

NIVUS GmbH
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E-Mail: info@nivus.com
Internet: www.nivus.de

For the following product:

Description:	Multi-functional measurement transmitter NivuMaster
Type:	NMx-xxxx...

we declare under our sole responsibility that the equipment made available on the UK market as of the date of signature of this document meets the standards of the following applicable UK harmonisation legislation:

- SI 2016 / 1101 The Electrical Equipment (Safety) Regulations 2016
- SI 2016 / 1091 The Electromagnetic Compatibility Regulations 2016
- SI 2012 / 3032 The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012

The evaluation assessed the following applicable harmonised standards or the conformity is declared in relation to other technical specifications listed below:

- BS EN 61010-1:2010 + A1:2019 + A1:2019/AC:2019
- BS EN 61326-1:2013

This declaration is submitted on behalf of the manufacturer:

NIVUS GmbH
Im Taele 2
75031 Eppingen
Germany

represented by:

Ingrid Steppe (Managing Director)

Eppingen, 21/10/2022

Signed by *Ingrid Steppe*