



ALT 6300

Smart Ultrasonic Level Transmitter



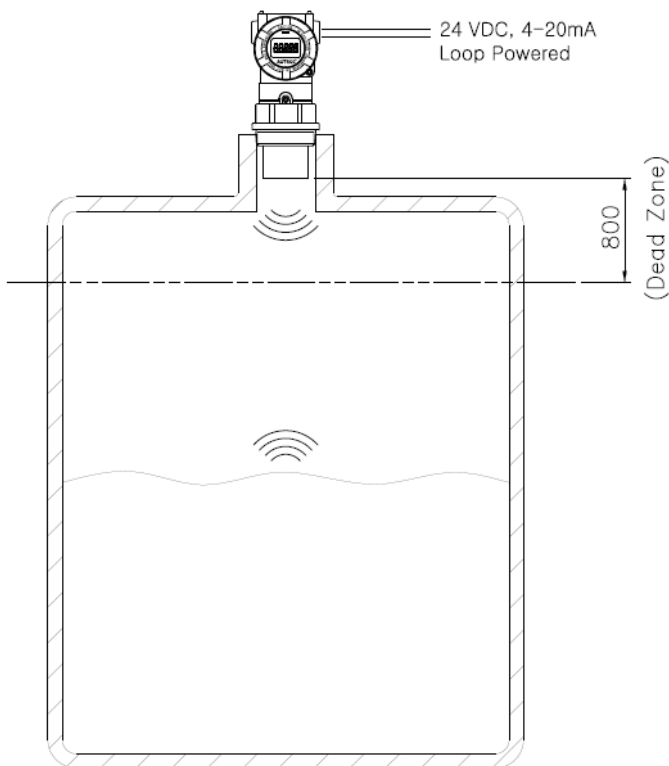
LEVEL



Overview

The Autrol ALT6300 Ultrasonic Level Transmitter
As processor-based transmitter, distance from ultrasound sensor
It is based on the principle of measuring the time required for
the ultrasonic pulses included, and is also suitable for medium
viscosity media. It converts the time reflected by the ultrasonic
wave into the distance, converts it to 4 ~ 20mA value, and has
the function to use control system such as DCS or PLC

Basic Configuration



ALT-6300 Smart Ultrasonic Level Transmitter

Features

- 2 wire, 4 ~ 20mA communication and HART communication
- Easy on-site operation with remote control of HART communication.
- Can measure level or distance
- Continuous self-diagnosis.
- Easy Unit Change on Display (feet, meter, inch, cm, mm)

Applications

- Operating range 10m
- Simple installation and operation, low installation and commissioning costs

Specification

Accuracy	±10mm	
Output	Type	Analog 4 to 20mA (2wire) with Hart digital signal
	Diagnostic Alarm	Adjustable 3.78, 21.1mA
Power	16.5~45VDC (with Hart digital signal) 22~45V @ 250 Ω	
Operation temperature	-20 to + 80 °C	
Process temperature	-20 to 150 °C	
Process Pressure	-0.25 ~ 3.0 bar	
Humidity Limits	5% ~ 100% RH	
Update Time	1 second	
Beam width	12°, ±2°	
Operating Frequency	50kHz ± 4%	
Zero/Span	Reed Switch	
Measurement Sensor Range	800mm ~ 10,000mm	
Damping	0 ~60 seconds	

ALT-6300 Ordering Information

Model	Description	
ALT6300	Smart Ultrasonic Level Transmitter	
Code	Measurement	
-L	Level	
-X	Special (manufacture order)*	
Code	Sensor Code	
1	Maximum range : 5 meter	
2	Maximum range : 10 meter*	
3	Maximum range : 5 meter (Extended Sensor)*	
4	Maximum range : 10 meter (Extended Sensor)*	
0	Special*	
Code	Sensor Housing Material	
HM1	Acetal	
X	Special*	
Code	Process Connection	
A31	3" ANSI, #150	Flange
A33	3" ANSI, #300	
A41	4" ANSI, #150	
A43	4" ANSI, #300	
J81	JIS 80A, 10K	
J82	JIS 80A, 20K	
J10	JIS 100A, 10K	
J11	JIS 100A, 20K	
TN4	2 1/2" NPT	
TG4	G 2 1/2"	
S	Special*	
Code	Output Signal	
A0	4-20mA, HART	
Code	Electrical Connection	
1	1/2-14NPT Epoxy-Polyester Painted Aluminum	
2	G1/2 Epoxy-Polyester Painted Aluminum	
X	Special*	
Code	Hazardous Location Certifications	
K0	Maker Standard (Waterproof:IP66)*	
Code	Option	
ST	Stainless Steel Housing	
M1	LCD Indicator(5digit)	

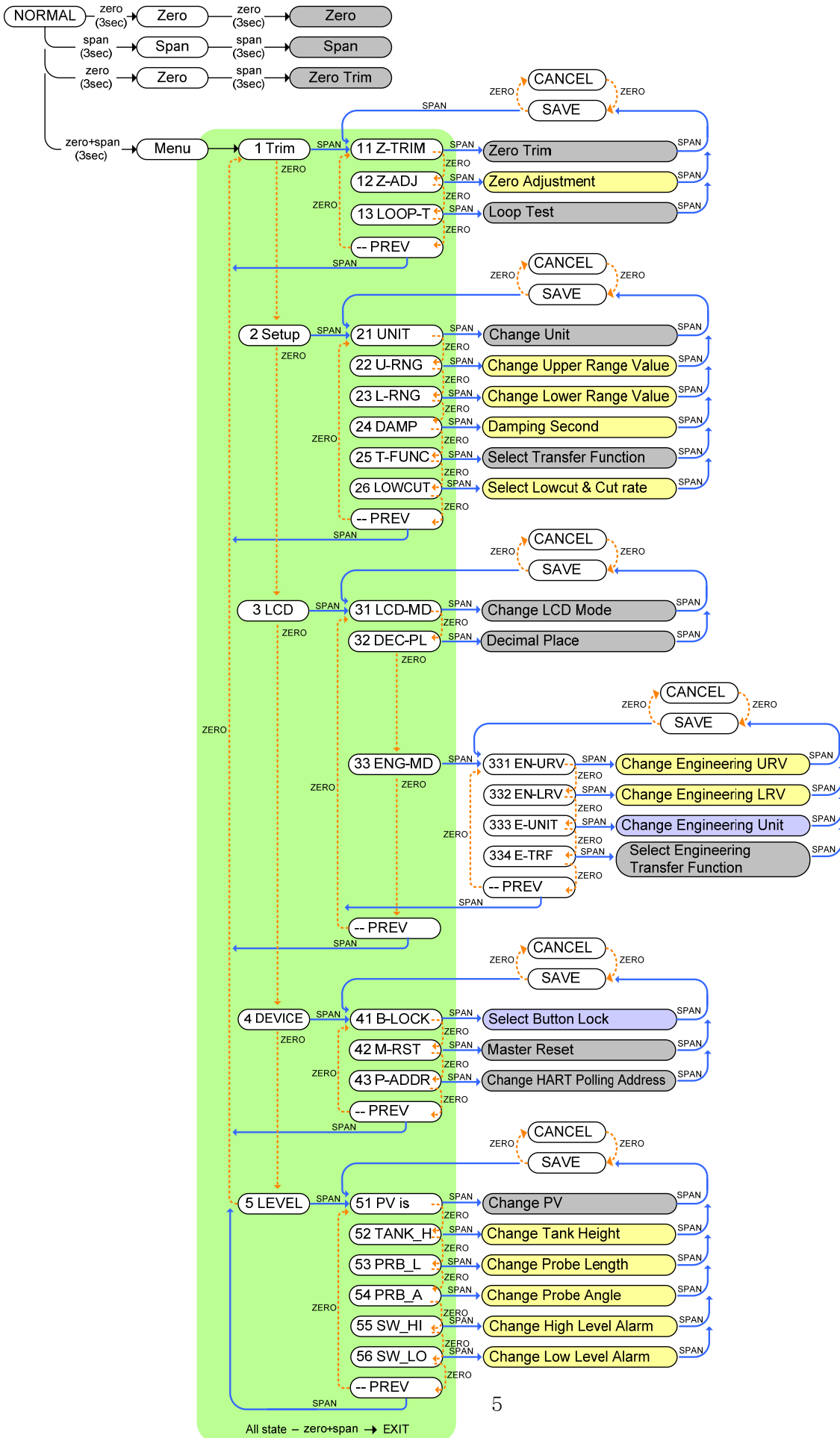
LPE	Lightening Protector (External)
LPI	Lightening Protector (Internal)
Code	Measure Level (800 ~ 10,000mm)
- □□□...□ (with unit)	Measure level 800~10,000mm (meter/ft/mm/inch...)

* : ask before order

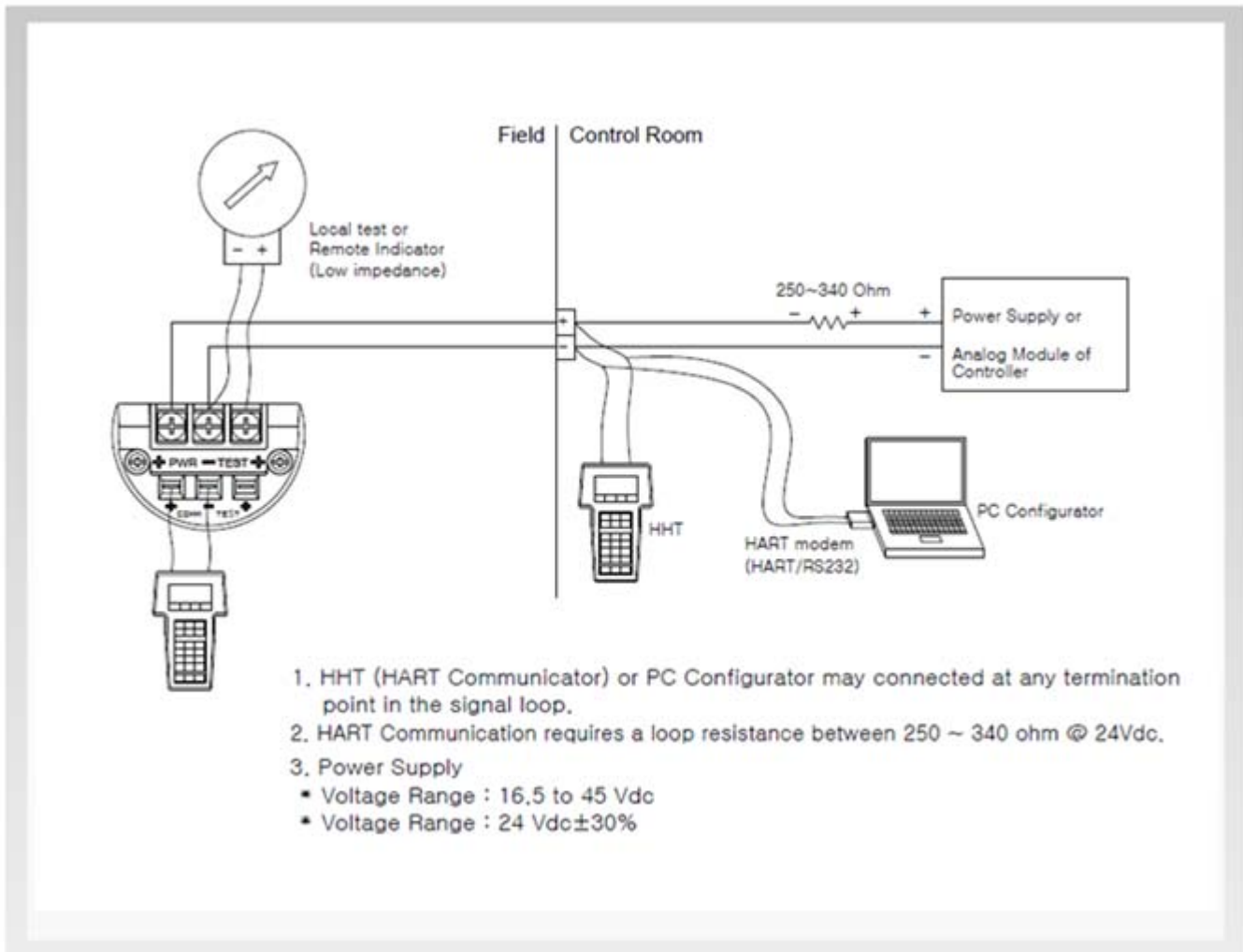
Example : ALT6300-LHM1A33A01K0ST-3M

LEVEL, ASTM, 3" ANSI, #300, 4-20mA, HART, 1/2-14NPT Epoxy-Polyester Painted Aluminum,
Maker Standard (Waterproof:IP66), Stainless Steel Housing, 0.5~3M

Operation Manual



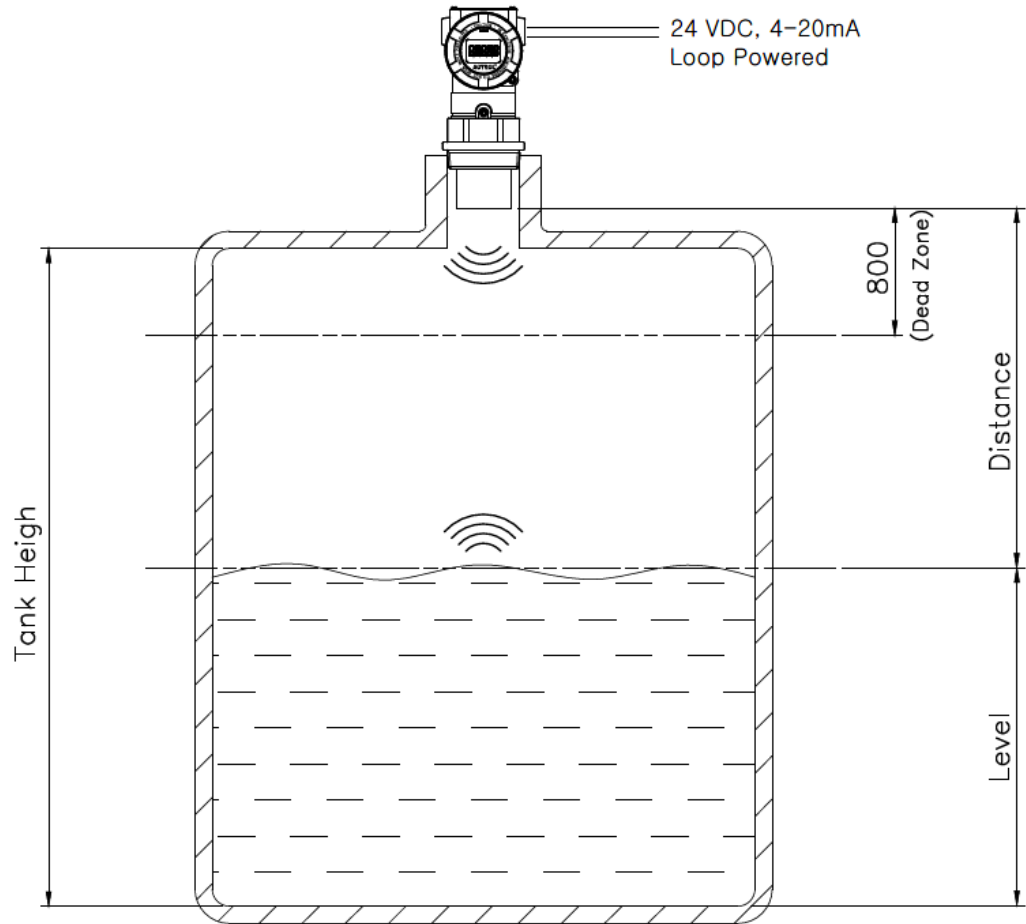
Connection Diagram of Signal, Power, HHT for Transmitter



Common function

Parameters for level measurement

To measure the level, the parameters for the tank structure should be set as shown below.



[Figure 1-1] Tank construction

Distance

Distance from the transmitter to the surface of the measuring medium (measurement result). Increase the value to the opposite surface of the measuring medium with zero (zero) at the bottom of the ultrasonic sensor of the transmitter. The transmitter measures the level

Distance is measured first and converted to Level value. However, not all measurements measure the range exceeding the transmission range.

Level

Distance from the bottom surface to the surface of the measuring medium (measurement result). Set the floor to 0 (Zero) It is possible to measure how much the medium is stored in the tank,

As with Distance, it does not measure the range beyond the transmission range.

Tank Height

Set the height of the tank. It is the distance from the tank bottom to the transmitter installation position, and it is a parameter that must be set for the level measurement. Exactly, "Level is 0 (Zero)

From the desired point to be measured "to the transmitter mounting position. In general, if you want to set the level of the tank bottom to 0 (Zero), but you want to consider the level at a location other than the bottom as zero (Zero), adjust the value of Tank Height. You can make the desired settings. See the "Level Setting Example" below for a detailed explanation. Tank Height must be greater than Upper Range Value.

The relationship between level and distance is as follows.

$$\text{Level} = \text{Tank Height} - \text{Distance}$$

Level

Change the Tank Height to adjust the level to the entered value.

Adjustment

That is, Tank Height = Input Value + Distance

Analog Output

4 ~ 20mA Analog Output converts the Primary Value to the current value corresponding to Range output. Primary Value can be selected as Distance or Level.

Range is set as LRV (Lower Range Value) ~ URV (Upper Range Value), Primary

When the value is equal to LRV, it is 4mA. When the value is equal to URV, 20mA is outputted.

Output unit setting

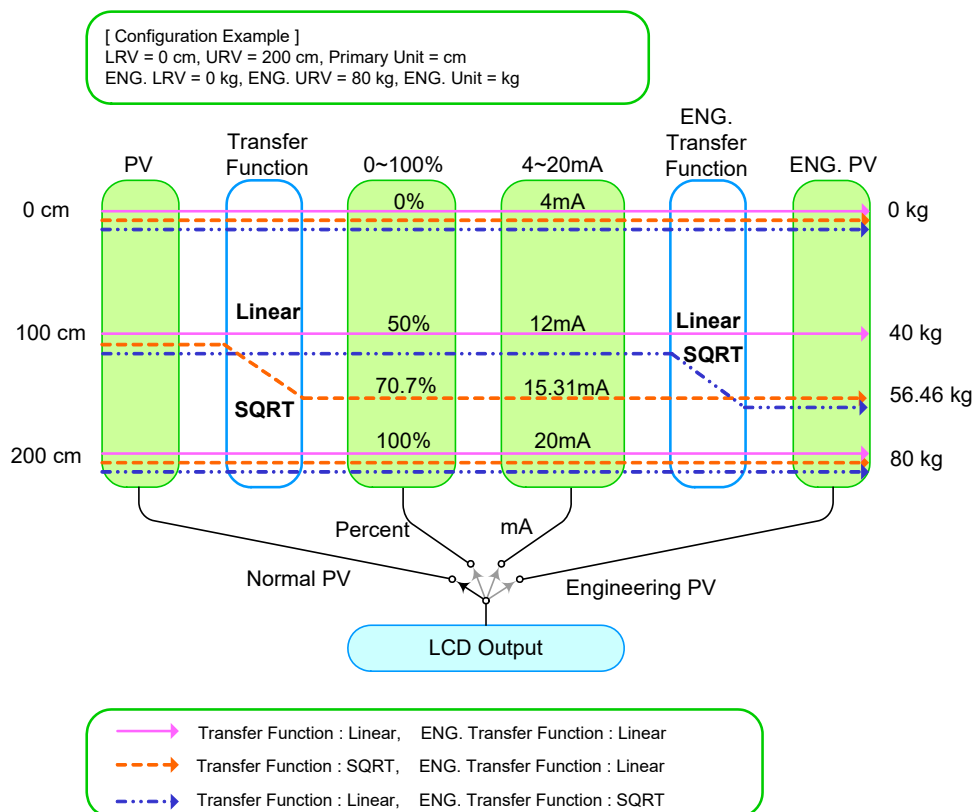
The measured primary value can be set to the desired unit for display by LCD and HART. Available units are as follows.

Available units	feet, meter, inch, cm, mm
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The transmitter of the AUTROL series provides additional units for use in the LCD Engineering Mode. However, since the LCD Engineering Mode is a method of setting the display method on the LCD screen, the units added by the LCD Engineering Mode are used only for the LCD display and the HART uses the existing units.

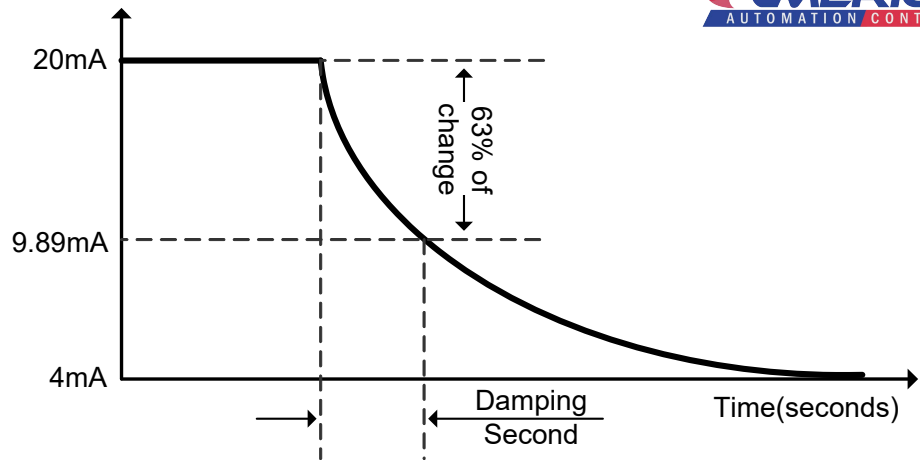
LCD Engineering Mode

The ALT-6300 can output measured results to the LCD screen in various ways. LCD Engineering Mode is a function that converts measured results into "numerical values □ □ with different weights" and outputs them to the LCD screen. In LCD Engineering Mode, Engineering Range is set separately and the measured result (0 ~ 100%) is mapped to Engineering Range and displayed on LCD. Refer to [Fig. 1-2] for the measurement value processing procedure in LCD Engineering Mode. Transfer Function and ENG. Note that the Transfer Function can not be set to SQRT at the same time.



Damping Time Setting

Damping is a function that relaxes and outputs the sudden change (shock) of the input without reflecting it directly to the output. In addition, the periodic noise and vibration components included in the measurement And filtering. Damping Second is defined as the time it takes for the output to reach 63% of the change in instantaneous input change. Damping Second shall be established by reviewing the system's required response time, signal stability, and other requirements.



[Drawing1-4] Damping Second

Damping Second can be set to a value between 0 and 60 seconds, and it is set to 1 second when shipped from the factory. The set value (Second) should be regarded as a "coefficient indicating the degree of damping". In practice, the definition itself is defined as "time to reach 63%", but it should be understood as "degree of relaxation" rather than "time" in actual use. In particular, if Damping Second is set to 1 second, do not perform an operation such as updating the output once every second.

Item	Setting history	HART	Button	Affected output items when changing settings
Basic setting	Change Range	○	○	All outputs except PV displayed on LCD
	Unit change	○	○	PV displayed on the LCD
	Damping Second change	○	○	All outputs
	Transfer Function change	○	○	All outputs except PV displayed on LCD
	Low-cut change	○	○	All outputs except PV displayed on LCD
	Loop Test	○	○	All outputs except PV displayed on LCD
	PV is changed	○	○	All outputs
	Change Tank Height	○	○	If Level, Output All
	Change Probe Length	○	○	In some cases,
	Change Probe Angle	○	○	All outputs
High and Low alarm value	○	○	Change alarm output	
correction	Zero Trim	○	○	All outputs
	Zero Adjustment	○	○	All outputs
	Full Trim	○	✗	All outputs

	D/A Trim	○	✗	4~20mA
elautograph Information setting	Change Polling Address	○	○	4~20mA
	Set transmitter default information. (Tag, Date, Descriptor, Message Etc...)	○	✗	-
LCD Display	Change LCD mode	○	○	LCD display all
	Change Decimal Place	○	○	LCD display all
	LCD Engineering Mode change (Eng Range, Eng Unit, Eng Transfer Function Etc...)	○	○	LCD Engineering Value
Other	Button Lock setting	△	○	
	Master Reset	○	○	All outputs

Customer Service and Support



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