

## Instruction Manual NivuGuard Monitor

(Original Instruction Manual – english)



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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.

If you experience any problems with the instruction handbook, then please contact **NIVUS GmbH - Customer Service.**

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## 1 General



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### ***Important Note***

*READ CAREFULLY BEFORE USE!*

*KEEP IN A SAFE PLACE FOR LATER REFERENCE!*

---

This instruction manual is an original instruction for NivuGuard Monitor and is for the intended use of the device. This manual is oriented exclusively to qualified expert personnel.

Read this instruction manual carefully and completely prior to installation and connection since it contains relevant information on this product. Observe the notes and particularly follow the warning notes and safety instructions.

Keep this manual in a safe place and make sure it is available for the users of this product at any time.

If you should have problems to understand information contained within this instruction manual either contact NIVUS for further support.

NIVUS cannot be held responsible for damage to persons or material due to incorrectly understood information in this manual.

In case of selling the instrument this instruction manual shall be provided to the purchaser since it is a part of the standard delivery.

Detailed information on how to operate the complete system can be found in the accompanying instruction manual of NIVUS Sensors etc.

### Personnel requirements

Installation, commissioning and maintenance shall be executed only by personnel meeting the demands as follows:

- Expert personnel with relevant training and appropriate qualification.
- Personnel authorised by the plant operator



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### Qualified personnel

*within the context of this documentation or the safety notes on the product itself are persons who are sufficiently familiar with installation, mounting, starting up and operation of the product and who have the relevant qualifications for their work; for example.*

- *Training, instruction or authorisation to activate/deactivate, isolate, ground and mark electric circuits and devices/systems according to the safety engineering standards.*
- *Education and instruction according to the standards of safety engineering regarding the maintenance and use of adequate safety equipment.*
- *First aid training*

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### Applicable Documentation

For the installation and operation of the complete system extra instruction manuals or technical description may be required apart from this manual

- Instruction manual for NivuGuard 2-Sensor (provided with the sensor).

## 2 Safety Instructions

### 2.1 Used symbols and signal words



*The general warning symbol indicates the risk of personal injuries or death. In the text section the general warning symbol is used in conjunction with the signal words described below.*

**DANGER**



**Warnings in high degree of risk**

*Indicates a high-risk, imminently hazardous situation which will result in death or serious injury if not avoided.*

**WARNING**



**Warnings in medium degree of risk**

*Indicates a possible danger with medium risk which may result in a life-threatening situation or (severe) bodily injury if it is not avoided..*

**CAUTION**



**Warnings in low-risk or property damages**

*Indicates a possible danger with moderate risk which may result in minor or moderate personal injury or material damage if not avoided. .*

#### Other signs and definitions

**WARNING**



**Danger by electric voltage**

*Indicates a hazard with a high risk of electric shock which may result in a life-threatening situation or (severe) bodily injury if it is not avoided.*



**Important Note**

*Contains information that should be highlighted.*

*Indicates a potentially damaging situation which can result in a damage of the product or an object in its environment.*



**Note**

*Contains information and facts.*

## 2.2 Safeguards and Precautions

**WARNING**



**Germ contamination**

*Please note that due to operation in the wastewater field measurement system and cables may be loaded with dangerous disease germs. Respective precautionary measures shall be taken when getting in contact with cables and sensors to avoid damage to one's health.*

*Wear protective clothing.*

**WARNING**



**Observe regulations on health and safety at work!**

*Installation, commissioning and maintenance shall be executed only by expert personnel authorised by NIVUS.*

*Before starting installation works, observing the work safety regulations needs to be checked.*

*Failure to observe may cause personal injury.*

**WARNING**



**Do not modify safety devices!**

*It is strictly prohibited to disable safety devices or to modify the way they work. Failure to observe may cause personal injury as well as system damage*

## 2.3 Liability Disclaimer

For connection, initial start-up and operation as well as maintenance of the unit the following information and higher legal regulations of the respective country (e.g. VDE regulations in Germany) such as applicable Ex regulations as well as safety requirements and regulations in order to avoid accidents shall be observed.

The safety-related values of the connected NivuGuard 2 Monitor shall comply with the technical specifications or the specifications contained in the according EC type examination certificate.

Interconnecting several active devices within an intrinsically safe circuit may result in different safe maximum values. In such cases the intrinsic safety may be impaired!

All operations on the device which go beyond installation or connection measures in principle shall be carried out by NIVUS staff or personnel authorised by NIVUS due to reasons of safety and guarantee.

Operate the transmitter only in technically perfect working order.

### **Improper Use**

Not being operated in accordance with the requirements may impair the safety. The manufacturer is not responsible for failures resulting from improper use.

## 2.4 User's Responsibilities



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### **Important Note**

*In EEA (European Economic Area) the national implementation of the framework directive 89/391/EEC and corresponding individual directives, in particular directive 2009/104/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 regulations on health and safety at work shall be followed.*

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- Make sure to have a local operating permit available and observe the associated conditions. In addition to this you must observe environmental requirements and local laws on the following points:
- 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)

### **Connections:**

Operators shall make sure prior to operating the instrument that during installation and initial start-up the local regulations (such as regulations for electrical connection) are observed.



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### **Note**

*This instruction manual is part of the device.*

- *Ensure its availability for the user at any time.*
  - *Follow the instructions and recommendations, particularly the safety information*
-

### 3 Product Specification

#### 3.1 Overview



1. Display
2. Keypad
3. Relays status indicator LED
4. Cable glands

Fig 3.1 Overview

#### 3.2 Intended Use

**CAUTION**



***Warning of improper use!***

*The instrument is intended solely for the purpose described below. Modifying or using the instruments for any other purposes without the manufacturer's written consent will not be considered as use in accordance with the requirements. The manufacturer cannot be held responsible for any damage resulting from improper use. The user alone bears any risk.*

The NivuGuard Monitor has been designed to provide a simple interface to the NivuGuard 2 Sensor. Housed in an IP67/Nema 6 enclosure the product is ideally suited to applications where velocity monitoring, reporting or control is required. The controller is very easy to use and may be quickly and simply setup via keypad.

The NivuGuard Monitor is engineered and manufactured according to the current state of the art as well as to recognised safety regulations. Danger to persons or material, however, cannot be completely ruled out.

Strictly observe the maximum permissible limit values as specified in chapter Product Specification

Any case varying from these conditions which is not approved by NIVUS GmbH in written form is left at owner's risk.

### 3.3 Device Identification

A type label is indicated on the housing and contains the following:

- Name and address of the manufacturer
- CE-label
- Type labelling and series identification (serial number)
- Year of manufacture (first two numbers of serial number: year)
- It is important for queries and replacement part orders to specify type, year of manufacture and serial number (Article no. if necessary). This ensures correct and quick processing.



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#### Note

*Check the device nameplate to ensure that the device is delivered according to your order.*

*Check if the correct supply voltage is printed on the nameplate.*

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**Fig. 3-2** Type label NivuGuard Monitor

### 3.4 Specifications

|                                     |  |
|-------------------------------------|--|
| Power supply                        | 85 – 264 V AC; 50/60 Hz,<br>DC 22 – 28 V<br>10 W maximum power (typically 8 W)   |
| Max. power consumption              | AC / DC: 10 W (typically 8 W)  |
| Mains Fuse                          | 2A 'T' 20mm<br>DC FuseSelf Resetting Type  |
| Weight                              | Nominal 0.65 kg  |
| Enclosure material/Description      | ABS base with Polycarbonate lid, flammability rating UL94HB  |
| Cable entry detail                  | underside fitted with 3 x M20, nylon cable glands suitable for 6 – 12 mm cable   |
| Protection degree                   | IP66/67  |
| Operating temperature (electronics) | -20 °C to +50 °C   |
| Display                             | 2 x 12 alpha numeric   |
| <b>Outputs</b>                      |  |
| Analogue Output                     | Isolated active output (passive output optional) of 4-20 mA or 0-20 mA into 1K* (user programmable and adjustable) 0.1% resolution |
| Digital Output                      | 2 volt free contacts form "C" (SPDT) rated at 2 A at 240 V AC  |
| Serial port                         | RS232 (Service only)   |
| <b>Programming</b>                  |  |
| On-board programming (standard)     | By integral keypad   |
| Programming security                | Via passcode (user selectable and adjustable)  |
| Programmed data integrity           | Via non-volatile RAM   |

### Storing

Strictly observe the storing conditions below:

- max. temperature: +60 °C
- min. temperature: - 20 °C
- max. humidity: 95 %, non-condensing

Protect the NivuGuard Monitor from corrosive or organic solvent vapours, radio-active radiation and strong electromagnetic radiation.

## 3.5 Equipment

### 3.5.1 Delivery

The standard delivery of NivuGuard Monitor contains:

- The instruction manual with the EU Declaration of Conformity and approvals where all necessary steps to correctly install and to operate the NivuGuard Monitor are listed.
- The NivuGuard Monitor
- Interface cable (for programming the device)

Check additional accessories depending on your order and by using the delivery note.

### 3.5.2 Receipt

Check the delivery according to the delivery note for completeness and intactness immediately after receipt. Report any damage in transit to the carrier instantly.

Send an immediate, written report to NIVUS GmbH in Eppingen as well.

Incomplete delivery shall be directly reported to the headquarters in Eppingen or your local distributor in written form within two weeks



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*Mistakes cannot be rectified later!*

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### 3.5.3 Transport

Protect the NivuGuard Monitor from shock and impact loads and vibrations. The transportation must be carried out in the original packaging.

### 3.5.4 Return

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

Returns with insufficient postage will not be accepted!

### 3.5.5 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.

Appropriate accessories and spare parts can be found in our price list

## 4 Product construction and overview

### 4.1 Dimensions

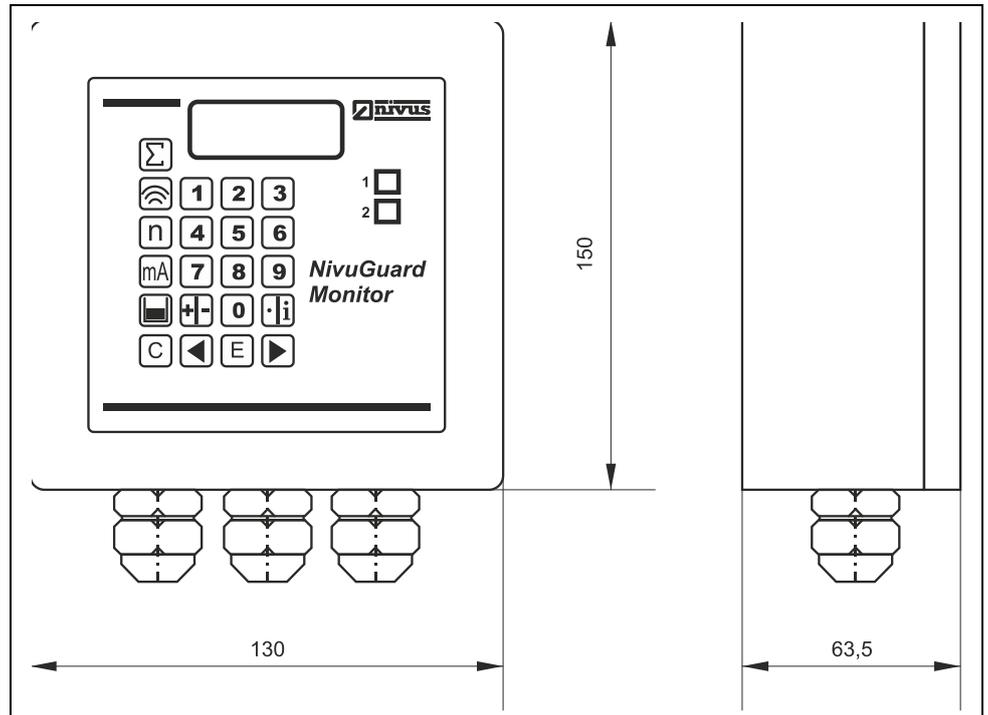


Fig. 4-1 Enclosure dimensions NivuGuard Monitor

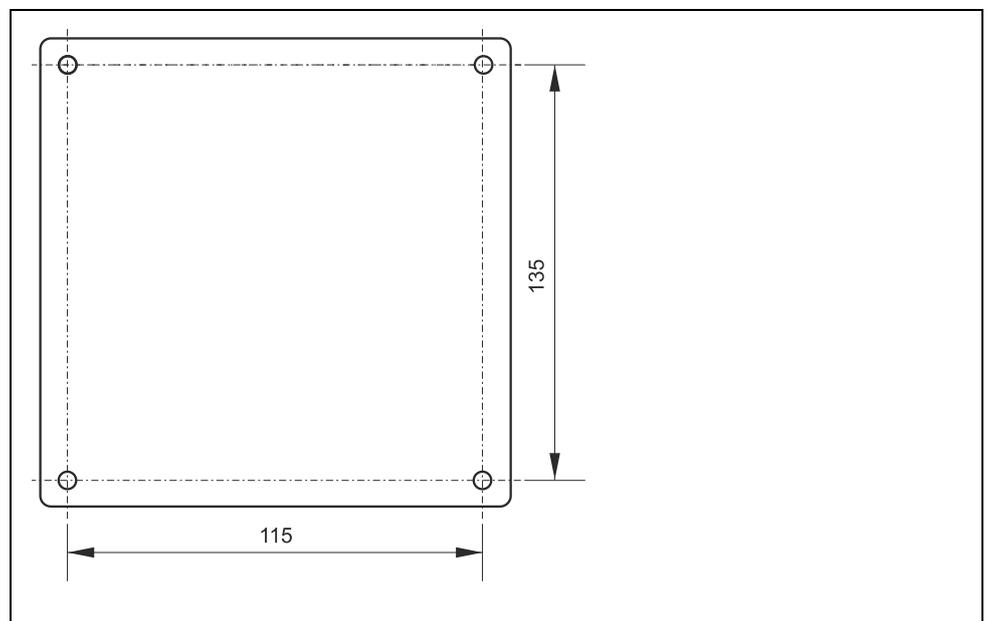


Fig. 4-2 Dimensions of the mounting holes

## **4.2 Cable glands**

There are 3 x M20 cable glands, suitable for 6 – 12mm cables, fitted to the base of the NivuGuard Monitor enclosure.

## **4.3 Functional description**

The NivuGuard Monitor is an indicating instrument with an LC display

It enables monitoring and programming the NivuGuard 2 sensors directly by keypad and display.

## 5 Installation and connection

### 5.1 Installation instructions

- Observe appropriate installation
  - Follow applicable legal or operational guidelines
- Improper Handling can result in injury and / or damage to the sensors

The NivuGuard Monitor must be mounted in a non-hazardous (safe) area.

#### 5.1.1 Hints to avoid electrostatic discharge (ESD)



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##### **ESD-Risks**

*Maintenance procedures which do not require power supply of the instrument shall not be executed before the unit has been disconnected from mains power in order to minimise danger and ESD risks.*

*Disconnect the NivuGuard Monitor from mains power.*

---

The sensitive electronic components inside the unit may get damaged by static electricity. The manufacturer recommends the following steps to prevent the device from getting damaged due to electrostatic discharge:

- Disconnect the NivuGuard Monitor from mains power for maintenance procedures.
- Discharge static electricity from your body before touching the instrument's electronic components.
- Avoid unnecessary movements to reduce the risk of building up static electricity.
- Ensure proper grounding.

For safe installation the measures below must be taken

- Do not subject the NivuGuard Monitor to excessive vibration or shock
- Do not install the NivuGuard Monitor close to footpaths or travel ways
- Do not install the v close to objects with strong electromagnetic fields (frequency converters, high voltage power lines or similar.)Protect the device from direct sunlight. Install a sun protection if necessary.

Strictly avoid when installing the device:

- corrosive chemicals or gases
- radioactive radiation
- objects radiating strong heat

## 5.1.2 Fastening the NivuGuard Monitor

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### **Note**

*Mounting materials and tools are not part of the standard delivery*

---

The NivuGuard Monitor should be mounted by size 8 screws (length and type to suit your application)

- Remove the top cover to access the pre-moulded mounting holes which are located in the base of the enclosure under the lid retaining screws.
- The NivuGuard Monitor should be mounted by drilling four holes.

## 5.2 Electrical installation

---

### **WARNING**



### **Disconnect the unit from mains power**

*All work on electrical connections may only be carried out with the supply voltage turned off.*

*Observe electrical data specified on the nameplate.*

---



### **Note:**

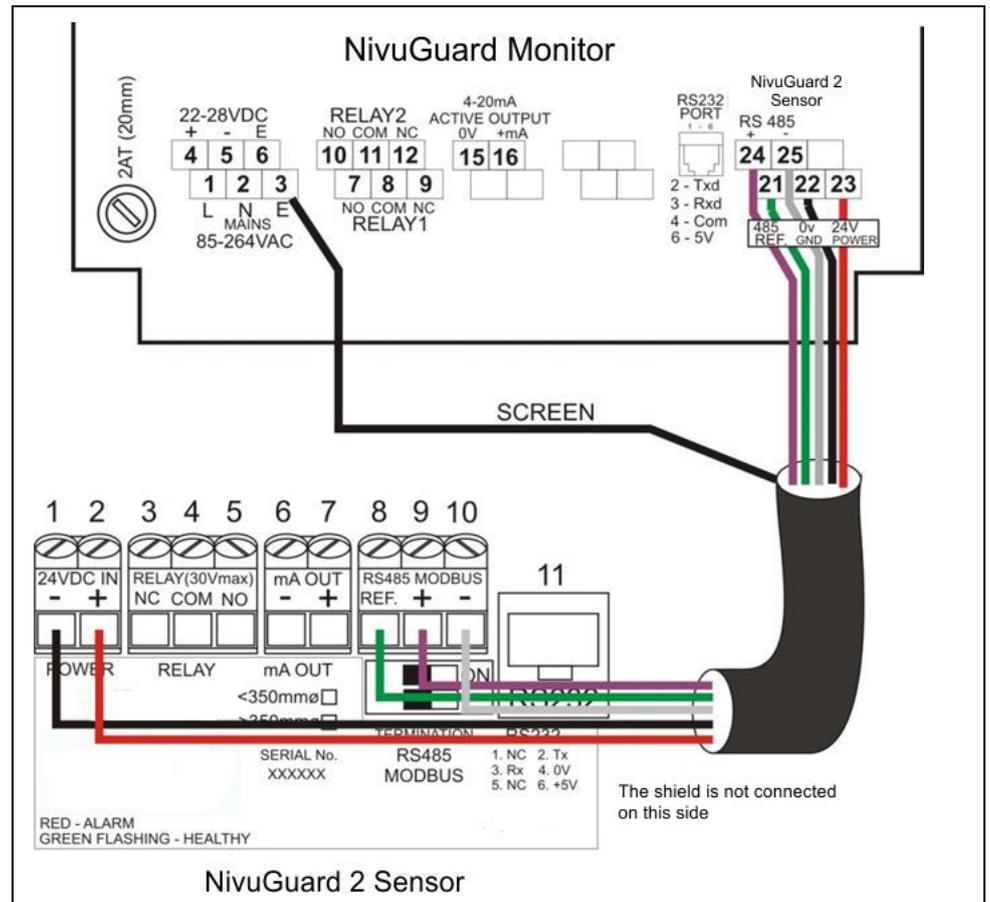
*Observe the national installation instructions.*

---

For electric installation the regulations in the respective countries must be referred to.

For installation in wet environments or in areas featuring the risk of flooding it may be necessary to install extra protective measures such as a residual current device (RCD) if required.

### 5.3 Connection



**Fig. 5-1 NivuGuard Monitor wiring diagram**

The colours of the wires in Fig. 5-1 can deviate.

| Terminal clamp | NG Monitor | NG2 Sensor |
|----------------|------------|------------|
| 0V - GND       | 22         | 1          |
| 24 V DC        | 23         | 2          |
| 485 REF:       | 21         | 8          |
| 485 +ve        | 24         | 9          |
| 485 -ve        | 25         | 10         |
| Cable shield   | 3 or 6     | n.c.       |

## 5.4 Power supply



### **Backup DC power**

*The NivuGuard Monitor can be powered from mains AC or DC.*

*Where a backup DC power source is connected it will automatically power the unit in the event of AC power failure.*

*When AC returns it will switch back.*

---

Ensure the following preconditions for power supply:

- Ensure the correct assignment of the terminals before connecting to mains power.
- Voltage: 85 -264 V AC (22-28 V DC)
- Power consumption typically 8 W, maximum 10 W
- Power supply protection by a fuse of min. 250 mA).

### **NivuGuard 2-Sensor**

The NivuGuard 2-Sensor should be installed and connected in accordance with its manual.

### **Relay outputs**

The two relays can be programmed to a variety of alarm & control functions. The relay contacts are all rated at 2A at 240V AC.

All connections should be such that the short circuit capacity of the circuit to which they are connected, is limited by fuses rated so that they do not exceed the relay rating.

### **Current output**

This is an isolated active mA output of 4 - 20mA or 0 - 20mA, with an option of a passive mA output. The load should not exceed 1KΩ.

## 5.5 Mains power and fuse

AC mains power fuse is located, on bottom board to the left and above of the power input terminals, as previously illustrated in the Terminal wiring diagram.



---

### **Important note**

*Never operate the NivuGuard Monitor with the cover open.*

*An external switch or circuit breaker should be installed near to the NivuGuard Monitor to allow the supply to be removed during installation and maintenance. In addition, the relay contacts should also have a means of isolating them from the NivuGuard Monitor.*

*Interconnecting cables must be adequately insulated in accordance with local regulations. Strip back 30 mm of the outer insulation of the cable. Strip 5 mm of insulation from the end of each conductor. Twist all exposed strands of the conductor together. Insert the stripped conductor into the terminal block as far as it will go and tighten the terminal block screw. Ensure that all strands are firmly clamped in the terminal block and that there is no excess bare conductor showing, and no stray strands.*

---

## 5.6 Preparing the device

Before switching on the device, make sure that:

- The NivuGuard Monitor is mounted correctly and is in a safe area (non-hazardous)
- The power supply is correctly installed.
- The relays are connected correctly.

## 6 Initial start-up

The initial start-up of the complete measuring system is not allowed until the installation has been finished and checked.

- Use the keypad to programme your NivuGuard Monitor.

### 6.1 Using the control elements

#### 6.1.1 Display

Whilst in the Run Mode it will display the current flow or velocity reading and its units of measurement, along with the mA output and status messages with regards to the communication status and Fail Safe Mode.

When in Program mode, the display is used to read information on the menu system, the parameter number and parameter details and values, which can be entered.

During Test Mode the display is used to monitor the simulated flow or velocity and mA output.

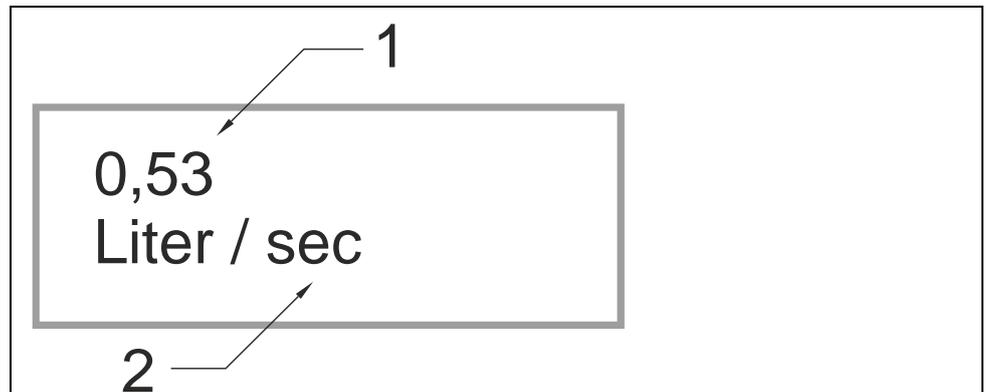


Fig. 6-1 Display Overview

1. **Main Display**, 12 digit alpha numeric display:
  - Run Mode:** current measurement displayed, dependent on measurement unit's chosen, and value of Hot Key function selected.
  - Program Mode:** displays parameter number and values entered for parameters.
  - Test Mode:** displays simulated flow or velocity
2. **Auxiliary Display**, scrolling twelve digit alpha numeric display
  - Run Mode:** displays units, totaliser or status messages on communications, detail of Hot Key function selected.
  - Program Mode:** displays Menu and Sub Menu headings, parameter details and options

### 6.1.2 Keypad

#### Hot Keys

There are five hot keys on the keypad, which can be used to quickly access common parameters for viewing only, while in Run Mode.

Pressing the hot key once will display the first parameter, then repeated pressing will display the others, then the NivuGuard Monitor reverts to Run Mode.

In program mode, they have different functions, the functions are shown below.

| Taste   | Run-Modus   | Program-Modus                            |
|---|---|--|
|    | System totaliser and resettable totaliser                       | Not used with <b>NivuGuard Monitor</b> . |
|    | Confidence level and signal strength.                           | Not used with <b>NivuGuard Monitor</b> . |
|    | Not used with <b>NivuGuard Monitor</b> .                        | Reset parameter to default setting.      |
|   | Instantaneous mA output.  | Not used with <b>NivuGuard Monitor</b> . |
|  | Flow and velocity readings                                      | Not used with <b>NivuGuard Monitor</b> . |
|  | Not used with <b>NivuGuard Monitor</b> .                        | Not used with <b>NivuGuard Monitor</b> . |
|  | Gives details of unit type, serial number and software revision | Enter Decimal Point                      |

### Menu Keys

The menu keys are used to navigate around the built in menu system and have the following functions:

| Menu Key   | Function   |
|--|--|
| <br> | <ol style="list-style-type: none"> <li>1. Arrow keys for moving left and right around the menu system.</li> <li>2. Used in test mode to simulate the flow or velocity moving up and down.</li> </ol>   |
|   | <ol style="list-style-type: none"> <li>1. Used to confirm each action (for example select a menu option) or when entering a parameter number or value.</li> <li>2. Used to confirm questions asked by your NivuGuard Monitor such as before restoring factory defaults.</li> </ol> |
|   | <p>Used to navigate up a level in the menu system, and back to run mode.</p> <p>Used to cancel a value entered in error.</p>   |

### Numeric Keys

These keys are used for entering numerical information during programming.

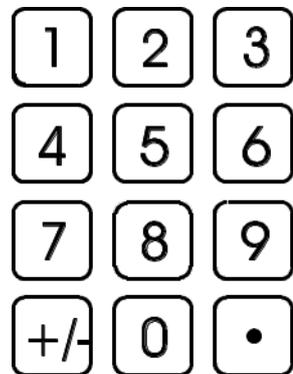


Fig. 6-2 Numeric Keys

## 6.2 Operating Modes

There are two main operating modes for the NivuGuard Monitor:

- Run mode
- Program mode. (code per default: >1997<)

There is also a Test Mode, used for checking the set-up. All modes are now described.

### 6.2.1 Run mode

This mode is used once the NivuGuard Monitor has been set up in program mode. It is also the default mode that the unit reverts to when it resumes operation after a power failure.

When the NivuGuard Monitor is switched on for the first time, it will attempt to initiate the NivuGuard 2-Sensor and will display a message similar to “Update...” and follow by parameter number. All relays by default are switched off and once the NivuGuard Monitor is initialised, the display will show the current flow or velocity and the measurement unit.

After programming is complete, any relays that are set will operate when the measurement reaches the relevant setpoint.




---

#### Note

*If the NivuGuard 2-Sensor is not detected, NivuGuard Monitor will retry.*

---

#### LED's

There are two LED's that can be seen through the lid of the NivuGuard Monitor enclosure, which will indicate the operational status of the relays whilst in Run mode, as follows:

| LED 1       | LED 2       | Run Mode                         |
|-------------|-------------|----------------------------------|
| Off         | Off         | Relays are in their OFF state.   |
| Constant On | Off         | Relay 1 in its ON state          |
| Off         | Constant On | Relay 2 in its ON state          |
| Flash       | Off         | No sensor detected               |
| Off         | Flash       | System error (clock or EE error) |

### 6.2.2 Program mode

This mode is used to set up the NivuGuard Monitor or change information already set. Use the on-board keypad 002E.

### How to access program mode

To enter the program mode, you simply enter the passcode via the keypad.

The code set at factory is: 1997.

- Enter the passcode
- Press the Enter-key




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#### Note

*There is a time-out period of 15 minutes when in program mode, after which time run mode will be resumed if you do not press any keys.*

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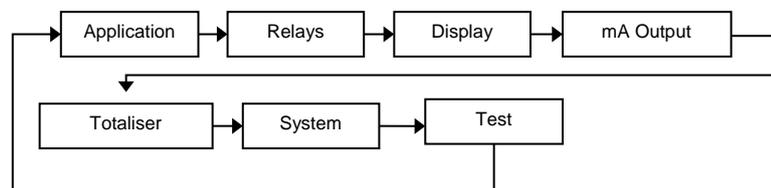
There are two means of editing parameters, directly or using the menu system. Each is now described.

### Using the Menu-system

The menu system has been designed to make the changing of parameters very simple. There are two levels of menu:

- Main Menu
- Sub-Menu

On the display there is a line of text that shows the menu system. Pressing the arrow keys scrolls the display between the top-level menu items, (as shown below, starting at Quick Setup).



As you press the cursor keys to scroll left and right between these, you can press ENTER at any time to select it and take you to the sub-menu.

Each of these options, along with their sub-menus is described in Chapter 7 Parameter Guide. When you move down into the sub-menu, you can scroll round using the arrow keys, press ENTER to go to the required section of parameters.

Once you have reached the relevant section, scroll through the parameters, and enter the necessary information.

To enter the information, use the numeric keys and press ENTER and you will see the message "Saved!".

If you press CANCEL, then no change will be made, and the message "Unchanged!!" will be displayed.

When you have finished, press CANCEL to go back to the previous level.

When you have reached the top level, then the NivuGuard Monitor will ask for confirmation before allowing you to go back into run mode. This is done by pressing ENTER at the display prompt.

### Directly editing parameters

In the menu system or sub-menu system, simply enter the parameter number directly via keypad to jump directly to the parameter.

- The textline rotates automatically displaying the parameter name, number, the applicable units and the maximum and minimum figure.
- The top line shows the value you are setting.

New values are saved after confirmation of the >Saved!< message by pressing >ENTER>.

If you press >CANCEL< the message >Unchanged!< will be displayed and the new value is not saved.

### 6.2.3 Test mode

Test mode is used to simulate the application and confirm that all parameters and relay setpoints have been entered as expected.

During simulation, there is a choice of whether the relays will change state (hard simulation) or not (soft simulation), but the LED's will always change state to indicate that the relay setpoints have been activated, and the mA output will change.

- If you wish to test the logic of the system that the **relays are connected to** then select **hard simulation**.
- If you don't want to change the relay state, then select a soft simulation.

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

- Automatic simulation will move the velocity up and down between minimum velocity and maximum velocity,
- Manual simulation will allow you to move the velocity up and down using the arrow keys.

To enter simulation, first go to **program mode**. Then, using the menu system, select menu item '**Test**' then sub-menu item '**Simulation**'. Simply change the value of the parameter **P980** to one of the following::

- 1= Manual soft simulation
- 2= Automatic soft simulation
- 3= Manual hard simulation
- 4= Automatic hard simulation

To return to program mode, press **CANCEL** and test mode will end.

When in manual simulation, by default test mode will move the flow or velocity by 0.25 steps. Altering the **increment (P981)** will change this value.

In **automatic mode**, the rate at which the velocity moves up and down is set by the **increment (P981)**, and the **rate (P982)** in minutes, which can be changed to make the flow or velocity move up and down faster. E.g. if **increment (P981)** is set for 0.25 and **rate (P982)** is set to 1 min then the flow or velocity will increase or decrease at a rate of 0.25/min.

- To make the simulated flow or velocity move slower, decrease the value in **increment (P981)** or increase the value in **rate (P982)**.
- To make the simulated flow or velocity move faster, increase the value in **increment (P981)** or decrease the value in **rate (P982)**.
- 

### 6.2.4 Factory Defaults

#### Factory Defaults

When first installing the NivuGuard Monitor, or subsequently moving or using the unit on a new application, before proceeding to program the unit for its intended application it is recommended that you ensure that all parameters are at their default values by completing a Factory Defaults P930, as described in Chapter 7 Parameter Guide.

The **date (P931)** and **time (P932)** in the NivuGuard Monitor were set at the factory, but may need checking or amending if, for example the application is in a time zone other than GMT, see Chapter 7 Parameter Guide for full details.

Once you are satisfied with the installation, you can proceed with programming for the intended application. It is sensible to program all of the required parameters at the same time. The system will be then set-up.

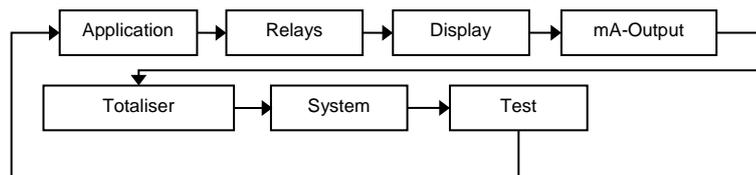
## 7 Parameter Guide

This chapter describes all of the parameters in your NivuGuard Monitor, in the order they appear in the menu system.

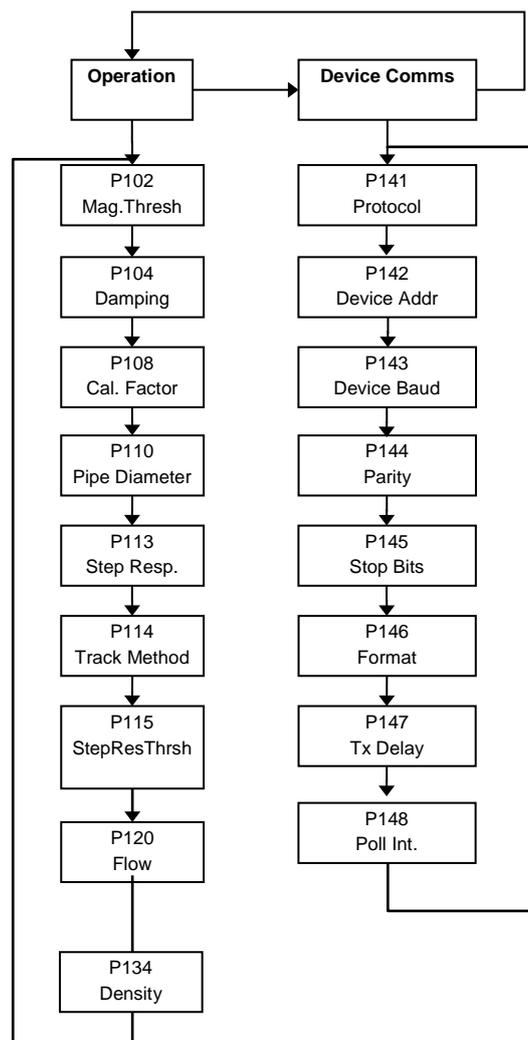
### 7.1 Menu System Diagrams

Shown below is a set of charts to show you how all the various parts can be found using the menu system.

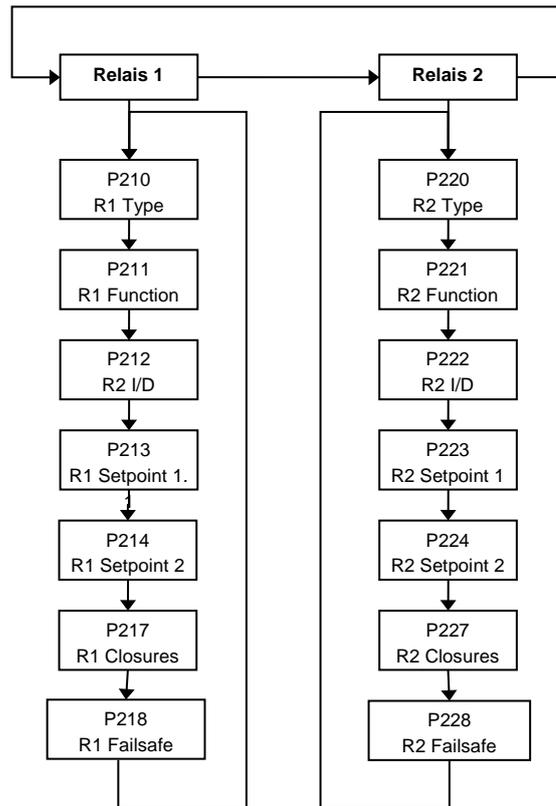
#### 7.1.1 Top Level Menu



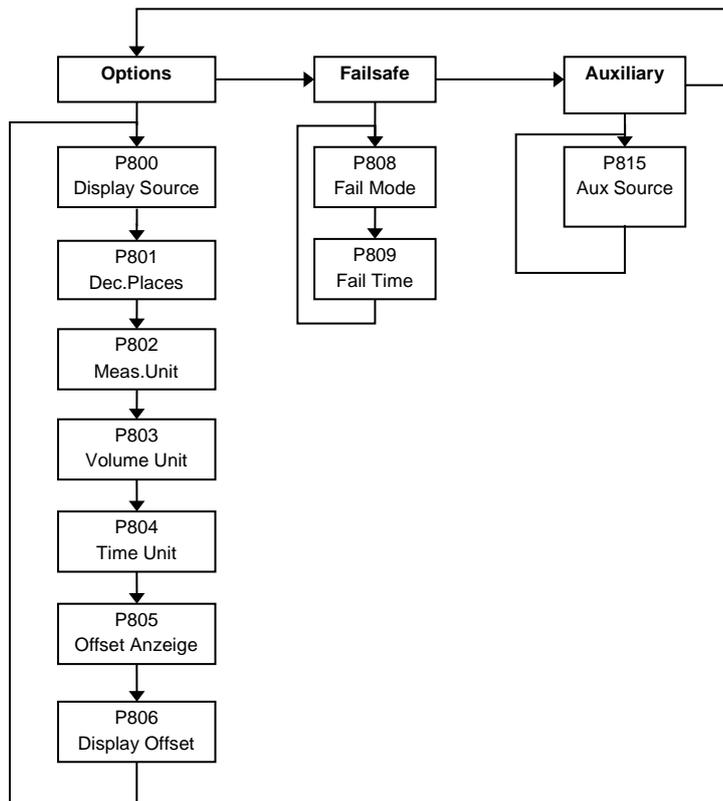
#### 7.1.2 Application Menu



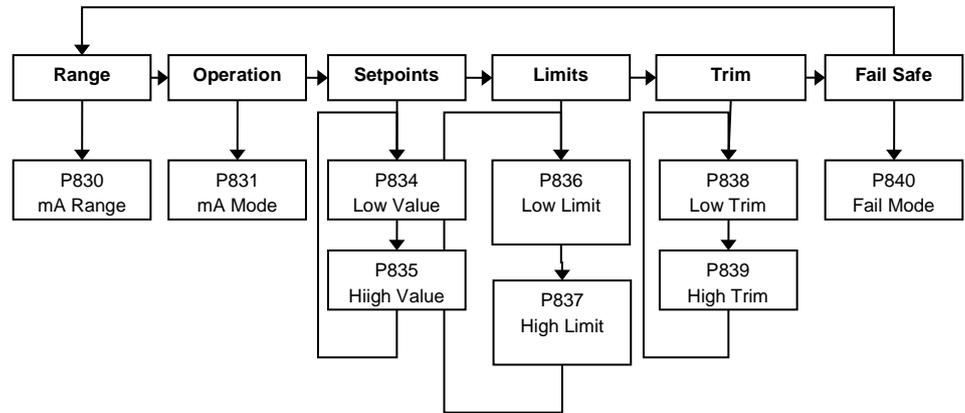
### 7.1.1 Relays Menu



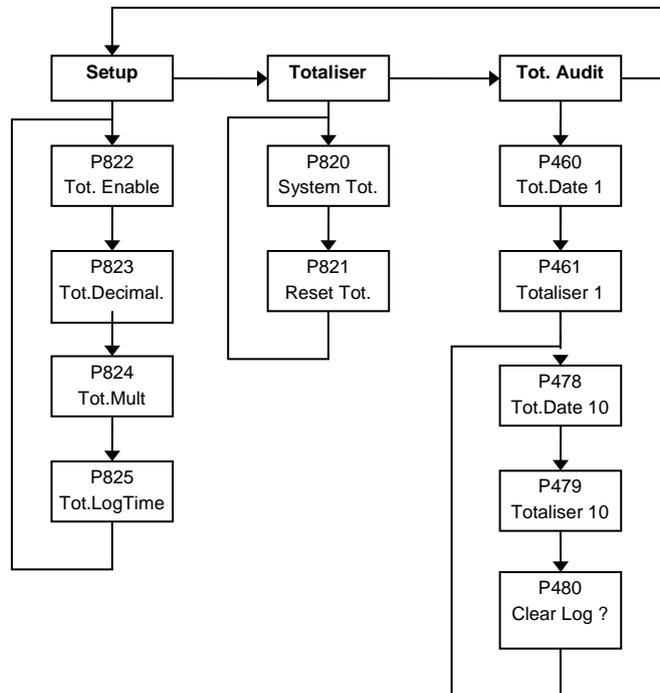
### 7.1.2 Display Menu



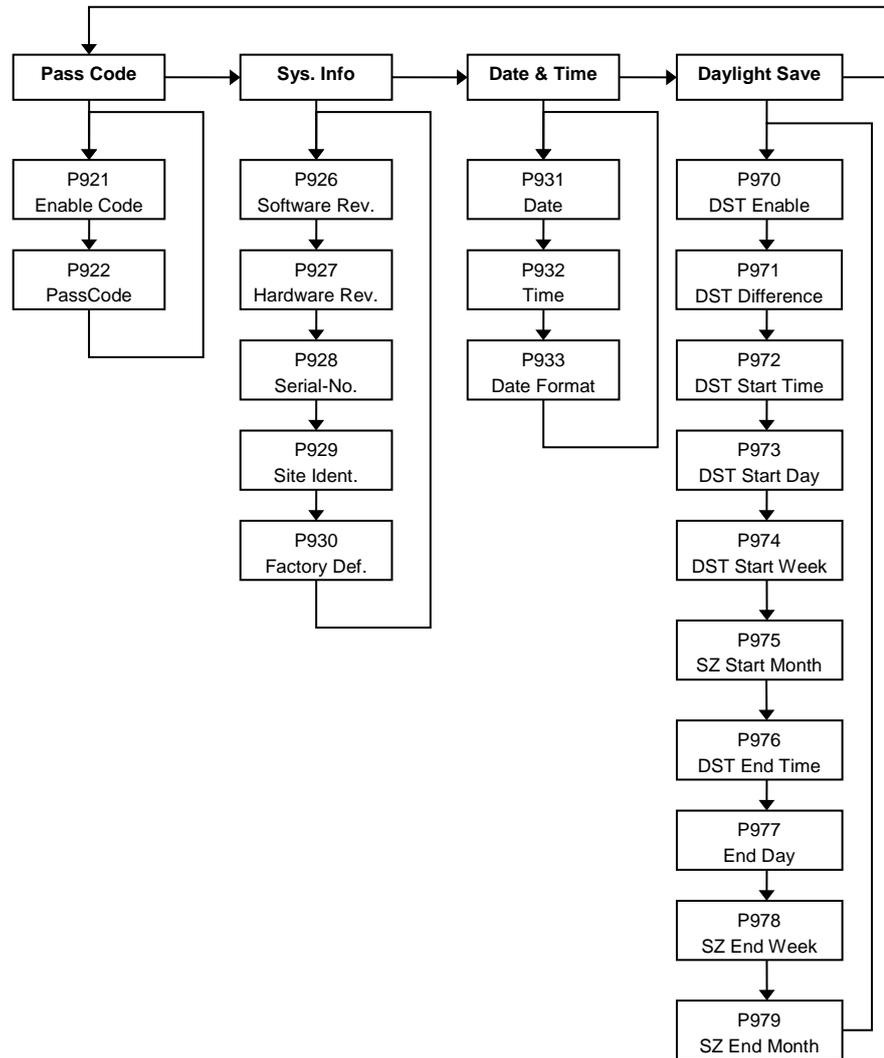
7.1.3 mA-Output Menu



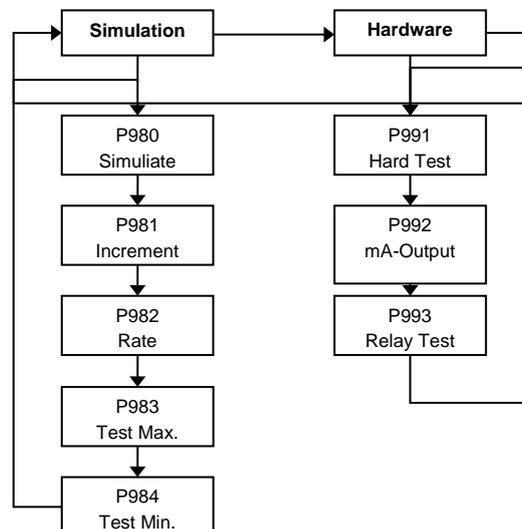
7.1.4 Totaliser Menu



### 7.1.5 System Menu



### 7.1.6 Test Menu



## 7.2 Parameter Listing

This section describes all of the parameters.

Any parameter can be reset to its default, by pressing the >n< hot key, whilst in program mode.

## 7.3 Application Parameter

### 7.3.1 Operation

#### ***P102 Mag Threshold***

This parameter sets the sensitivity of NivuGuard 2-Sensor.

The Mag Threshold value sets the required level of signal above the minimum signal before the NivuGuard Monitor decides it is seeing flow.

The default is set at 1600 which means that the NivuGuard Monitor must see a signal strength of at least 16 above the minimum signal before it decides there is flow.

**Default = 1600**

#### ***P104 Damping***

This parameter sets the damping of the NivuGuard 2.

The value of the damping sets the amount of flow readings it uses to create an average flow.

The default is set to 24, meaning the average of 24 readings will be used as the flow value.

**Default = 24**

#### ***P108 Cal Factor***

This parameter sets the calibration factor for the NivuGuard 2 unit in percentage. The NivuGuard 2 is designed to give a repeatable flow value.

However if the value being read by the FlowPulse does not meet the flow value that is expected the Cal Factor can be used to modify the output.

**Default = 100 %**

#### ***P110 Pipe Diameter***

This parameter sets the internal pipe diameter of the pipe that the NivuGuard 2 is connected to.

The maximum inner value is Default = 0.35 m.

A higher value will cause an error message (>pipe ID<)

**Default = 0.1 m**

#### ***P113 Step Response***

The step response allows NivuGuard Monitor to temporarily bypass damping and track any sudden change in flow commonly encountered during the beginning and end of a pumping cycles.

| Option           | Beschreibung             |
|------------------|--------------------------|
| 0 = Off          | No effect                |
| 1 = On (Default) | Step Response is enabled |

### ***P114 Track Method***

This parameter sets the flow tracking of the NivuGuard Monitor.

- "Magnitude" forces the tracking to go to the first point in which the flow reaches 5% of the noise floor.
- "Gradient" will force the tracking to go to the first point in which the gradient of the trace reaches zero.
- By default the tracking method is set to auto, meaning both methods are used simultaneously. The NivuGuard Monitor will decide which will give the most reliable reading.

| Option             | Description                |
|--------------------|----------------------------|
| 0 = Auto (Default) | Auto tracking              |
| 1 = Magnitude      | Tracking by magnitude only |
| 2 = Gradient       | Tracking by gradient only  |

### ***P115 StepRsThres***

The Step Response Threshold is the change in flow required for the normal damping to be bypassed. The range of the step response threshold is:

- Min. = 22
- Max. = 426
- Default = 60
- 426 relates to the 'Flow High' value.

The higher the step response threshold, the larger the jump in flow needs to be before damping is skipped.

### ***P120 Min. Flow Cut Off***

This parameter multiplies the units of flow by 23 on the horizontal axis of the flow trace. E.g. if the parameter is set to 2300, then the corresponding flow index would be 100. The Flow Pulse via the Flow Monitor will not report any flow unless the flow indicator exceeds 100 on the flow index.

Default = 740

**P134 Particle Density**

This parameter is used to set the type of material being measured in the pipe that the NivuGuard Monitor is attached to.

| Option                      | Description                             |
|-----------------------------|---|
| 0 = Very Low                | Material has very low particle density  |
| 1 = Low                     | Material has low particle density       |
| <b>2 = Medium (Default)</b> | Material has medium particle density    |
| 3 = High                    | Material has high particle density      |
| 4 = Very High               | Material has very high particle density |

**7.3.2 Communication Monitor and Sensor**

The communication parameters should not be modified!

**P141 Protocol**

This parameter determines the communication protocol that the processor uses to initialise the NivuGuard 2 Sensor.

| Option                          | Description                      |
|---------------------------------|----------------------------------|
| <b>0 = Modbus RTU (Default)</b> | Modbus RTU with hexadecimal data |
| 1 = Modbus ASCII                | Modbus ASCII with ASCII data     |

**P142 Device Address**

This parameter determines the address of the NivuGuard 2-Sensor that the processor is connected to.

**Default = 126**

**P143 Device Baud**

This parameter determines the baud rate that the processor uses to communicate with the NivuGuard 2 Sensor.

**Default = 19200 Baud**

**P144 Parity**

This parameter determines the communication parity that the processor uses to communicate with the NivuGuard 2 Sensor.

| Option                    | Description |
|---------------------------|-------------|
| <b>0 = None (Default)</b> | No parity   |
| 1 = Odd                   | Odd parity  |
| 2 = Even                  | Even parity |

**P145 Stop Bit**

This parameter determines the communication stop bit that the processor uses to communicate with NivuGuard 2 Sensor.

| Option                 | Description   |
|------------------------|---------------|
| 1 = One Stop (Default) | One stop bit  |
| 2 = Two Stop           | Two stop bits |

**P146 Extended Format**

This parameter determines the communication stop bit that the processor uses to communicate with NivuGuard 2 Sensor.

| Option                         | Description                    |
|--------------------------------|--------------------------------|
| 0 = Unsigned Integer (Default) | Unsigned integer data          |
| 1 = Signed Integer             | Signed integer data            |
| 2 = Float Motorola Format      | Motorola floating point format |
| 3 = Float IEEE Format          | IEEE 754 floating point format |

**P147 Tx delay**

This parameter determines the transmission delay that the processor uses to communicate with the NivuGuard 2 Sensor.

**Default = 5 m/s**

**P148 Poll Interval**

This parameter determines the polling interval that the processor uses to exchange data with the NivuGuard 2 Sensor.

**Default = 1.5 seconds**

## 7.4 Relay Parameters

All relay related parameters are prefixed with a 2\*\*.

The second digit of the three figure parameter number denotes the relay number as follows:

- **21\*** parameters for Relay 1
- **22\*** parameters for Relay 2

The third digit selects specific parameters for the setting up of the relays, which can be selected individually and results in the following parameter numbers for each relay.

- Relay 1 210 to 218
- Relay 2 220 to 228

### 7.4.1 Relay Type

#### ***P210, P220 - Relay Type***

This parameter defines what type each relay should be.

è see the table below:

| Option                         | Description   |
|--------------------------------|---|
| <b>0= Not In Use (Default)</b> | Relay not in use or programmed.   |
| 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. |
| 2= Control                     | Relay is programmed as a control relay, which will energise ON, and de-energise OFF.  |
| 3 = Totaliser                  | Relay is programmed as a totaliser relay, which will energise ON, and de-energise OFF as pulsing relay  |

### 7.4.2 Alarms

#### ***P210, P220 = 1 (Alarm)***

The second parameter for each relay determines the function of the alarm.

#### ***P211, P221 – Relay Function***

This parameter defines what function the alarm will respond to as follows.

| Option                  | Description  |
|-------------------------|--|
| <b>0= Off (Default)</b> | Relay will not operate.  |
| 1= Flow                 | Alarm is based on the flow rate and the type of flow alarm (P212, 222) and two setpoints must be set (P213, 223 & P214, 224). Setpoints are entered in Display Units |
| 2= Velocity             | Alarm is based on the velocity, and the type of velocity alarm (P212, 222) and two setpoints must be set (P213, 223 & P214, 224).                                    |
| 3= Loss of Echo         | Alarm is raised if the <b>Failsafe Timer (P809)</b> expires. No setpoints are required.  |
| 4= Loss of Clock        | Alarm is raised if the real time clock fails. No setpoints are required.   |

Note that the loss of echo and loss of clock will also be shown on the display as “NO SENSOR” and “LOST CLOCK” respectively.

The third parameter for each relay determines the alarm ID for the relay you wish to set.

### **P212, 222 – Relay Alarm ID**

When P211, P221 = 3 (Loss of Echo) or 4 (Loss of Clock)

This parameter has no function and will only be displayed.

### **When P211, P221 = 1 or 2**

This parameter defines which alarm type, the relay should respond to, as follows:

| Alarm ID                   | Description   | Setpoints   |
|----------------------------|---|---|
| <b>1=General (Default)</b> | Relay goes “ON” when the value reaches the ON setpoint and goes “OFF” when the value reaches the OFF setpoint.    | P213, 223 is ON Setpoint; P214, 224 is OFF Setpoint   |
| 2= High                    | Relay goes “ON” when the value rises to the ON setpoint and goes “OFF” when the value lowers to the OFF setpoint. | ON> OFF Relay Setpoints P213, 223 and P214, 224 Setpoints, can be set in any order as the unit ‘knows’ that you are setting a high level alarm. |
| 3= Hi-Hi                   | Same as 2 = High, but different identifier.   |   |
| 4= Low                     | Relay goes “ON” when the value lowers to the ON setpoint and goes “OFF” when the value rises to the OFF setpoint. | ON<OFF Relay Setpoints P213, 223 and P214, 224. Setpoints, can be set in any order as the unit ‘knows’ that you are setting a low level alarm.  |
| 5= LoLo                    | Same as 4=Lo, but different identifier.   |   |
| 6= In bounds               | Relay goes “ON” if value is inside the zone between the two setpoints.  | Relay Setpoints, P213, 223 and P214, 224 can be set in any order as the unit ‘knows’ that you are setting an in-bounds alarm.                   |
| 7= Out of bounds           | Relay goes “ON” if value is outside the zone between the two setpoints.   | Relay Setpoints P213, 223 and P214, 224 can be set in any order as the unit ‘knows’ that you are setting an out of bounds alarm.                |

The fourth parameter and the fifth parameter for each relay set the Alarm “ON” and “OFF” points. For a high alarm the “ON” is set higher than “OFF”. For low alarm then “ON” is set lower than “OFF”. See the appropriate alarm ID, table (P212, 222) for further information.

When P211, P221 = 3 (Loss of Echo) or 4 (Loss of Clock)

This parameter has no function and will not be displayed.

When P211, P221 = 1 or 2

**P213, P223 - Relay Setpoint 1**

Determines the “ON” or “OFF” point for the alarm according to the ID selected.

**P214, P224 - Relay Setpoint 2**

Determines the “ON” or “OFF” point for the alarm according to the ID selected.



**Important Note**

*Setpoints are entered in values according to the function selected.*

**Flow/Velocity - entered in Display Units.**

*See the appropriate alarm function, table (P211, 221, 231) for further information.*

**7.4.3 Control**

**P210, P220 = 2 (Control)**

When a relay is being set up as a control relay, the second parameter that will be displayed in the menu determines its function.

**P211, P221 – Relay Function**

This function is used, where it is required to energise the relay to switch a device, such as a pump, ON and de-energise the relay to switch the device OFF.

| <b>0 = Off</b> | <b>Relay is always de-energised</b>  |
|----------------|--|
| 1 = Flow       | Relay will <b>energise “ON”</b> as set in Relay <b>Setpoint 1</b> (P213, 223). And turns <b>“OFF”, de-energises</b> , as set in Relay <b>Setpoint 2</b> (P214, 224). |
| 2 = Velocity   | Relay will <b>energise “ON”</b> as set in Relay <b>Setpoint 1</b> (P213, 223). And turns <b>“OFF”, de-energises</b> , as set in Relay <b>Setpoint 2</b> (P214, 224). |
| 0 = Off        | Relay is always de-energised   |



---

**Important Note**

A control relay is started and stopped at the “ON” and “OFF” setpoints. To control down (reduce level) then set “ON” higher than “OFF”. To control up (increase level) then set “ON” lower than “OFF”. For relay 1 “ON” is P213, “OFF” is P214 and For relay 2 “ON” is P223, “OFF” is P224

---

The fourth parameter, and fifth parameter, are set to determine the switch points, “ON” and “OFF” for the relay. See control function, table (P211, 221, 231) for further information.

**P213, P223 – Relay Setpoint 1**

This parameter determines the “ON” point for the control relay.

Relay Setpoints are entered in values of Measurement Units (P802).

**P214, P224 -Relay Setpoint 2**

This parameter determines the “OFF” point for the control relay.

Relay Setpoints are entered in values of Measurement Units (P802).

**7.4.4 Totaliser****P210, P220 = 3 (Totaliser)**

When a relay is set up as a totaliser relay, the second and third parameters that will be displayed in the menu determine the frequency and duration of the relay pulse.

**P213, P223 - Relay Setpoint 1**

The factor by which the on board totaliser (P820) should be multiplied by to provide a relay closure, giving the frequency of the pulse. Default = 0.00

**P214, P224 - Relay Setpoint 2**

The time in seconds to set the duration of the relay pulse. Default = 0.00 secs.

**7.4.5 Common Parameters****P217, P227 – Relay Closures**

This parameter displays the number of times the relay has activated since the relay has been in use. It can be reset with any value.

**P218, P228 - Relais Fail Safe**

The unit has a general fail-safe parameter P808. However, this can be overridden so that each individual relay has its own independent fail safe mode.

This parameter determines what the relay will do in the event of the Fail safe Time (P809) expiring.

| Option             | Description                            |
|--------------------|--|
| <b>0 = Default</b> | Relay assumes system default mode P808 |
| 1 = Hold           | Relay remains in its current state     |
| 2 = De-Energise    | Relay will De-Energise                 |
| 3 = Energise       | Relay will Energise                    |

## 7.5 Display Parameters

### 7.5.1 Options

#### ***P800 Display Source***

This parameter determines whether the NivuGuard Monitor uses the Flow or the Velocity.

| Option                    | Description                     |
|---------------------------|---------------------------------|
| <b>1 = Flow (Default)</b> | Display shows flow readings     |
| 2 = Velocity              | Display shows velocity readings |

#### ***P801 Decimal Places***

This parameter determines the number of decimal places on the reading during run mode.

- Minimum = 0 (No decimal places)
- Maximum = 3 (3 decimal places)
- Default = 2 (2 decimal places)

#### ***P802 Measurement Unit***

This parameter determines the measurement units showed on the reading during run mode.

| Option                      | Description                |
|-----------------------------|----------------------------|
| <b>1 = metres (Default)</b> | Measurement in metres      |
| 2 = cm                      | Measurement in centimetres |
| 3 = mm                      | Measurement in millimetres |
| 4 = feet                    | Measurement in feet        |
| 5 = inch                    | Measurement in inches      |

### **P803 Volume Unit**

The value of this parameter determines volume unit of flow readings.

| Option               | Description                    |
|----------------------|--------------------------------|
| 1 = litres (Default) | Display volume in litres       |
| 2 = cubic metre      | Display volume in cubic metres |
| 3 = cubic feet       | Display volume in cubic feet   |
| 4 = UK gallons       | Display volume in UK gallons   |
| 5 = US gallons       | Display volume in US gallons   |

### **P804 Time Unit**

The value of this parameter determines the time unit of flow and velocity readings.

| Option                   | Description             |
|--------------------------|-------------------------|
| 1 = per second (Default) | Display flow per second |
| 2 = per minute           | Display flow per minute |
| 3 = per hour             | Display flow per hour   |
| 4 = per day              | Display flow per day    |

### **P805 Display Offset**

The reading is added by the value of this parameter before being displayed.

Default = 0

### **P806 Display Conversion**

The reading is multiplied by the value of this parameter before being displayed.

Default = 1,0

## 7.5.2 Failsafe

### **P808 Fail-safe mode**

By default, if a fail-safe condition occurs, then the display and the output are held at their last known values until a valid reading is obtained.

If required, you can change this so that the unit goes to high (max flow/velocity), or low (min flow/velocity) value as follows:

| Option              | Description                           |
|---------------------|---------------------------------------|
| 1 = Known (Default) | Remain at the last <b>known</b> value |
| 2 = High            | Will fail to the <b>high</b> value    |
| 3 = Low             | Will fail to the <b>low</b> value     |

à See also P840 (Output Fail-safe mode)



---

**Important Note**

*In the event of a fail-safe condition occurring, the display and Output can be configured to fail to a condition which is independent of each other. To set independent Output Failsafe see P840.*

---

**P809 Fail-safe Time**

In the event of a fail-safe condition the fail safe timer determines the time before fail-safe mode is activated.

Default = 2 min.

If the timer activates, the unit goes into fail-safe as determined by P808 (Display) and P840 (Output). When this happens, you will see the message "Failed Safe!" on the display, along with a message explaining why (lost comm. or comm. error, for example)

When a valid measurement is obtained then the display and output will be restored and the timer is reset.

**7.5.3 Auxiliary**

**P815 Aux Source**

Determine the display on the secondary line of screen.

| Option              | Description                           |
|---------------------|---------------------------------------|
| 0 = Units (Default) | Display the units of the main display |
| 1 = Flow            | Display flow reading                  |
| 2 = Velocity        | Display velocity reading              |
| 3 = Totaliser       | Display resettable totaliser          |

## 7.6 mA-output Parameters

### 7.6.1 Range

#### ***P830 Output Range***

This parameter determines the range of the mA output, from the following:

| Option                     | Description  |
|----------------------------|--|
| 0= Off                     | output disabled.   |
| 1= 0 to 20 mA              | output directly proportional to the output mode (P831), so if the reading is 0% the output is 0 mA. If the reading is 100% the output is 20 mA.  |
| 2= 4 to 20 mA<br>(Default) | output directly proportional to the output mode (P831), so if the reading is 0% the output is 4 mA. If the reading is 100% the output is 20 mA.  |
| 3= 20 to 0 mA              | output inversely proportional to the output mode (P831), so if the reading is 0% the output is 20 mA. If the reading is 100% the output is 0 mA. |
| 4= 20 to 4 mA              | output inversely proportional to the output mode (P831), so if the reading is 0% the output is 20 mA. If the reading is 100% the output is 4 mA. |

### 7.6.2 Operation

#### ***P831 Output Mode***

This parameter determines the output mode of the mA output, from the following:

| Option               | Description                             |
|----------------------|---|
| 0= Default (Default) | mA output follows P800 (Display Source) |
| 1 = Flow             | mA output according to flow reading     |
| 2 = Velocity         | mA output according to velocity reading |

### 7.6.3 Setpoint

By **default** the mA Output will represent the 0% (0 or 4mA dependant on (P830) Output Range) and 100% of the operational span (20mA), but you may wish to have the output represent a section of the operational span.

For example, the application has an operational span of 6 m/s but output is to represent 0m/s (0 or 4mA dependant on (P830) Output Range) to a level of 5 m/s (20mA).

If so P834 (Low Setpoint) should be set to 0.00 m/s and P835 (High Setpoint) should be set to 5 m/s.

#### ***P834 Output Low Level***

This parameter sets the measurement value at which the low mA output will occur (0 or 4mA dependant on (P830) Output Range)

**Default = 0 l/s**

***P835 Output High Level***

This parameter sets the measurement value at which the high mA output will occur (20mA).

***Default = 6000 I/s***

**7.6.4 Limits**

***P836 Output Low Limit***

This parameter sets the lowest level that the mA output will drop to, the default is 0mA, but you can override this if the device you connect to cannot for example accept less than 2mA, yet you want to use the 0-20mA range.

***Default = 0.00mA***

***P837 Output High Limit***

This parameter sets the highest level that the mA output will rise to, the default is 20 mA, but you can override this if the device you connect to cannot for example accept more than 18 mA, yet you want to use the 0-20 mA range.

***Default = 20.00mA***

**7.6.5 Trim**

***P838 Output Low Trim***

If the device you are connected to is not calibrated, and not showing the low value, then you can trim it using this parameter. You can either type in the offset directly, or use the arrow keys to move the output up and down until you get the expected result on the device that is connected.

***P839 Output High Trim***

If the device you are connected to is not calibrated, and not showing the high value, then you can trim it using this parameter. You can either type in the offset directly, or use the arrow keys to move the output up and down until you get the expected result on the device that is connected.

### 7.6.6 Failsafe

#### ***P840 Output Fail-safe Mode***

This parameter determines what happens to the output in the event of the unit going into fail-safe mode.

The default is to do the same as the system fail-safe (P808), but this can be overridden to force the output to an independent fail-safe mode as follows:

| Option        | Description  |
|---------------|--|
| 0 = Default   | Output will fail as per P808.  |
| 1 = Hold      | Output will retain its last known value.   |
| 2 = Low       | Output will fail to its low condition.   |
| 3 = High      | Output will fail to its high condition (20mA maximum).   |
| 4 = Very Low  | Output will fail to its lowest or fault condition of 2mA for 4-20 range or 0mA for 0-20 range. |
| 5 = Very High | Output will fail to its highest or fault condition of greater than 20mA (22mA maximum).        |

## 7.7 Totaliser Parameters

### 7.7.1 Setup

#### ***P822 Totaliser Enable***

This parameter determines if the totaliser is enabled or not, the options are as follows:

| Option                  | Description           |
|-------------------------|-----------------------|
| <b>0 = No (Default)</b> | Totaliser is disabled |
| 1 = Yes                 | Totaliser enabled     |

#### ***P823 Totaliser Decimal***

This parameter determines the number of decimal places in the totaliser during run mode. It can be set between 1 and 4.

**Default = 2**

#### ***P824 Totaliser Multiplier***

Use this parameter if the totaliser increments by to large or small amount, enter the factor by which the actual flow rate is multiplied by before incrementing the totaliser.

E.g. if flowrate is being calculated and displayed in ltrs/second and it is desired to increment the totaliser in cubic metres select 7 = \*1000.

When viewing, the totaliser display will state, "Units are: L\*1000", and the totaliser will be incremented every 1000 litres

| Option                  | Beschreibung   |
|-------------------------|--|
| 1 = 1/1000              | Totaliser will increment every 1/1000th units of flow    |
| 2 = 1/100               | Totaliser will increment every 1/100 units of flow       |
| 3 = 1/10                | Totaliser will increment every 1/10 units of flow        |
| <b>4 = *1 (Default)</b> | Totaliser will increment every 1/1 units of flow         |
| 5 = * 10                | Totaliser will increment every 1/10 units of flow        |
| 6 = * 100               | Totaliser will increment every 1/100 units of flow       |
| 7 = * 1000              | Totaliser will increment every 1/1000 units of flow      |
| 8 = * 10000             | Totaliser will increment every 1/10,000 units of flow    |
| 9 = * 100000            | Totaliser will increment every 1/100,000 units of flow   |
| 10 = * 1000000          | Totaliser will increment every 1/1,000,000 units of flow |
| 11 = 1/10000            | Totaliser will increment every 1/10,000 units of flow    |
| 12 = 1/100000           | Totaliser will increment every 1/100,000 units of flow   |
| 13 = 1/1000000          | Totaliser will increment every 1/1,000,000 units of flow |

#### ***P825 Totaliser LogTime***

This parameter sets the time at which the totalisers are stored in non-volatile memories.

**Default = 00:00**

### **7.7.2 Totalisers**

#### ***P820 System Totaliser***

Displays the current value of the, non-resettable totaliser.

During run mode this totaliser can be viewed via the "Totaliser" hot key.

Unlike the resettable totaliser this totaliser cannot be reset whilst in run mode, it can however be reset whilst in program mode by accessing P820 Totaliser and entering zero.

#### ***P821 Resettable Totaliser***

Displays the current value of the, resettable totaliser. This totaliser can be allocated to appear, during run mode, on the auxiliary display line (P815) or alternatively via the "Totaliser" hot key.

### 7.7.3 Tot. Audit

#### ***P460 to P479 Totaliser Audits***

Parameters P460-P479 show the date and total flow for the last ten days, the first on the list are the most recent and last ones are the oldest. When all ten total audits are full the oldest is pushed out and all totals increment through to allow the new days total to be registered in the first days total audit parameter allocation.

#### ***P480 Clear Logs***

This parameter enables all of the Total Audits (P460 - P479) to be cleared to factory default values.

## 7.8 System Parameters

### 7.8.1 Passcode

#### ***P921 Enable Code***

**Enables** the passcode (P922), which means the passcode must be entered to go into program mode. If disabled (set to 0), then no passcode is required, and ENTER is used to enter program mode.

**Default = 1 (Enabled)**

#### ***P922 Passcode***

This is the passcode that must be used to enter program mode.

The **default is 1997**, but this can be changed to another value from 0 to 9999.

### 7.8.2 System Information

The following three parameters do not affect how the unit performs, but details contained within them may be required when making technical enquiries.

#### ***P926 Software Revision***

This parameter will show the current software revision.

#### ***P927 Hardware Revision***

This parameter will show details of the current hardware revision.

#### ***P928 Serial Number***

This parameter will show the serial number of the unit.

#### ***P929 Site Identification***

This parameter allows you to give each unit an individual reference number, for identification purposes. You can set any number between 1 and 99999.

### ***P930 Factory Defaults***

This parameter resets all parameter values to the original Factory Set values that were installed when the unit was tested, before despatch to you.

To reset parameters:

- Enter „1“ and press „Enter“  
Then a message is displayed “Entr if sure”.
- Press „Enter“ to reset the values.  
If you press any other key, the parameter will not be reset /and a message will confirm this.
- Program the unit to the desired application.

## **7.8.3 Date & Time**

### ***P931 Date***

This parameter shows the **current date**, in the format as set by P933 (Date Format), and can be reset if required.

### ***P932 Time***

This parameter shows the current time, in the format HH: MM (24-hour format). and can be reset if required

### ***P933 Date Format***

This parameter allows you to alter the format that the date is displayed to your choice of DD: MM: YY, MM: DD: YY or YY: MM: DD. The default is DD: MM: YY

## **7.8.4 Daylight Saving Time**

### ***P970 DST Enable***

When Enabled (set to 1) the internal clock will be automatically adjusted to compensate for the difference between standard time and Daylight Saving Time.

| <b>Option</b>            | <b>Description</b> |
|--------------------------|--------------------|
| 0 = No                   | DST is disabled    |
| <b>1 = Yes (Default)</b> | DST is enabled     |

### ***P971 DST Difference***

This parameter sets the time difference between standard time and Daylight Saving Time. The time difference is entered in HH:MM.

**Default = 01:00**

### ***P972 DST Start Time***

This parameter is used to set the time of day at which Daylight Saving Time will start, the time is entered in the format HH: MM (24-hour format).

**Default = 02:00**

### **P973 Start Day**

Use this parameter to enter the day of the week (P974) that Daylight Saving Time is to start.

| Option                      | Description                   |
|-----------------------------|-------------------------------|
| 2 = Monday                  | DST will start on a Monday    |
| 3 = Tuesday                 | DST will start on a Tuesday   |
| 4 = Wednesday               | DST will start on a Wednesday |
| 5 = Thursday                | DST will start on a Thursday  |
| 6 = Friday                  | DST will start on a Friday    |
| 7 = Saturday                | DST will start on a Saturday  |
| <b>8 = Sunday (Default)</b> | DST will start on a Sunday    |

### **P974 Start Week**

This parameter will determine the week of the month (P975) in which Daylight Saving Time is to start.

| Option                    | Description   |
|---------------------------|---|
| 1 = Week 1                | DST will start on day (P973) in the first week (P974) of the month (P975).  |
| 2 = Week 2                | DST will start on day (P973) in the second week (P974) of the month (P975). |
| 3 = Week 3                | DST will start on day (P973) in the third week (P974) of the month (P975).  |
| 4 = Week 4                | DST will start on day (P973) in the fourth week (P974) of the month (P975). |
| <b>5 = Last (Default)</b> | DST will start on day (P973) in the last week (P974) of the month (P975).   |

### **P975 Start Month**

This parameter is used to select the month in which Daylight Saving Time is to start.

| Option                     | Description                                 |
|----------------------------|---|
| Option                     | Description                                 |
| 1 = January                | DST will start during the month of January  |
| 2 = February               | DST will start during the month of February |
| <b>3 = March (Default)</b> | DST will start during the month of March    |
| 4 = April                  | DST will start during the month of April    |
| 5 = May                    | DST will start during the month of May      |
| 6 = June                   | DST will start during the month of June     |
| 7 = July                   | DST will start during the month of July     |
| 8 = August                 | DST will start during the month of August   |

|               |  |
|---------------|--|
| 9 = September | DST will start during the month of September |
| 10 = October  | DST will start during the month of October   |
| 11 = November | DST will start during the month of November  |

**P976 DST End Time**

This parameter is used to set the time of day at which Daylight Saving Time will end, the time is entered in the format HH: MM (24-hour format).

**Default = 02:00**

**P977 End Day**

Use this parameter to enter the day of the week (P978) that Daylight Saving Time is to end.

| Option                      | Beschreibung                |
|-----------------------------|-----------------------------|
| 2 = Monday                  | DST will end on a Monday    |
| 3 = Tuesday                 | DST will end on a Tuesday   |
| 4 = Wednesday               | DST will end on a Wednesday |
| 5 = Thursday                | DST will end on a Thursday  |
| 6 = Friday                  | DST will end on a Friday    |
| 7 = Saturday                | DST will end on a Saturday  |
| <b>8 = Sunday (Default)</b> | DST will end on a Sunday    |

**P978 End Week**

This parameter will determine the week of the month (P975) in which *Daylight Saving Time* is to end.

| Option                    | Description   |
|---------------------------|---|
| 1 = Week 1                | DST will end on day (P977) in the first week (P978) of the month (P979).    |
| 2 = Week 2                | DST will start on day (P977) in the second week (P978) of the month (P979). |
| 3 = Week 3                | DST will start on day (P977) in the third week (P978) of the month (P979).  |
| 4 = Week 4                | DST will start on day (P977) in the fourth week (P978) of the month (P979). |
| <b>5 = Last (Default)</b> | DST will start on day (P977) in the last week (P978) of the month (P979).   |

### **P979 End Month**

This parameter is used to select the month in which *Daylight Saving Time* is to end.

| <b>Option</b>                 | <b>Description</b>                         |
|-------------------------------|--|
| 1 = January                   | DST will end during the month of January   |
| 2 = February                  | DST will end during the month of February  |
| 3 = March (Default)           | DST will end during the month of March     |
| 4 = April                     | DST will end during the month of April     |
| 5 = May                       | DST will end during the month of May       |
| 6 = June                      | DST will end during the month of June      |
| 7 = July                      | DST will end during the month of July      |
| 8 = August                    | DST will end during the month of August    |
| 9 = September                 | DST will end during the month of September |
| <b>10 = October (Default)</b> | DST will end during the month of October   |
| 11 = November                 | DST will end during the month of November  |
| 12 = December                 | DST will end during the month of December  |

## 7.9 Test Parameters

### 7.9.1 Simulation

VORSICHT



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#### **Effects on plant sections**

*The relay simulation will directly affect to following plant sections.*

- *The simulation shall be executed by trained electricians only. The responsible expert personnel must have sound knowledge on the entire control procedures of the according facility.*

*Prepare the simulation process carefully!*

- *Switch the following systems to manual operation.*
- *Disable actuating drives and similar or limit the according functions.*

***It is absolutely necessary to have a safety person available!***

*Disregarding may lead to personal injury or damage your facility. NIVUS will accept no liability that might arise from disregarding these instructions for use.*

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#### **P980 Simulate**

Test mode is used to simulate the application and confirm that all parameters and relay setpoints have been entered as expected.

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

The LED's will always switch according to how the relays have been programmed, and the output will change accordingly.

- Select a hard simulation if you want to test the logic of the system that the relays are connected to.
- Select a soft simulation if you don't want to change the relay state.

There are two simulation modes:

- automatic
- manual

**Automatic simulation** will move the velocity up and down between minimum and maximum velocity and activate the relay and/or corresponding LED at the programmed setpoints.

- Use the arrow keys to change the direction of the velocity movement at any-time.

In **manual simulation** use the arrow keys to move the velocity up and down as required.

The choices for you to enter are as follows.

- 1= Manual soft simulation
- 2= Automatic soft simulation
- 3= Manual hard simulation
- 4= Automatic hard simulation

To return to program mode, press CANCEL and test mode will end.

### ***P981 Increment***

By default, simulation mode will move by **0.25 steps** in manual simulation and by 0.25/min in automatic simulation. Altering the increment can change this value.

### ***P982 Rate***

In automatic mode, the rate at which the measurement will move up and down is determined by the Increment (P981) and the time, Rate (P982) which can be changed as required.

To increase the rate at which the measurement moves increase the Increment (P981) or decrease the Rate (P982).

To decrease the rate at which the measurement moves decrease the Increment (P981) or increase the Rate (P982).

### ***P983 Test Max.***

This parameter determines the maximum of the simulated measurement values.

**Default = 1000**

### ***P984 Test Min.***

This parameter determines the minimum of the simulated measurement values.

**Default = 0**

## **7.9.2 Hard Test**

### ***P991 Test Hardware***

When this parameter is selected, the unit will test the following in turn:

- **LED's.** Watch them change colour as shown on the display and press ENTER if they operate as shown.
- **Relays.** Press a numeric key, corresponding to the number of the relay you wish to test, and the relay will change state each time the key is pressed. If you press any other key, other than a valid relay number, then the test will end.
- **Segments.** All the segments on the LCD are lit up so you can see if they all work. Press ENTER to end the test.
- **Keys.** You should press each key to confirm it works, with a counter showing how many more keys remain un-pressed. Be sure to press the CANCEL key last as this will show if all keys were pressed or not. If they were not then an error message is displayed.

**P992 Output Test**

This parameter will allow you to force a specified current on to the output to test any equipment that it is connected to. The figure you enter will be generated by the output.

**P993 Relay Test**

Press a numeric key corresponding to the number of the relay you wish to test, and the relay will change state each time the key is pressed. If you press any other key, other than a valid relay number, then the test will end.

## 8 Troubleshooting

This section describes many common symptoms, with suggestions as to what to do.

| Symptom   | Abhilfe  |
|---|--|
| >No Sensor< message displayed.  | Check power supply. Check wiring to NivuGuard 2 Sensor                           |
| Current velocity reads zero but you know there is flow movement.                    | Ensure NivuGuard 2-Sensor is mounted correctly and in accordance with chapter 2. |
| LED's change colour at relevant relay switch points but relays do not change state. | Check supply to unit and ensure voltage selector set to correct position.        |

## 9 Maintenance and Cleaning

### 9.1 Maintenance

**WARNING**



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***Disconnect Unit from Mains Power***

*Disconnect the unit from mains power and safeguard the higher system against restart before you begin maintenance work (e.g. cleaning).*

*Disregarding may lead to electrical shocks.*

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There are no user serviceable parts inside your NivuGuard Monitor, except the mains power fuse. If you experience any problems with the unit, then please contact **NIVUS GmbH - Customer Service**

**Phone: +49 7262 9191-888**

Reset the internal pipe diameter after every new installation.

NIVUS recommends a routinely inspection depending on environmental conditions.

### 9.2 Cleaning

Clean the enclosure if required using a dry, lint-free cloth. For stubborn dirt the enclosure can be cleaned using a damp cloth.

Do not use sharp cleansing agents or solvents.

Light household cleaners or soapy water can be used

### 9.3 Sensors

The hints on how to maintain and clean the sensors shall be necessarily observed. These hints can be found in the *Technical Instruction of the NivuGuard 2 Sensor*.

This instruction is part of the standard sensor delivery!

## 10 Dismantling/Disposal

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### **EC WEEE-Directive logo**

*This symbol indicates that the Directive 2012/19/EU on waste electrical and electronic equipment requirements shall be observed on the disposal of the equipment.*

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### **Improper disposal may be harmful to the environment.**

Always dispose equipment components and packaging materials according to applicable local regulations on environmental standards for electronic products.

- Disconnect the unit from mains power.
- Use appropriate tools to remove the cables from the enclosure.
- Remove the unit from the wall.

## 11 Parameter list

### APPLICATION

#### *RS485 Baud rate*

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P143              | Device Baud | 19200 baud     |   |   |   |   |   |

#### *FlowPulse Setup*

| Parameter Details |                 | Entered Values |   |   |   |   |   |
|-------------------|-----------------|----------------|---|---|---|---|---|
| No.               | Description     | Default        | 1 | 2 | 3 | 4 | 5 |
| P102              | Mag Threshold   | 1600           |   |   |   |   |   |
| P104              | Damping         | 24             |   |   |   |   |   |
| P108              | Cal Factor      | 100            |   |   |   |   |   |
| P110              | Pipe Diamter    | 0,1 m          |   |   |   |   |   |
| P113              | Step Damping    | 1 (JYes)       |   |   |   |   |   |
| P114              | Track Method    | 0 (Auto)       |   |   |   |   |   |
| P115              | Track Threshold | 60             |   |   |   |   |   |
| P134              | Density         | 2 (Medium)     |   |   |   |   |   |

### APPLICATION

#### *Relay 1*

| Parameter Details |              | Entered Values |   |   |   |   |   |
|-------------------|--------------|----------------|---|---|---|---|---|
| No.               | Description  | Default        | 1 | 2 | 3 | 4 | 5 |
| P210              | R1 Type      | 0 = Off        |   |   |   |   |   |
| P211              | R1 Function  | 0 = Off        |   |   |   |   |   |
| P212              | R1 Alarm ID  | 1 = Off        |   |   |   |   |   |
| P213              | R1 Set 1     | 0,000 m/s      |   |   |   |   |   |
| P214              | R1 Set 2     | 0,000 m/s      |   |   |   |   |   |
| P217              | R1 Closures  | 0              |   |   |   |   |   |
| P218              | R1 Fail Safe | 0              |   |   |   |   |   |

#### *Relay 2*

| Parameter Details |                        | Entered Values |   |   |   |   |   |
|-------------------|------------------------|----------------|---|---|---|---|---|
| No.               | Description            | Default        | 1 | 2 | 3 | 4 | 5 |
| P220              | R2 Type                | 0 = Off        |   |   |   |   |   |
| P221              | R2 Function            | 0 = Off        |   |   |   |   |   |
| P222              | R2 Alarm ID/Pump Group | 1 = Off        |   |   |   |   |   |
| P223              | R2 Set 1               | 0,000 m/s      |   |   |   |   |   |
| P224              | R2 Set 2               | 0,000 m/s      |   |   |   |   |   |
| P227              | R2 Closures            | 0              |   |   |   |   |   |
| P228              | R2 Fail Safe           | 0              |   |   |   |   |   |

## Display

### Options

| Parameter Details |                    | Entered Values |   |   |   |   |   |
|-------------------|--------------------|----------------|---|---|---|---|---|
| No.               | Description        | Default        | 1 | 2 | 3 | 4 | 5 |
| P800              | Display Source     | 1=Flow         |   |   |   |   |   |
| P801              | Decimal Places     | 2              |   |   |   |   |   |
| P802              | Measurement Unit   | 1              |   |   |   |   |   |
| P806              | Display Conversion | 1              |   |   |   |   |   |

### Fail Safe

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P808              | Fail Mode   | 1=Known        |   |   |   |   |   |
| P809              | Fail Time   | 2,0 Min.       |   |   |   |   |   |

## Output

### Range

| Parameter Details |                 | Entered Values |   |   |   |   |   |
|-------------------|-----------------|----------------|---|---|---|---|---|
| No.               | Description     | Default        | 1 | 2 | 3 | 4 | 5 |
| P830              | Bereich Ausgang | 2 = 4- 20mA    |   |   |   |   |   |

### Set Point

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P834              | Low Level   | 0.000 m/s      |   |   |   |   |   |
| P835              | High Level  | 6.000 m/s      |   |   |   |   |   |

### Limits

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P836              | Low Limit   | 0.00 mA        |   |   |   |   |   |
| P837              | High Limit  | 20.00 mA       |   |   |   |   |   |

### Trim

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P838              | Low Trim    | 0.00           |   |   |   |   |   |
| P839              | High Trim   | 0.00           |   |   |   |   |   |

**Fail Safe**

| Parameter Details |             | Entered Values  |   |   |   |   |   |
|-------------------|-------------|-----------------|---|---|---|---|---|
| No.               | Description | Default         | 1 | 2 | 3 | 4 | 5 |
| P840              | Fehlermode  | 0 = Werkseinst. |   |   |   |   |   |

**SYSTEM**

**Passcode**

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P921              | Enable Code | 1 = Yes        |   |   |   |   |   |
| P922              | Passcode    | 1997           |   |   |   |   |   |

**System Information**

| Parameter Details |                   | Entered Values |   |   |   |   |   |
|-------------------|-------------------|----------------|---|---|---|---|---|
| No.               | Description       | Default        | 1 | 2 | 3 | 4 | 5 |
| P926              | Software Revision | Read Only      |   |   |   |   |   |
| P927              | Hardware Revision | Read Only      |   |   |   |   |   |
| P928              | Serial Number     | Read Only      |   |   |   |   |   |
| P929              | Site Ident.       | 1              |   |   |   |   |   |

**Date & Time**

| Parameter Details |             | Entered Values |   |   |   |   |   |
|-------------------|-------------|----------------|---|---|---|---|---|
| No.               | Description | Default        | 1 | 2 | 3 | 4 | 5 |
| P931              | Description | Default        |   |   |   |   |   |
| P932              | Date        | Current Date   |   |   |   |   |   |
| P933              | Time        | Current Time   |   |   |   |   |   |

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## EU Konformitätserklärung

*EU Declaration of Conformity*

*Déclaration de conformité UE*

Für das folgend bezeichnete Erzeugnis:

*For the following product:*

*Le produit désigné ci-dessous:*

|                     |  |
|---------------------|--|
| <b>Bezeichnung:</b> | <b>Anzeigedisplay für NG2</b>                  |
| <i>Description:</i> | <i>Monitor for NivuGuard 2</i>                 |
| <i>Désignation:</i> | <i>Instrument d'affichage pour NivuGuard 2</i> |
| <b>Typ / Type:</b>  | <b>NGM...</b>                                  |

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 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 24.10.2022

Gez. *Ingrid Steppe*

## UK Declaration of Conformity

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Internet: www.nivirus.de

For the following product:

|                     |                                |
|---------------------|--------------------------------|
| <b>Description:</b> | <b>Monitor for NivuGuard 2</b> |
| <b>Type:</b>        | <b>NGM...</b>                  |

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 / 1091 The Electromagnetic Compatibility Regulations 2016
- SI 2016 / 1101 The Electrical Equipment (Safety) 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, 24/10/2022

Signed by *Ingrid Steppe*