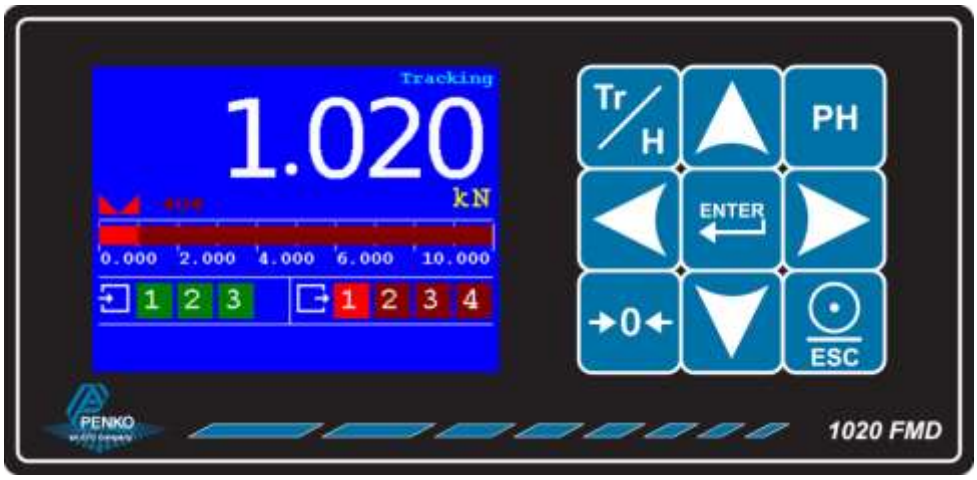
# PENKO Engineering B.V.

Your Partner for Fully Engineered Factory Solutions




## Quick Start:
## 1020 FMD

PENKO
an ETC Company

## Table of Contents

## Introduction

The PENKO 1020 FMD is a compact comprehensive Force Measurement Device.

### In the box

The box contains the following items:

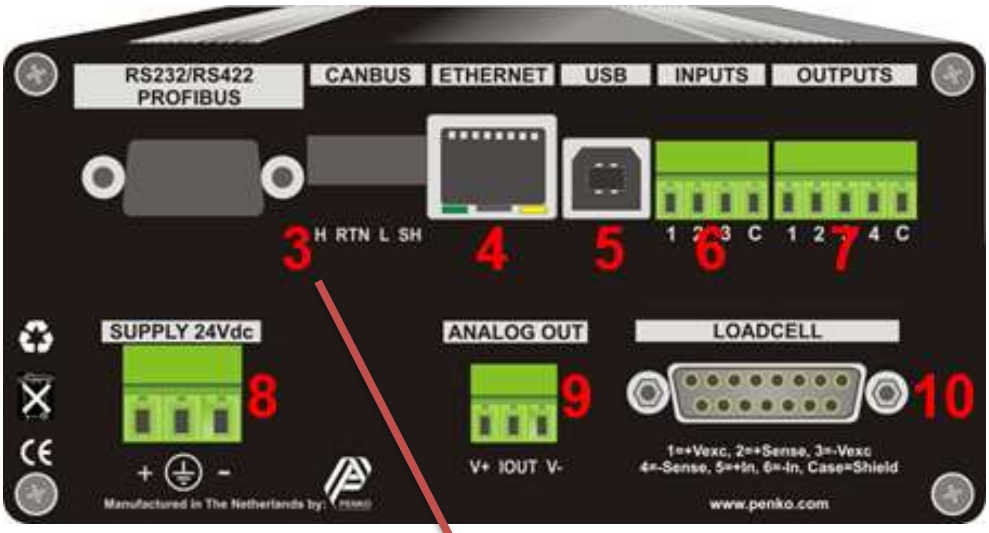
- 1 x 1020 FMD device
- 1 x rubber ring for mounting purpose
- 2 x clip for mounting purpose
- 1 x connector for load cell connection
- 1 x quick start manual

### Needed for use

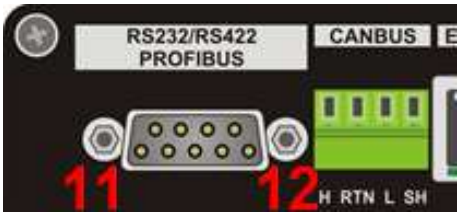
To use the 1020 FMD the following items are needed:

- Class 2 or Limited Power Source, rate 18 - 32 VDC, 0.4A@24VDC
- Load cell / Torque sensor

# 1 Overview


**Option 1:**




**Option 2:**

| Number | Description |
|---|---|
| 1 | TFT display 320 x 240 |
| 2 | Keypad |
| 3 | **OPTION:** None \|\| Serial + CAN bus \|\| Profibus |
| 4 | Ethernet connection |
| 5 | USB connection |
| 6 | Digital inputs (3) |
| 7 | Digital outputs (4) |
| 8 | 24VDC power supply |
| 9 | **OPTION:** Analog output |
| 10 | Load cell connection |
| 11 | RS232/RS422 connection |
| 12 | CAN bus connection |
| 13 | Profibus connection |
| 14 | Bus termination for Profibus |

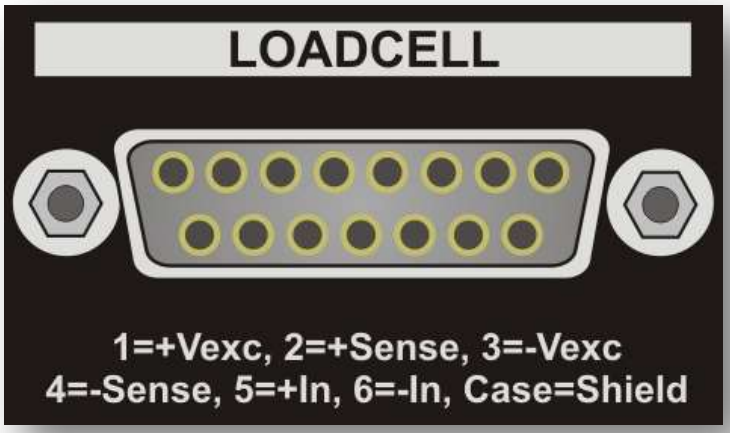
# 2 Connections

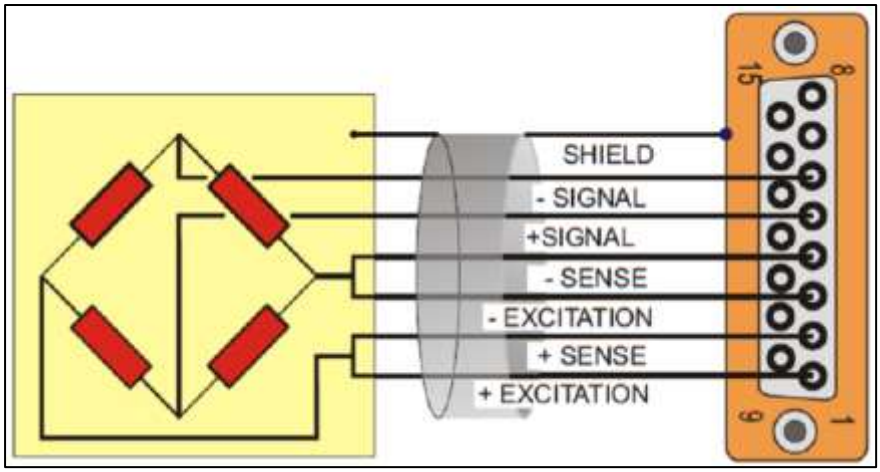
This chapter describes the power supply and load cell connections of the 1020 FMD.

## 2.1 Power supply


Power the device using a Class 2 or Limited Power Source, rate 18 – 32 VDC, 0.4A@24VDC

## 2.2 Load cell

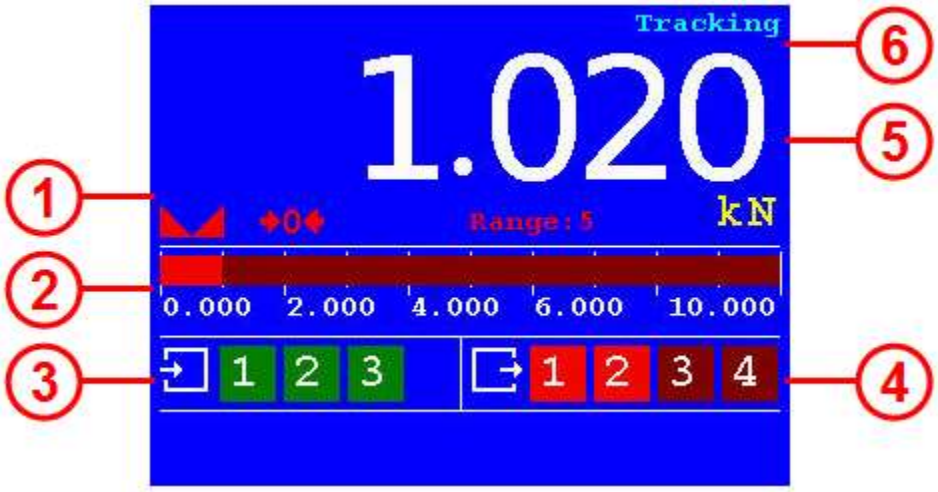



| Property | Description |
|---|---|
| Wiring | With sense |
| Type of sense | Passive |
| Excitation voltage | 5 VDC |
| Sensitivity | 0,1 µV/d |
| Selectable ranges | 1 mV/V \| 1,5 mV/V \| 2 mV/V \| 2,5 mV/V \| 3 mV/V |
| Input voltage @3mV/V | -16 mV to 16 mV |
| A/D Conversion speed | 1600/s |
| Max. load cell impedance | 1200 Ω |
| Min. Load cell impedance | 43,75 Ω |
| Max. no. of load cells 350 Ω | 8 |
| Max. no. of load cells 1000 Ω | 22 |

## 3 Display and keypad

The display contains the following indications:



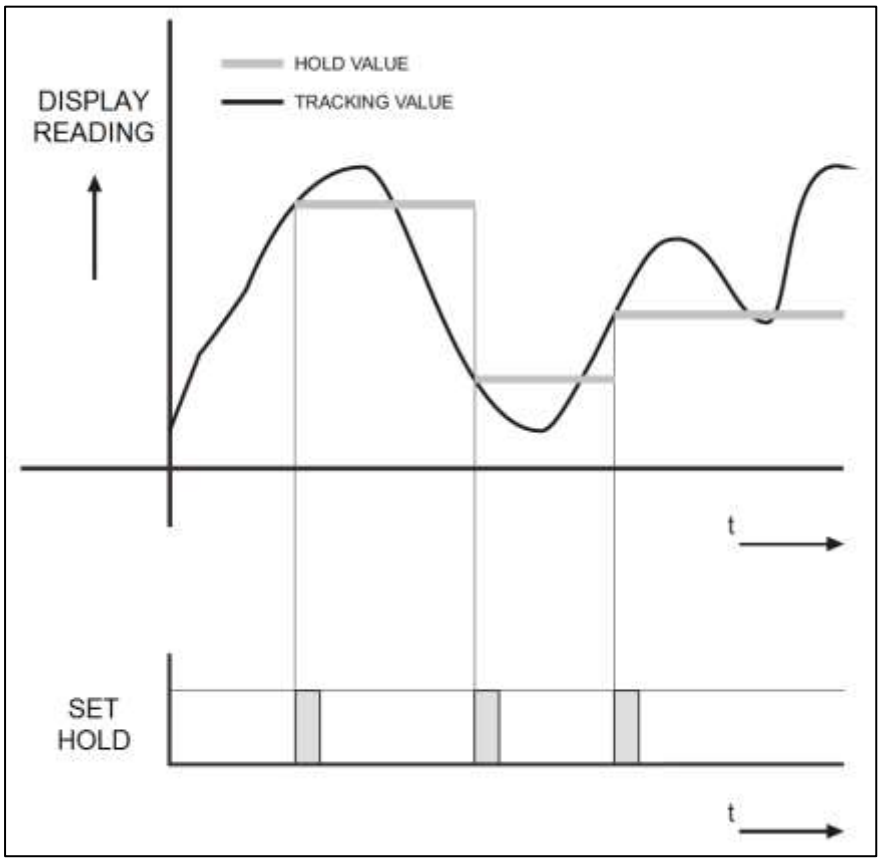

| Number | Description |
|---|---|
| 1 | Indicator in stable range [] Zero active [] Range/Interval active |
| 2 | Bar graph indication |
| 3 | Digital input active indication (3 inputs) |
| 4 | Digital output active indication (4 outputs) |
| 5 | Measured value |
| 6 | Type of value shown on the display (Tracking, Hold, T.I.R, Peak, Valley) * |

*** Display value**

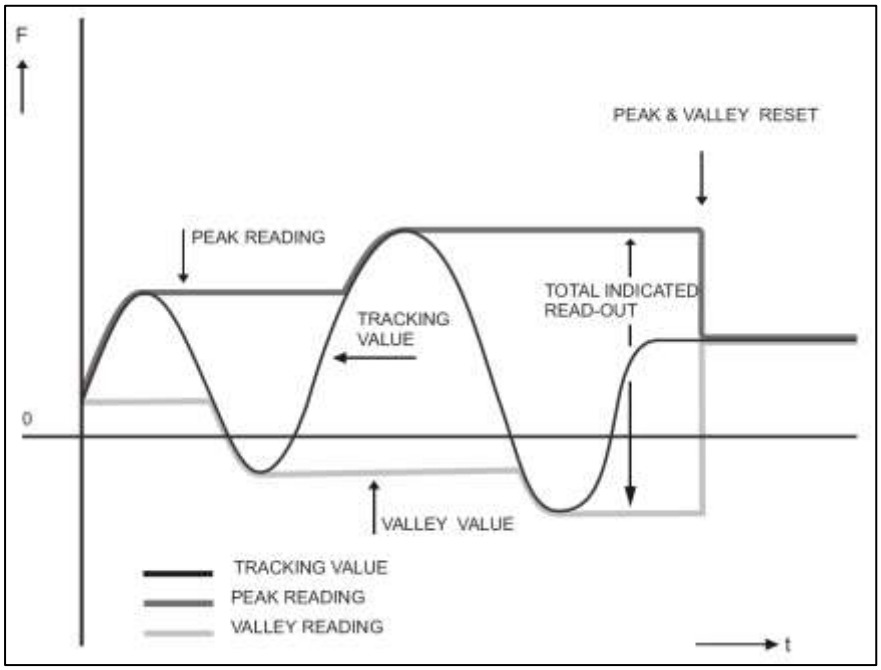
| | |
|---|---|
| **Tracking** | Tracking value. The display follows the input signal. |
| **Hold** | Hold value. The hold value is stored every time the zero button is pressed in hold mode, and every time the input, programmed as hold, is high. |
| **Peak** | Peak hold value. This is the highest measured value. |
| **Valley** | Valley hold value. This is the lowest measured value. |
| **T.I.R.** | **T**otal **I**ndicated **R**eadout value. The difference between the peak hold and valley hold value. |

See next page for examples.

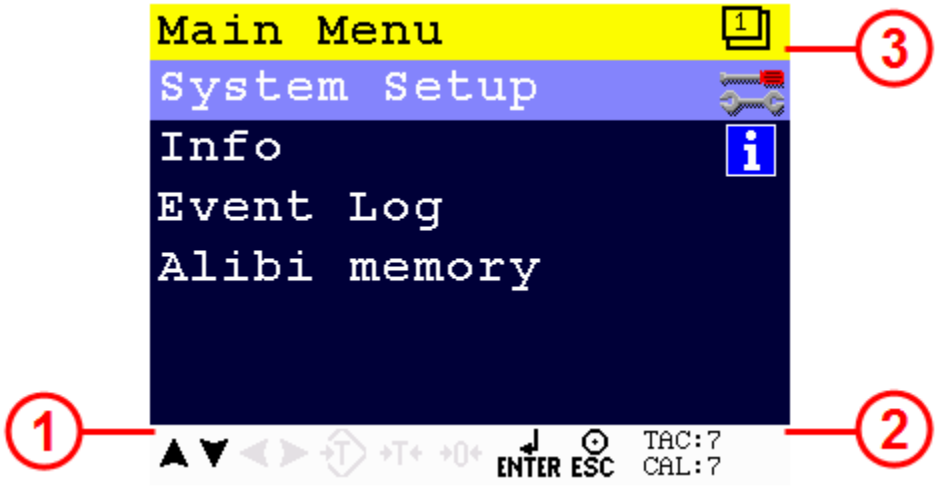
## Hold function




## Peak, Valley and T.I.R. function



The display indications in menu mode:




| Number | Description |
|---|---|
| 1 | Active buttons for current menu item |
| 2 | TAC and CAL code* |
| 3 | Menu level |

*** TAC and CAL code**

**TAC** stands for Traceable Access Code. A number of settings are only available after entering this code. When these settings are changed, the TAC is incremented with 1.

**CAL** stands for CALibration code. The calibration settings are only available after entering this code. When the calibration settings are changed, the CAL is incremented with 1.

The keys have the following functions:


**Tracking / Hold**
Toggle between Tracking mode and Hold mode.


**Peak Hold**
Show Peak Hold mode.


**Enter / Menu**
Adjust levels. Press > 2 seconds to enter configuration menu. In menu mode, press to confirm setting.


**Zero**
Press to set tare/zero. Press again to reset tare/zero. In Hold mode, press to set hold value. In Peak/Valley/T.I.R mode, press to clear the stored value.


**Print / Escape**
Press to cancel or step back one menu item. Press from start screen to print.

**Up / Increase value**
From start screen, press to show T.I.R. value on the display.

**Down / Decrease value**
From start screen, press to show valley hold value on the display.

**Left / Change position of cursor**

**Right / Change position of cursor**

# 4 First use

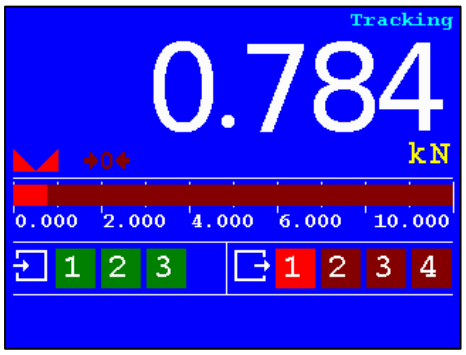
For first use, the following settings are important:

- Unit indication
- Decimal point position
- Step size
- Maximum load
- Calibration

This chapter describes how to adjust these settings.

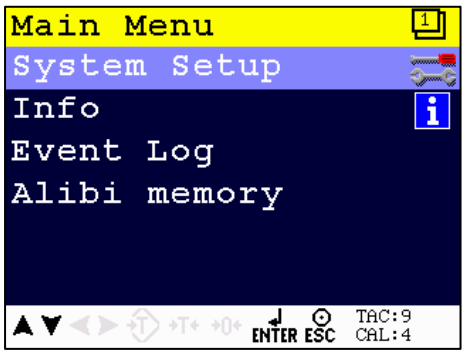
### Main Menu

From the main screen, press the Enter button for 2 seconds to enter the Main Menu.





**Press 2 seconds**



## Navigate through menu

Use the Up and Down button to navigate through the menus. Use the Enter button to enter a menu item. Use the Escape button to step back a level.

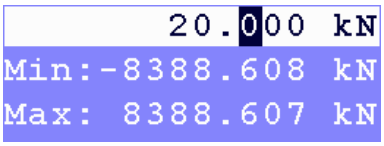
**Up**

**Down**


**Open menu item**


**Back to previous level**

## Edit a value




Use the arrow buttons to edit a value. Select the digit with the Left and Right button. Increase the value with the Up button. Decrease the value with the Down button. Use the Enter button to confirm the whole value. Use the Zero button to clear the whole value.

**Select previous digit**

**Select next digit**

**Increase selected digit**

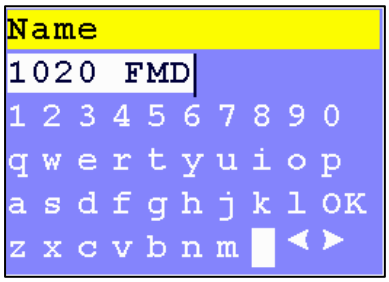
**Decrease selected digit**


**Confirm whole value**


**Clear whole value**

## Edit a text

In case a text has to be edited, a keyboard appears on the screen.



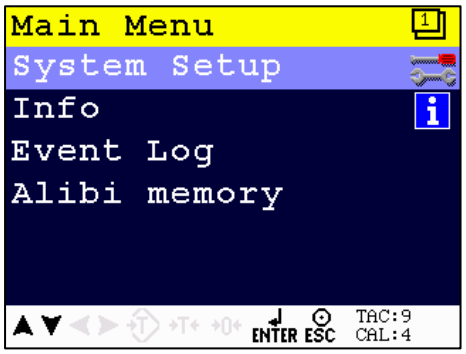

Use the arrow buttons to navigate through the keyboard. Use the Enter button to select the character. Use the Zero button for backspace. Use the Peak-hold button to change the character set.


**Left** **Right** **Up** **Down** **Select character** **Backspace**

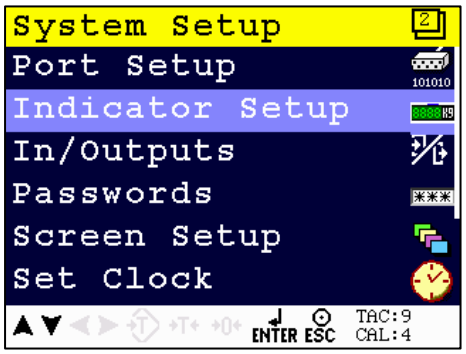

**Change character set**

## Indicator parameters

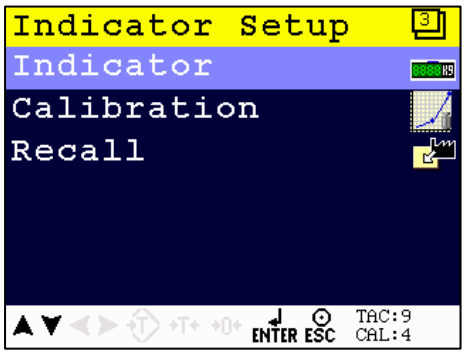
The indicator parameters can be set as follows:



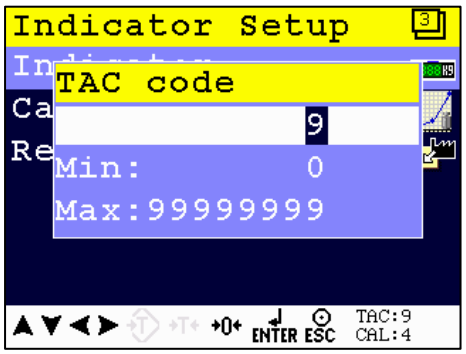






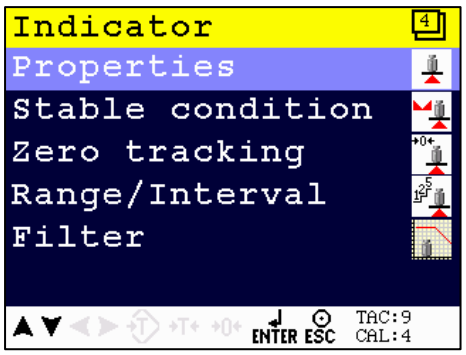




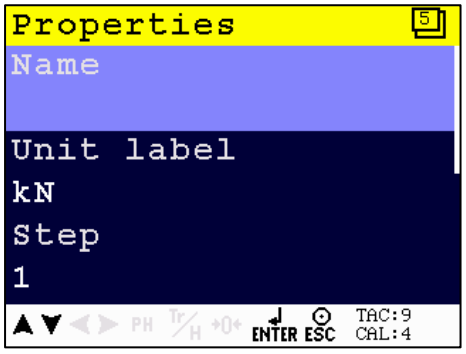




**Enter the TAC as shown on the right bottom corner of the screen using the arrow buttons - apply with the Enter button**








**Here the Unit, Step size, Decimal point and Max load can be set**

**Unit**
Set the unit of measurement, for example kN or N. This will be shown everywhere the measured force is displayed or printed.

**Decimal point**
Select the position of the decimal point. This setting will be used everywhere the measured force is displayed or printed.

| Available options |
|---|
| 000000 |
| 00000.0 |
| 0000.00 |
| 000.000 |
| 00.0000 |
| 0.00000 |

**Step**
Select the step size. This setting defines the scaled parts of the force value. The display value will be rounded to the nearest value with a valid step size. Available options:

| Available options |
|---|
| 1 |
| 2 |
| 5 |
| 10 |
| 20 |
| 50 |
| 100 |
| 200 |

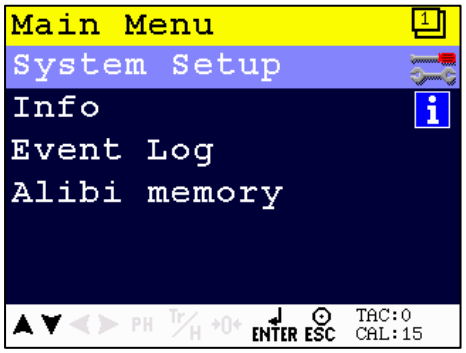
→ Example:

Measured value is 2005 kN.

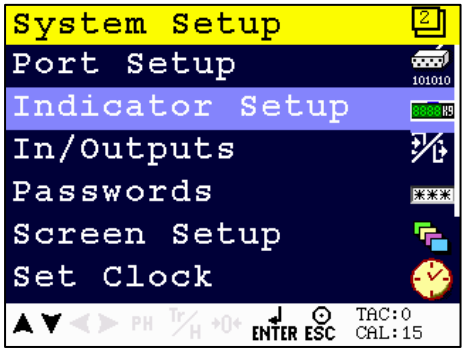
| Step size | Displayed value |
|---|---|
| 1 | 2005 |
| 2 | 2006 |
| 5 | 2005 |
| 10 | 2010 |
| 20 | 2000 |
| 50 | 2000 |
| 100 | 2000 |
| 200 | 2000 |

**Maxload**
Set the force the indicator will use as maximum. If the measured force is higher than the maximum load, the display will show **======**

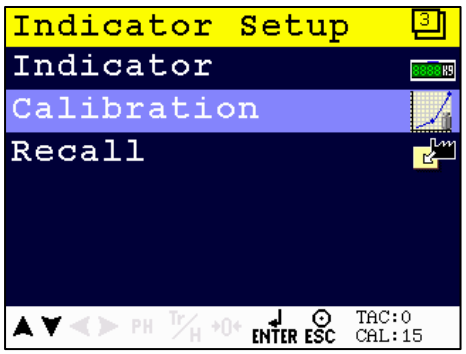
## Calibration



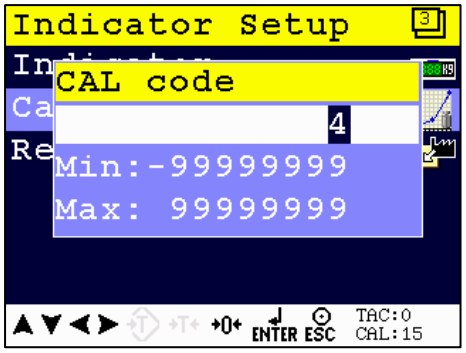






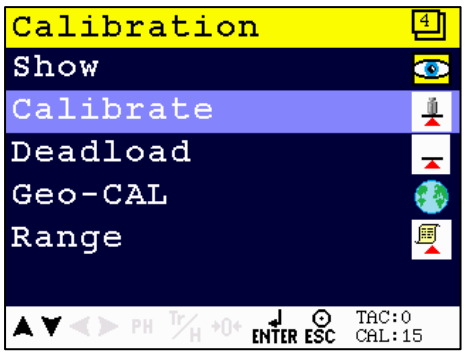




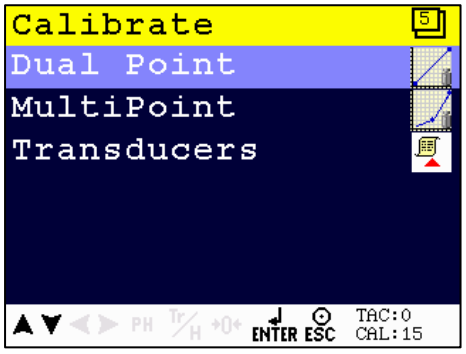




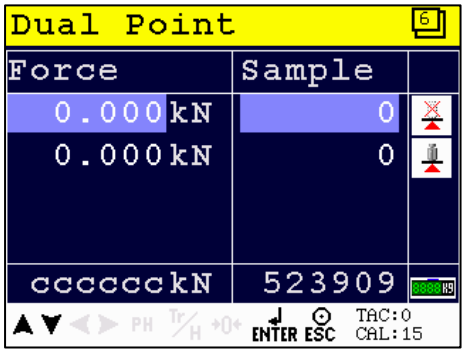
**Enter the CAL as shown on the right bottom corner of the screen using the arrow buttons - apply with the Enter button**





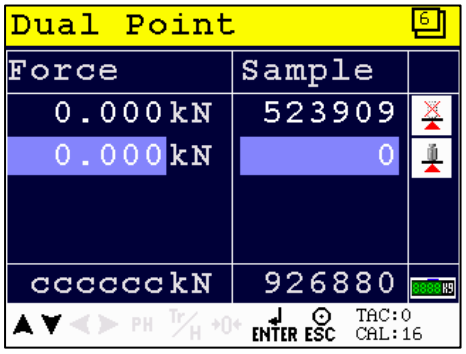






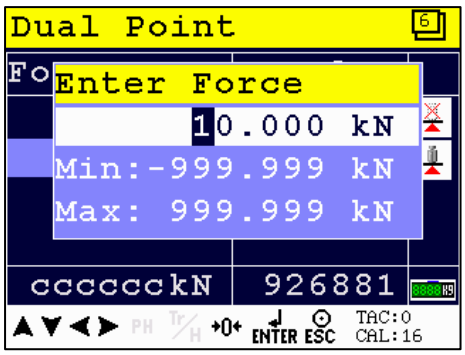


**Make sure the load cell or force sensor is not loaded and is stable before pressing Enter**



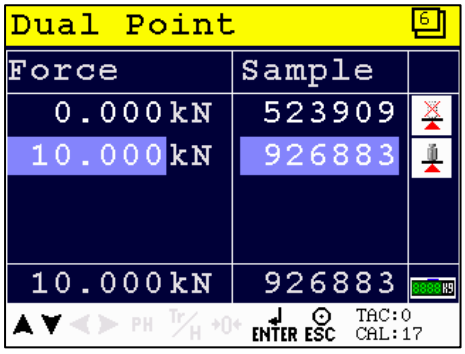


**Make sure the load cell or force sensor is loaded with the reference weight and is stable before pressing Enter**





**Enter the reference weight - apply with the Enter button**




**The device is now calibrated**

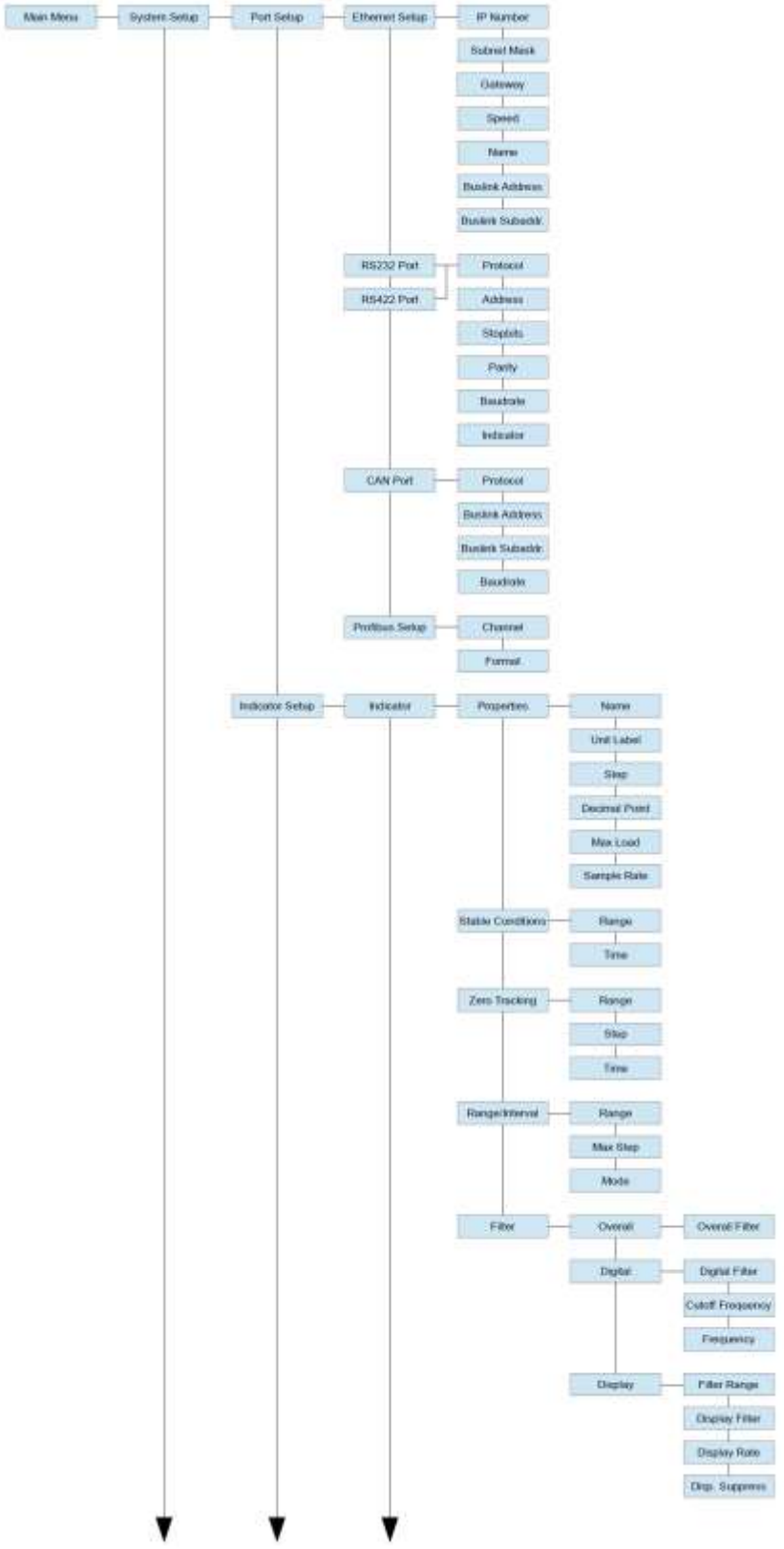
**Error codes:**

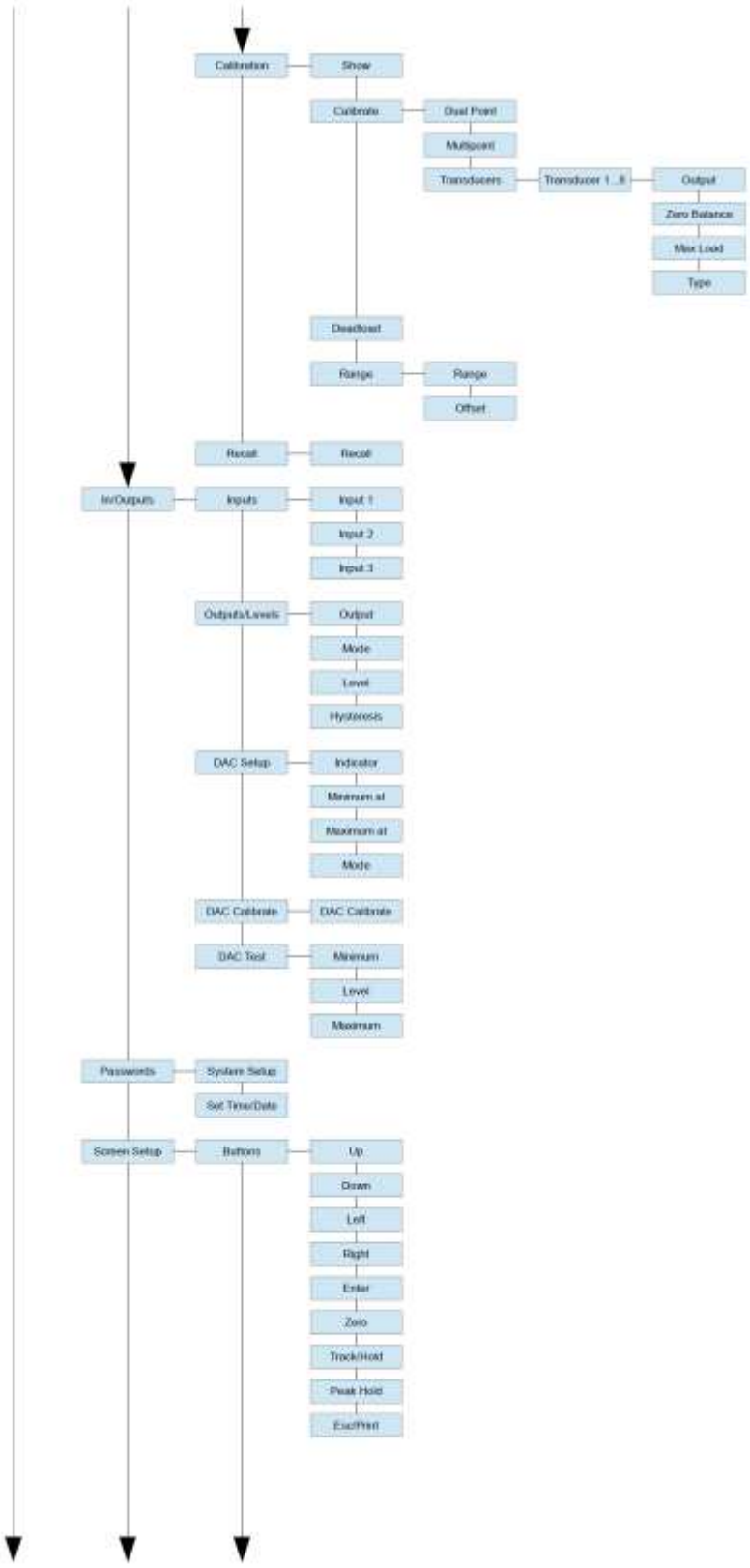
| Error code | Description | Solution |
|---|---|---|
| **CCCCCC** | No proper calibration available | Check calibration setting |
| | | |
| **UUUUUU** | Underflow | Check load cell<br>Check platform construction |
| | | |
| **OOOOOO** | Overflow | Check load cell<br>Check platform construction |
| | | |
| **======** | Display overflow; Exceed maximum display value (max. load) | Reduce load on platform |

# 5 Standard factory settings

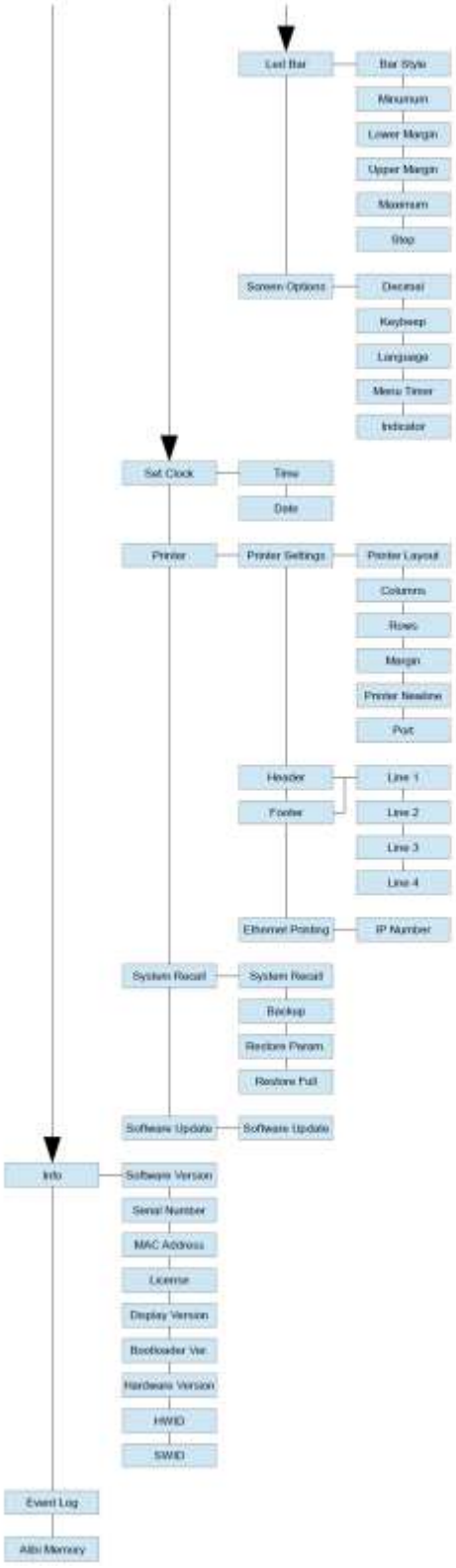
| Description | Display | Value | Your setting |
|---|---|---|---|
| **Properties** | Name | … | |
| | Unit label | kN | |
| | Step | 1 | |
| | Decimal point | 0,000 | |
| | Max Load | 10,009 kN | |
| | Sample Rate | 1600/s | |
| **Stable condition** | Range | 0,002 kN | |
| | Time | 1,00 s | |
| **Zero tracking** | Range | 0,000 kN | |
| | Step | 0,000 kN | |
| | Time | 0,00 s | |
| **Range / Interval** | Range | 0 Parts | |
| | Max Step | 1 | |
| | Mode | Multi Range | |
| **Filter - Overall** | Overall Filter | 0 dB | |
| **Filter - Digital** | Digital Filter | Static App. | |
| | Cutoff Frequency | 1,0 Hz | |
| | Frequency | 50 Hz | |
| **Filter- Display** | Filter Range | 0,000 kN | |
| | Display Filter | 0 dB | |
| | Display Rate | 25 updates/s | |
| | Disp.Suppress | 0,000 kN | |

# 6 Menu structure




Calibration
Show
Calibrate
Dual Point
Multipoint
Transducers
Transducer 1...8
Output
Zero Balance
Max Load
Type
Deadload
Range
Range
Offset
Recall
Recall
In/Outputs
Inputs
Input 1
Input 2
Input 3
Outputs/Levels
Output
Mode
Level
Hysteresis
DAC Setup
Indicator
Minimum at
Maximum at
Mode
DAC Calibrate
DAC Calibrate
DAC Test
Minimum
Level
Maximum
Passwords
System Setup
Set Time/Date
Screen Setup
Buttons
Up
Down
Left
Right
Enter
Zero
Track/Hold
Peak Hold
Esc/Print

# 1020 FMD


Led Bar
Bar Style
Minumum
Lower Margin
Upper Margin
Maximum
Step
Screen Options
Decimal
Keybeep
Language
Menu Timer
Indicator
Set Clock
Time
Date
Printer
Printer Settings
Printer Layout
Columns
Rows
Margin
Printer Newline
Port
Header
Footer
Line 1
Line 2
Line 3
Line 4
Ethernet Posting
IP Number
System Recall
System Recall
Backup
Restore Param
Restore Full
Software Update
Software Update
Info
Software Version
Serial Number
MAC Address
License
Display Version
Bootloader Ver
Hardware Version
HWID
SWID
Event Log
Alibi Memory


## About PENKO

Our design expertise include systems for manufacturing plants, bulk weighing, check weighing, force measuring and process control. For over 35 years, PENKO Engineering B.V. has been at the forefront of development and production of high-accuracy, high-speed weighing systems and our solutions continue to help cut costs, increase ROI and drive profits for some of the largest global brands, such as Cargill, Sara Lee, Heinz, Kraft Foods and Unilever to name but a few.

Whether you are looking for a simple stand-alone weighing system or a high-speed weighing and dosing controller for a complex automated production line, PENKO has a comprehensive range of standard solutions you can rely on.

## Certifications

PENKO sets high standards for its products and product performance which are tested, certified and approved by independent expert and government organizations to ensure they meet – and even – exceed metrology industry guidelines. A library of testing certificates is available for reference on:
**http://penko.com/nl/publications_certificates.html**

## PENKO Professional Services

PENKO is committed to ensuring every system is installed, tested, programmed, commissioned and operational to client specifications. Our engineers, at our weighing center in Ede, Netherlands, as well as our distributors around the world, strive to solve most weighing-system issues within the same day. On a monthly basis PENKO offers free training classes to anyone interested in exploring modern, high-speed weighing instruments and solutions. A schedule of training sessions is found on: **www.penko.com/training**

## PENKO Alliances

PENKO's worldwide network: Australia, Belgium, Brazil, China, Denmark, Germany, Egypt, Finland, France, India, Italy, Netherlands, Norway, Poland, Portugal, Slovakia, Spain, Syria, Turkey, United Kingdom, South Africa, Slovakia Sweden and Switzerland, Singapore.
A complete overview you will find on: **www.penko.com/dealers**

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