

Instruction Manual



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ANDERSON-NEGELE

Instrument Model Number _____

Instrument Serial Number _____



"ILM-4" Inductive Conductivity Sensor

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Section 1 - General

1.1 - Description

The ILM-4 conductivity sensor has been specifically designed for placement in Dairy, Food and Beverage applications where conductivity measurement is required. The ILM uses an inductive system that measures the electrical conductivity of a liquid. The sensor takes this measurement and calculates the result in a variety of units ranging from siemens down to micro siemens depending on actual liquid conductivity. The calculated value is then displayed along with the creation of analog outputs representing the measurement based on an internally selected range. In addition to the display and analog outputs, the ILM also offers an optional digital input that can be used to change the internal range selection of the analog outputs. The resulting output signals may be interfaced with Anderson Digital Indicators, Anderson recording devices or Customer supplied instrumentation including programmable logic controllers. Multiple sizes are available to allow adapting a variety of piping sizes. The ILM-4 is 3-A authorized with all wetted parts are constructed of 316L stainless steel and PEEK plastic. Two keys allow for programming changes that can affect the analog and display operation.

1.2 - Specifications

Process Connection: G1", 1.5", 2", 2.5", 3"

Materials Connection Head: 1.4305 (303 Stainless)

Fitting: 1.4404 (316L)

Toroid: PEEK

Window Material: PMMA/Acrylic

Temperature Ranges

Ambient: -10-70 °C (14-158°F)

Process: 0-130 °C (32-266°F)

CIP/SIP-Cleaning: up to 150°C (300°F) for up to 60 minutes

Operating Pressure: 10bar (150 psi) maximum

Measurement Principle: Inductive conductivity

Ranges: 0.5 to 999mS/cm, Freely programmable

Repeatability: within < 1% of measured value

Response Time temperature: T90 15...60sec

Display: backlit LCD, 5 lines

Electrical Connection: 1-2 x M12 plug-in (SS 316), (1) 4 pin, (1) 5 pin

Supply Voltage: 24 (18-35 VDC)@ 190 mA

Input Range Switching: E1=24 (18-35 VDC) Galvanically Isolated

Analog outputs: 4-20 mA active

Short Circuit Proof: DC decoupled

Weight: approx. 1300g. (2.7lbs.)

Environmental Protection: Designed and factory tested to IP69K;intended for use in wet environments at up to 100% relative humidity

Approvals:

Conforms to UL Std 61010-1 3rd Ed

Certified to CSA Std C22.2 61010-1 3rd Ed

1.3 - General Safety

These safety instructions have to be strictly observed in order:

- To not endanger the safety of persons and environment
- To avoid any damages to the measuring instrument
- To prevent any faulty product as a result of use

The electric connection may only be carried out by qualified persons who have the necessary electrical knowledge and have been authorized by the owner to do so. The wiring of the voltage supply and the inputs and outputs of the control circuits has to be carried out professionally in consideration of current electrical design and regulation. Also refer to chapter 3 "Installation"/"Electrical" for more information.

In particular, the following references have to be observed:

- Safety instructions
 - Electrical connection information
1. All persons who are involved in the installation, commissioning, operation, service, and maintenance of the sensor have to be qualified accordingly.
 2. This instruction manual has to be strictly observed. The user of the sensor has to assured that the personnel concerned has read and fully understood the instruction manual.
 3. All work done must be carried out by authorized and trained personnel only.
 4. The instruction manual should be kept in close proximity to the device for reference to the operators.
 5. Before starting any cleaning, conversion, service or maintenance work, the measuring device has to be switched off and disconnected from the power. This requires a device for separating all live wires, e.g. a 2-pole main switch in the control cabinet. The associated device has to be protected against unauthorized switching-on.
 6. Before starting any service and maintenance work, the system has to be flushed with water and emptied. If the sensor has to be removed from the pipe system, all pipelines will have to be emptied prior to removal and protected by a maintaining an opening to atmosphere or a shut-off method to prevent refilling.
 7. Never remove or put out of action any safety devices through modification of the sensor.
 8. Do not touch any part of the sensor while the measuring instrument is cleaned as there is a risk of getting burned!
 9. To minimize the danger of injury, the working area around the sensor should have sufficient free space.
 10. The technical data according to the instruction manual, nameplate needs to be considered against the requirements of the application.

If damage is done to the sensor, all warranties are void.

Dangers not resulting from the functionality of the device, but from the ambient and operating conditions present at the place of application, have to be referred to in appropriate instructions to the operators and by the use of danger signs. The user of the device is exclusively responsible for the compliance with these instructions!

1.4 - Intended use

The ILM-4 conductivity sensor is only to be used for the application that it has been designed, dimensioned and built. The electrical connection must be made to a direct current network (see the nameplate).

The intended purpose of the conductivity sensor is the measurement of liquid electrical conductivity in the food processing, beverage, pharmaceutical and chemical industries. This sensor is not suitable for the measurement of hazardous, explosive, and combustible liquids of PED group.

Any modifications to the measuring device that might have an influence on the function and the safety devices of the sensor are only allowed to be carried out by authorized persons of Anderson Instrument Company. Possible misuse including any use in contradiction to the above-mentioned application is an indication of misuse of the measuring instrument!

In such a case Anderson does not assume any responsibility for safety.

Section 2 - Application Requirements

2.1 - Conditions required for the sensor

The sensor has to be installed in the product line with power supplied for operation. When selecting the place for the installation of the sensor you should ensure that the housing can be opened for service work whenever needed and that the sensor can be simply removed, if necessary. In order to protect the electronics from damage, select an installation location so that:



Warning! Do not subject this sensor to pressure that exceeds the specified upper range limit. Over-pressure may cause premature failure, incorrect output signal, or possible human injury.

- Product temperature is always kept within the admissible temperature

Caution: Do not expose the sensor to process or ambient temperatures that exceed the rated specifications. Physical damage, incorrect output signal, or premature failure may result.

- Piping is securely mounted (e.g. to avoid vibration)
- Sensor can be emptied if there is a risk of freezing
- Connection housing is not permanently exposed to dripping water

2.2 - Mounting Position

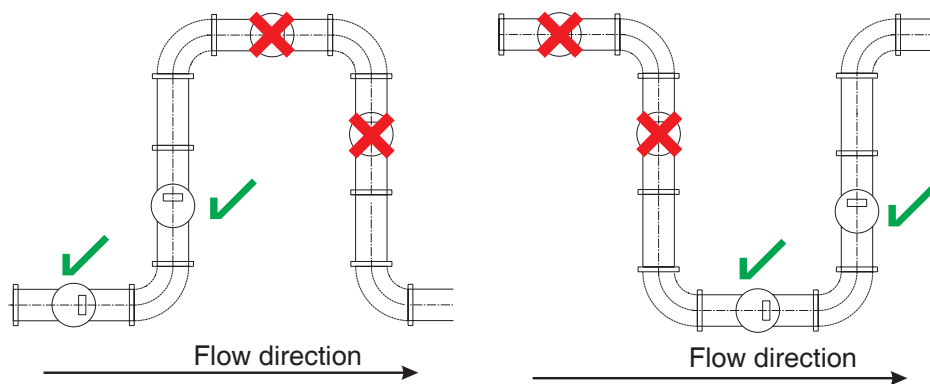
Ensure that the mounting position of the sensor guarantees that the measurement body is always submerged in media. Air or air bubbles will negatively impact measurement.

Correct installation:

- Install the sensor in or in front of ascending pipes also making sure to align the measurement hole in the toroid to the path of the liquid flow

Wrong installation:

- In or in front of descending pipes
- Into the highest point of a pipe. Air or air bubbles will concentrate there. Refer to drawings below for examples.



Section 3 - Installation

3.1 - Mounting in the line

Caution: Handle with care during installation to avoid damage to the sensor. Physical damage, especially to the PEEK sensing surfaces can cause incorrect output signal or premature failure. The ILM does not require a supported pipeline.

Caution: For proper mounting of this sensor, verify that the fitting connection type, size, gasket or seal, and holding ring or clamp match the process connection it is being mounted to. Improper mounting can cause process leakage, reduced pressure ratings, and/or contamination issues.

3.2 - Electrical

3.2.1 - Cabling and Connections

Anderson recommends the use molded five wire molded cord sets to provide the best protection in wet environments. Wire should be 18-24 AWG, 4 conductor cable to power the ILM-4 and provide a return for the analog output signal. In addition, it should be foil shielded with a continuous drain wire. The ILM is provided with M12 quick disconnect electrical connectors that will prevent moisture from entering the electronics housing. The drain (ground) wire should be attached to ground at only the receiving device end.

WARNING: To prevent signal interference, do not run signal cable closer than 12" to AC wiring.

3.2.2 - Power and Wiring



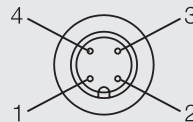
Warning! This unit accepts DC voltage only, connection to AC voltage can cause failure of the sensor and/or risk of electrocution

The ILM requires 24 VDC (18-35 VDC) at 190mA current for proper operation. The source should be regulated at limited to 4.2A. The diagrams below illustrate the pin assignments for the M12 connectors used on the ILM.

M12 connection Option "A"

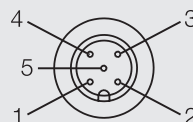
M12 connector (4-pin)

- 1: Conductivity -
- 2: Conductivity +
- 3: Power supply +24 V DC
- 4: Power supply -



M12 connector (5-pin)

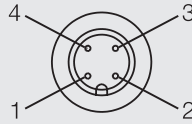
- 1: Output temperature +
- 2: Not assigned
- 3: Not assigned
- 4: Output temperature -
- 5: Digital input E1



M12 connection Option "N"

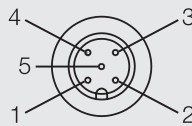
M12 connector (4-pin)

- 1: Output 1 +
- 2: Output 2 +
- 3: Output 2 -
- 4: Output 1 -



M12 connector (5-pin)

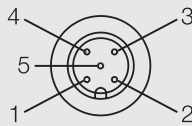
- 1: Power supply +24 V DC
- 2: Not assigned
- 3: Not assigned
- 4: Power supply -
- 5: Digital input E1



M12 connection Option "M"

M12 connector (5-pin)

- 1: Power supply +24 V DC
- 2: Output +
- 3: Output -
- 4: Power supply -
- 5: Digital input E1



Section 4 - Commissioning

Following mounting and electrical connections the device can now be turned on for use. With an empty measurement pipe the signal will not be expected to read "0". This reading is not a concern as the sensor have been designed for the measurement of liquids not gasses. Once filled with clear liquid the signal should stabilize to a reading representative of the liquids conductivity and the configuration of the sensor. The ILM-4 is factory calibrated and ready to use once installed. If a check of performance is desired it is recommended a check using reference calibration solutions be performed.

Section 5 - Operation

Once commissioned there is no further need to interact with the ILM other than reading the display to view the conductivity measurement as the measurement is continuous and automatic. The response of the ILM to various liquids is dependent on the free ion content of the liquid.

Section 6 - Parameterization

The ILM-4 inductive conductivity sensor is set to operate without requiring special adaptations. In isolated instances, some parameters may need to be adjusted. The parameterization may be changed using the PC-based MPI-200 programming adapter or the Simple User Interface directly on the sensor. This can be performed either directly on location or in the office in a dry simulation.

When setting the parameters, please note that a hierarchy of authorization levels exists (0 Monitoring, 1 Adjustment, 2 Setup 3 Calibration and 4 Factory). It is not possible to change the ILM-4 sensor parameters in the lowest "Monitoring" level. The parameters can be set/adjusted beginning with the "Adjustment" level. The farther up you move in the hierarchy, the more parameters can be changed at the customer site, although it should be noted that the upper levels, "**Calibration**" and "**Factory**", are password-protected and access is only possible on request.

Setting can be made regarding the sensor signal output (4...20 mA signal) and the measurement of conductivity, concentration and temperature. The 2 analog outputs of the sensor for conductivity, concentration and temperature are freely configurable.

Conductivity: Two different conductivities can be set independently of each other. The upper range limit can be freely selected. The temperature compensation and damping can also be set by the customer.

Concentration: The concentration can be select from 2 predefined ranges for common CIP media (NaOH or HNO₃). In addition, up to 8 customer-specific support points (each for conductivity and concentration) can be entered. To define a range, at least 2 points must be entered, and their values must both be > 0. Users can enter these support points in the "Setup" level and higher. The temperature compensation, damping and upper range limit can also be set.

Temperature: Output of the temperature of the medium measured at the tip of the PEEK part on the sensor. The temperature unit and response time can be adjusted.

The table below shows the conductivity sensor settings by authorization level:

Parameter	Settings in the "Adjustment" level	Settings in the "Setup" level	Adjustable range
Conductivity measurement			
Conductivity 1			
	Temperature Compensation	Temperature Compensation	Freely adjustable from 0...100%/K
		Damping 1	Selectable: inactive, 2.5 s, 5 s, 10 s, 20 s
	Upper Range Value	Upper Range Value	Freely adjustable from 0.5...1000 mS/cm (in increments of 0.5)
Concentration			
	Temperature Compensation	Temperature Compensation	Freely adjustable from 0...100%/K
		Damping C	Selectable: inactive, 2.5 s, 5 s, 10 s, 20 s
	Media Concentr. Range	Media Concentr. Range	NaOH 0...10%, HNO3 0...20% or customer-specific points (beginning with "Setup" level)
	Upper Range Value	Upper Range Value	Freely adjustable from 1...100%
		(+) Customer-specific points, concentration	Up to 8 support points for conductivity and concentration
Conductivity 2			
	Temperature Compensation	Temperature Compensation	Freely adjustable from 0...100%/K
		Damping 2	Selectable: inactive, 2.5 s, 5 s, 10 s, 20 s
	Upper Range Value	Upper Range Value	Freely adjustable from 0.5...1000 mS/cm (in increments of 0.5)
Temperature			
		Unit Temperature	°C or °F
		Response Time	Normal or rapid

Both the PC/MPI-200 and Simple User Interface software is based on a tree structure.

In addition to the advanced options in the Conductivity Measurement branch, the "Setup" level also enables access to the Signaling Interface branch. The following parameters for the sensor output signals can be changed in this branch:

- **Signal selection for the 4...20 mA signal:** Selection between conductivity 1 or 2, concentration and temperature
- **Set value for 4 or 20 mA signal:** By default, the lower range limit is used for the 4 mA signal and the upper range limit for the 20 mA signal. This can be adjusted as necessary.
- **"No Media" warning signal:** Current loop signal when the sensor is not immersed in a medium — dry running.
- **"Outside Spec." warning signal:** Current loop signal if an operating state is outside of the specified range. The measurement accuracy can no longer be guaranteed.
- **"Global Failure" error signal:** Current loop signal if a malfunction occurs, for example if the device fails.
- **Signal limit for underrange and overrange:** Lower or upper limit of the current loop signal that is still valid and linear when output below 4 mA or above 20 mA.
- **"Underflow/overflow" error signal:** Current loop signal is below or above the underrange or overrange limit
- **Signaling Simulation:** Simulates the current loop signal, where the source value is briefly replaced by the entered parameter value.
- **LED configuration:** These two LEDs can be configured as required. The procedure is described in section 6.3.

A list of the parameters set in the conductivity sensor is included with the delivery. These parameter values, as well as those changed by the users themselves, can be printed out using the MPI-200 programming adapter via File — Parameter Data — Print and can also be exported as a file to the PC (via File — Parameter Data — Export Data File (*.xml)).

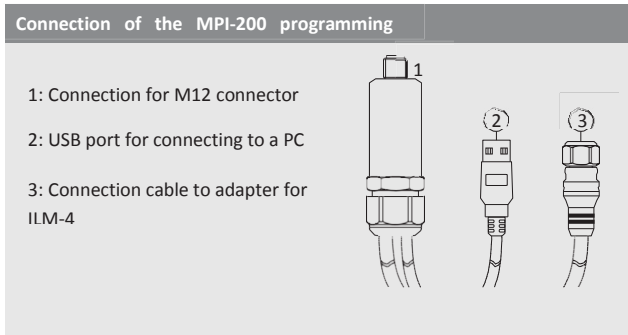
When making the settings, note the help texts in the MPI software for each parameter. They provide useful information on changing the selected parameter.

6.1 - Settings using the MPI-200 programming adapter

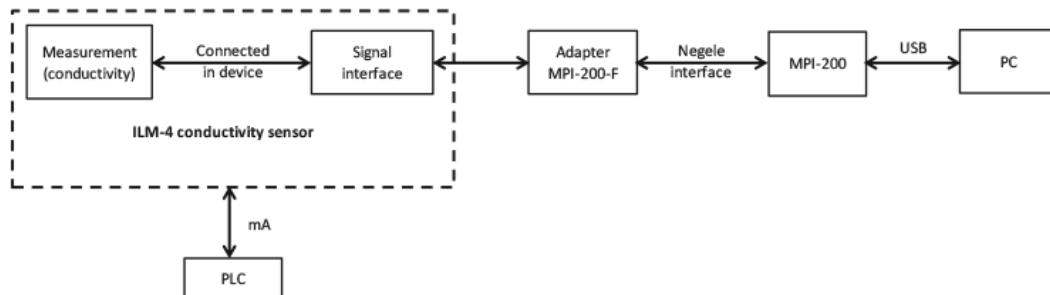
The MPI-200 programming adapter is connected to the ILM-4 conductivity sensor via the external MPI-200-F adapter piece. It must be ensured that the ILM-4 conductivity sensor is permanently connected to the supply voltage while the parameters are being set.



Connection plug for the MPI-200-F adapter as an intermediate plug between the ILM-4 electronics and the MPI-200 connection 3 (see the next figure).



Signal flow during programming



After the sensor is connected to the PC and the user software is opened, the following window appears:

1. Information on the current process value
2. Buttons for changing the parameter setting
3. Information on the current source value
4. Adjustable PC parameters
5. Adjustable sensor parameters

Clicking on the + in the menu opens a submenu in which parameters can be adjusted.



Note:

For further settings, please see also the description in the MPI-200 product information.

To set or change parameters directly in the sensor (see section 6.2 “Settings using the Simple User Interface”), you need the ID codes contained in the table below. This table only lists the most important ID codes.

Further ID codes can be found in the user software. To view these, right-click on “Info” by the parameter name. An info box appears with the respective ID (see graphic below):



Because the search number must have 6 digits, an additional digit is always added in front of the five-digit ID (30034 in the graphic above). This digit depends on the node as follows:

- 4 for changes to the display
- 3 for changes to the signal interface
- 0 for changes to the conductivity measurement

Because the signal selection is located in the single interface node, the ID code for the “Signal selection” example above is: 330034.

A list of all ID codes can be printed out via the PC user interface. To do so, click on File — Parameter Data — Print to open the corresponding window and print out the complete list of ID codes.

List of important ID codes:

Parameter/ parameter name	Access/setup mode (must be set before the change is made)	Search number (ID number)	Node/ module	Value name
Display				
Contrast User Interface	2 Setup	451020	4 Display	(#)
Backlight	2 Setup	451030	4 Display	(#)
Screensaver delay time	2 Setup	451050	4 Display	(#)
Signaling interface				
Current Loop Signal				
Signal Selection	2 Setup	330031	3 Signal Int	X45a current loop signal
4-mA Setpoint	2 Setup	330111	3 Signal Int	X45a current loop signal
20-mA Setpoint	2 Setup	330191	3 Signal Int	X45a current loop signal
Underrange Limit	2 Setup	330141	3 Signal Int	X45a current loop signal
Overrange Limit	2 Setup	330211	3 Signal Int	X45a current loop signal
LED 1 digital output				
Signal Selection	2 Setup	330034	3 Signal Int	LED 1 digital output
Warn-S: no Media	2 Setup	331191	3 Signal Int	LED 1 digital output
Warn-S: Outside Spec.	2 Setup	331201	3 Signal Int	LED 1 digital output
Fehler-S: Global Failure	2 Setup	331231	3 Signal Int	LED 1 digital output
Signal-Auswahl	2 Setup	330035	3 Signal Int	LED 2 digital output
LED 2 Digital Output				
Signal Selection	2 Setup	330035	3 Signal Int	LED 2 digital output
Warn-S: no Media	2 Setup	331192	3 Signal Int	LED 2 digital output
Warn-S: Outside Spec.	2 Setup	331202	3 Signal Int	LED 2 digital output
Fehler-S: Global Failure	2 Setup	331232	3 Signal Int	LED 2 digital output
Conductivity Measurement				
Unit of Temperature Comp	2 Setup	013021	0 Measure	(#)
Conductivity 1				
Temp. Compensation 1	2 Setup	013031	0 Measure	Conductivity 1
Damping 1	2 Setup	013041	0 Measure	Conductivity 1
Upper Range Value 1	2 Setup	013091	0 Measure	Conductivity 1
Concentration				
Temp. Compensation C	2 Setup	013032	0 Measure	Concentration C
Damping C	2 Setup	013042	0 Measure	Concentration C
Media Concentr. Range	2 Setup	013061	0 Measure	Concentration C
Upper Range Value C	2 Setup	013092	0 Measure	Concentration C
Conductivity 2				
Temp. Compensation 2	2 Setup	013033	0 Measure	Conductivity 2
Damping 2	2 Setup	013043	0 Measure	Conductivity 2
Upper Range Value 2	2 Setup	013093	0 Measure	Conductivity 2
Temperature				
Unit Temperature	2 Setup	013144	0 Measure	Temperature
Response Time	2 Setup	013145	0 Measure	Temperature

6.2 - Settings using the Simple User Interface

The software structure of the Simple User Interface is similar to that of the PC version. The system is operated using two control buttons to the left and right of the display. These two buttons can be used to navigate through the tree structure of the Simple User Interface to change parameters. The button functions are as follows:

Button	Press briefly	Press and hold
R	Jump to next node, parameter	Edit a node, parameter
L	Jump back to previous node, parameter	Leave editing mode without saving, return to next higher level
R/L	Scroll up and down	
R and L together		Press both buttons for 10 seconds: the menu jumps back to the beginning (attention: this is not a reset)

R right

L left

Note:

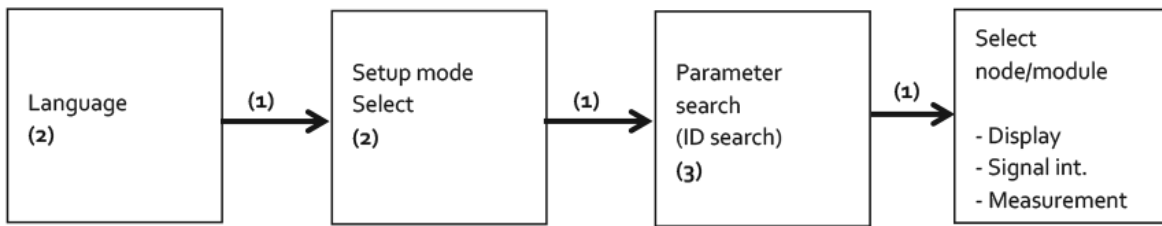
The digits 1), 2) and 3) shown in the graphic below refer to the programming example below.

1. Briefly press the right button.
2. Press and hold the right button, select the required mode (e.g. Setup) and node (e.g. Signalint), scroll through the menu using the right/left buttons and confirm the selection by pressing and holding the right button.
3. Press and hold the right button and then enter the ID number from right to left. Proceed as follows:
 - A. Select the desired position (navigation with the right/left buttons, press the left button: Change the position to the left, press the right button, change the position to the right).
 - B. At the desired position, press and hold the right button until the field becomes gray. Then enter the numerical value using the right/left buttons and confirm by pressing and holding the right button until the gray area disappears. Then enter the next digit.
 - C. After all digits have been entered, move all the way to the left with the left button until the field become gray. Then press and hold the right button. The system jumps to the selected parameter, which can now be entered or changed in the same manner. Start by pressing and holding the right button.

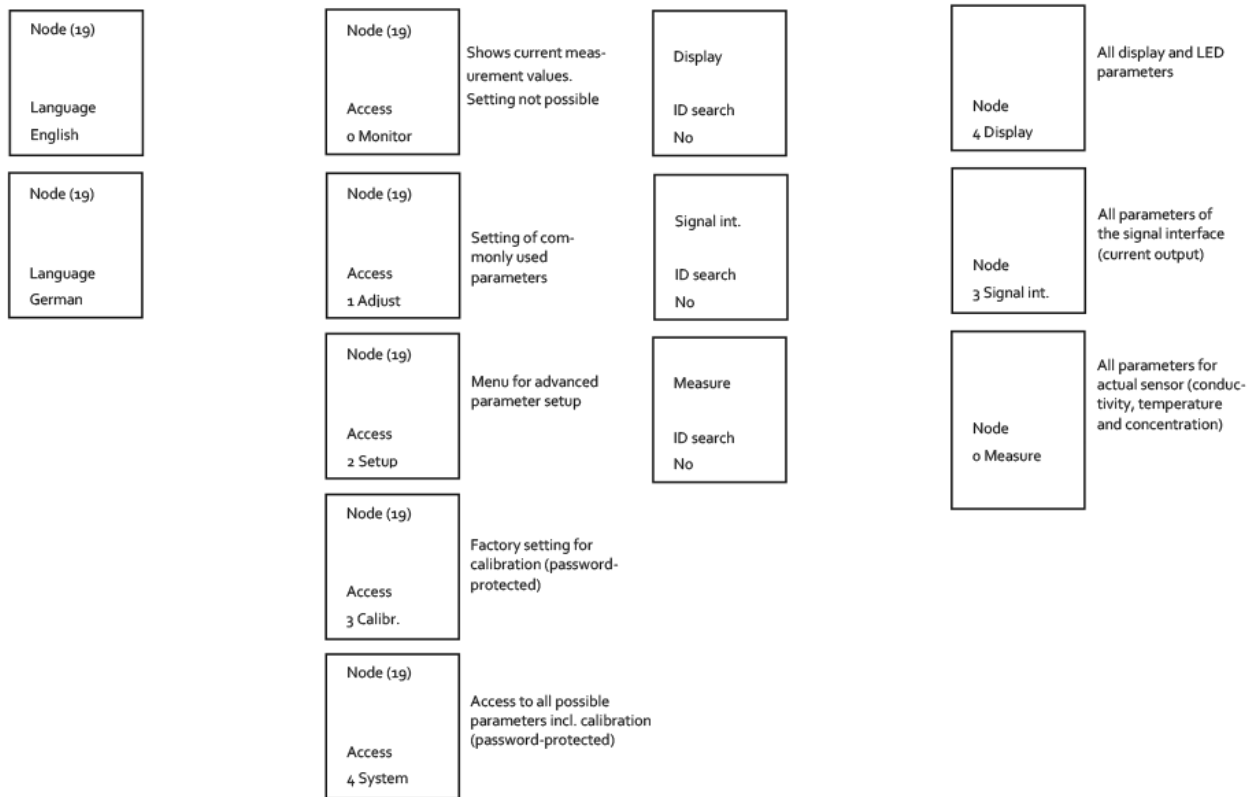
For some system-related parameters, you are asked to confirm that you really wish to make the change. Do this by pressing the left or right button.

- Press the right button to change the parameter or save the change.
- Press the left button to leave the setting without making a change.

Menu flowchart to change a parameter

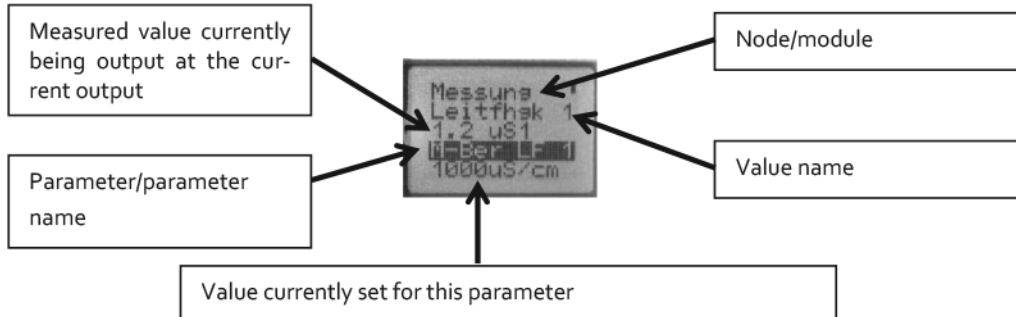


Example of screen display:



6.2.1 - Screen display

After the sensor parameters have been adapted/changed, or after the sensor is switched on and no change is made, the sensor switches to the display mode after a certain period. In the display mode, all nodes of the conductivity measurement are run through – conductivity 1, concentration, conductivity 2 and temperature. For each node, the following values/information is displayed:



6.2.2 - LED configuration

The display unit features 2 LEDs that can be individually configured. These can be used to visually indicate faults directly on-site. The LED to the left of the display is LED 1 while the one to the right is LED 2.

The following options can be selected when setting the LEDs:

- **Signal Selection:** The following signals can be selected: conductivity 1 and 2, temperature and concentration.
- **Output function, direction of action, switch point entry method, switch point, hysteresis**
- **Switch ON Delay, Switch OFF Delay:** The digital output is switched on or off with the delay set here. Values can be set between 0...30 s.
- **Warn-S: no Media, Warn-S: Outside Spec., Err-Sig: Underflow, Err-Sig: Overflow, Err-Sig: Global Failure:** The effect of each parameter on the LED display can be set. The following can be selected: “No Effect on Output”, “Output Fast Blinking” (0.4 s interval), “Output Slowly Blinking” (1 s interval), “Output ON” (LED on continuously) and “Output OFF”. “Output” refers to the LED here.
- **Signaling Simulation:** The source value is briefly replaced by the entered parameter value. The following situations can be simulated: “Output OFF”, “Output ON”, “Output Slowly Blinking” and “Output flashes rapidly”. “Output” refers to the LED here.

The conductivity sensor is delivered with the following factory settings for the LEDs:

- LED 1 (left LED)
Err-Sig: Overflow: The LED flashes every second if the sensor registers an overrange error. If the sensor is in a normal state, this LED is off.
- LED 2 (right LED)
Power ON Signal – Err-Sig: Global Failure: LED lights up continuously in normal mode as long as the device is supplied with power. If a device failure occurs, this LED flashes rapidly (approx. 0.4 s interval)

6.3 - Examples for settings sensors

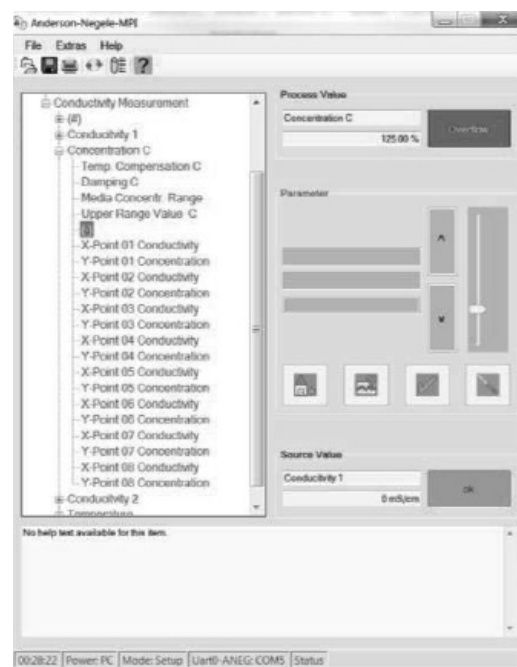
This section contains some examples that illustrate how the sensor can be set via the PC user interface or the Simple User Interface:

6.3.1 - Setting of customer-specific concentration curve via PC software

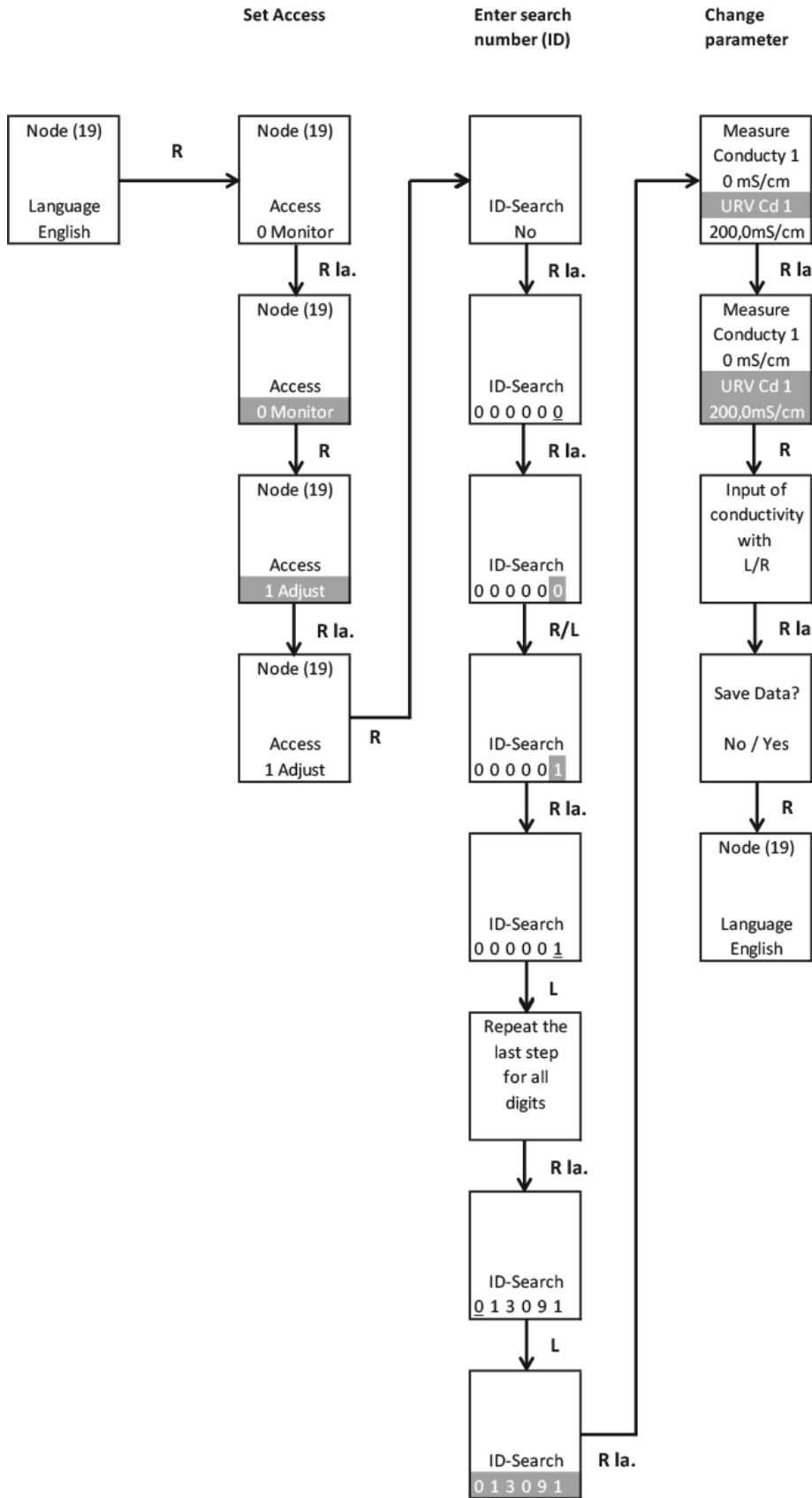
After the PC software is started, a customer-specific curve for the concentration can be entered via the following node: Conductivity Measurement — Concentration C — (+). Values need to be entered for at least 2 X and Y points. Up to 8 support points for X and the associated Y values can be entered to establish the relationship between conductivity (X) and concentration (Y). The Y values together with the associated X values form coordinates that act as support points for the linearization curve. If 0 is entered for any of these points, that support point is deactivated.

X-Point 01...X-Point 08 (Conductivity): This parameter is used to define the customer-specific measurement range of the conductivity. Values can be entered from 0...1000 mS/cm.

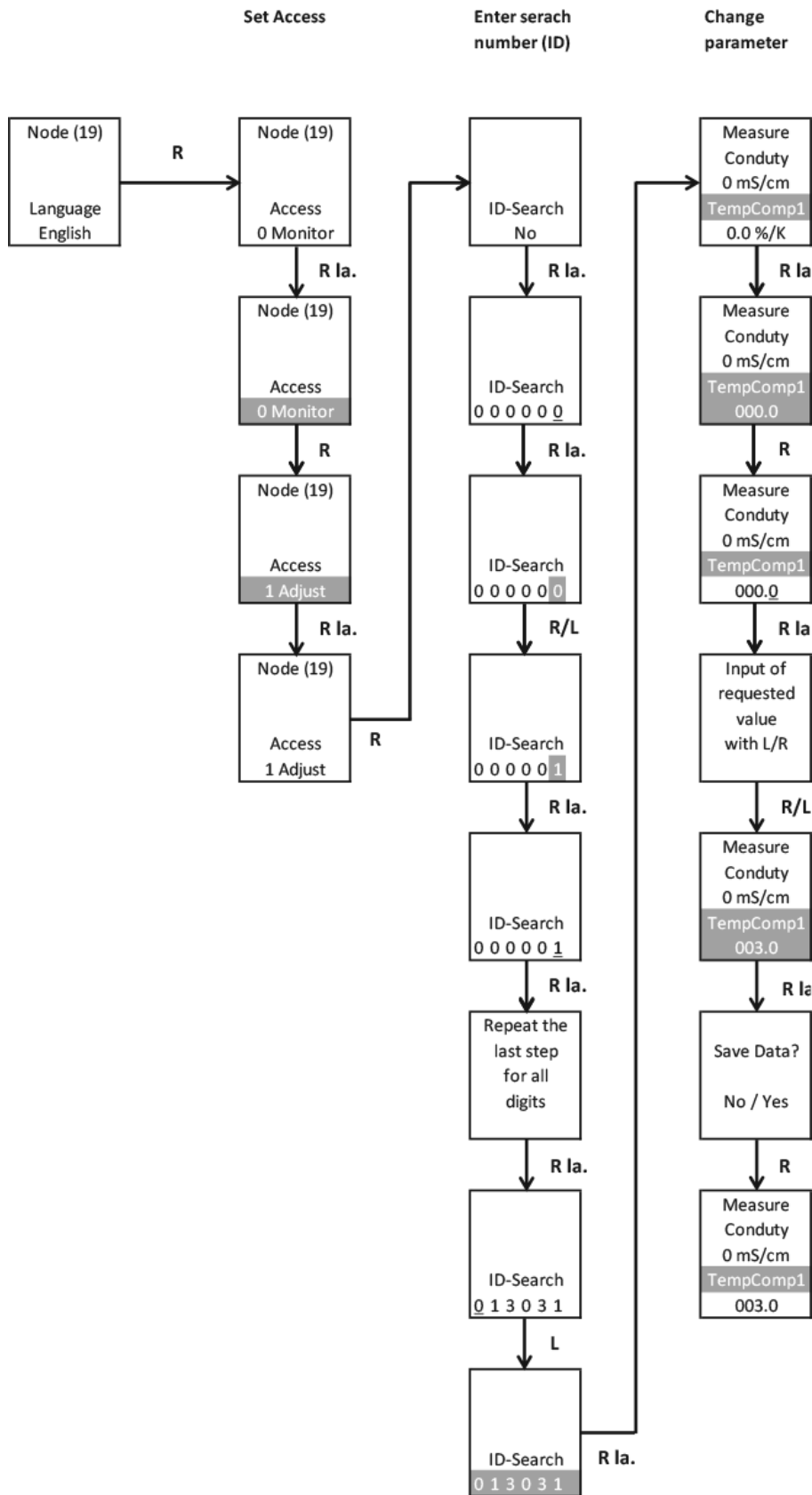
Y-Point 01...Y-Point 08 (Concentration): This parameter is used to define the customer-specific measurement range of the concentration. Values can be entered from 0...100%.



6.3.2 - Example for setting measurement range 1



6.3.3 - Example for setting temperature coefficient 1



Section 7 - Troubleshooting

Symptom	Diagnosis	Action
Display does not light up	-Unit is miss wired -No power to sensor	-Correct wiring -Correct power issue
Display lights no analog output	Analog output has failed	Return to factory for service
Switched output does not operate	-Set point is incorrectly set	-Adjust set point to correct value
mA output stays at >21mA but display indicates measurement	Range selection is too low	Reconfigure range for a higher value
Reading on display and output are different when flowing than when flow is stopped	Air/gasses are being introduced into the process liquid	Find and correct source for air/gas entrainment

Caution: Attempting to disconnect or change wiring to this sensor during process operation can cause loss of signal to the control system!

Section 8 - Maintenance and Cleaning

The ILM requires no regular maintenance other than the periodic changing of process connection gaskets. This should be done annually or at the same intervals as your plant gasket maintenance. The product contact and exterior of the ILM is designed to be cleaned under the same conditions as required in food and pharma processing facilities including CIP cleaning methods. High pressure hoses, abrasive brushes or pads and harsh detergents should not be used to clean the ILMs product contact and external surfaces.

Section 9 - Service and Calibration

9.1 - Service



Warning! Do not remove this sensor from the process while it is operating. Removal while the process is operating can contaminate the process and could cause human injury.

Caution: Improper replacement of components during service can result in process leakage, reduced pressure rating, system cleanability issues, incorrect output signal, or error code(s).

There are no serviceable electronic components in the ILM. All required repairs require returning the device to the factory.

9.2 - Calibration

Although a full calibration of the ILM requires the device to be returned to the factory it is possible to check the ILMs performance against known liquids.

The conductivity sensor described here is maintenance-free. However, if it should become necessary to calibrate the sensor, the offset (zero point) and the span of the sensor can be set in the "Calibration " mode (via the software). For this purpose, navigate to the following window via the user interface (for example, for conductivity 1): "Conductivity Measurement — Conductivity 1 — Offset Conductivity 1" (for offset) or "Conductivity Measurement — Conductivity 1 — Slope Conductivity" (for span). For the offset, the set value is added to the calibrated conductivity value set at the factory. For the span, the set factor is multiplied with the calibrated conductivity value set at the factory. This method can also be applied to concentration, conductivity 2 and temperature (offset only).

The adjustable ranges are:

- Offset conductivity: half of the set measurement range, e.g. -50...50 mS/cm in measurement range 0...200 mS/cm
- Slope Conductivity: 75%...125%.

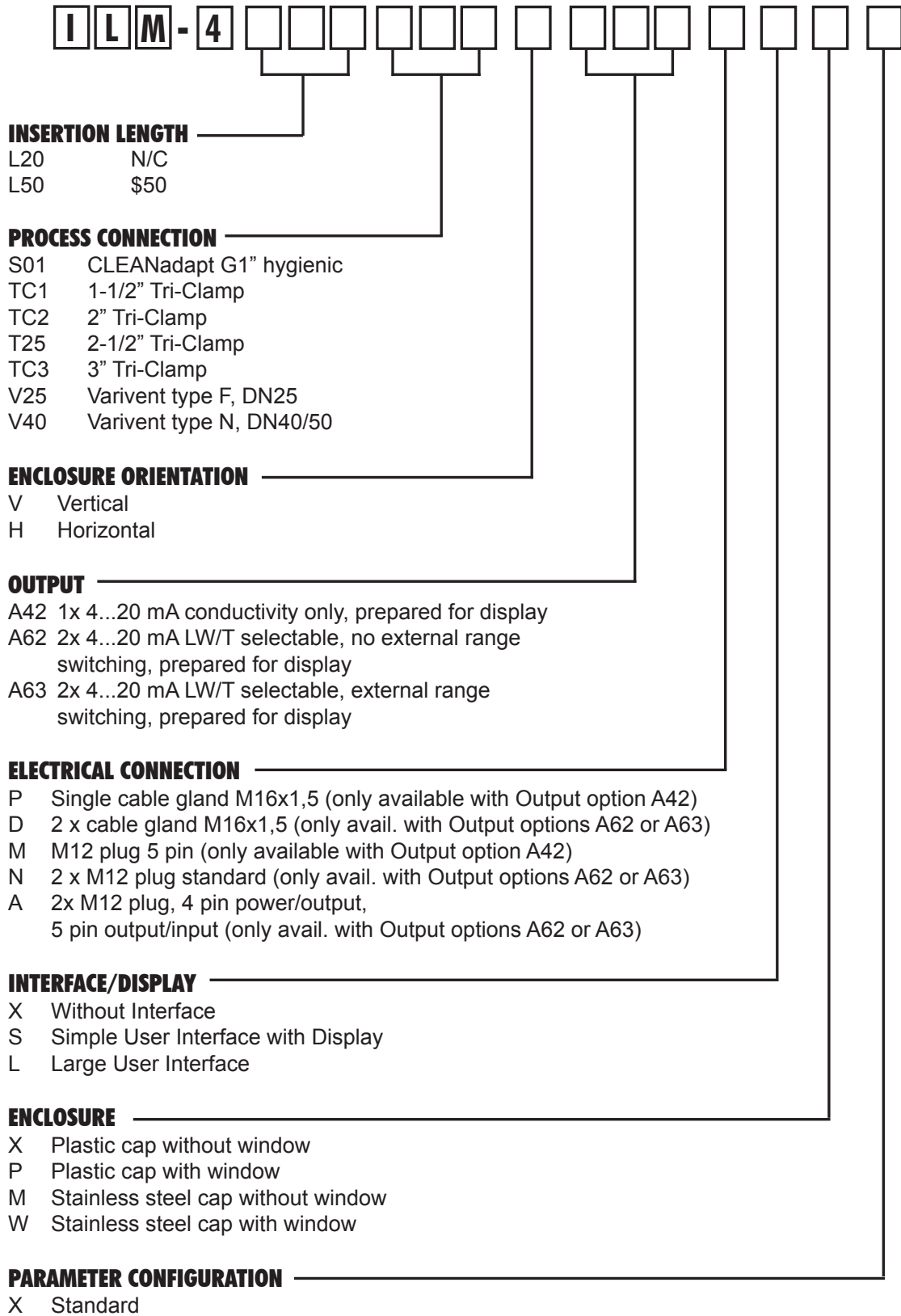
The setting can also be made via the User Interface directly on the sensor using the ID codes 013071 for the zero-point conductivity and 013081 for the conductivity slope.

Note: We recommend always using a known reference solution and/or reference device for a calibration.

Section 10 - Spare Parts

Shielded cordset w/25' cable	42117H0025	
Shielded cordset w/50' cable	42117H0050	
Shielded cordset w/100' cable	42117H0100	
Field Wireable Connector-Straight	42119B0000	
Field Wireable Connector-90°	42119A0000	
Window cap o-ring	36241N0017805052	Qty Required 1

Section 11 - Product Matrix



Warranty and Return Statement

These products are sold by The Anderson Instrument Company (Anderson) under the warranties set forth in the following paragraphs. Such warranties are extended only with respect to a purchase of these products, as new merchandise, directly from Anderson or from an Anderson distributor, representative or reseller, and are extended only to the first buyer thereof who purchases them other than for the purpose of resale.

Warranty

These products are warranted to be free from functional defects in materials and workmanship at the time the products leave the Anderson factory and to conform at that time to the specifications set forth in the relevant Anderson instruction manual or manuals, sheet or sheets, for such products for a period of one year.

THERE ARE NO EXPRESSED OR IMPLIED WARRANTIES WHICH EXTEND BEYOND THE WARRANTIES HEREIN AND ABOVE SET FORTH. ANDERSON MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO THE PRODUCTS.

Limitations

Anderson shall not be liable for any incidental damages, consequential damages, special damages, or any other damages, costs or expenses excepting only the cost or expense of repair or replacement as described above.

Products must be installed and maintained in accordance with Anderson instructions. Users are responsible for the suitability of the products to their application. There is no warranty against damage resulting from corrosion, misapplication, improper specifications or other operating condition beyond our control. Claims against carriers for damage in transit must be filed by the buyer.

This warranty is void if the purchaser uses non-factory approved replacement parts and supplies or if the purchaser attempts to repair the product themselves or through a third party without Anderson authorization.

Returns

Anderson's sole and exclusive obligation and buyer's sole and exclusive remedy under the above warranty is limited to repairing or replacing (at Anderson's option), free of charge, the products which are reported in writing to Anderson at its main office indicated below.

Anderson is to be advised of return requests during normal business hours and such returns are to include a statement of the observed deficiency. The buyer shall pre-pay shipping charges for products returned and Anderson or its representative shall pay for the return of the products to the buyer.

Approved returns should be sent to: ANDERSON INSTRUMENT COMPANY INC.
156 AURIESVILLE ROAD
FULTONVILLE, NY 12072 USA

ATT: REPAIR DEPARTMENT



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