

KSONIK MICRO LP

Ultrasonic Level Transmitter

“Loop powered” ultrasonic level transmitter
K-TEK Products



Introduction

This operating instruction manual provides the following information:

- Quick start guide - see page 3
- Instructions on changing parameters -see page 4
- Installation instructions - see page 5
- Configuration guidelines - see page 6

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1.0 Introduction

The KMICRO LP range works on the non-contact principle of ultrasonics. A pulse of energy emits from the Transducer at the speed of sound and is detected on its return. The Transmitter can distinguish the difference between the correct echo and other ambient noise. When the signal returns, the KMICRO LP measures the time period, and then knowing the speed of sound, it can accurately calculate the distance from the material to the Transducer. The Microprocessor will adjust the display and 4-20 mA output accordingly.



2.0 Quick Start for the KSONIK MICRO LP

Initially, the default unit of measurement (meters) must be changed to feet. Refer to page 5 for the method of changing parameters and select "ft" in the "Unit" parameter, "ENTER" it and press "RUN".

KSONIK MICRO LP was designed with a very simple configuration program. This allows the technician to set up KSONIK MICRO LP without the aid of a complicated source code book. There are no references to any codes in KSONIK MICRO LP. The set up procedure is all menu driven.

KSONIK MICRO LP Wiring Connections

Simply connect the regulated power supply to positive and negative terminals. A multi-meter can be placed in series with the positive supply to measure the mA output.

Aim the transducer at a wall about 3 ft. away and check the display. It should read the following:

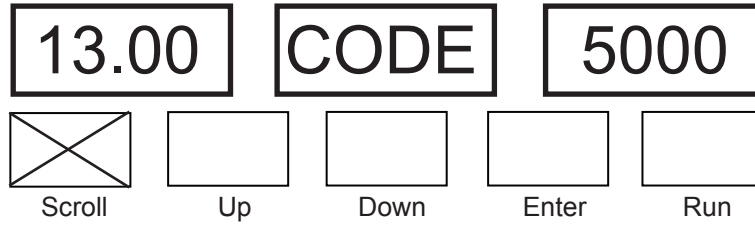
13.00

If the reading is below 13.00 ft., then move the transducer closer to the wall. If the reading is above 13.00 ft., then move the transducer away from the wall. You may now proceed and check other distances.

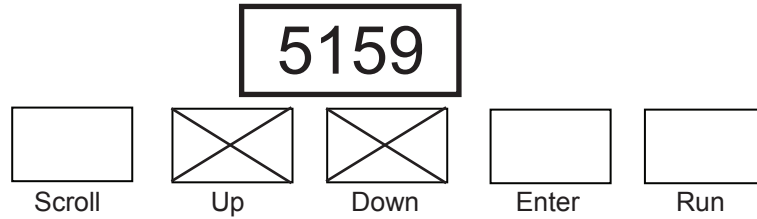
3.0 Changing Parameters

Before any parameters can be changed, the security code must first be entered in order to gain access to the parameters.

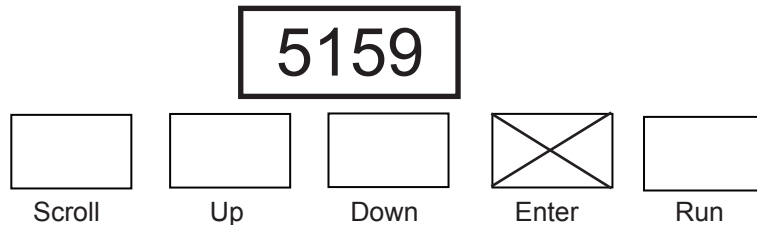
Step 1: Simply SCROLL and the SECURITYCODE prompt will be displayed.



Step 2: Then enter the code 5159 by pressing the UP and DOWN keys.



Step 3: Press Enter.



Code has been accepted.

ACC

Code not accepted, please try again.

13.00

The display will indicate that it has accepted the code by displaying "ACC" and then it will display "ED" empty distance. If you would like to carry on programming, the configuration list is on page 6 for the KSONIK MICRO LP.

4.0 Installation

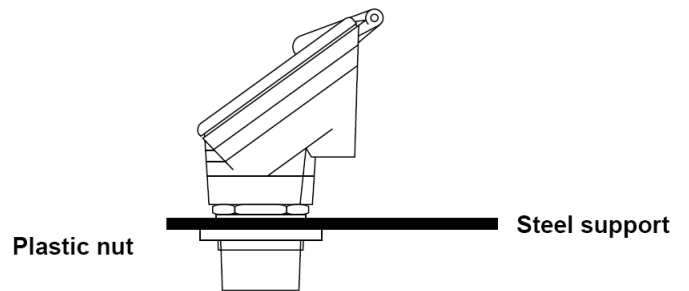
KMICRO LP is protected to IP65. The Transmitter is dust and waterproof so it can be mounted outside. The LCD display should not face full sunlight as this can cause the display to fail. KMICRO COMPACT LP should be fixed to a chassis plate using a plastic nut to tighten the 2-inch NPT thread.

DO NOT INSTALL KMICRO LP in areas of high vibration as this may cause failure.

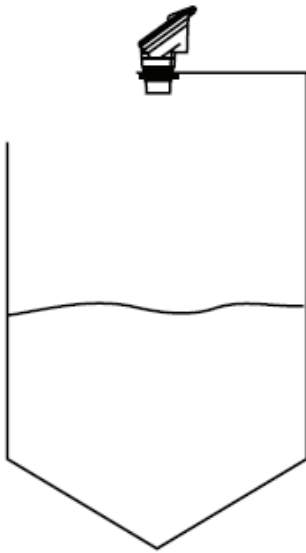
DO NOT INSTALL KMICRO LP in the close vicinity of electrical cable, SCR's or variable speed drives.

The installation of KMICRO LP is the most important section of this manual and has been driven up into 6 sub sections.

1. KMICRO LP must be fitted at least 1.64 ft / 0.50 m above the highest point of level.
2. Always use the plastic nut. KMICRO LP must be fitted to a rigid support. Use mild steel or a suitable plastic. Do not use stainless steel as this can cause ringing.
3. KMICRO LP must be perpendicular to the material it is measuring with a clear line of sight and must not be above beams or filling points.



Transducer perpendicular to liquid level.

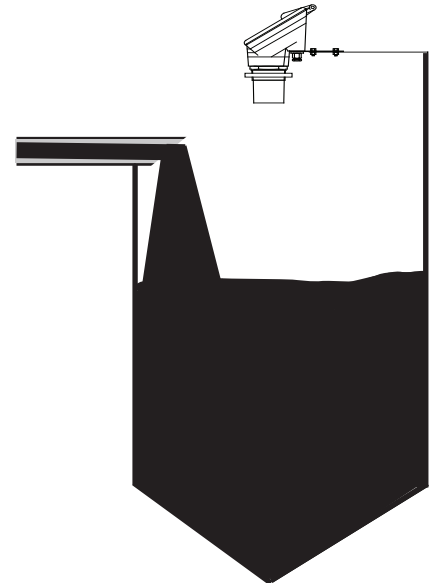


INCORRECT



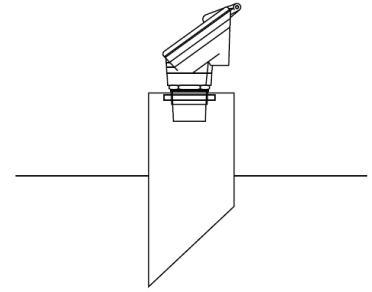
This is **INCORRECT** as the filling point is obscuring the KSONIK's line of sight

CORRECT



This is **CORRECT** as the filling point is **NOT** obscuring the KSONIK's line of sight

4. If KMICRO LP is in a coned vessel, it must be positioned over the cone. This ensures that the Transducer receives the true echo and not one from the sides of the cone.
5. When a standpipe is being used it must be as wide as possible; i.e. the pipe diameter must be at least double its height, preferably made of plastic. The base MUST have a 45° chamber to reduce the echo size from the bottom of the standpipe. No welding should be present on the inside of the pipe as this causes false echoes.
6. If any large electrical equipment is installed in the vicinity, then earthed steel conduit must be used.



5.0 Key Description

KMICRO LP is “user friendly” having only 5 keys and a menu driven display. The keys are listed below with their appropriate functions.

SCROLL

This is used to initially access the programming and then to run through the various commands.



This key is used to INCREASE the value in the various commands.



This key is used to INCREASE the value in the various commands.

ENTER

When the value has been selected it can be accepted by pressing the ENTER key.

RUN

When programming is complete, press RUN to return KSONIK MICRO back to the run mode.

SECURITY CODE

To advance to the programming mode, the correct security code must be entered. The factory default code is 5159.

6.0 Configuration for KSONIK MICRO LP

FLOW MODE		
BASIC	OPTIONS	DEFAULTS
SECURITY CODE	0-9999	5159
EMPTY DISTANCE	1.31 - 16.40 FT	16.40 FT
	0.40 - 5.00 M	
SPAN	0.33 - 15.42 FT	15.42 FT
	0.10 - 4.70 M	
RATE OF CHANGE	0.33 - 32.81 FT / MIN	3.28 FT / MIN
	0.10 - 10.00 M / MIN	
LOSS	LO/HI/HOLD	HOLD
LOSS OF ECHO TIME	30-900 SEC	300 SEC
FACTORY RESET	YES/NO	NO
ZERO OFFSET	-1.97 - 1.97 IN	0 IN
	-50 - +50 MM	
UNIT	FEET / METERS	FEET

SECURITY CODE

Security code to advance to programming.

DEFAULT 5159

EMPTY DISTANCE

This is the distance from the face of the transducer to the bottom of the tank.

DEFAULT 16.42 ft.

SPAN

This figure is the measuring range of the instrument i.e. distance from the bottom of the tank to the highest point being measured. Remember, the material must not approach within 16.4 ft. of the transducer face.

DEFAULT 15.42 ft.

RATE OF CHANGE

This is used to set up the rate of change of the level output. Increase the number if the level moves faster than 3.28 ft. / min and decrease it if a more stable output is required.

DEFAULT 3.28 ft. / min

LOSS

If a loss of echo condition is reached then the 4-20 mA output will follow the configured settings 3,6 mA (LO), 21 mA (HI), or hold the last recognized echo.

DEFAULT HOLD

LOSS OF ECHO DELAY TIME

This sets up the time period from the time the KSONIK MICRO does not receive a good echo to the time it goes into the loss of echo routine.

DEFAULT 300 SEC

FACTORY RESET

This prompt will reset all the values entered back to the factory setting except the password. Please write down all settings before using this function.

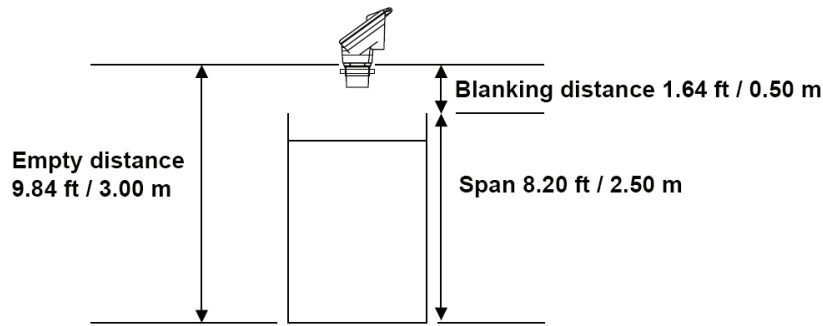
DEFAULT NO

ZERO ADJUST

Should there be a small zero offset in the measurement this function can correct it up to -1.97 in. / -50 mm and +1.97 in. / 50 mm.

DEFAULT 0 IN

7.0 Example - Level Measurement for KMICRO LP



The KSONIK MICRO LP is monitoring the level in an open tank and sending back to the control room a 4-20mA signal. The tank is 8.20 ft / 2.50 m high and the transducer is mounted 1.64 ft / 0.50 m above the tank. The actual level is at 6.56 ft / 2.00 m which would make the output 16.8 mA.

SECURITY CODE	5159
EMPTY DISTANCE (ED)	9.84 FT / 3.00 M
SPAN	8.20 FT / 2.50 M
LOSS	HOLD

Below is what KSONIK MICRO LP will display on the above application. The analog output should be approximately 16.8 mA.

06.56

8.0 Fault Finding

There are three categories of possible faults. The malfunction of the instrument, loss of echo and wrong reading. The biggest problem is to identify the malfunction. If the instrument is not working satisfactorily then remove the transmitter to the workshop. Connect the power and aim the KSONIK MICRO to a wall about 6.00 ft away, making sure that it is perpendicular to the wall. Now reset the instrument by the factory reset prompt. Change the unit of measurement back to feet. The Instrument should now read about 9.85. If it does not read the above then there is a malfunction with the instrument and it should be returned for repair. If the above works and it still does not work in the field then there are many possible problems. Please check below for possibilities.

Loss of Echo

Check that the KSONIK MICRO is not being used on a solid or agitated surface, as agitated surfaces and solids do not reflect as much signal as flat surfaces. Aim the Transducer straight down. Check if the Transducer face is dirty.

Wrong reading, always reading close to the transducer.

Do not reduce the blanking distance below 1.64 ft / 0.50 m unless consultation has been made with ABB. Electrical noise can cause this error. Remove noise.

Wrong reading, anywhere in tank.

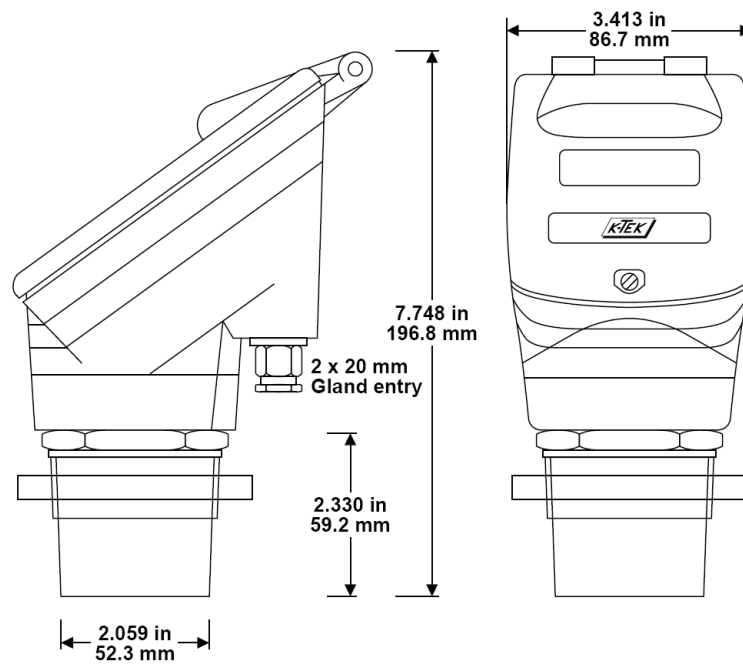
Check to see if there is a reflection from the wall. Please note that a piece of wire across a tank can be a big enough echo to be accepted. Are the parameters correct? Reset to factory default and check that KSONIK MICRO reads correctly. If the factory settings are OK then your parameters need changing. Re-check them with a tape measure.

9.0 Terminal Connections



**Connections -
KSONIK MICRO LP**
Power Supply and Output
- Negative 4-20 mA and power
+ Positive 4-20 mA and power

10.0 Dimensions



11.0 Customer Support

ABB

No.5, Lane 369, Chuangye Road,
KangQiao Town, Pudong District,
Shanghai, 201319, P. R. China

Phone: (86)21 6105 6666

Fax: (86)21 6105 6992

Email: china.instrumentation@cn.abb.com

Website: www.abb.com/level

11.1 ABB RMA Form

***** IMPORTANT CUSTOMER NOTICE: PLEASE READ PRIOR TO RETURNING PRODUCTS TO ABB*****

Be sure to include the Return Authorization (RA) number on the shipping label or package to the attention: Customer Service. A copy of this document should also be included with the packing list. ABB wants to maintain a safe work environment for its employees. In the event, the returned product or material has been in contact with a potentially hazardous chemical, per federal regulations, the customer must provide evidence of decontamination and the related chemical composition and characteristics. In order to expedite your return, please include the applicable Material Safety Data Sheets (MSDS) and decontamination tags by affixing these documents in close proximity to the shipment label for identification purposes. (January 18, 2006)

Return Authorization Form	
Customer:	Date:
Contact Name:	Product:
Contact Email:	Serial No:
Contact Phone:	Job No:
Contact Fax:	Service Rep:
Completed by Customer	
Reason:	
Problem Found: None	
Action None	
Requested:	
Is expedited return shipping requested?	<input type="checkbox"/> Yes
<i>If yes, please provide a purchase order or your shipper's account number (ex FedEx or UPS). ABB pays return transport via standard ground shipments only.</i>	
Account #:	
If purchase order is issued, a copy of purchase order must be included with return authorization documentation.	
Is ABB authorized to repair items determined to be non-warranty?	
<i>If yes, a copy of purchase order must be included with return authorization documentation.</i>	
<input type="checkbox"/> Yes	
Customer PO#:	Date:
Has product been in contact with any potentially hazardous chemical?	
<i>If yes, documentation product and forward MSDS to ABB. "ATTN: Customer Service"</i>	
<input type="checkbox"/> Yes	
Return Repaired Product to Address	
Shipping Address:	Billing Address:
	Ship Via:

12.0 Declaration of Conformity

The KMICRO COMPACT LP range complies with conformity in accordance with the following tests.

Electromagnetic Compatibility

Susceptibility:	EN50082-1 EN50082-2	EN801-2,3,4, ENV50140 EN61000-4-2 EN61000-4-4	ENV50204 ENV50141
Emission:	EN50081-2 EN50081-1	EN55011 EN55022	EN60555-2,3
Safety:	BSEN61010-1		

CE Conformity Declaration

The KMICRO LP is in accordance with EN50081-2 1993 and EN50082-2 1995.
Prairieville, Louisiana December 20, 2002

Eric Fauveau

Eric Fauveau, V.P. R & D
ABB

13.0 Warranty

5 YEAR WARRANTY FOR:

KM26 Magnetic Liquid Level Gauges; MagWave Dual Chamber System; LS Series Mechanical Level Switches (LS500, LS550, LS600, LS700, LS800 & LS900); EC External Chambers, STW Stilling Wells and ST95 Seal Pots.

3 YEAR WARRANTY FOR:

KCAP300 & KCAP400 capacitance switches. BETA Pressure and Temperature Switches have a limited factory guarantee, excluding wetted parts & consumables.

2 YEAR WARRANTY FOR:

AT100, AT100S and AT200 series transmitters; RS80 and RS85 liquid vibrating fork switches; RLT100 and RLT200 reed switch level transmitters; TX, TS, TQ, IX and IM thermal dispersion switches; IR10 and PP10 External Relays; MT2000, MT5000, MT5100 and MT5200 radar level transmitters; RI100 Repeat Indicators; KP paddle switches; A02, A75 & A77 RF capacitance level switches and A38 RF capacitance level transmitters; Buoyancy Level Switches (MS50, MS10, MS8D & MS8F); Magnetic Level Switches (MS30, MS40, MS41, PS35 & PS45).

1 YEAR WARRANTY FOR:

KM50 gauging device; AT500 and AT600 series transmitters; LaserMeter and SureShot series laser transmitters; LPM200 digital indicator; DPM100 digital indicators; APM100 analog indicators; KVIEW series digital indicators and controllers; SF50 and SF60 vibrating fork switches, KB Electro-Mechanical Continuous Measuring Devices, KSONIK ultrasonic level switches, transmitters & transducers, ChuteMaster Microwave Transmitter / Receiver and TiltMaster Switches.

SPECIAL WARRANTY CONSIDERATIONS:

ABB does not honor OEM warranties for items not manufactured by ABB (i.e. Palm Pilots). These claims should be handled directly with the OEM.

ABB will repair or replace, at ABB's election, defective items which are returned to ABB by the original purchaser within the period specified above from the shipment date of the item and which is found, upon examination by ABB, to its satisfaction, to contain defects in materials or workmanship which arose only under normal use and service and which were not the result of either alterations, misuse, abuse, improper or inadequate adjustments, applications or servicing of the product. ABB's warranty does not include onsite repair or services. Field service rates can be supplied on request.

If a product is believed to be defective, the original purchaser shall notify ABB and request a Returned Material Authorization before returning the material to ABB, with transportation prepaid by the purchaser. (To expedite all returns/repairs from outside of the United States, consult ABB's customer service team (service@ktekcorp.com) to determine an optimal solution for shipping method and turnaround time.) The product, with repaired or replaced parts, shall be returned to the purchaser at any point in the world with transportation prepaid by ABB for best-way transportation only. ABB is not responsible for expedited shipping charges. If the product is shipped to ABB freight collect, then it will be returned to the customer freight collect.

If inspection by ABB does not disclose any defects in material or workmanship, ABB's normal charges for repair and shipment shall apply (minimum 250.00 USD).

The materials of construction for all ABB products are clearly specified and it is the responsibility of the purchaser to determine the compatibility of the materials for the application.

THE FOREGOING WARRANTY IS ABB'S SOLE WARRANTY AND ALL OTHER WARRANTIES EXPRESSED, IMPLIED, OR STATUTORY, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED AND NEGATED TO THE MAXIMUM EXTENT PERMITTED BY LAW. NO PERSON OR REPRESENTATIVE IS AUTHORIZED TO EXTEND ANY OTHER WARRANTY OR CREATE FOR ABB ANY OTHER LIABILITY IN CONNECTION WITH THE SALE OF ABB'S PRODUCTS. THE REMEDIES SET FORTH IN THIS WARRANTY ARE EXCLUSIVE OF ALL OTHER REMEDIES AGAINST ABB. ABB SHALL NOT BE LIABLE FOR ANY CONSEQUENTIAL, INCIDENTAL, OR SPECIAL DAMAGES OF ANY KIND. ABB'S SOLE OBLIGATION SHALL BE TO REPAIR OR REPLACE PARTS (FOUND TO BE DEFECTIVE IN MATERIALS OR WORKMANSHIP) WHICH ARE RETURNED BY THE PURCHASER TO ABB.

14.0 Customer Support

ABB

No.5, Lane 369, Chuangye Road,
KangQiao Town, Pudong District,
Shanghai, 201319, P. R. China
Tel: +86 21 6105 6666
Fax: +86 21 6105 6992
www.abb.com/level

Contact us

ABB Engineering (Shanghai) Ltd.

No.5, Lane 369, Chuangye Road,
KangQiao Town, Pudong District,
Shanghai, 201319, P. R. China

Phone: (86)21 6105 6666

Fax: (86)21 6105 6992

www.abb.com/level

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