
QN-100 NIR Moisture Sensor

User Manual

Document ref.	AS-PRD-MAN-001	Revision	1.0
Date of issue	June 2026	Status	Approved
Document owner	Applications Engineering	Classification	Public / Customer-facing

Table of Contents

1. Introduction	4
2. Main Screen	4
2.1 Product Selector	4
2.2 Trend Chart	4
2.3 Measurement Display	5
2.4 Status Bar	5
2.5 Navigation Buttons	5
3. Accessing the System Menu	5
3.1 Password Entry	6
4. System Menu	6
4.1 Sensor	7
4.2 HMI	7
4.3 Users	7
5. Sensor — Calibration	7
5.1 Selecting a Calibration	7
5.2 Calibration Parameters (Params Tab)	9
5.3 Calibrate Tab	10
5.3.1 Fields	10
5.3.2 Performing a Two-Point Calibration	11
5.4 Alarms Tab	12
5.5 Setup Tab	13
5.5.1 Filter Channels	13
5.5.2 Aperture Position and Auto-Balance	14
5.5.3 Signal Level Display	14
6. Sensor — Diagnostics	14
6.1 General Tab	14
6.2 Filters Tab	16
7. Sensor — General	16
7.1 General Tab	17
7.1.1 Hold Mode	17
7.1.2 Restore Factory Defaults	18
7.2 Settings Tab	18
8. Sensor — Temperature	18
9. Sensor — Measurements	20
9.1 Selecting a Measurement	20
9.2 Measurement Fields	20
9.3 Filter Status Values	21
10. HMI — Inputs-Outputs	21
10.1 Outputs	22
10.2 Inputs	22
11. HMI — Analogue Outputs	22
11.1 General Tab	23
11.2 Calibrate Tab	24
12. HMI — General	24

12.1 General Tab.....	25
12.2 Settings Tab	26
13. HMI — Fieldbus.....	26
14. HMI — Sampler.....	28
14.1 Sampler Cycle.....	28
14.2 Sampler Fields	28
14.3 Enabling the Sampler	29
15. Users	29
Revision History	29
16. Approval	29

1. Introduction

This guide covers the operation of the Human Machine Interface (HMI) for the QN-100 NIR Moisture Sensor. It is intended for operators who use the HMI on a day-to-day basis to monitor moisture readings, select products, and navigate the system menus.

The QN-100 uses Near Infrared (NIR) technology to provide continuous, real-time moisture measurement. The HMI displays live readings, trend data, and system status, and provides access to configuration menus for authorised users.

2. Main Screen

The Main Screen is displayed when the HMI is running normally. It provides a live view of moisture readings and a rolling trend chart.

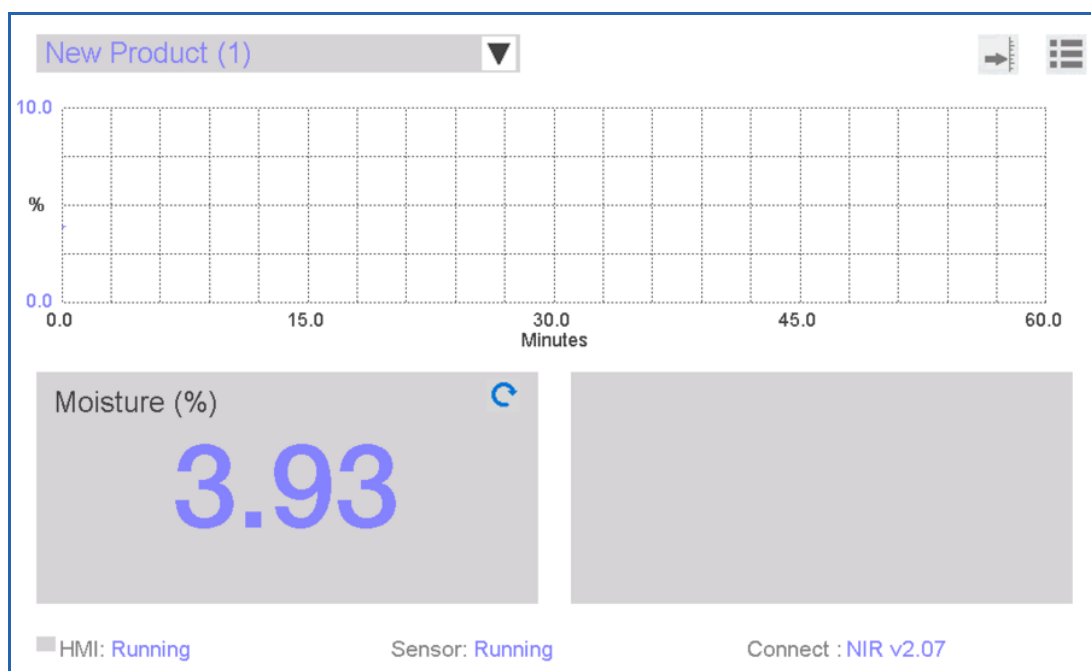


Figure 1 — Main Screen

2.1 Product Selector

The dropdown at the top left of the screen shows the currently active product (e.g. "New Product (1)"). Tap the dropdown arrow to select a different product from the list. Each product may have its own calibration and measurement settings.

2.2 Trend Chart

The trend chart occupies the upper portion of the screen and displays moisture readings (%) over the last 60 minutes. The vertical axis shows the moisture range and the horizontal axis shows time in minutes.

The chart updates automatically in real time as new readings are taken.

2.3 Measurement Display

The lower section of the screen contains one or two large readout panels:

- **Moisture (%)** — displays the current live moisture reading as a large numeric value.
- **Second Constituent (if available)** — the right-hand panel displays a second measurement channel when a second constituent is configured for the active product. If not configured, this panel will be blank.

2.4 Status Bar

The status bar along the bottom of the screen shows the current operational status of the system:

Field	Description
HMI	Status of the HMI application (e.g. Running).
Sensor	Status of the NIR sensor (e.g. Running).
Connect	Firmware version of the connected sensor (e.g. NIR v2.07).

Note: A green indicator next to the HMI status label confirms the system is operating normally.

2.5 Navigation Buttons

Two icon buttons are located in the top right corner of the Main Screen:

- **Menu button (grid icon)** — opens the System menu for access to configuration options.
- **Adjust button (arrow icon)** — allows the operator to quickly apply a zero offset to the moisture reading. This is useful for making a fast on-the-spot correction without entering the System menu. This button can be locked out via the HMI General Settings to prevent accidental adjustment.

3. Accessing the System Menu

Tapping the menu button (grid icon, top right corner of the Main Screen) will prompt you to enter a password before the System menu is displayed.

3.1 Password Entry

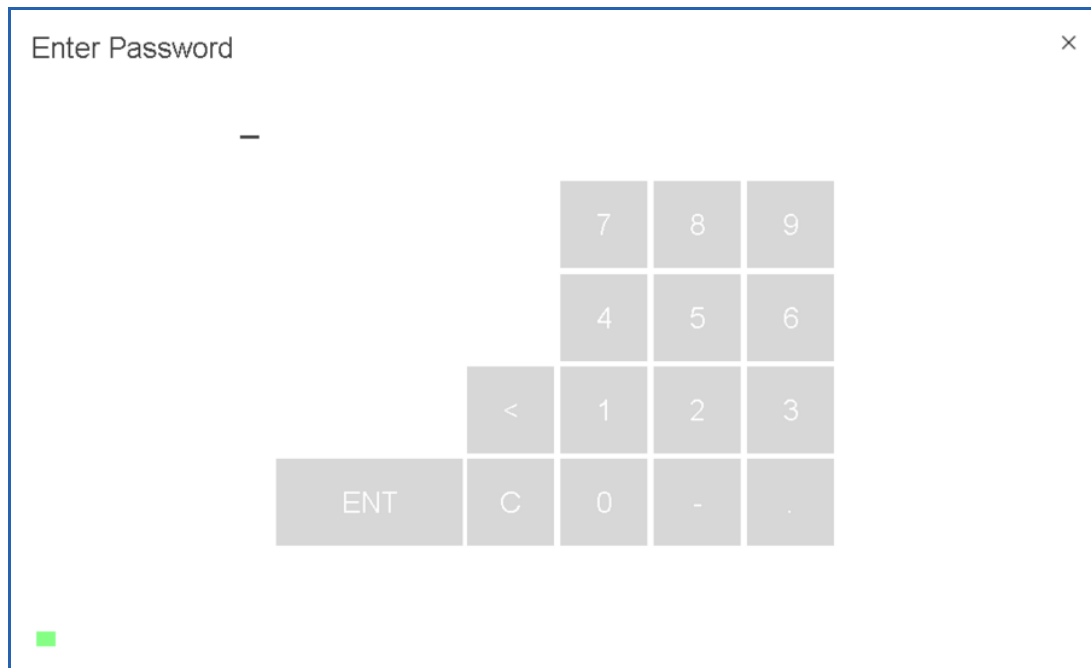


Figure 2 — Password Entry Screen

The Enter Password screen presents a numeric keypad. Use the keypad to enter your password, then confirm with the ENT key.

- Tap the number keys (0–9) to enter each digit of your password.
- Tap ◀ (backspace) to delete the last digit entered.
- Tap C to clear the entire entry and start again.
- Tap ENT to confirm and submit the password.
- Tap the X button in the top right corner to cancel and return to the Main Screen.

Note: The password entry field at the top of the screen displays a dash (—) while entry is in progress. Contact your system administrator if you do not know your password.

4. System Menu

After a correct password is entered, the System menu is displayed. This menu provides access to three areas of the system.

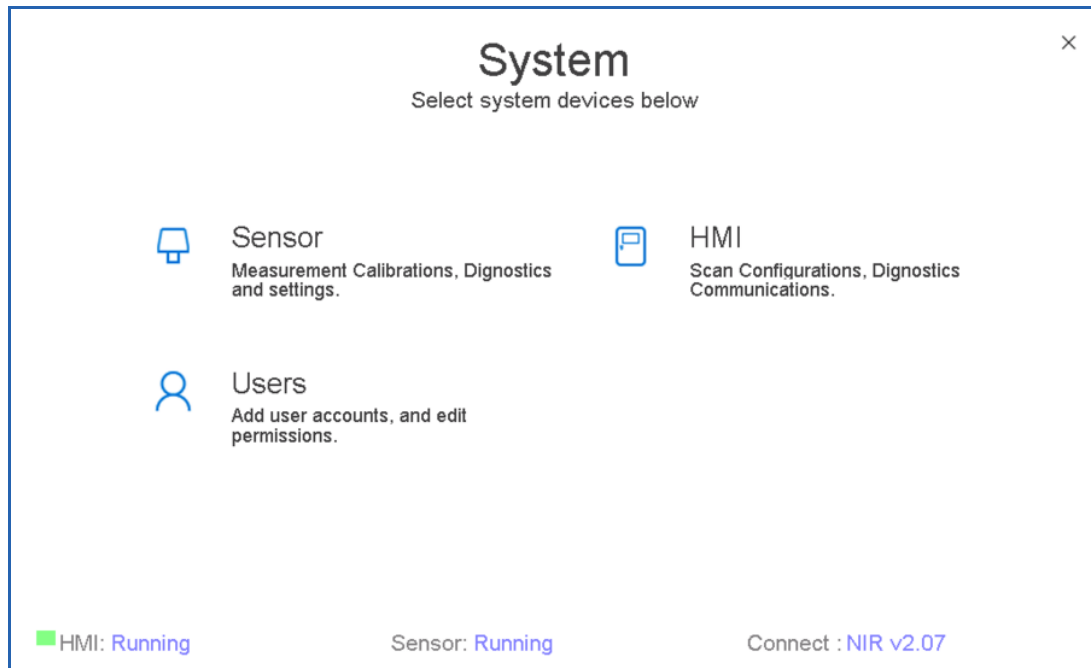


Figure 3 — System Menu

4.1 Sensor

The Sensor section provides access to measurement calibrations, diagnostics, and sensor settings. This area is typically used by qualified technicians or system administrators.

4.2 HMI

The HMI section provides access to scan configurations, diagnostics, and communications settings for the HMI itself.

4.3 Users

The Users section allows authorised administrators to add user accounts and manage access permissions. This feature is not currently implemented.

Note: Tap the X button in the top right corner of the System menu to close the menu and return to the Main Screen.

5. Sensor — Calibration

Tapping Sensor in the System menu opens the Sensor section. The left-hand panel provides navigation to the following areas: Calibration, Diagnostics, General, Temperature, and Measurements.

The Calibration screen allows authorised users to view and edit the calibration parameters for each product. Tap Calibration in the left-hand panel to open this screen.

5.1 Selecting a Calibration

The dropdown at the top of the Calibration screen shows the currently loaded calibration. Tap the dropdown arrow to expand the product list and select a different calibration.

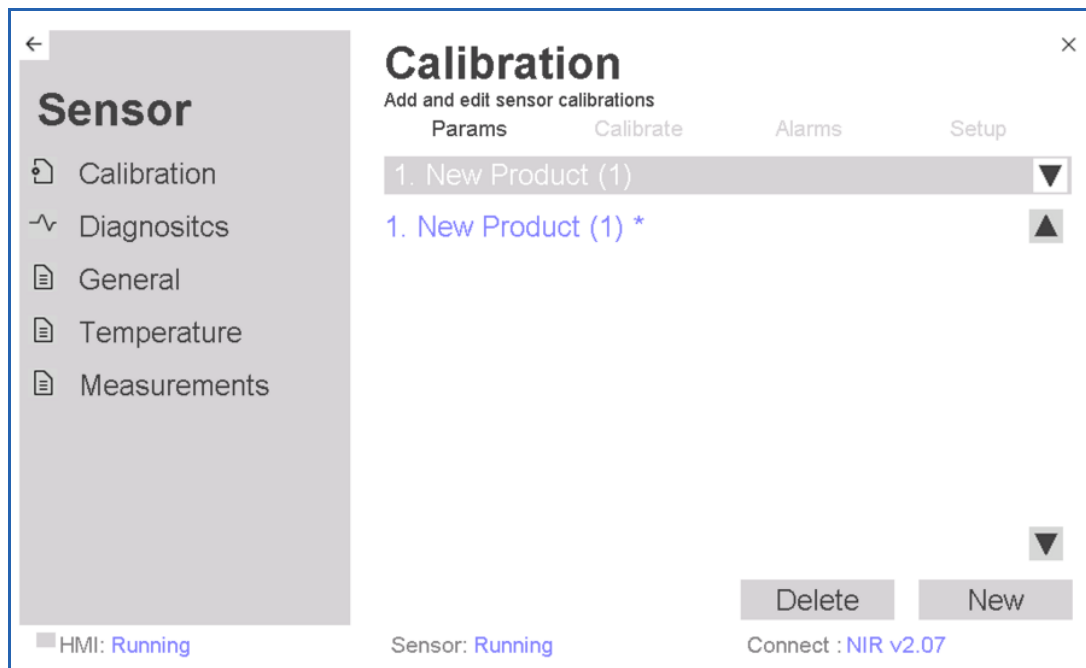


Figure 4 — Calibration Product List (single product)

Each entry in the list represents a saved product calibration. The item marked with an asterisk (*) is the currently active calibration — the one the sensor is using for live measurements. Items displayed in blue are selectable; tap a blue entry to load it. Items displayed in black are already selected and cannot be re-selected.

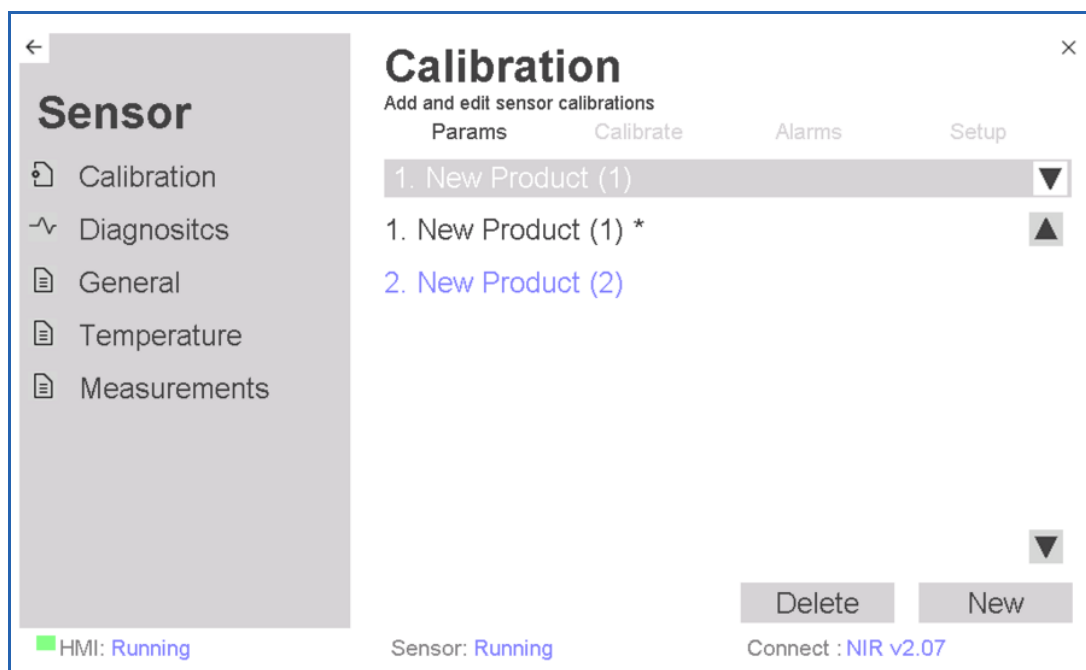


Figure 5 — Calibration Product List (multiple products)

When multiple calibrations have been created, all available products are shown in the list. Tap the desired product to load it into the Calibration screen.

- **New** — tap to create a new product calibration entry.

- **Delete** — tap to delete the currently selected calibration. Use with caution; this action cannot be undone.

5.2 Calibration Parameters (Params Tab)

Once a calibration is selected, the Params tab displays its configuration. The Params tab is the default view when opening the Calibration screen.

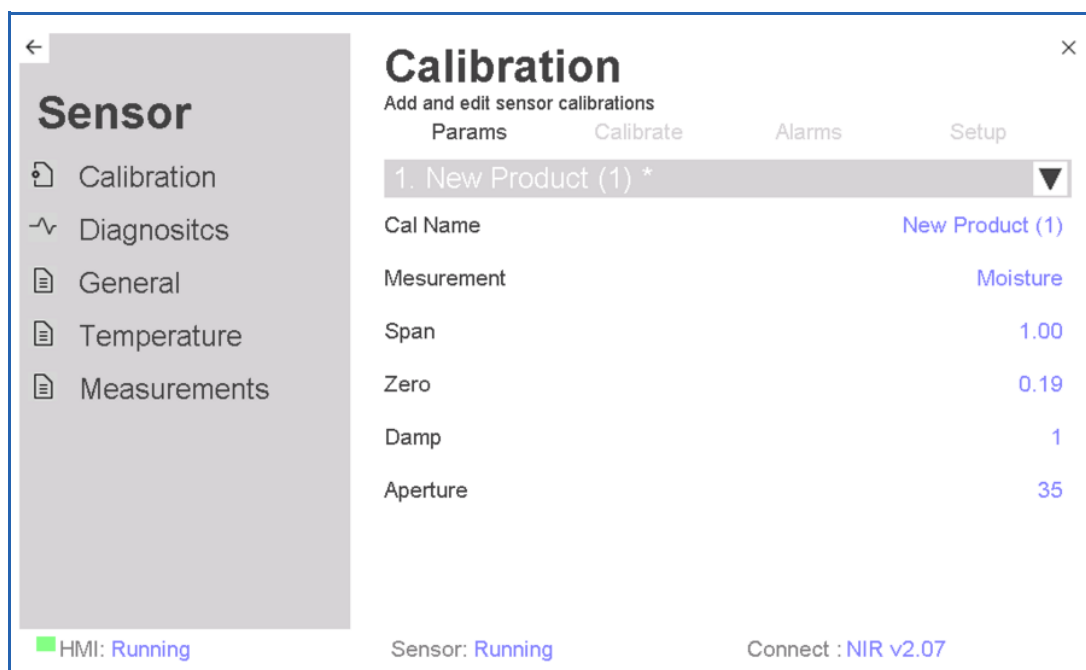


Figure 6 — Calibration Params Tab

The following parameters are shown:

Field	Description
Cal Name	The name assigned to this calibration (e.g. New Product (1)).
Measurement	The constituent being measured (e.g. Moisture).
Span	Span correction factor applied to the measurement output.
Zero	Zero offset applied to the measurement output.
Damp	Damping factor that smooths the measurement response over time. A higher value produces a more stable but slower-responding reading.
Aperture	The aperture setting used by the sensor for this calibration.

Note: Parameters shown in blue are editable. Tap a value to modify it. Contact your system administrator before making changes to calibration parameters, as incorrect values will affect measurement accuracy.

Additional tabs are available across the top of the Calibration screen:

- **Calibrate** — used to perform a calibration procedure against reference samples.
- **Alarms** — configure alarm thresholds for this product.
- **Setup** — additional setup options for the calibration.

5.3 Calibrate Tab

The Calibrate tab is used to perform a two-point calibration against known laboratory reference samples. This adjusts the Span and Zero values so that the sensor output matches the true moisture content of the measured product.

A two-point calibration requires two reference samples with different moisture levels — a Low reference and a High reference. Both samples must be measured by the sensor and have a known lab-verified moisture value.

Figure 7 — Calibrate Tab (before Calculate)

5.3.1 Fields

The Calibrate tab displays the following fields:

Field	Description
Measurement	The constituent being calibrated (e.g. Moisture). Shown in blue as an editable field.
Reading	The current live reading from the sensor.
Span	The current Span value for this calibration. Updated automatically after a successful Calculate.
Zero	The current Zero value for this calibration. Updated automatically after a successful Calculate.
Lab Reading — Low	The known moisture value (from laboratory analysis) of the Low reference sample. Enter this value manually.
Lab Reading — High	The known moisture value (from laboratory analysis) of the High reference sample. Enter this value manually.
Measured Reading — Low	The moisture value currently being measured by the sensor for the Low reference sample.

Measured Reading — High	The moisture value currently being measured by the sensor for the High reference sample.
-------------------------	--

5.3.2 Performing a Two-Point Calibration

Follow these steps to perform a calibration:

1. Present the Low reference sample to the sensor and allow the reading to stabilise.
2. Tap the Lab Reading – Low field and enter the known moisture value for the Low sample as determined by laboratory analysis.
3. The Measured Reading – Low value will update to reflect the sensor output for that sample.
4. Repeat steps 1–3 for the High reference sample, entering its known moisture value in the Lab Reading – High field.
5. Tap Calculate. The system will compute new Span and Zero values based on the entered lab and measured readings.
6. Review the updated Span and Zero values. If the results are acceptable, tap Save to apply the new calibration.

Figure 8 — Calibrate Tab (after Calculate, Save active)

Once Calculate has been performed successfully, the Save button becomes active. Tapping Save writes the new Span and Zero values to the calibration and returns the sensor to normal operation with the updated settings.

- **Cancel** — discards any entered values and returns to the previous state without making changes.
- **Calculate** — computes new Span and Zero values from the entered Lab and Measured readings.
- **Save** — saves the calculated Span and Zero values to the active calibration. Only available after a successful Calculate.

Note: Always verify the sensor readings are stable before recording Measured Reading values. Unstable readings will result in an inaccurate calibration.

5.4 Alarms Tab

The Alarms tab is used to configure the target, range, warning, and alarm thresholds for the selected calibration. These values are used by the PC software to control the colour of the trend line displayed on screen, giving operators an at-a-glance indication of whether the process is within acceptable limits.

The screenshot shows the 'Calibration' window with the 'Alarms' tab selected. On the left is a 'Sensor' sidebar with options: Calibration, Diagnostics, General, Temperature, and Measurements. The main area is titled 'Calibration' with a subtitle 'Edit sensor calibration alarms.' and tabs for 'Params', 'Calibrate', 'Alarms', and 'Setup'. A dropdown menu shows '1. New Product (1) *'. Below this, the 'Measurement' is set to 'Moisture'. The 'Target' is 5.00. The 'Range' is set with 'Low' at 0.00 and 'High' at 10.00. The 'Alarm' thresholds are 2.00 (Low) and 8.00 (High). The 'Warning' thresholds are 4.00 (Low) and 6.00 (High). At the bottom, status indicators show 'HMI: Running', 'Sensor: Running', and 'Connect : NIR v2.07'.

Figure 9 — Calibration Alarms Tab

The trend line colour changes according to the following thresholds:

Trend Line Colour / Status	Condition
Green — On Target	Reading is within the Warning thresholds (between Warning Low and Warning High).
Yellow — Warning	Reading has moved outside the Warning thresholds but remains within the Alarm thresholds.
Red — Alarm	Reading has exceeded the Alarm thresholds (below Alarm Low or above Alarm High).

The fields on the Alarms tab are:

Field	Description
Measurement	The constituent these alarm thresholds apply to (e.g. Moisture).
Target	The ideal moisture value for this product. Used as a reference point for process control.
Range — Low / High	The minimum and maximum values displayed on the trend chart axis in the PC software.
Alarm — Low / High	Thresholds at which the trend line turns red. A reading below Alarm Low or above Alarm High indicates the process is out of acceptable limits.

Warning — Low / High	Thresholds at which the trend line turns yellow. Warning limits sit closer to the Target than Alarm limits, providing an early indication that the process is drifting.
----------------------	---

Note: All values shown in blue are editable. Tap a value to modify it. Warning thresholds should be set inside (closer to Target than) the Alarm thresholds to ensure the colour progression from green to yellow to red works correctly.

5.5 Setup Tab

The Setup tab is used to automatically balance the optics of the NIR sensor.

When a range of products to be measured have significantly different reflective characteristics, the sensor needs to be rebalanced. Each calibration has a setting for the optical balance (effectively an aperture position).

SET triggers an automatic balancing routine that adjusts the aperture position. The routine aims to bring the highest filter signal to 2.0V, ensuring the sensor is correctly set up for accurate measurement.

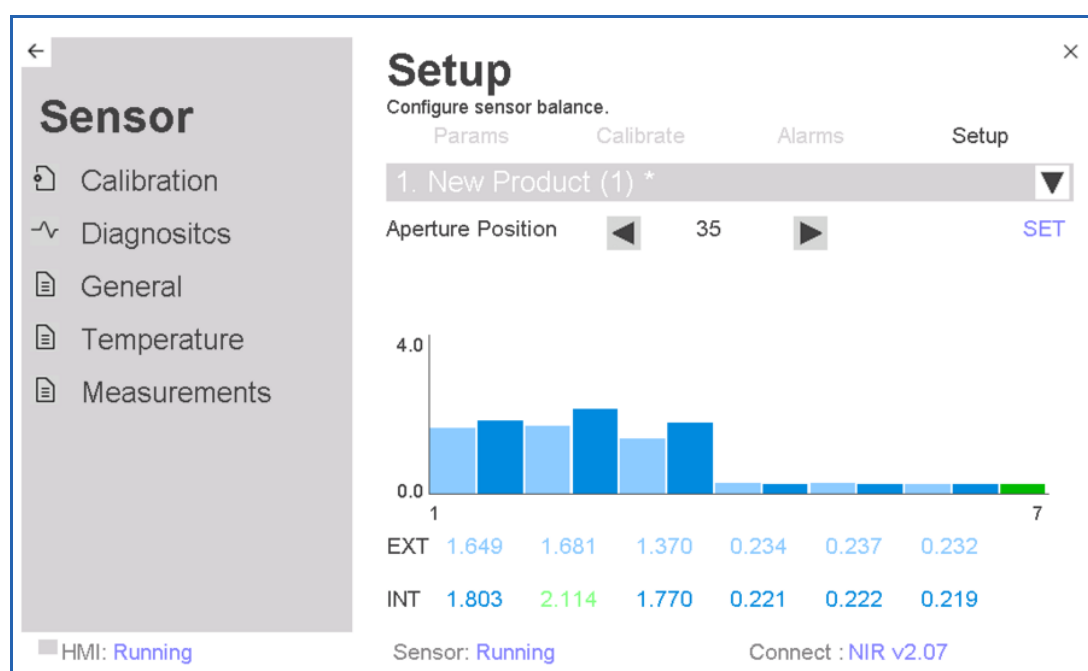


Figure 10 — Calibration Setup Tab

5.5.1 Filter Channels

This sensor is fitted with three NIR filters, configured for low moisture measurement. Each filter operates at a specific wavelength:

Channel	Purpose
1	Reference filter
2	Measurement filter — this wavelength is strongly absorbed by moisture and is used as the primary measurement channel.
3	Reference filter

Channels 4–7 shown in the bar chart are not populated in this sensor configuration and will display near-zero signal levels.

5.5.2 Aperture Position and Auto-Balance

The Aperture Position value shown on screen indicates the current mechanical aperture setting, which controls the amount of internal reference light reaching the detector. The left and right arrow buttons allow the current value to be viewed, but the primary method of setting the aperture is via the automatic balancing routine.

Tapping SET initiates the auto-balance routine. The sensor will automatically:

- Adjust the aperture position to control the internal light level.
- Apply autogain to increase or decrease the filter signal levels as required.
- Target a peak filter signal of 2.0V on the highest channel.

Note: The SET button should only be used by a qualified technician. Running the auto-balance routine will alter the aperture and gain settings of the sensor. Always verify the sensor readings are stable and correct after performing a balance.

5.5.3 Signal Level Display

The bar chart and numerical readouts show the current signal levels for each filter channel across two rows:

- **EXT** — the external signal level detected by each filter channel when measuring the product or background.
- **INT** — the internal reference signal level for each filter channel.

The channel with the highest INT signal is highlighted in green. After a successful auto-balance, this value should be at or close to 2.0V. For this sensor the highest signal will typically be on channel 2 (1.94 μm , the measurement filter).

6. Sensor — Diagnostics

The Diagnostics screen provides a real-time view of the sensor's key operational parameters. It is used to verify that the sensor is functioning correctly and to assist with fault finding. Tap Diagnostics in the left-hand Sensor menu to open this screen.

6.1 General Tab

The General tab displays the core diagnostic parameters for the sensor.

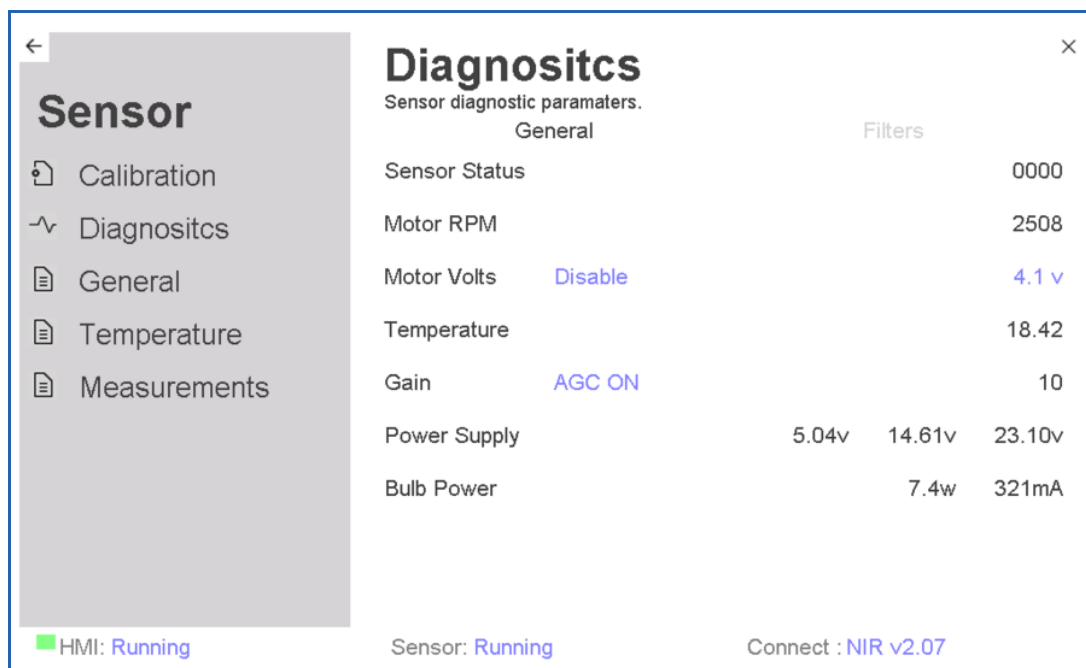


Figure 11 — Sensor Diagnostics, General Tab

Field	Description
Sensor Status	A four-digit status code indicating the current health of the sensor. A value of 0000 indicates normal operation with no faults detected.
Motor RPM	The rotational speed of the internal filter wheel motor. This should remain stable during normal operation.
Motor Volts	The voltage supplied to the filter wheel motor, shown in blue. The Disable button alongside this field stops the filter wheel motor. Tap Disable to halt the motor — this is used for maintenance or diagnostic purposes only.
Temperature	The internal temperature of the sensor in degrees Celsius.
Gain	The current detector gain value. When AGC ON is displayed in blue, Automatic Gain Control is active and the sensor is adjusting gain automatically. Tap AGC ON to toggle Automatic Gain Control off; the label will change accordingly. Manual gain control should only be used by a qualified technician.
Power Supply	The three internal power supply rail voltages: 5V, 15V, and 24V nominal. These are displayed as live readings and should remain close to their nominal values during normal operation.
Bulb Power	The power consumption and current draw of the internal NIR light source, displayed in watts and milliamps.

Note: This screen is read-only except for the Motor Volts Disable button and the AGC toggle. Both controls should only be operated by a qualified technician. Do not disable the motor or turn off AGC during normal measurement operation.

6.2 Filters Tab

The Filters tab provides a read-only view of the individual filter channel signal levels. No adjustments can be made from this screen; it is intended for monitoring and diagnostic purposes only.

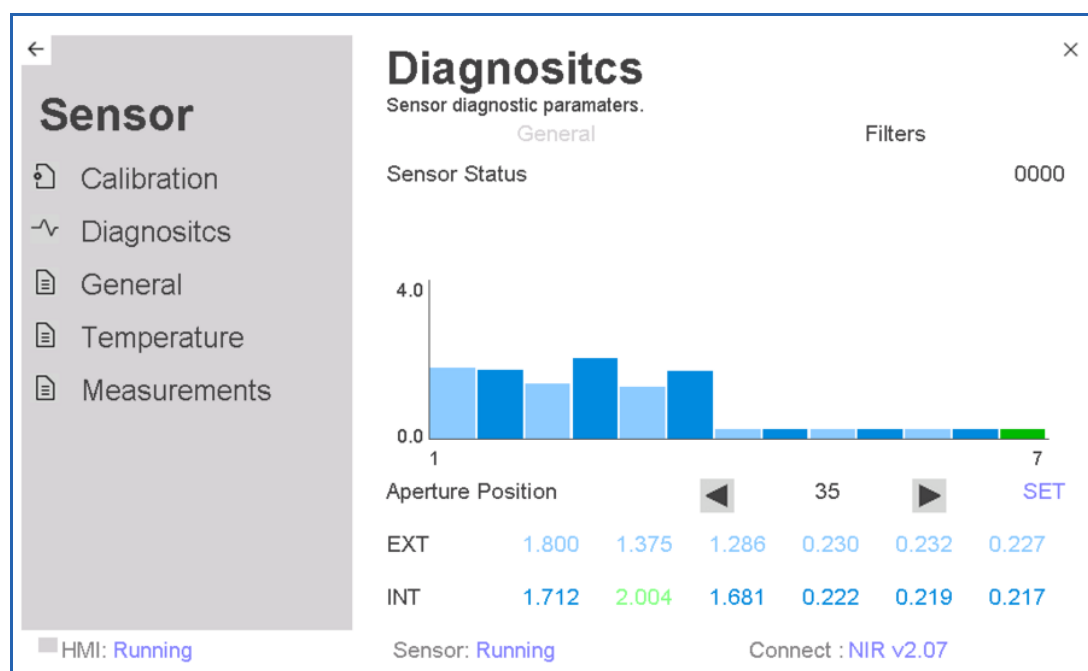


Figure 12 — Sensor Diagnostics, Filters Tab

The Filters tab displays the following information:

Field	Description
Sensor Status	The current sensor health code, also shown on the General tab. A value of 0000 indicates normal operation.
Bar Chart	A visual representation of the current signal levels across all seven filter channels. Channels 1–3 correspond to the three installed NIR filters; channels 4–7 are unpopulated and will show near-zero levels.
Aperture Position	Displays the current aperture position value. The arrow buttons and SET control are visible but cannot be operated from this tab — adjustments are made via the Setup tab in the Calibration screen.
EXT	The external signal level for each filter channel, measured in volts.
INT	The internal reference signal level for each filter channel, measured in volts. The highest value is highlighted in green. After a successful auto-balance this should be at or close to 2.0V.

Note: The EXT and INT values on this screen update in real time and can be used to monitor the optical stability of the sensor during operation. If signal levels appear unusually low or erratic, contact your system administrator.

7. Sensor — General

The General screen displays identification and configuration information for the sensor. Tap General in the left-hand Sensor menu to open this screen.

7.1 General Tab



Figure 13 — Sensor General Tab

Field	Description
Firmware Version	The version of firmware currently installed on the sensor (e.g. NIR v2.07). This is a read-only field.
Hardware	The hardware revision code for the sensor PCB (e.g. 1011-001-00). This is a read-only field.
Serial No	The unique serial number of the sensor. This is a read-only field.
Identifier	A user-assignable name or label for the sensor (e.g. QN 100 1). Shown in blue as an editable field. Tap to modify.
Hold Mode	Determines the behaviour of the measurement output when no product is detected. Shown in blue as an editable field. See Section 7.1.1 for details.

7.1.1 Hold Mode

Hold Mode is used in applications where a product loss sensor is fitted to detect when there is no product present in front of the NIR sensor. When the product loss sensor signals that the measurement path is empty, the HMI will respond according to the selected Hold Mode setting.

Field	Description
Disabled	Hold Mode is inactive. The sensor outputs its live reading at all times, regardless of whether product is present.
Freeze	When no product is detected, the measurement output is frozen at the last valid reading until product is present again.

Zero	When no product is detected, the measurement output is set to zero until product is present again.
------	--

Note: Tap the Hold Mode field to cycle through the available options. The appropriate setting will depend on how the downstream system or PC software uses the measurement output. Contact your system administrator if you are unsure which Hold Mode to use.

7.1.2 Restore Factory Defaults

The Restore Factory Defaults button is located at the bottom of the General tab. Tapping this button will erase the entire sensor memory and reset all settings — including calibrations, configurations, and user data — back to the factory default state.

⚠ WARNING

This action is irreversible. All calibrations and sensor settings will be permanently lost. Restore Factory Defaults should only be used as a last resort under the guidance of a qualified technician or Absorption Systems support. Do not tap this button during normal operation.

7.2 Settings Tab

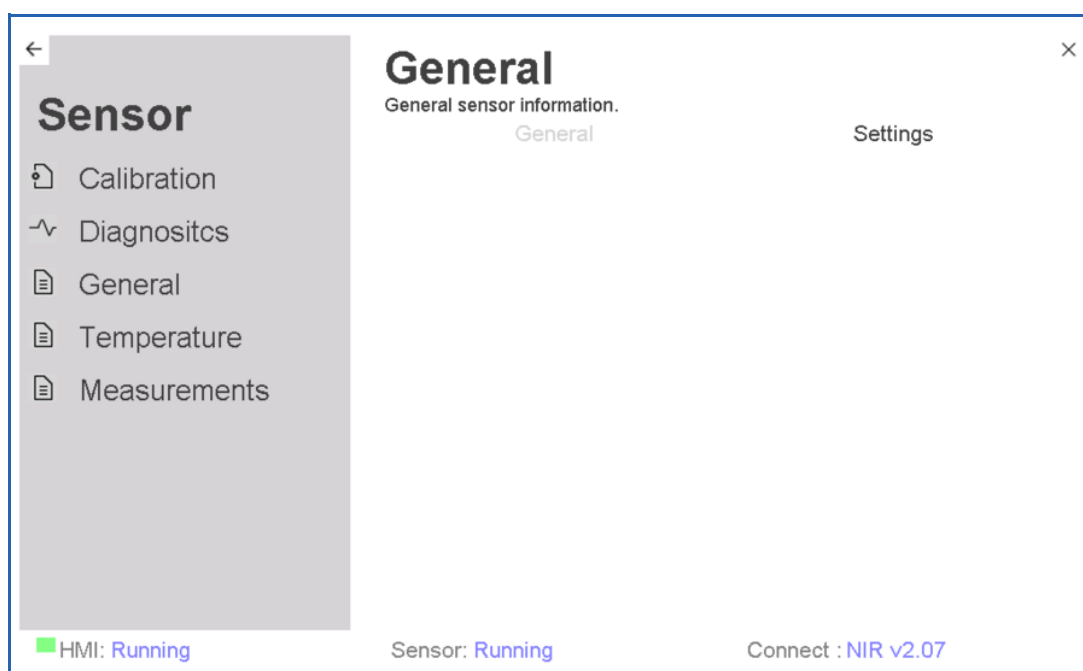


Figure 14 — Sensor General, Settings Tab

The Settings tab is currently reserved for future use and contains no configurable options at this time.

8. Sensor — Temperature

The Temperature screen is used to configure an optional NIR Temperature Sensor that can be fitted to the QN-100. When enabled, the temperature reading is displayed as the second constituent readout on the Main Screen. Tap Temperature in the left-hand Sensor menu to open this screen.

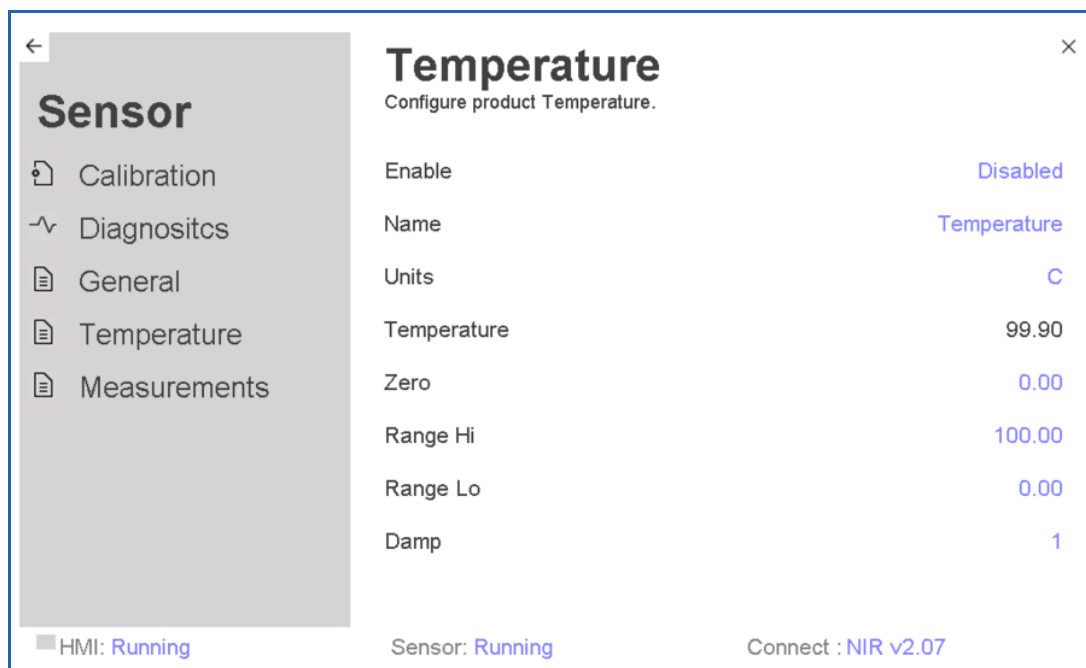


Figure 15 — Sensor Temperature Screen

Field	Description
Enable	Enables or disables the temperature measurement feature. When set to Disabled, no temperature reading is displayed on the Main Screen. Tap to toggle between Enabled and Disabled.
Name	The display name for the temperature measurement (e.g. Temperature). This label will appear on the second readout panel on the Main Screen when enabled.
Units	The unit of measurement for the temperature reading (e.g. C for Celsius). Tap to change.
Temperature	The current live temperature reading from the NIR Temperature Sensor. This field is read-only. If no temperature sensor is fitted, this value will display an invalid reading (e.g. 99.90) and Enable should remain set to Disabled.
Zero	A zero offset applied to the temperature reading to correct for any offset error.
Range Hi	The upper limit of the expected temperature range. Used for scaling and display purposes.
Range Lo	The lower limit of the expected temperature range. Used for scaling and display purposes.
Damp	A damping factor applied to the temperature reading to smooth the output. A higher value produces a more stable but slower-responding reading.

Note: The Temperature feature requires an optional NIR Temperature Sensor to be fitted to the QN-100. If no temperature sensor is installed, Enable must remain set to Disabled. Enabling temperature measurement without a sensor fitted will result in an invalid reading being displayed on the Main Screen.

9. Sensor — Measurements

The Measurements screen is used to configure the measurement channels output by the sensor. Up to three measurements can be enabled simultaneously, including Moisture and up to two additional constituents. When a second or third measurement is enabled, it will appear in the second readout panel on the Main Screen.

Access to the Measurements menu requires a specialist password. At the Enter Password screen, enter 4095 and tap ENT. Then navigate to Sensor → Measurements.

Note: The Measurements menu should only be configured by a qualified technician. Incorrect settings may affect the sensor output and any connected systems.

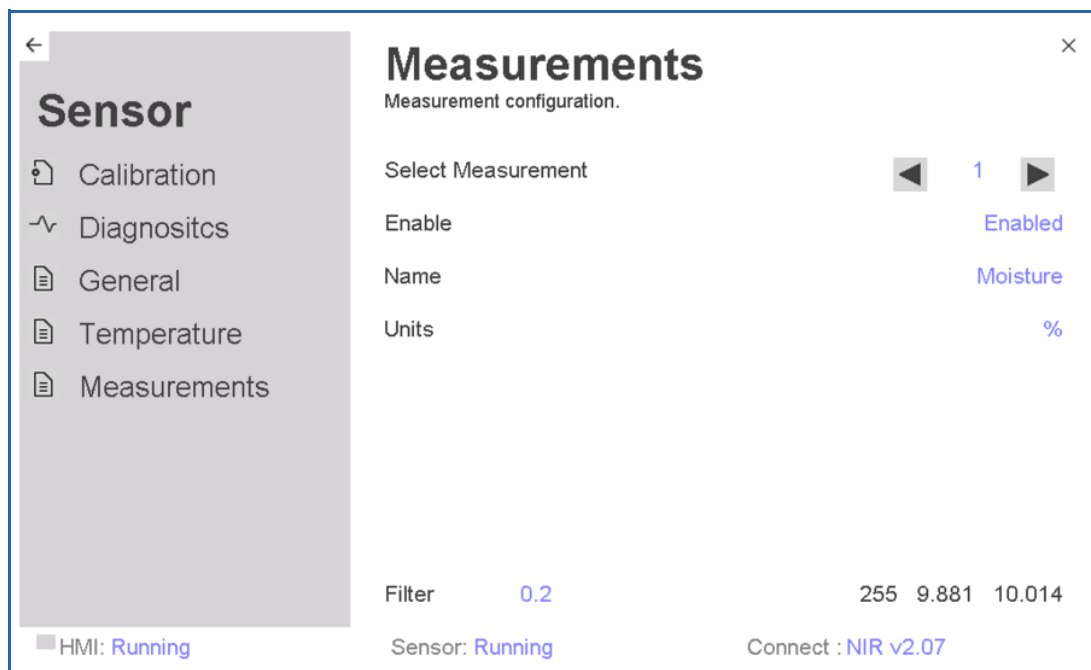


Figure 16 — Sensor Measurements Screen

9.1 Selecting a Measurement

Use the left (◀) and right (▶) arrow buttons next to Select Measurement to navigate between the available measurement slots (1, 2, and 3). The fields below update to show the configuration for the currently selected measurement slot.

The available measurement types are:

- **Moisture** — the primary measurement, typically configured on slot 1.
- **Oil** — measures oil content.
- **Coatweight** — measures the coating weight of the product.
- **Basis Weight** — measures the basis weight of the product.

9.2 Measurement Fields

Field	Description
Select Measurement	The currently selected measurement slot (1, 2, or 3). Use the arrow buttons to navigate between slots.

Enable	Enables or disables this measurement slot. When Enabled, the measurement will be active and its reading included in the sensor output. Tap to toggle.
Name	The display name for this measurement (e.g. Moisture). This label appears on the readout panel on the Main Screen.
Units	The unit of measurement for this channel (e.g. %).
Filter	A deadband filter value that helps stabilise the reading in noisy applications. The default value is 0.2. Increasing this value reduces noise-induced fluctuations in the output at the cost of some response speed.

9.3 Filter Status Values

To the right of the Filter field, three read-only values are displayed. These indicate the current state of the filter algorithm:

- The first value indicates the filter health. An ideal value is 255. If this value resets to zero, the filter deadband setting is too low for the level of noise present and should be increased.
- The second and third values show the current filtered measurement outputs used internally by the sensor.

Note: If the first filter status value is frequently resetting to zero, increase the Filter deadband value incrementally until the value stabilises at 255. Contact your system administrator if the issue persists.

10. HMI — Inputs-Outputs

Tapping HMI in the System menu opens the HMI section. The left-hand panel provides navigation to the following areas: Inputs-Outputs, Analogues, General, Fieldbus, and Sampler.

The Inputs-Outputs screen is used to configure the digital inputs and outputs of the HMI. The QN-100 supports up to three digital outputs and four digital inputs.

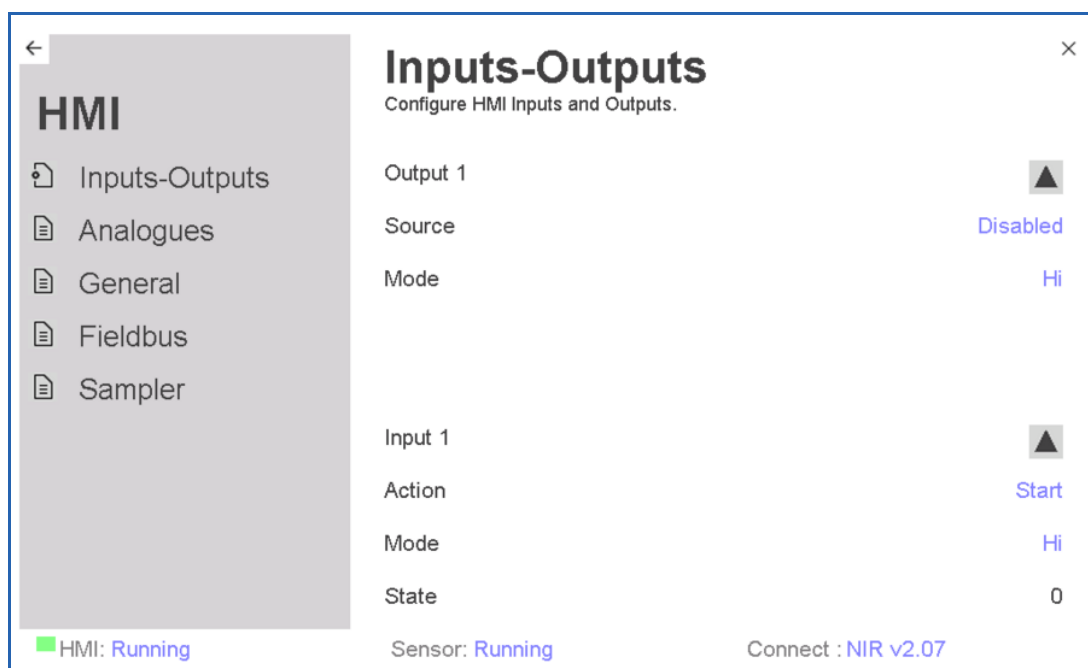


Figure 17 — HMI Inputs-Outputs Screen

10.1 Outputs

Three digital outputs (Output 1, Output 2, Output 3) are available. Use the ▲ button next to the Output heading to scroll between them. Each output has the following fields:

Field	Description
Source	The measurement channel that drives this output. Options include Disabled or an active measurement constituent such as Moisture. When set to Disabled, the output is inactive.
Mode	The logic level at which the output activates. Hi means the output switches high when the condition is met; Lo means the output switches low.

10.2 Inputs

Four digital inputs (Input 1, Input 2, Input 3, Input 4) are available. Use the ▲ button next to the Input heading to scroll between them. Each input has the following fields:

Field	Description
Action	The action triggered when this input is activated. For the QN-100 this is set to Start, which starts the measurement process when the input signal is received.
Mode	The logic level that triggers the input action. Hi means the input is triggered on a high signal; Lo means it is triggered on a low signal.
State	The current live state of the input (0 = inactive, 1 = active). This is a read-only field and updates in real time.

Note: All Source, Action, and Mode fields shown in blue are editable. Tap a field to change its value. Input and output wiring configuration should be carried out by a qualified technician.

11. HMI — Analogue Outputs

The Analogue Outputs screen is used to configure and calibrate the analogue output channels of the HMI. Up to three analogue outputs are available. The label next to each output indicates whether a physical analogue output card has been detected by the HMI — for example, Analogue 1 (Detected) confirms that the card is fitted and active. Use the ▲ button to scroll between outputs.

11.1 General Tab

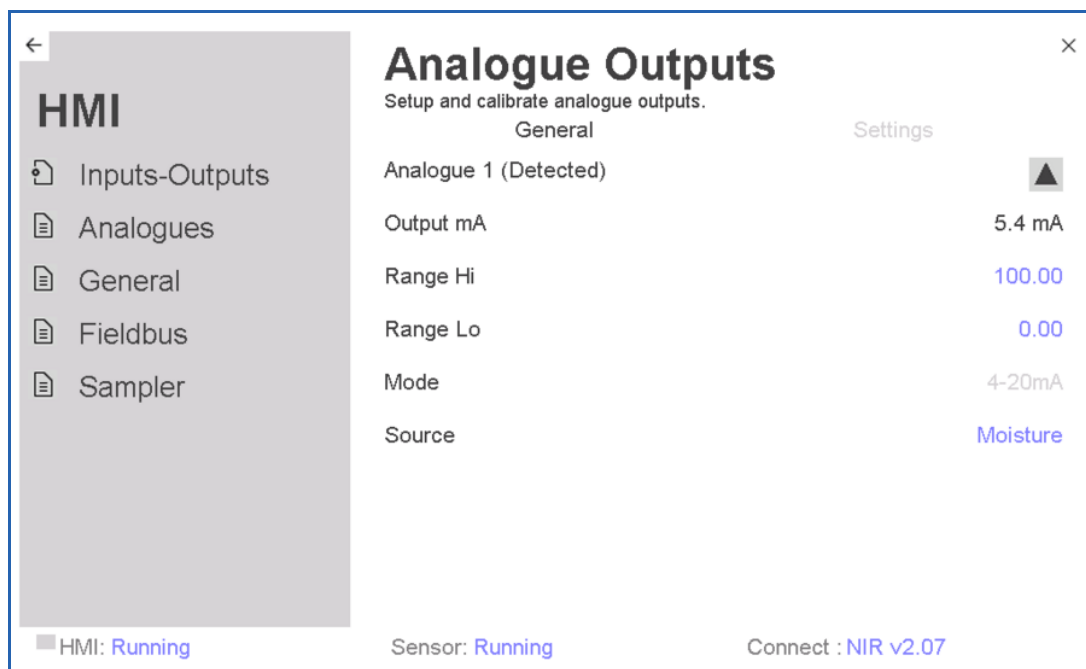


Figure 18 — Analogue Outputs, General Tab

Field	Description
Output mA	The current live output level of this analogue channel in milliamps. This is a read-only field.
Range Hi	The measurement value that corresponds to the maximum analogue output (20 mA). For example, a Range Hi of 100.00 means a moisture reading of 100% will produce a 20 mA output.
Range Lo	The measurement value that corresponds to the minimum analogue output (4 mA). For example, a Range Lo of 0.00 means a moisture reading of 0% will produce a 4 mA output.
Mode	The analogue output signal type. For the QN-100 this is 4-20 mA.
Source	The measurement channel driving this analogue output (e.g. Moisture). Tap to change to a different configured measurement constituent.

Note: Range Hi and Range Lo should be set to match the expected measurement range for the application. Setting these values correctly ensures the analogue output accurately represents the full measurement span across the 4–20 mA range.

11.2 Calibrate Tab

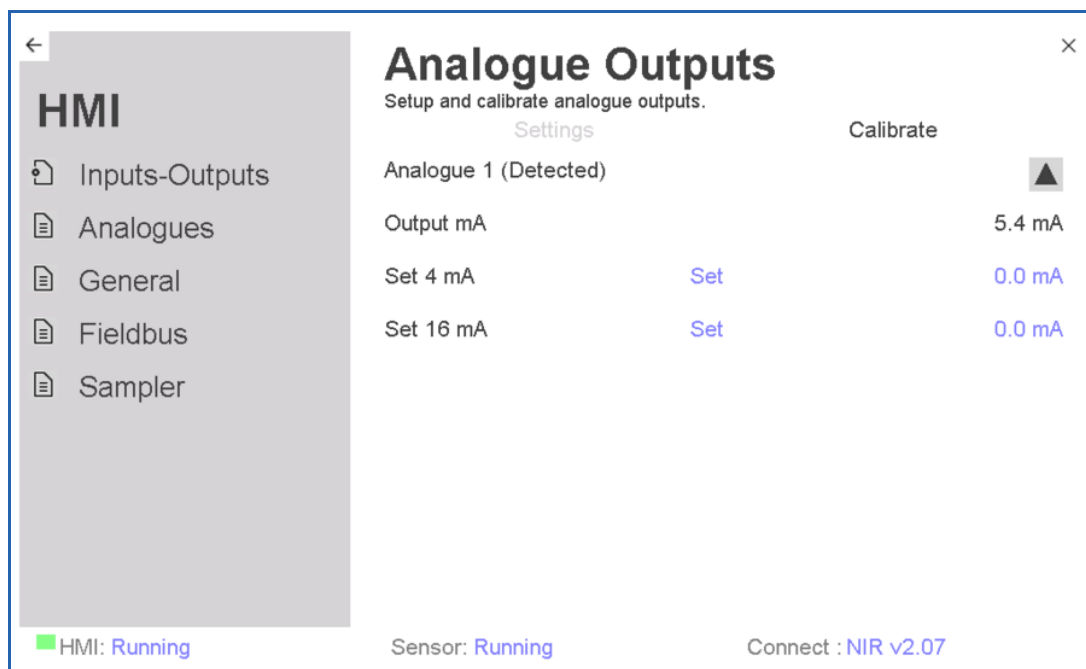


Figure 19 — Analogue Outputs, Calibrate Tab

The Calibrate tab allows the analogue output to be trimmed to compensate for any offset in the hardware, ensuring the output is accurate at both ends of the 4–20 mA range.

Field	Description
Output mA	The current live output level of this analogue channel in milliamps. This is a read-only field.
Set 4 mA	Used to trim the low end of the analogue output. Enter a trim offset value in the editable field, then tap Set to apply it. This adjusts the output so it reads accurately at 4 mA.
Set 16 mA	Used to trim the high end of the analogue output. Enter a trim offset value in the editable field, then tap Set to apply it. This adjusts the output so it reads accurately at 16 mA.

Note: Analogue output calibration should only be performed by a qualified technician using a calibrated current meter. Incorrect trim values will result in inaccurate analogue output readings.

12. HMI — General

The HMI General screen displays identification information for the HMI and provides access to a number of operational settings. Tap General in the left-hand HMI menu to open this screen.

12.1 General Tab

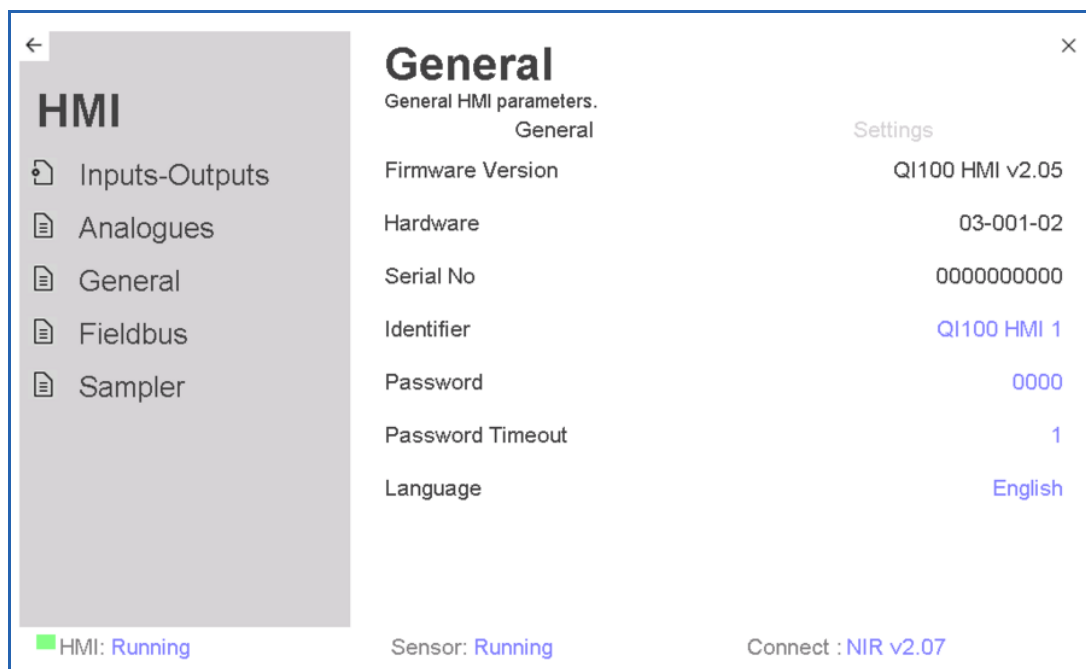


Figure 20 — HMI General Tab

Field	Description
Firmware Version	The version of firmware currently installed on the HMI (e.g. QI100 HMI v2.05). This is a read-only field.
Hardware	The hardware revision code for the HMI (e.g. 03-001-02). This is a read-only field.
Serial No	The unique serial number of the HMI. This is a read-only field.
Identifier	A user-assignable name or label for the HMI (e.g. QI100 HMI 1). Tap to modify.
Password	The numeric password required to access the System menu. Tap to change. The default password is 0000.
Password Timeout	The number of seconds before the System menu automatically locks and requires the password to be re-entered. Tap to modify.
Language	The display language for the HMI interface. Tap to change.

Note: Keep a record of any changes made to the Password. If the password is lost, contact Absorption Systems for assistance.

12.2 Settings Tab

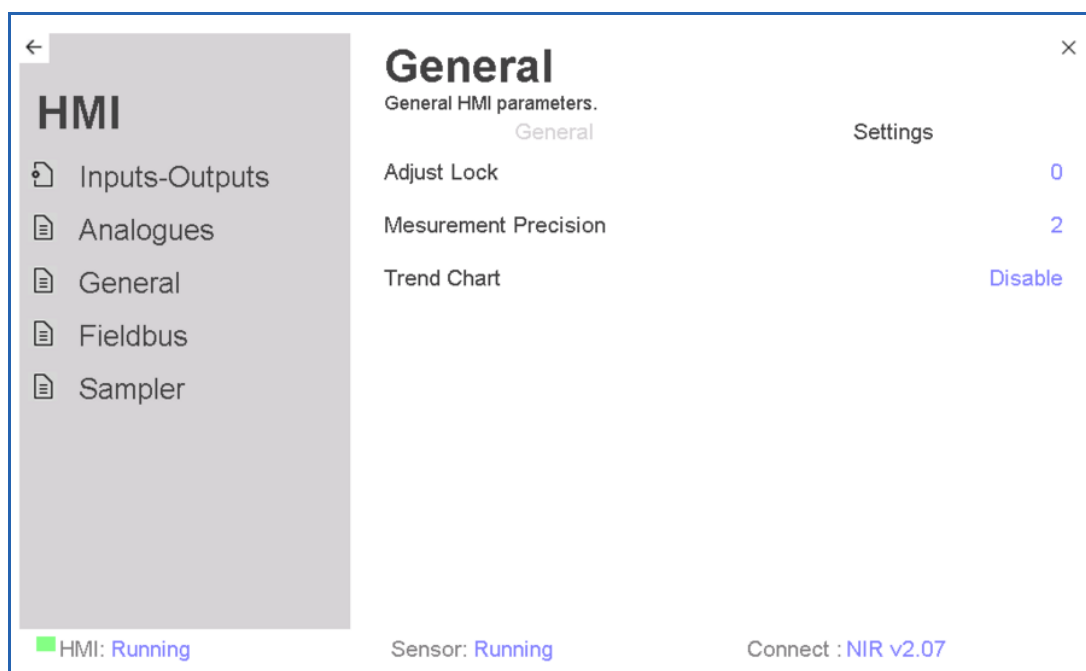


Figure 21 — HMI General, Settings Tab

Field	Description
Adjust Lock	Controls whether the zero offset adjustment button on the Main Screen is available to operators. When set to 0 the button is enabled, allowing operators to apply a manual zero offset to the measurement. Setting this to a non-zero value disables the button, preventing adjustments without system menu access.
Measurement Precision	The number of decimal places displayed on the measurement readout panels on the Main Screen (e.g. a value of 2 will display readings such as 3.93).
Trend Chart	Controls whether the rolling trend chart is displayed on the Main Screen. When set to Disable the chart is hidden, showing only the measurement readout panels.

13. HMI — Fieldbus

The Fieldbus screen is used to configure the network communication settings for the HMI. The QN-100 supports a range of industrial fieldbus protocols including Profinet, Profibus, EtherNet/IP, Modbus, and EtherCAT. The protocol fitted depends on the specification of the unit supplied. Tap Fieldbus in the left-hand HMI menu to open this screen.

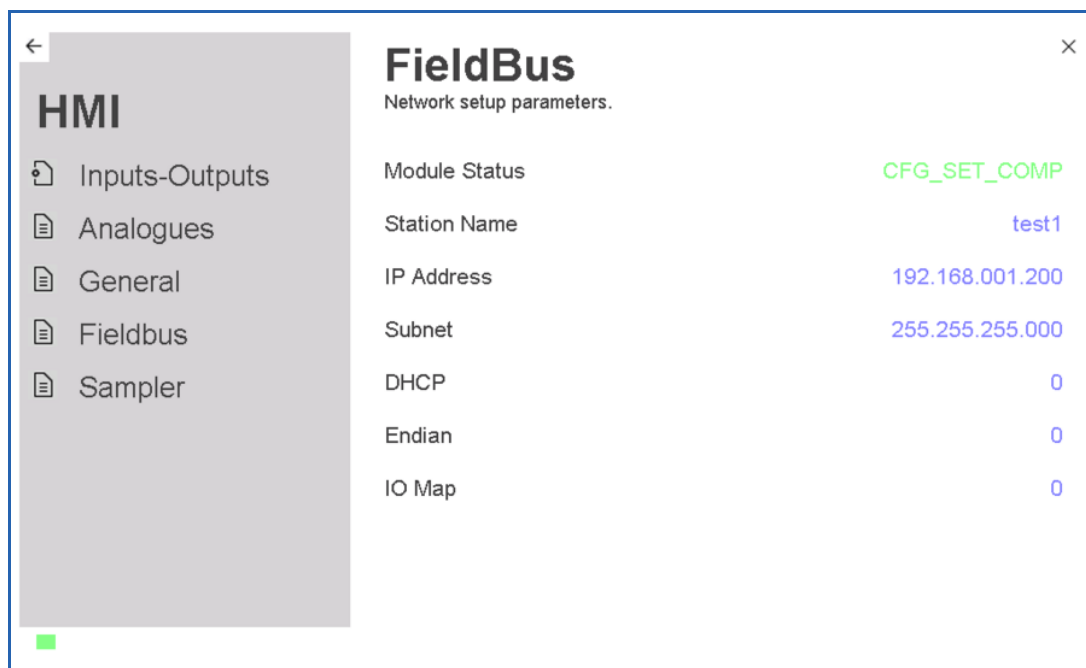


Figure 22 — HMI Fieldbus Screen

Field	Description
Module Status	Indicates the current status of the fieldbus module. CFG_SET_COMP (displayed in green) confirms that the fieldbus configuration has been applied successfully and the module is active and communicating.
Station Name	The network name assigned to this HMI on the fieldbus network (e.g. test1). This is used to identify the device on the network. Tap to modify.
IP Address	The static IP address assigned to the HMI for network communication. Tap to modify.
Subnet	The subnet mask for the network. Tap to modify.
DHCP	Enables or disables automatic IP address assignment via DHCP. Set to 0 to use the static IP address configured above. Set to 1 to obtain an IP address automatically from a DHCP server.
Endian	Controls the byte order used for fieldbus data. Set to 0 for big endian (most significant byte first). Set to 1 for little endian (least significant byte first). The correct setting will depend on the requirements of the connected PLC or control system.
IO Map	Selects the IO map used for fieldbus communication. The IO map defines the list of data parameters available to read from or write to via the fieldbus. Currently one IO map is available.

Note: Fieldbus network settings should only be configured by a qualified engineer familiar with the site network infrastructure and the connected control system. Incorrect settings may result in loss of communication. After making changes, cycle power to the HMI to apply the new configuration.

14. HMI — Sampler

The Sampler screen is used to configure the optional powder sampler accessory. A powder sampler can be fitted to the QN-100 for use in gravity chute applications, where loose powder or granular product flows past the sensor. The sampler diverts a portion of the product into a measurement chamber, takes a reading, then clears the chamber using compressed air before the next cycle begins. Tap Sampler in the left-hand HMI menu to open this screen.

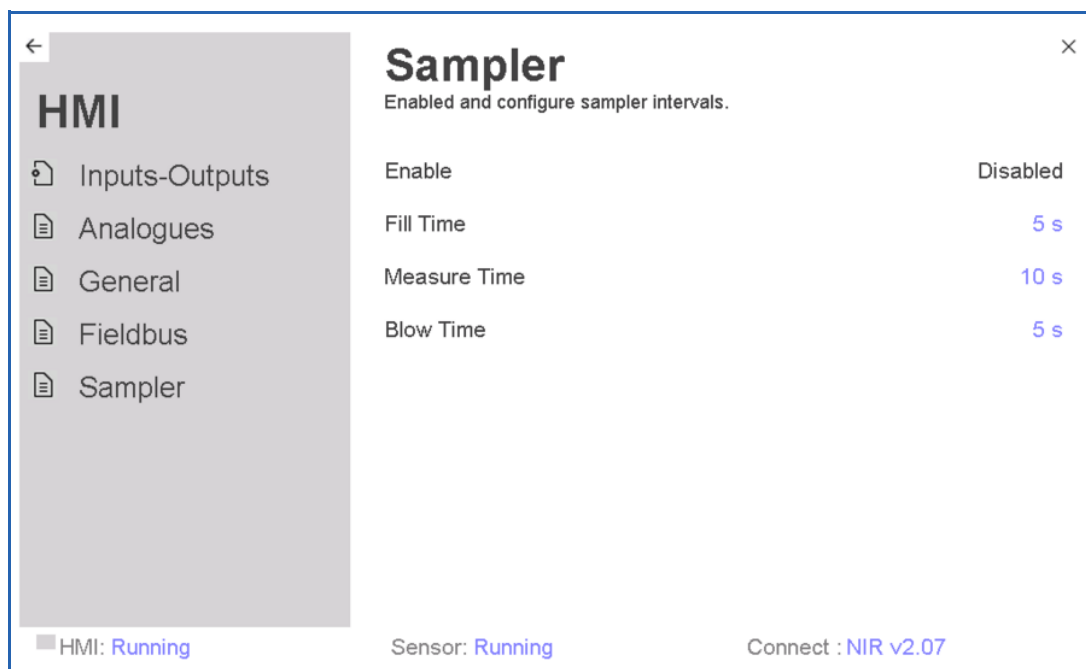


Figure 23 — HMI Sampler Screen

14.1 Sampler Cycle

When enabled, the sampler operates continuously in the following sequence:

1. **Fill** — the sampler chamber fills with product for the duration of the Fill Time.
2. **Measure** — the NIR sensor takes a moisture reading of the sample in the chamber for the duration of the Measure Time.
3. **Blow** — compressed air clears the measured sample from the chamber for the duration of the Blow Time. The cycle then repeats.

14.2 Sampler Fields

Field	Description
Enable	Enables or disables the powder sampler. When disabled, the sampler cycle does not run. See Section 14.3 for instructions on enabling the sampler.
Fill Time	The duration in seconds for which the sampler chamber fills with product at the start of each cycle.
Measure Time	The duration in seconds for which the sensor takes a measurement of the sample in the chamber.

Blow Time	The duration in seconds for which compressed air is applied to clear the sample from the chamber at the end of each cycle.
-----------	--

14.3 Enabling the Sampler

The sampler is a specialist feature that requires a separate access password to enable. To activate the sampler:

1. Tap the Menu button (grid icon) on the Main Screen.
2. At the Enter Password screen, enter the password 4095 and tap ENT.
3. Navigate to HMI → Sampler.
4. Tap the Enable field to enable the sampler.

Note: The powder sampler requires a compressed air supply to be connected to the sensor. Ensure the air supply is connected and at the correct pressure before enabling the sampler. Contact Absorption Systems if you require assistance with sampler installation or setup.

15. Users

The Users section is accessible from the System menu and is intended to provide user account management and access permission controls. This feature is currently under development and will be available in a future firmware update.

Note: This section will be updated in a future revision of this document once the Users feature is released. Contact Absorption Systems for the latest information.

Revision History

Rev	Date	Description	Author
1.0	Jun 2026	Initial release.	Applications Engineering

16. Approval

Role	Name / Signature	Date
Prepared by	Applications Engineering	June 2026
Approved by	Applications Engineering	June 2026