ULS Series

ULTRASONIC LEVEL SENSOR

USER MANUAL

CONTENTS

1. PURPOSE OF USE

The ultrasonic sensor sends and detects high-frequency ultrasonic sound with a piezoelectric transducer. A part of the reflected sound wave by hitting the measuring surface is detected by the transducer, depending on the speed of the signal in the air, the distance of the objects is determined.When the specified switching point is reached, the output is switched. The measured value is given as analog (0 ... 10 V / 4 ... 20 mA) or CANopen signal.
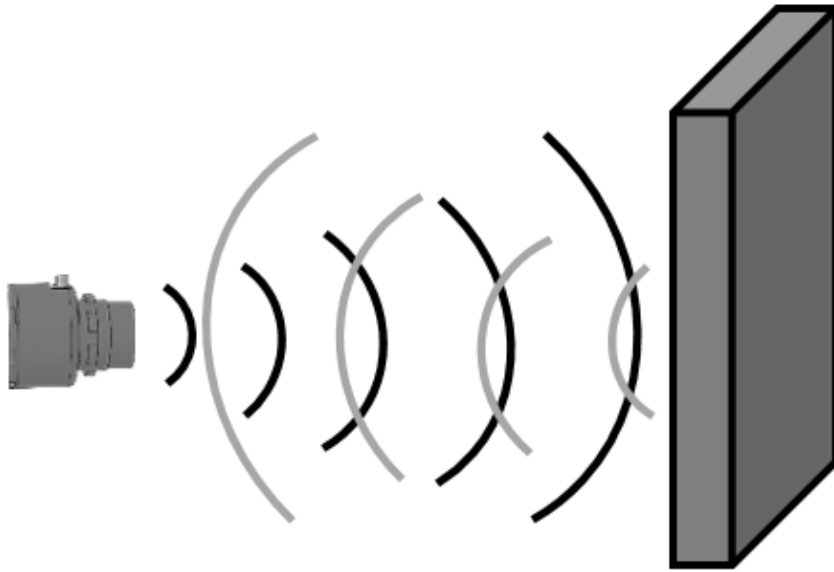
With ultrasonic sensors, objects can be reliably detected and measured regardless of material, color, transparency and surface properties.

ULS series ultrasonic sensors;
Used in non-contact, level and volume measurement of liquid and solid materials in open and closed tanks.There is also an open channel flow measurement option.It can display the measured value as level, distance (cm, m, inch or feet) or volume (liters, m3, imp, gallons) with 4 sealed membrane keypads

Kullanım Alanları:

- Level measurement, pump control in tank, warehouse etc.
- Occupancy rate calculation in product warehouses
- Treatment plants
- Food industry

Operating range	0.4 - 9 meters
Blind area	0.4 meters
Measurement Frequency	40 Khz
Accuracy	±%0.2 FS
Supply Voltage	16…30 VDC
Power consumption	2,4 Watt max.
Current consumption	100 mA max. @24 VDC / 150 mA max. @16 VDC
Sampling rate	4 Hz
Ultrasonic taper angle	30°
Minimum resolution	1 mm
PNP Open Collector outputs	2 x PNP Open Collector Outputs
Serial connection (Optional)	RS-232, RS-485, CANopen
Analog outputs (Optional)	0-10 V, 4-20 mA, 0-20 mA
Analog output load	500 Ω
Analog output resolution	16 Bit
Tare input (Optional)	+Vcc (16…30 VDC)
Reverse connection protection	Yes
Overload protection	Yes (600 mA)
Temperature compensation	Yes
Watchdog	Yes
Electrical connection	M12 / 8 pin male and M12 / 5 pin female sockets (standard)
	1 piece 8 x 0,14 mm^2 shielded cable and 1 piece 5 x 0,14 mm^2 shielded cab
Cable length	Standard 1 meters, optional others
Operating temperature	-40 °C … 75 °C
Storage temperature	-40 °C … 85 °C
Protection class	IP67
Weight	~700 gr
Housing material	Delrin® POM-C EN 10204

CE COMPATIBILITY

EN 61326-1:2013
EN 61000-4-2:2009
EN 61000-4-3:2006/A2:2010
EN 61000-4-4:2012

EN 61000-4-5:2014/A1:2017
EN 61000-4-6:2014/AC:2015
EN 61000-4-8:2010
EN 55011

3. MECHANICAL DIMENSIONS

Ø 115

130

Ø 68

M72 X 2
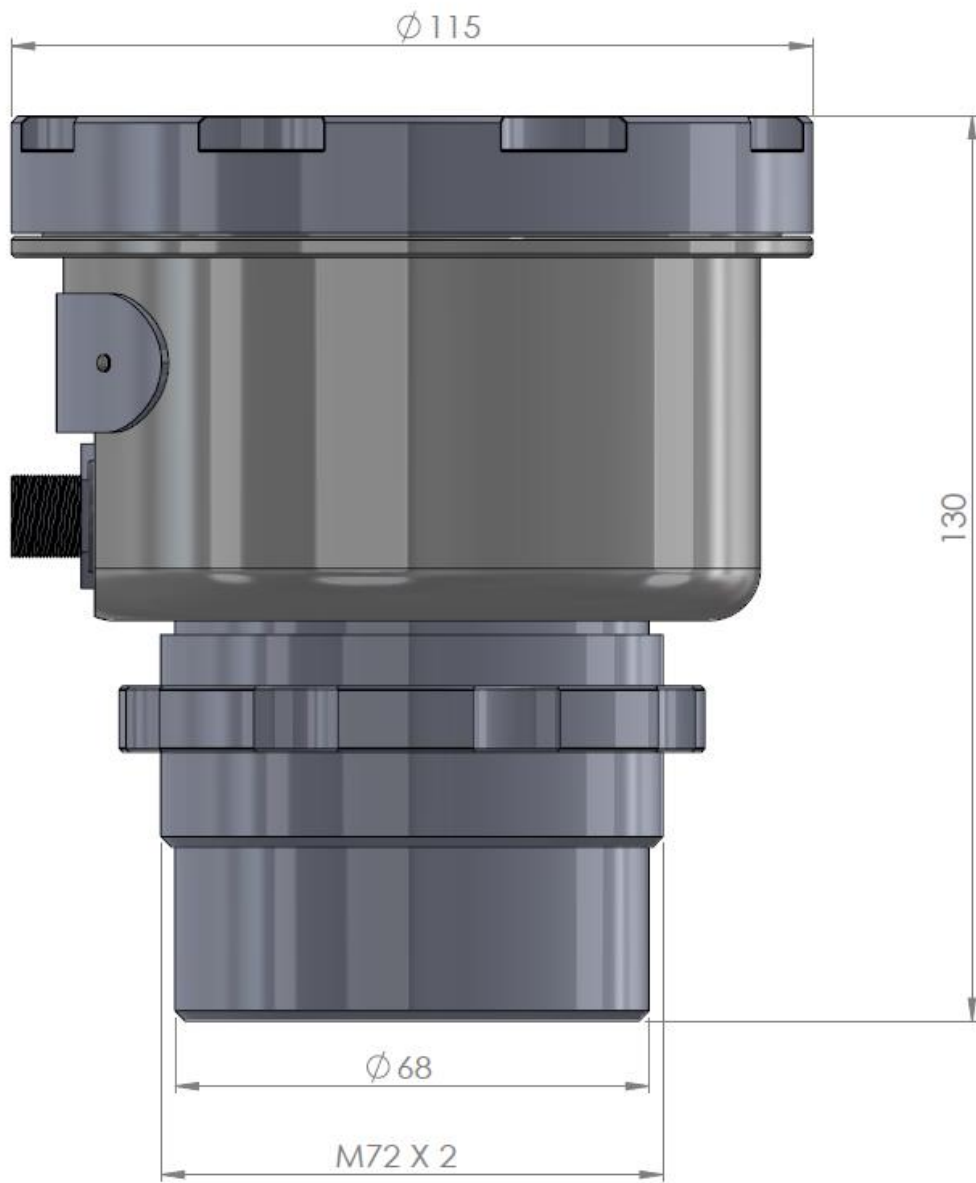
4. CONNECTIONS

4.1. Electrical Connections

CN1 (M12 / 8 Pin socket or cable)
Pin No	**Signal**	**Cable Color**
1	16...30VDC supply input	Red
2	GND – 0V	Black
3	Analog Out -	Green
4	Serial Communication (RS232 - Tx) (RS485 - B) (CAN - L)	Blue
5	Serial Communication (RS232 - Rx) (RS485 - A) (CAN - H)	White
6	Analog Out +	Yellow
7	Serial Communication GND	Grey
8	-	-
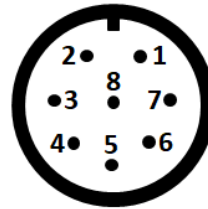
M12/8 Pin male socket (front view of the socket on the sensor)

M12/8 Pin female socket (front view of the cable-mounted socket)

CN2 (M12 / 5 Pin socket or cable)
Pin No	**Signal**	**Cable Color**
1	GND	Black
2	PNP Open Collector Output 1	Yellow
3	PNP Open Collector Output 2	Green
4	GND	Pink
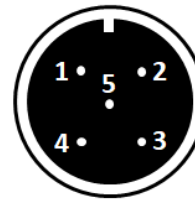
M12/5 Pin female socket (front view of the socket on the sensor)
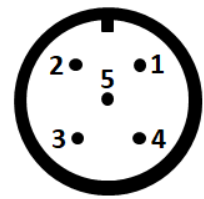
M12/5 Pin male socket (front view of the cable-mounted socket)

4.2. Mechanical Connections
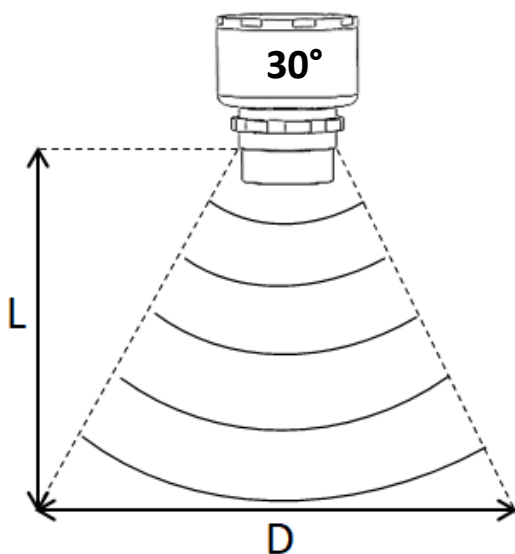
		OPTIMUM	MINIMUM
L	D		
1m		60 cm	100 cm
2m		120 cm	100 cm
3m		180 cm	100 cm
4m		240 cm	100 cm
5m		300 cm	120 cm
6m		360 cm	140 cm
7m		420 cm	160 cm
8m		480 cm	180 cm
9m		540 cm	200 cm

MOUNTING WARNINGS
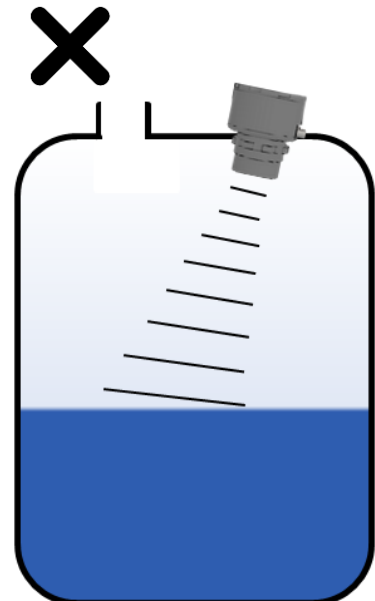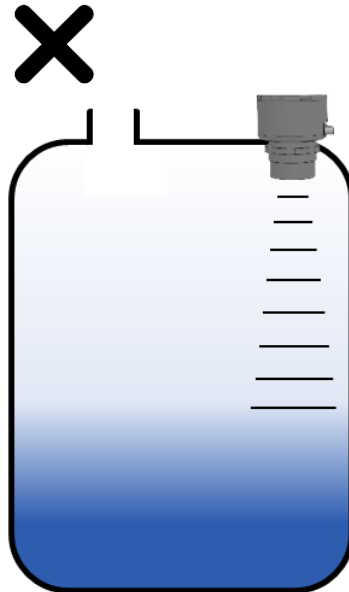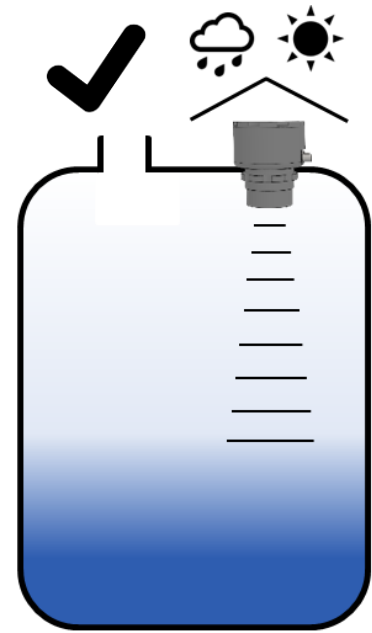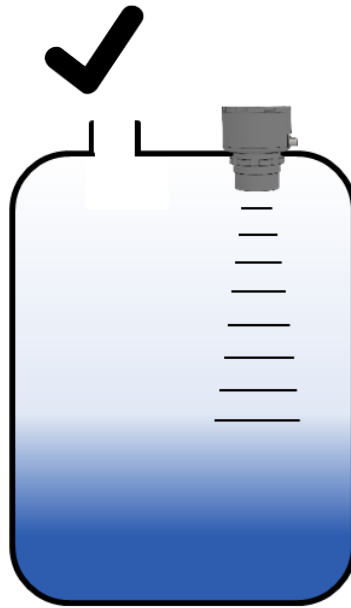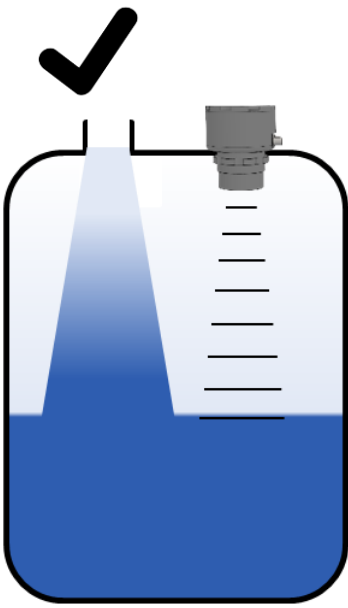
- The measurement reference surface is the lowest line of the sensor.
- The highest solid level cannot enter the blind area
- For level measurement, the sensor must not be installed near the tank input.
- It is recommended that the sensor be protected against sun and rain.
- The sensor must be installed perpendicular to the surface to be measured and should not be placed close to the side surface.

5. VOLUME CALCULATIONS

1- Rectangular

Volume = (Len Y - Distance) x Len Y x Len Z

Len X: Width of ractangular tank
Len Y: The distance of the base of the rectangular tank to the end of the sensor.
Len Z: Length of ractangular tank
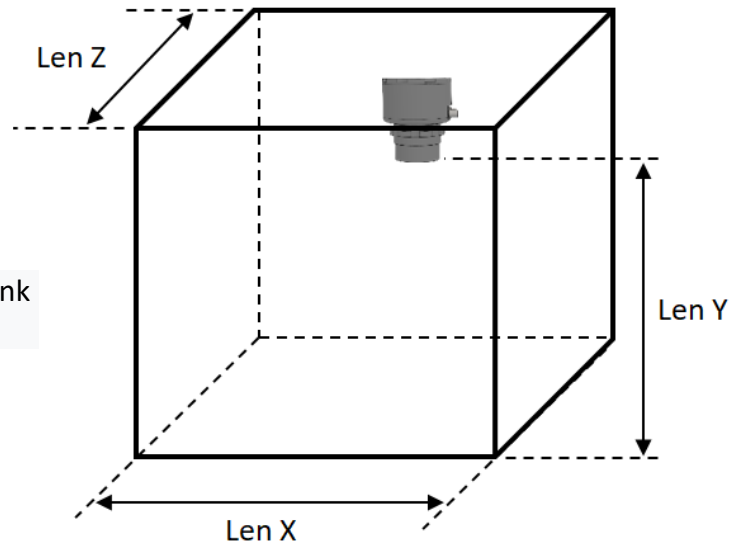
2- Cylinder

Volume = (Len Y - Distance) x π x (dIa/2)^2

Len Y: Height of cylinder
dIa: Cylinder base diameter
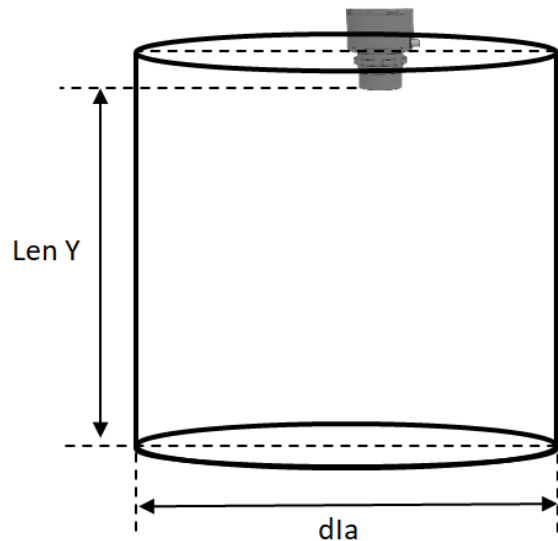
3- Horizontal Cylinder

r = dIa / 2   d = dIa - Distance

Volume = Len X x (r^2 x arccos((r-d)/r))-(r-d) x $\sqrt{}$ ((2xrxd)-(d^2))

Len X: Length of horizontal cylinder
Len Y: Distance from the tip of the sensor to the bottom of the tank
dIa: Diameter of cylinder
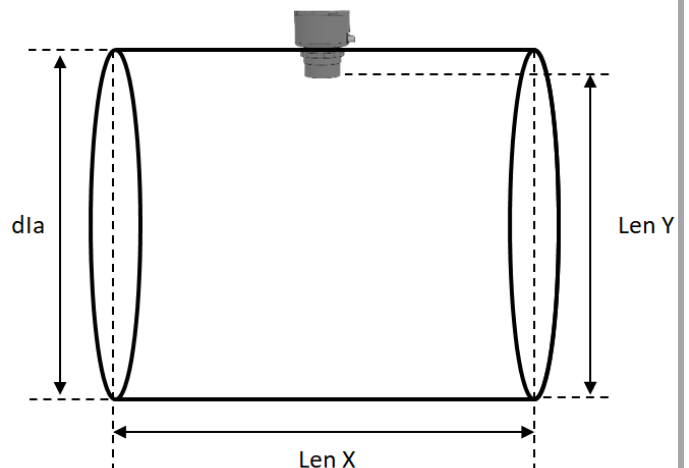
4- Globe

h = Len Y – Distance

Hacim= $(\pi/3)$ x h^2 x (1,5 x (dIa)-h)

Len Y: Distance from the tip of the sensor to the
bottom of the tank
dIa: Diameter of globe
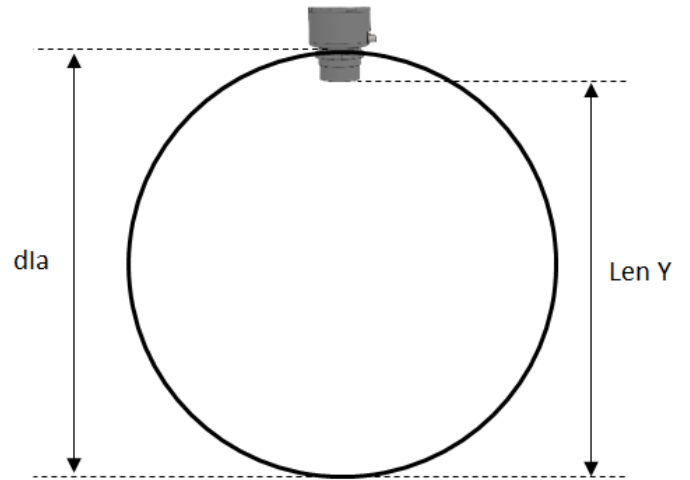
5- Flume

h = Len Y – Distance

Flow = 4 x dIa x $h^{(1,522 \times (dIA^{026}))}$

dIa : Width of flume
Len Y : Distance from the tip of the
sensor to the bottom of the flume
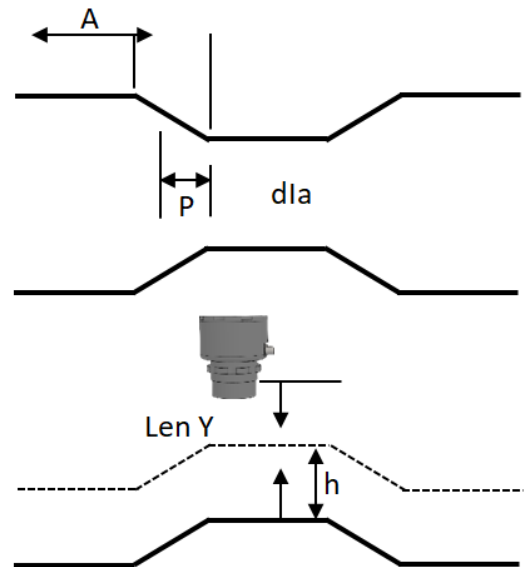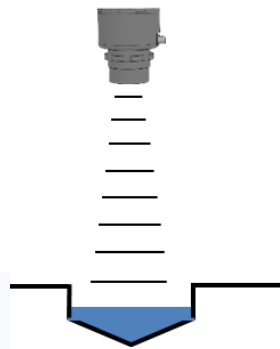
6. WARNINGS

1. Be sure to follow the instructions and warnings in the operating instructions before connections and during use.
2. Check the supply voltage before energizing the device.
3. Mount the device in a safe place against falling, slipping, shaking and rocking.
4. Make the sensor connections before energizing the device. your device. Do not disconnect or connect the device during operation.
5. Make sure that the cables between the sensor and your device are shielded and away from high-current energy cables.
6. Do not expose your device directly to a heat source (sun, heater, etc.) in an environment where it will operate.
7. To clean your device, wipe your device with a damp cloth. Do not use chemicals.
8. Observe the limit values specified in the technical specifications for the inputs and outputs.
9. Make sure that there are no obstacles in front of the ultrasonic conical outlet of the device.
10. In order to make an accurate measurement, the device should be perpendicular to the surface to be measured.
11. Transport and storage should be at their original packaging and an ambient temperature of -25°C / + 85°C in such a way that they will not be exposed to dust, humudity, impact, vibration, falling or water.
12. There are no user-serviceable parts in the event of a malfunction. In case of failure, please contact our technical service.The product will be out of warranty if used outside of the specifications in the user manual and opened or repaired other than authorized services.

Top Menu
Sub Menu

OUT

OUT-1   OUT-2

ANLOG   DGTAL   SOUND

*Out menus appear if the device has PNP Open Collector output.

DISP

POINT   V.TYP   REFRS   FILTR   TARE

UNIT   VOL V   BAR.GR.   PEAH.

SECUR

HIDE   RESET   FTRY   PASS.   LOCH
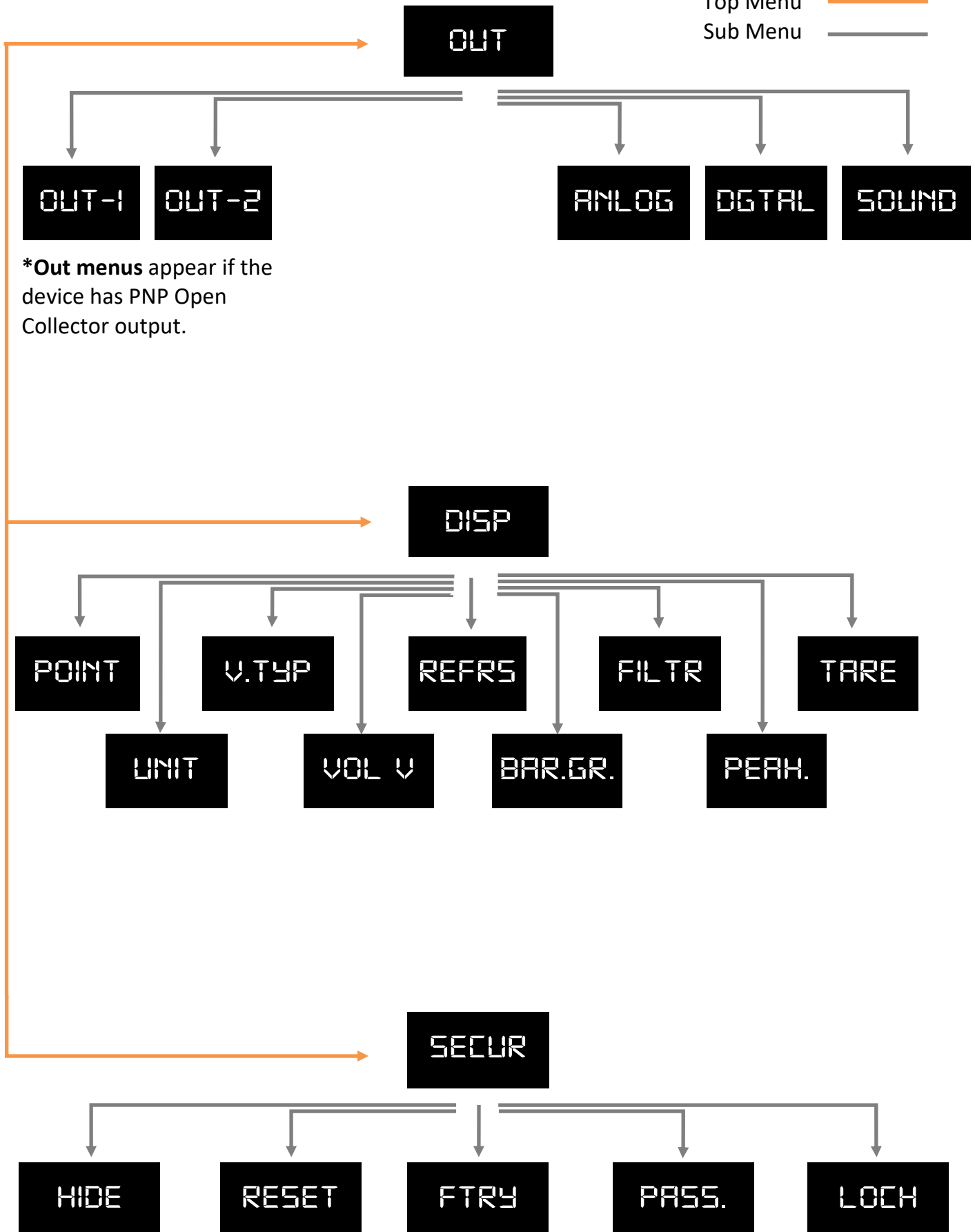
8. FRONT PANEL SPECIFICATIONS
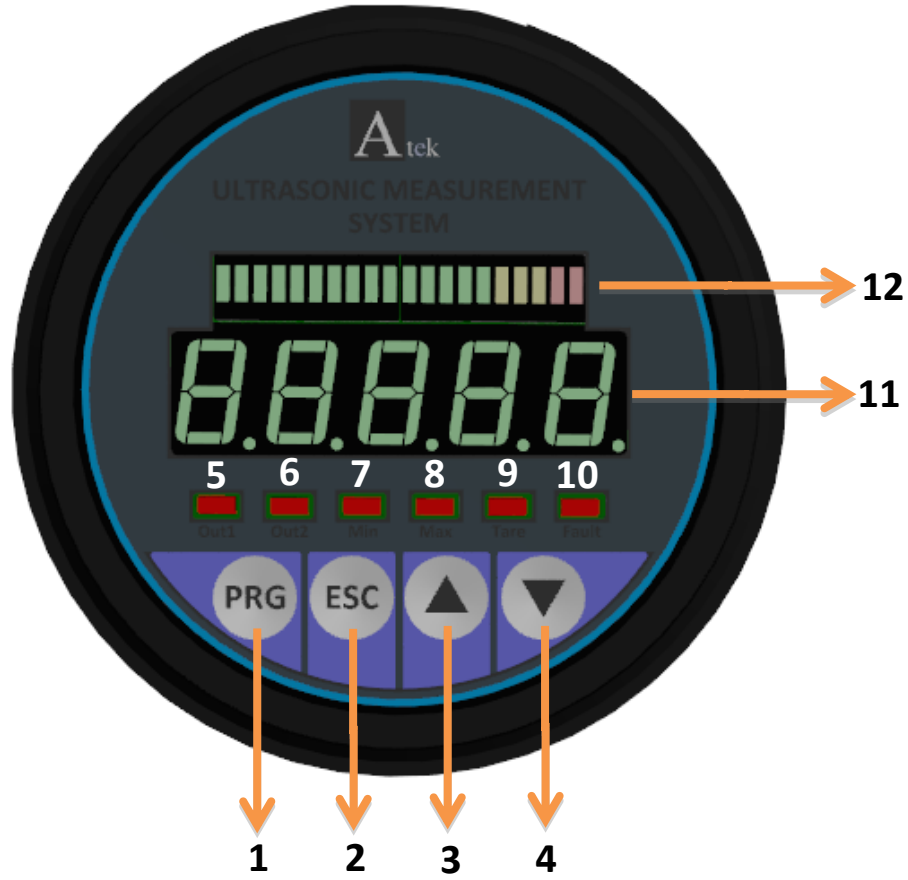
1) PRG (PRG): Programming and Enter key. It is used to enter the menus or confirm the entered values.

2) ESC (ESC): Escape, exit and back key. It is used to return to the upper menu or to exit from the menus.

3) YUKARI (▲): Up key. Used for navigating between menus, incrementing the value when entering a value or moving to upper step.

4) AŞAĞI (▼): Down key. Used for navigating between menus, decreasing the value when entering a value or moving to lower step.

5) Out1 Status Led : Lights up when the PNP Open Collector 1 output is active.

6) Out2 Status Led : Lights up when the PNP Open Collector 2 output is active.

7) Min Status Led : Lights up when the minimum measured distance is displayed.

8) Max Status Led : Lights up when the maximum measured distance is displayed.

9) Tare Status Led : Lights up when the tare function is active.

10) Fault Status Led : Lights up when the measuring range is exceeded. Ekranda en son geçerli ölçüm gösterilir. The display shows the last valid measurement.

11) Display Screen : Single line, 5 digit display.

12) LED bar: It increases and decreases in range of entered scale values.

9. SETUP

9.1. Setting The PNP Open Collector Set Value

Set the SET values for the PNP Open Collector outputs of your device to be activated.

1.Specify SET-1 for PNP Open Collector output:

PRG → OUt → PRG → OUt_1 → PRG → SEt_1

(Keep it pressed)

SEt_1 → PRG

25. ← PRG ← 25 ← ▲ ▼ ← 20

▼ ▲ → 2.5

The decimal point starts flashing. Use the UP and DOWN keys to select the decimal point.

Press and hold the UP and DOWN keys to move to the next step. To enter a negative (-) value, press the DOWN key to come to one of the non-digitized steps.

When PRG key is pressed and entered, the value input screen opens. Enter the desired value using the UP and DOWN keys.

2.5 → SEt_1

The new SET1 value you confirmed with the PRG key has been set. Press the ESC key to return to the operating mode.

2. Specify SET-2 for PNP Open Collector output:

PRG → OUt → PRG ▲ → OUt_2 → PRG → SEt_2

(Keep it pressed)

SEt_2 → PRG

25. ← PRG ← 25 ← ▲ ▼ ← 20

▼ ▲ → 2.5

The decimal point starts flashing. Use the UP and DOWN keys to select the decimal point.

Press and hold the UP and DOWN keys to move to the next step. To enter a negative (-) value, press the DOWN key to come to one of the non-digitized steps.

When PRG key is pressed and entered, the value input screen opens. Enter the desired value using the UP and DOWN keys.

PRG → SEt_2

The new SET2 value you confirmed with the PRG key has been set. Press the ESC key to return to the operating mode.

10. OPERATING MODE: FUNCTIONS

10.1. Tare Function

***Only works when the Tare function is active. For activating or explaining the types of functions, 10.2.5 Tare Function Settings

Each time the UP key is pressed while the unit is in the operating mode, the Tare function is activated according to the type of the selected function and the **Tare** status lights up.

10.2. Viewing the Maximum and Minimum Values that Are Read

If you press the DOWN key while the unit is in operating mode, you can see the lowest (minimum) value read from the moment the unit starts to operate. At the same time, **Min** status will flash on the screen.

When you press the DOWN key again, you can see the highest (maximum) value read from the moment the device starts to operate. At the same time **Max** will be on the screen.

Min.	Max.	Actual Value
▽ → 0.770	▽ → 5.765	▽ → 3.466

* You can see Min - Max on the screen for as long as you want and make it active for as long as you want. To make settings for Min – Max menu;

PRG → OUt → ▲ ▲ → di SP → PRG → ▲ ▲ → PEAH. → PRG

t.Lo. → A value in seconds is entered and the last minimum value is kept on the display for this time. If no value is entered in this menu, the minimum value in memory is valid.

t.H ı. → A value in seconds is entered and the last maximum value is kept on the display for this time. If no value is entered in this menu, the maximum value in memory is valid.

t.ESC. → A value in seconds is entered, min. or max. values are kept on the display for the time entered. then the screen returns to the current value. If no value is entered in this menu, min. or max. value remains visible on the screen.

Note: You can use the ESC key to delete the (minimum) or (maximum) values in the memory.

10.3. Quick Set Values Change

Press and hold the ESC key to quickly change all adjustable setpoints while the unit is in run mode. You can then change the desired SET value by pressing the PRG key. When entering a value, press and hold the UP and DOWN keys to move to the next step. To enter a negative (-) value, press the DOWN key to come to one of the non-digitized steps

1	ESC (Keep it pressed) →	SEt_1	4	PRG →	25.
2	PRG →	24	5	▽ ▲ →	2.5
3	▽ ▲ →	25	6	PRG →	SEt_1

10.4. Switching The Programming Mode

To switch your device from working mode to programming mode
Press and hold PRG until OUT appears in the display. To return to the operating mode, press the ESC key repeatedly until you return to the operating mode.

11. PROGRAMMING MODE: PROGRAMMING THE DEVICE

Your device operates in two different modes. Your device is in 'operating mode' while the initial value of the sensor readout is displayed; In the 'programming mode' on the screen where the settings are changed and the parameters are changed. In this section, the functions in Programming Mode are explained.

To switch your device from working mode to programming mode Press and hold PRG until OUT appears in the display. To return to the operating mode, press the ESC key repeatedly until you return to the operating mode. While your device is in Programming Mode;

- To scroll between menus, press the DOWN and UP keys
- Press enter (PRG) to enter any menu.
- Use the ESC key to exit from any menu and return to the upper menu.
- When entering any parameter value, press the DOWN key to dicrease, press the UP to increase the value. Press and hold the keys to move to the next or previous digit.

11.1. Output Menu [OUT]

OUT-1 and OUT-2 menus appear if the device has PNP Open Collector output.

11.1.1. PNP Open Collector 1 Output Settings (OUT-1) `OUt- 1`

11.1.1.1. Entering the Set Value
Indicates the value at which the first PNP Open Collector output will be activated and Set1 status led will light

PRG (Keep it pressed) → `OUt` PRG → `OUt_ 1` PRG → `SEt_ 1`

PRG ↓

`20` → ▲ ▼ ← `25` ← PRG ← `25.` ← ▼

▲ ↓

`2.5`

PRG → `SEt_ 1`

The decimal point starts flashing. Use the UP and DOWN keys to select the decimal point.	Press and hold the UP and DOWN keys to move to the next step. To enter a negative (-) value, press the DOWN key to come to one of the non-digitized steps.	When PRG key is pressed and entered, the value input screen opens. Enter the desired value using the UP and DOWN keys.

The new SET1 value you confirmed with the PRG key has been set. Press the ESC key to return to the operating mode.

11.1.1.2. PNP Open Collector Output Function Selection `FUnct.`

This function selection determines when the PNP Open Collector output will be activated and deactivated according to the set values.
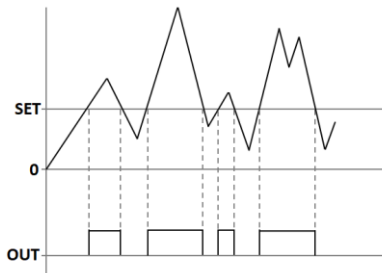
`StAnd.`

The PNP Open Collector is activated when the value read in the device increases by increasing
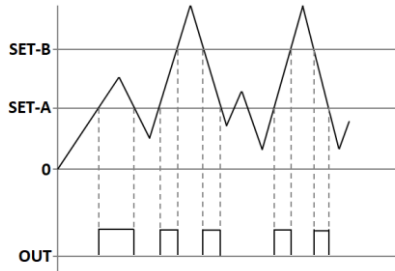
`bAnd`

The PNP Open Collector is activated when the read value in the device is between Set-1A and Set-1B.
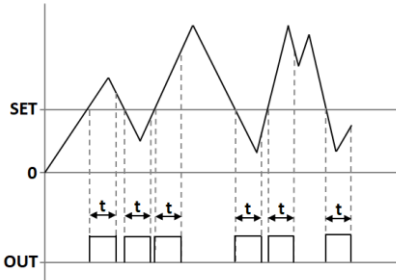
`CAtch`

The PNP Open Collector is activated each time the value read on the device passes by increasing or decreasing Set-1 value.
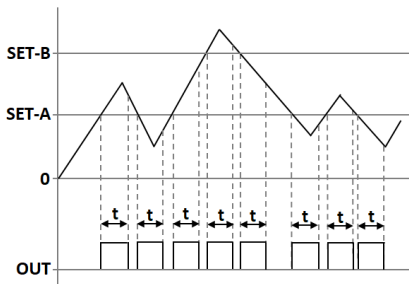
`dUAL`

The value read in the device activates the PNP Open Collector whenever the Set-1A or Set-1B value increases or decreases.

`PErdC`
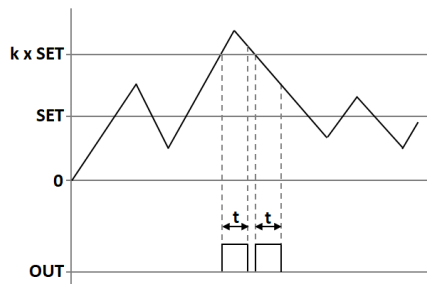
The value read in the device is activated when the value of Set-1 or the value of Set-1 is increased or decreased by every level such as 2,3,4,5 ...

11.1.1.3. Delay `dELAY`

It specifies in seconds how long the PNP Open Collector output will remain active after it is activated. If '0' is entered as a zero value, the PNP Open Collector output will remain active until it changes conditionally.

11.1.1.4. Hysteresis `HYSUP` `HYSdn`

Due to the unstability in decimal value read on the connected sensor, you can enter the hysteresis value to prevent the PNP Open Collector from being turned on and off at any time, so that the set value you set for the PNP Open Collector will be activated and deactivated as low as Hysdn and above Hysup.

11.1.1.5. Offset Value `OFSEt`

If you want to add offset to the entered set value, this menu is used. If all set values are selected forward or negative by the specified offset value, they are shifted back.

11.1.1.6. The Default State of the PNP Open Co `Cond`

Depending on the factory settings of your device, the PNP Open Collector is normally closed and activated with the specified setpoint and functions. Use the Cond option on the Out-1 menu to activate the default in the default position and turn off with the specified setpoint and functions. The factory setting NC (NormallyClosed) is the option that the PNP Open Collector is normally closed, NO. (Normally Open) indicates that the PNP Open Collector is normally open.

11.1.2. PNP Open Collector 2 Output Settings (OUT-2) `OUt_2`

Bu menüde sensörde bulunan 2.Röle çıkışının ayarlarını yapabilirsiniz. Ayarların tamamı 8.1.1. bölümde anlatılan 1. Röle çıkışı OUT-1 ayarları ile aynıdır.

11.1.3. Analog Output and Measuring Range Settings (ANLOG) `AnLOG`

If your ULS, which is manufactured specifically for your order, has an analog output module, you can make the necessary settings from this menu.
Select the analogue output from the **TYPE** menu:

`0- 10U` → 0 - 10 Volt   `0.5-4.5` → 0.5 - 4.5 Volt

`4-20n.` → 4 - 20 mA   `0-20n` → 0 – 20 mA

`0-5U` → 0 - 5 Volt

From the **COND** menu, select whether the analogue output module is active or not. Use ON to activate or OFF to activate.
From **InvrS** menu, you can choose which value to increase or decrease according to the sensor reading on the analogue output. This option, which is OFF by default, provides an analog output that increases or decreases in proportion to the value read at the sensor. If you turn this ON, the value read out at the sensor will increase while the value at the analog output will decrease, ie an inversely proportional output will be provided increase while the value at the analog output will decrease, ie an inversely proportional output will be provided.
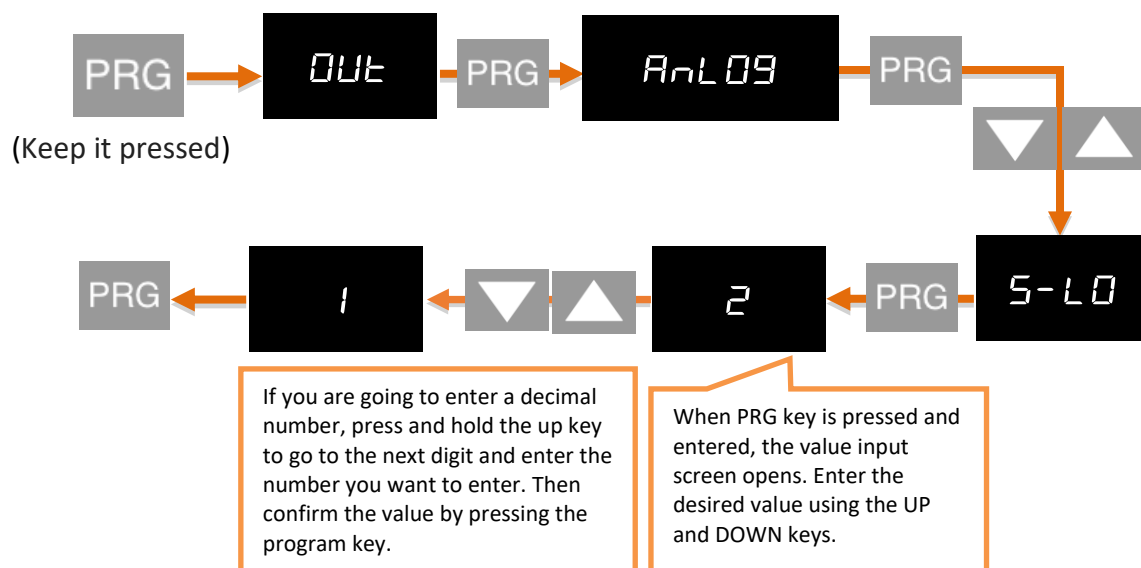
Wave Form (VAVE.F.) `UAUE.F.`

The waveform of the output signal can be selected from the Vave.f menu. There are 4 options in the menu: Liner, Sin, Cos, Trian. When the liner option is confirmed with the PRG key, a linearly increasing waveform is obtained in the specified scale range. When the Cos option is confirmed with the PRG key, a waveform in the form of a waveform that starts from zero and completes a complete cosine wave is obtained at the scale interval specified. When the Sin option is confirmed, a waveform in the form of a waveform that starts at the peak value of the sine wave and completes a complete sinusoidal wave in the determined scale range is obtained. When the triangle option is selected in the same way, a triangle wave is obtained in the scale interval determined at the exact middle value corresponding to the top.

Analog Output Scale Setting (Scale) `SCALE`

In the device with the analogue output feature, SCALE mode in this menu must be ON to set the output signal to the desired scale range. S-LO started appearing on the analogue menu afterwards. And S-HI. Options and scale values can be entered.

Setting The Minimum Distance to Measure (S-LO)

PRG → `OUt` → PRG → `AnLOG` → PRG
(Keep it pressed)

▽ △

PRG ← `1` ← ▽ △ ← `2` ← PRG ← `S-LO`

If you are going to enter a decimal number, press and hold the up key to go to the next digit and enter the number you want to enter. Then confirm the value by pressing the program key.

When PRG key is pressed and entered, the value input screen opens. Enter the desired value using the UP and DOWN keys.

Setting The Maximum Distance to Measure (S-HI)

PRG → `OUt` → PRG → `AnLOG` → PRG
(Keep it pressed)

▽ △

PRG ← `5` ← ▽ △ ← `9` ← PRG ← `S-HI`

If you are going to enter a decimal number, press and hold the up key to go to the next digit and enter the number you want to enter. Then confirm the value by pressing the program key.

When PRG key is pressed and entered, the value input screen opens. Enter the desired value using the UP and DOWN keys.
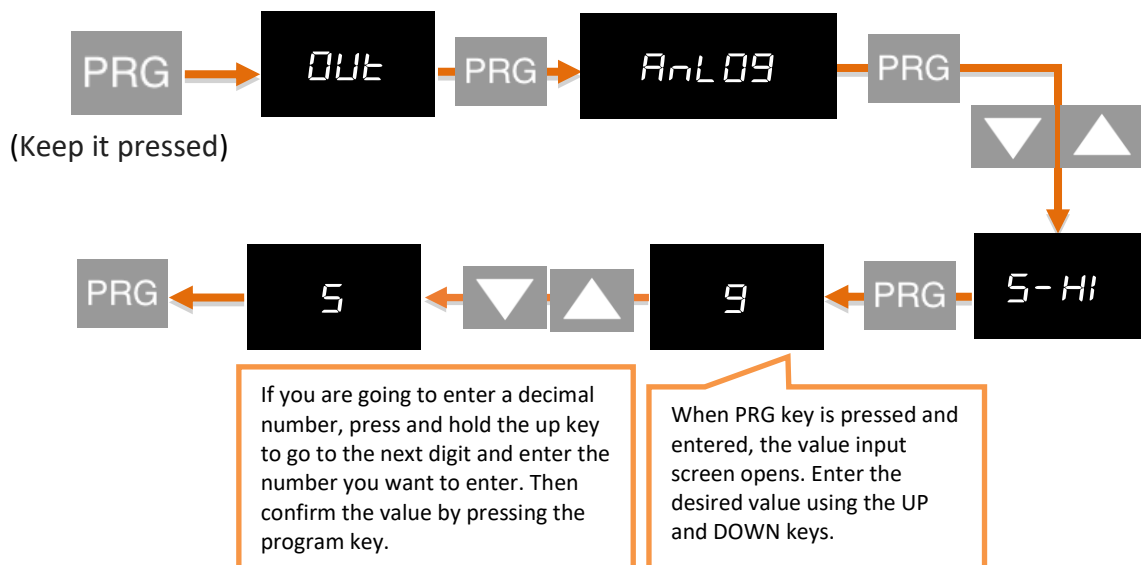
11.1.4. UART and CANopen Digital Output Settings (DGTAL) `d9tAL`

WARNING: After changing the UART or CANopen settings, you need to restart the device for the changes to take effect.

11.1.4.1. UART _Settings_

If you are communicating with your device via RS-485 or RS-232; You can make the necessary settings here. You can select the communication protocol, baudrate, parity, address and period information. For the MODBUS Protocol address information, see the relevant booklet.

11.1.4.2. CANopen Settings

Here you can configure the baud rate, Node ID, Heartbeat, PDO etc. of your device related to the CANopen protocol.
For more information on CANopen, see the ULS-CANopen booklet.

11.1.5. Key Volume Setting (SOUND) `SoUnd`

When you press any key on your device, you can turn the beep sound on and off from this menu. Use ON to turn the sound on, OFF to turn it off.

11.2. Display Menu [DISP]

11.2.1. Decimal Point Location Selection (POINT) `Po int`

In this menu you can set the decimal point of the displayed value in operating mode. Fabrika ayarlarında '3' olan bu değer, virgülden sonra kaç adet ondalık basamak gösterileceğini belirtir. This value, which is 3 in the factory settings, specifies how many decimal places are shown after the comma. If you select '0', only the whole number appears on the screen. Selecting 3 points after the comma means that the distance is measured in millimeters, 2 points are displayed in cm, and 0 is displayed in meters.

11.2.2.   Measurement Unit Selection (UNIT) `Uni t`

In this menu you can set the units in which the measured value is displayed on the screen. The unit of measurement can be selected as Centimeters, Feet or Inch.

11.2.3.   Volume Type Selection (V TYP) `u tYP`

This menu is used to specify the type of area to be measured. The volume type can be selected in 6 different types: level, cube, cylinder, horizontal cylinder, globe or flume. If the volume type is selected as level, the "Volume Value (vol v)" menu will not be opened.

11.2.4.   Entering The Volume Value (VOL V) `uOL u`

This menu opens if the volume type is selected as cube (1), cylinder (2), horizontal (3) cylinder, globe (4) or flume (5). In this menu, the required measurements are entered according to the volume type to be measured.

If the volume type is selected as **Cube (1)**, the following measurements are entered from the drop-down menu:

Len X: Width of rectangular tank
Len Y: Distance of the base of the rectangular tank to the end of the sensor
Len Z: Length of rectangular tank

If the volume type is selected as **Cylinder (2)**, the following measurements are entered from the drop-down menu:

Len Y: Height of cylinder
dIa: Cylinder base diameter

If the volume type is selected as **Horizontal Cylinder (3)**, the following measurements are entered from the drop-down menu:

Len X: Length of horizontal cylinder
Len Y: Distance from the tip of the sensor to the bottom of the tank
dIa: Diameter of cylinder

If the volume type is selected as **Globe (4)**, the following measurements are entered from the drop-down menu:

Len Y: Distance from the tip of the sensor to the bottom of the tank
dIa: Diameter of globe

If the volume type is selected as **Flume (5)**, the following measurements are entered from the drop-down menu:

dIa: Width of flume
Len Y: Distance from the tip of the sensor to the bottom of the flume

| tArE |

11.2.5. Tare Function Settings (TARE)

In this menu you can define the Tare Function and its properties.

From the **EVENT** menu you can select the Tare Function type:

When the unit is in operation mode, each time the UP key is pressed;

| 2ErO | → *ZERO:* Then the value read on the sensor is equal to zero and the Tare state LED is lit.

| PrSEt | → *PRESET:* Then, the value read on the sensor is equalized to the specified value and the Tare status LED is lit.

| r.2ErO | → *REPEATED ZERO:* The first time it is pressed, the value read on the sensor is equal to zero and the Tare status LED is lit. When it is pressed later, the read value returns to the state before the key is activated and the Tare status LED is turned off.

| r.PrSt | → *REPEATED PRESET:* When pressed for the first time, the value read on the sensor is equal to zero and the Tare status LED is lit. When it is pressed later, the read value returns to the state before the key is activated and the Tare status LED is turned off.

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In the **PrSet** option, you can specify the value to be equalized when the Tare key is pressed.

If your EPA300, which is specially manufactured according to your order, has the Digital Tare Input module, you can make settings from the **INPUT** menu under the Tare menu.

The **EDGE** option determines which edge of the edge signal coming from the Tare function is activated. RISE for rising edge, **FALL** for falling edge. For example; When you connect this signal to a button, the RISE option activates the tare when the button is pressed and the FALL option when the button is released after the button is pressed.

In the **FILTR** option, you can specify how many milliseconds the modulated signal is to be controlled. By default, this value is 100 ms.

With the **BUTTON** menu, you can select whether the tare button (![triangle]) on the front can be used. If the button is set to "Off" position, the tare button on the front side is not used, only the rear tare input can be used.

11.2.6. Screen Refresh Rate (REFRS)   `rEFrS`

Indicates how many milliseconds the value displayed on the screen will be refreshed. By default this value is 100 ms; To reduce or reduce the on-screen vibrations, or reduce the duration of your device's response to movement of the sensor.

11.2.7. Screen Flicker Prevention (FILTR)   `F iLtr`

Your ULS sensor is programmed to display the signals in the most accurate way on the screen by processing them with special algorithms. But; You can solve this problem by filtering from this menu in the event of a trembling of the value displayed on the screen due to various reasons such as noise in the vicinity, disturbances in the sensor. There are three different filtering methods for this:

1. AVRGE (Average Calculation):
When you activate this filter by turning the STATE option ON, your device will refresh the value that appears on the display after you have read as many values from the sensor as you would select COUNT. For example; COUNT will default to 40, and your device will refresh the value on the screen after you have taken 40 samples from the sensor, that is, after reading it, taking the average of these values. Accordingly, increasing COUNT will reduce flicker on the screen; But your device will slow the response of the sensor to its rapid movement. (ULS device makes 4 measurements in 1 second)

2. LQE (Lineer Quadratic Estimation):
You can also activate this filter, also known as a thick filter, by turning the STATE option ON. If you decrease the default COVARIANCE of 500, the flicker on the screen will decrease; But your device will slow down the reaction of the sensor to its rapid movement.

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3. HYS (hysteresis):
You can activate the hysteresis filter by turning the STATE option ON. With this filter, which has two parameters named Delta and A.Error, the value read from the sensor is not reflected on the screen until it changes to Delta. When the sum of the non-reflected values on the screen is equal to A.Error, the display is updated with the average of these values

11.2.8. Setting the LED Bar `bAr.9r.`

The led bar on the display normally moves from left to right as the value read from the sensor increases. You can change this direction as you like or move the scale value in reverse direction.

PRG ▶ `OUt` ▶ △ △ ▶ `di SP` PRG ▶ △ ▶ `bAr.9r.` ▶ PRG

(Press 3 times)

`I nvrS` ⟶ If you want the led bar to move from right to left, enter the Invers menu and set the normally OFF position to ON and confirm with the PRG and exit.

`SCALE` ⟶ You can move the led bar between the values you want, for this purpose enter the SCALE menu under the Bar.Gr. menu and turn the on position to the off position. S-LO. and S-HI. menus will be added under the Bar.Gr. menu. Enter the S-HI value for the end of the led bar and S-LO value for the start of the led bar and confirm with PRG.

11.3. Secure Menu [SECUR]

11.3.1. Hide Menu (HIDE) `H idE`

You can hide the menus ON you do not want the operator to see your device to use them.

`Hd.ALL` ➔ All menus except Secure are hidden.

`Hd.OUt` ➔ The Output menu is hidden.

`Hd.CLb` ➔ The Calib menu is hidden.

`Hd.dSP` ➔ The Display menu is hidden.

`Hd.FOU` ➔ The Quick Set change menu is hidden. See 10.3.

11.3.2. Lock Menu (LOCK) `LOCH`

If you have not set a password before, you will see NPASS in the display when you enter this menu. Press the PRG key to set the desired password here. Then use the DOWN and UP keys to select the menus you want to lock. Definition of the menus are same as 11.3.1. Menu Hiding section.

11.3.3. Setting the Password (PASS) `PASS.`

Use this menu item to set a password or to change the password you have previously set. If no password was previously set; When you enter this menu, the display will show NPASS. Press the PRG key to set the desired password here. If the password has already been set; The display shows PASS? Will appear and you will be asked to enter this password. After inputting the password, the display will show NPASS. You can specify your new password here and confirm it with the PRG key.

11.3.4. Return to Factory Settings (FTRY) `FtrY`

You can return your ULS to factory settings from the time box you desire. Press the PRG key to return to the factory settings. You need to enter 12345, which is the factory password for PASS password menu.

11.3.5. Restart the Device (RESET) `rESEt`

In any case, press the PRG key to come back to this menu to restart your device. The device will automatically power off and on and start working.

NOTE: The ULS device can optionally be used to display the measurement only, without the use of PNP Open Collector outputs, analog outputs, digital outputs.

12. WARRANTY DOCUMENT

Product: ULS

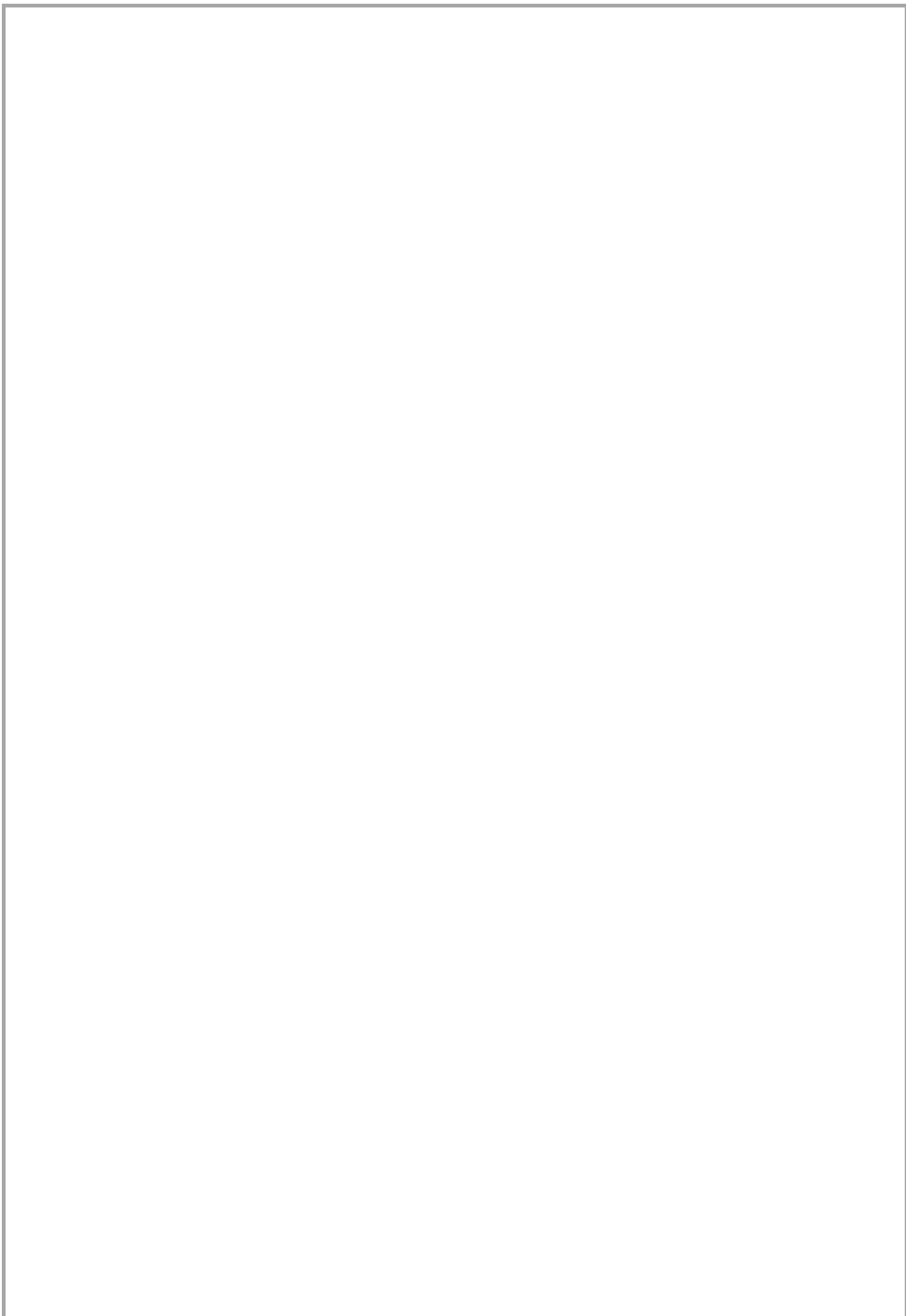|			
Tare Input	☐	RS-232	☐
Voltage Output	☐	RS-485	☐
Current Output	☐	CANopen	☐
PNP Open Collector Output	☐		

Serial Number : …………………………………

This product is warranted against production errors for two years. Out-of-warranty situations:

- Mechanical damage
- Damage in case of transport
- User errors

Other conditions are covered by the manufacturer's warranty.

Signature, Stamp

ATEK SENSOR TECHNOLOGIES

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