

Manual

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Universal Transmitter Model Messenger with Windows User Interface Software and Sensor Model LAS

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**Manufacturer and owner of all rights of transmitter model Messenger
Galvanic Applied Sciences Inc., Lowell MA, USA**

**Manufacturer and owner of all rights of sensor model LAS
Chemtronic Waltemode GmbH, Monheim am Rhein, Deutschland**

Warranty Conditions

The warranty for this product takes place according to the legal provisions. As places of warranty we explicitly name Galvanic Applied Sciences Inc. (Lowell USA) or Chemtronic Waltemode GmbH, Monheim am Rhein (Germany). In case of warranty service at the customer site, we will charge additional expenses e.g. travel expenses, overnight cost, etc. Consumable parts as well as wearing parts e.g. lamps, gaskets, etc. are not covered by warranty.

Improper use, gross negligence, use of the system outside of the technical specifications, missing or improper maintenance will cause a loss of the warranty claim. Please pay attention to our general terms of contract.

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Some countries do not allow the limitation of liability, so that this exclusion is possibly not valid for you.

About this Manual

This manual contains the most important steps to operate model LAS/MSG



**For more detailed information
please read reference manuals or contact Chemtronic Waltemode GmbH**



Safety Instructions

Pay attention to the following general safety instructions during use and operation of the system. Ignoring these instructions or special warnings inside of this manual can damage the sensor, cause inaccurate measurements, and possibly result in unsafe installations. Chemtronic Waltemode GmbH will not take any responsibility for consequences arising from ignoring the safety instructions and warnings.

For all Chemical liquids

The product you measure is may be toxic or otherwise harmful to human health. Observe appropriate precautions when handling and disposing the liquid. Review the appropriate published material safety data sheets regarding the safe handling and disposal of all reagents or standards.

Electrical installation

Qualified technical personnel must install the electrical installation of the system. This instrument requires an input of 90-260VAC at 50-60 Hertz (unless otherwise specified). A 24VDC/AC power supply is optional.

Hazardous Area

DO NOT INSTALL the system in hazardous area without the optional Ex-proof equipment. Operation of non Ex- proof systems in hazardous area will cause a high risk.



Using the system in hazardous areas (Ex Zone I / Ex Zone II) will only be safe with the installation of the optional special Ex-proof designs including all required certifications



Maintenance

Always disconnect the instrument from power during maintenance, replacement of components, installation of additional components or any other operations at the open instrument. Only qualified technical personnel must perform this work.

Operating the Instrument with open Enclosure

Only qualified technical personnel should operate the instrument when the enclosure is open. Take care that no moisture enters the enclosure.



Some components inside the instrument are energized with voltages, which can cause lethal shocks in case of contact. Be careful during installation, handling and operation of the instrument.



Improper installation / operation of the system

Warranty is void if the system is installed improperly, handled improperly, used outside of the technical specifications (of the instrument), or damaged by gross negligence.

Before Installation and Start Up! System Inspection

Check to ensure that all components of the instrument have arrived safely. Included should be: the Messenger Transmitter, the Sensors and the cable sets and Manual. The Messenger versions without display and with LCD include typically additional a Cd- Rom with Messenger Graph Software and an Interface adapter Model USB-Nano. If there is any damage to the equipment or if anything is missing please contact us immediately. Save the packing material for future system storage or shipping.



Danger: Exceeding the specified maximum pressure and / or the specified maximum temperature will cause a very high safety risk.



Please read the safety instructions before installation and start-up.

General Installation Guidelines

1. Transmitter and Sensors are sensitive components, do not drop and handle with care.
2. Follow the wiring diagram during installation of the system.
3. The process temperature and pressure cannot exceed the specification of the delivered Sensor.
4. Avoid air and gas bubbles inside the sensor, they cause disturbances. Noise and drift of the measurement would be the result (the air bubbles are not expected at a pressure upwards of 2 bar in aqueous solutions).
5. Please do not use the system in case of any visible mechanical damages!
6. The Messenger enclosure fits IP65 / Nema 4x protection class we recommend installation in a dry / dust free area.
7. The ambient temperature for the transmitter must be in a range of -10°C and 50°C (use dry purge air above 40°C).
8. AC power consumption of the Messenger Transmitter is less than 50 Watts.
9. Transmitter relay ratings for alarms and external devices are 2 A at 250V~ maximum.
10. Do not operate with open enclosure. Exposed electronics will promote the risk of electrical shock and might cause damage to the unit.
11. Do not alter cable length. The instrument was calibrated with a specified cable length. Altering cable length can cause unstable signals and void instrument calibration.
12. Ship the instrument in the original packing material to avoid damage to the sensor or transmitter.
13. Mishandling of the sensor is not covered under warranty. Do not disconnect the interior wiring of the sensor.
14. Proper instrument grounding: The instrument must be grounded to avoid electrical shock hazards to personnel, damage to the unit and erroneous operation.



WARNING: MAKE SURE THE AC POWER MAINS ARE SWITCHED OFF OR OTHERWISE DISCONNECTED BEFORE YOU BEGIN WIRING THE SYSTEM TO AVOID THE POSSIBILITY OF ELECTRICAL SHOCK. IT IS A GOOD PRACTICE TO INSTALL A MAIN POWER CUTOFF SWITCH NEAR THE SYSTEM WITH EXTERNAL MAIN FUSES.



THE SYSTEM REQUIRES AN AC-GROUND (EARTH GROUND) AND ALL SENSORS CONNECTED TO THE TRANSMITTER MUST BE GROUNDED

Please note. The following points are important to avoid damages of the Sensors at high temperature applications:

- Please connect purge air (cooling) before process insertion (dry, oil- & dust free instrument air)
- Leave air output open
- Do not interrupt the air cooling
- Remove the Sensor immediately from the process in case air purge is not guaranteed!

General Information

Introduction

Monitek Messenger is a compact, highly efficient, and expandable system that is designed to interface to a broad range of Monitek / Galvanic / Chemtronic sensors. It also has the capability to interface with multiple and different sensors at the same time. It's modular design approach enables several applications to be customized for a variety of measurements, such as Turbidity, Suspended solids, Color and % Concentration using optical in-line Sensors. The Messenger may be linked with Personal Computer, Laptop or Netbook operating Windows XP / Vista / 7 or an optional Panel PC (also called a TPC), the GUI (Graphical User Interface) software "Messenger Graph" offers completely menu-driven screens that are easy to understand and also has online help. The GUI interface is designed to allow three access levels (Operator, Technician and Factory) to prevent an unskilled operator from changing any critical parameter in the setup of the transmitter. The interface is intuitive with no need for programming codes or program numbers. The system also includes some self-check operations as well as the ability to access the basic measurement values without the use of a multi-meter or even physically accessing the electronics. The system includes the ability to perform field calibrations while the instrument is installed in the process and is operating. It comes factory pre-configured to your application. For most accurate setup sometimes the user calibrate on his process sample condition but typically there is no new calibration required in the first 18 Month.

Icons used in this User's Manual



WARNINGS INDICATE SITUATIONS THAT COULD RESULT IN THE INJURY TO HUMAN OPERATOR OR BYSTANDER.



Cautions indicate situations that could damage the Monitek Messenger or sensor. Cautions are printed in mixed case characters in boldface font

Specifications:

Sensors: Model LAS

Number of Sensors: 1 to 4 sensors. Each sensor may be linked to a separate 8 points Calibration table with 1st order or Curve fit linearization technique.

Area Classification: General Purpose

Environmental:

Operating Temp: -14 °F to 122 °F (-10 °C to 50 °C), air purge above temperatures of 104°F (40°C)
Humidity: 0 to 95% RH, non condensing

User Interface:

Alarms (option): Low High Alarms and General Fault Alarm are user programmable, latching or non-latching, energized or de-energized with alarm delay and hysteresis.
Display: Optional, 4 lines by 20 Characters backlight LCD.

Programming: Using PC, Laptop, Netbook or optional touch screen Panel PC.

Analog Outputs: 2x 0/4-20mA Isolated. Optional 2 additional outputs 0 to 1000 Ohm

Internal Relays: Optional, 4 relays fully programmable rated 2A/250VAC

Digital Inputs: Optional: Four Digital Inputs, fully programmable with activate levels of 5 to 24 VDC

Interfaces: RS-232 or RS-485 using Modbus RTU protocol.

Input Power: 90 to 260 VAC 50/60 Hz optional 24V

Power consumption: less than 50 watts

Case Material: 304 Stainless Steel

Approvals CE / CSA

Different Versions: Messenger Transmitter



Version without display



**Version with alphanumeric
LCD**



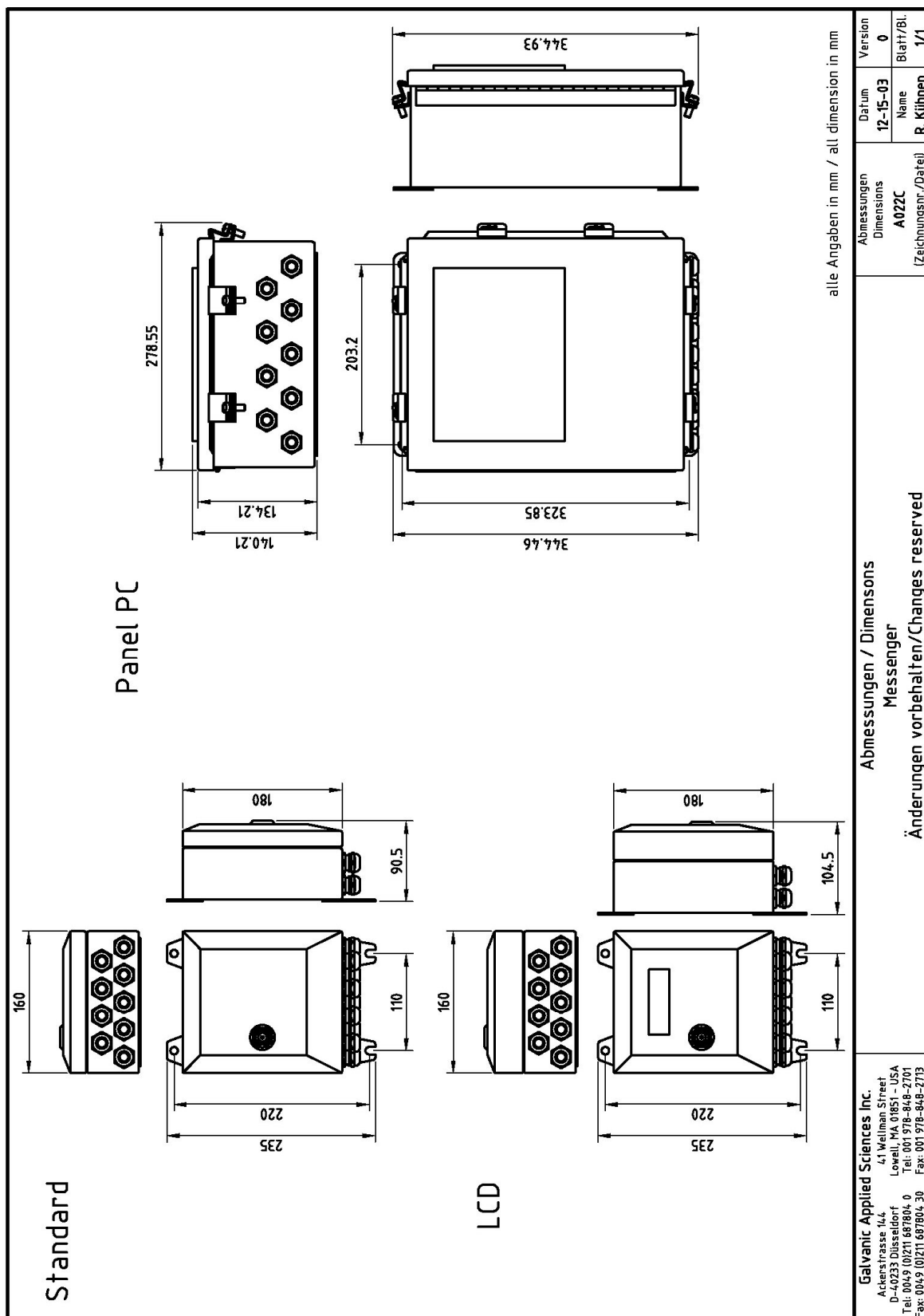
Version with Panel PC (TPC)



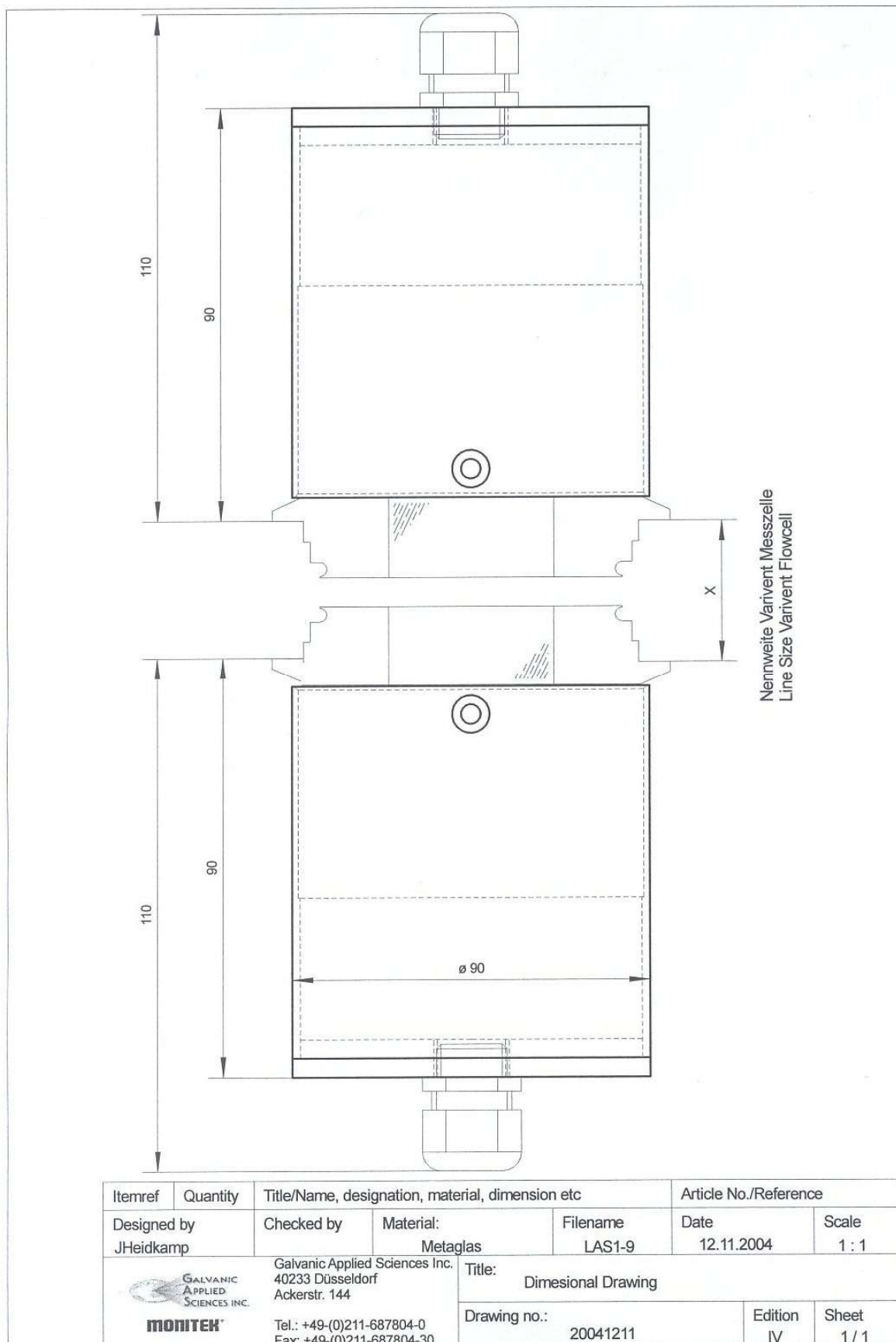
A PC / Laptop or Netbook is required for configuration / calibration of the versions without display and with LCD- display.

The Panel PC (TPC) version allows configuration and calibration without external equipment. The operation is will be done via touch screen of the Panel PC.

Dimensions for Monitek Messenger

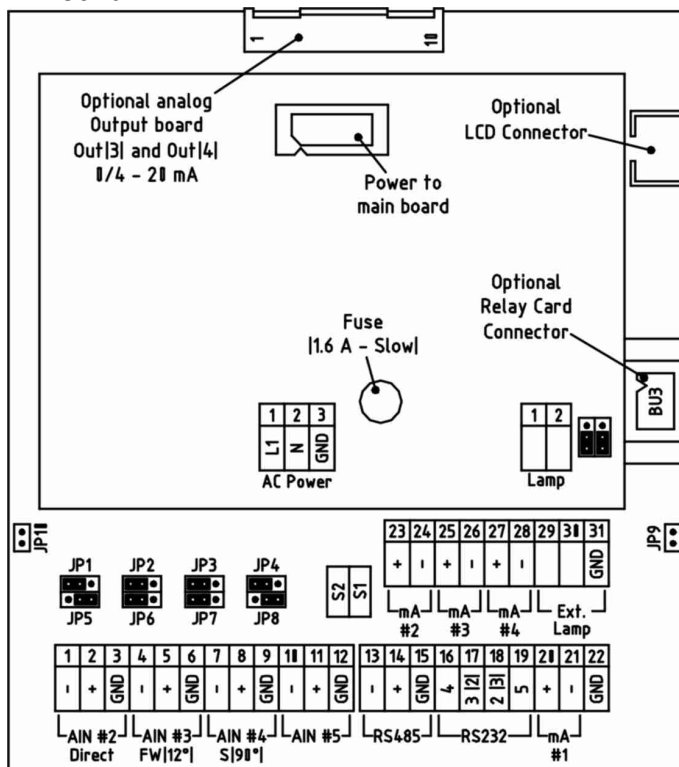


Dimensions Sensor Model LAS



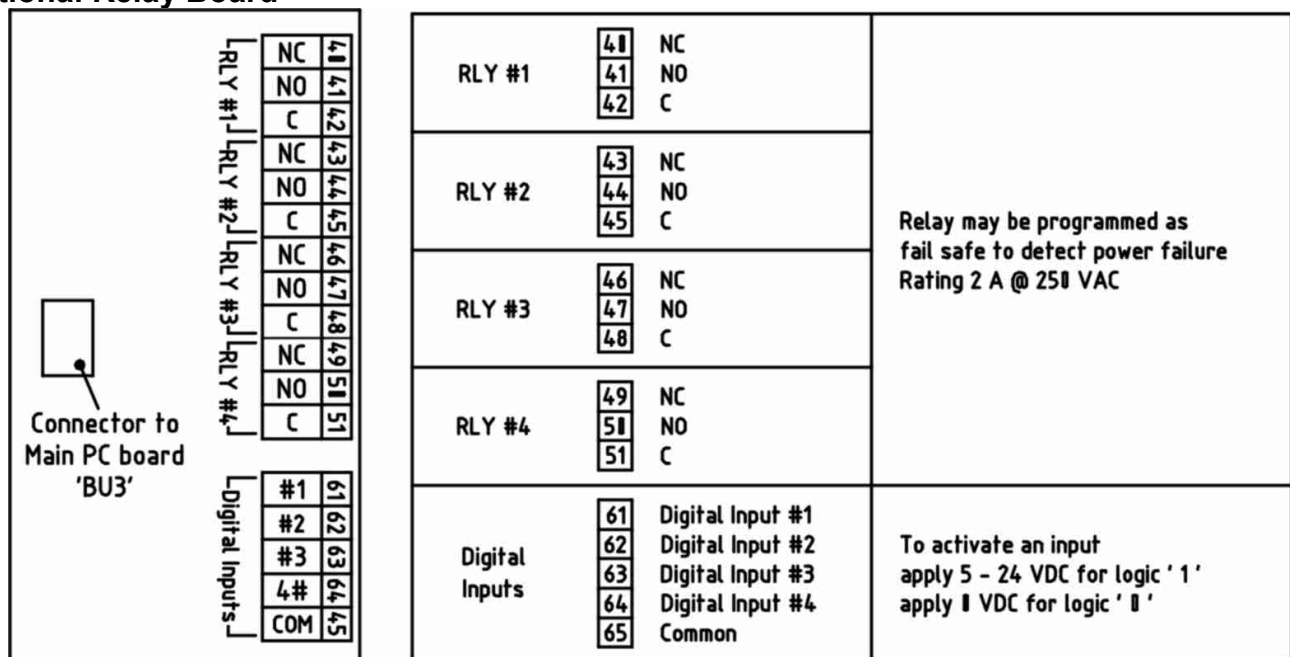
Connectors and Jumper Model Messenger

Main Board



RS485	13	-
	14	+
	15	AC GND
RS232	16	DSR EN-
	17	TxD
	18	RxD
	19	GND
mA #1	21	Out + 0/4 - 20 mA
	21	Out - 0/4 - 20 mA
mA #2	23	Out + 0/4 - 20 mA
	24	Out - 0/4 - 20 mA
mA #3	25	Out + 0/4 - 20 mA
	26	Out - 0/4 - 20 mA
		OPTIONAL
mA #4	27	Out + 0/4 - 20 mA
	28	Out - 0/4 - 20 mA
		OPTIONAL
Ext. Lamp	29	On/Off external lamp
	30	Input external lamp error
	31	GND
JP9	Jumper to reset with power off/on	
JP11	Used for boot mode to programm micro-controller	
JP1 thru JP4	Connect 1-2 for sensor Diode	
	Connect 2-3 for probe 0...+2mA	
JP5 thru JP8	Connect 1-2 for high GAIN 0...1uA range	
	Connect 2-3 for STD GAIN 0...10uA range	

Optional Relay Board



Jumper Positions (Gain Setting)



Only qualified technical personnel must perform this work contact support or read reference manual!



Interconnections to PC / Laptop (RS 232)

RS-232 Interface

RS-232 Pins - at Messenger

Messenger Pins		PC / Laptop	
16	DSR (-)	4	DTR
17	TX (Out)	2	RX (In)
18	RX (In)	3	TX (Out)
19	GND	5	GND

Reference Pins RS232 - at PC / Laptop / Netbook (9 Pin Sub-D)

Pin	Signal	Dir	Funktion
1	DCD/RLS D	IN	Carrier Detect
2	RXD	IN	Receive Data
3	TXD	OUT	Transmit Data
4	DTR	OUT	Data Term Ready
5	GND		Ground
6	DSR	IN	Data Set Ready
7	RTS	OUT	Request to Send
8	CTS	IN	Clear to Send
9	RI	IN	Ring Indicator

RS-485 Interface

RS-232 Pins - at Messenger

Messenger Pin		PC / Laptop	
13	(-)	--	--
14	(+)	--	--
15	GND	--	--

Connect Messenger via USB with your PC, Laptop or Netbook

Using the optional USB to RS485 Interface Converter Model USB Nano



An interface converter USB to RS232 can not be used to configure or calibrate the transmitter model Messenger! Using this type of converter will cause a crash of the Messenger Graph Software!

The interface converter USB- Nano is used to configure / calibrate the Transmitter via USB-interface.

1. Connect the RS485-converter to the USB- interface of your computer.
2. Install the driver software of the RS485- converter model USB- Nano.

Take notice:

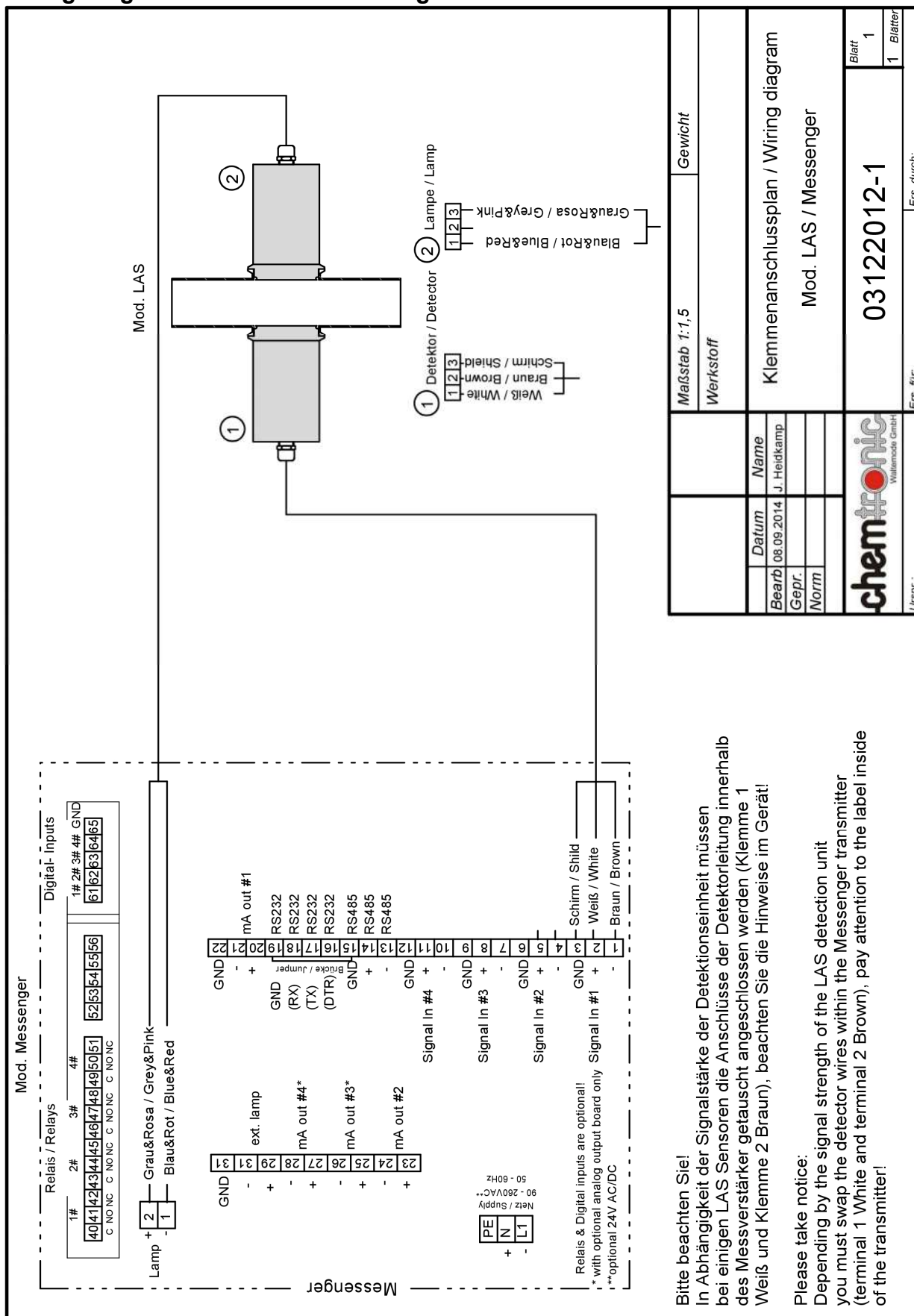
Restart your computer before you proceed with item 3 otherwise you may get problems with configuration.

3. Start the Windows Control Panel and select System, Hardware, Device Manager, COM and LPT.
4. Assign a COM port, COM1, COM2, COM3 or COM4 to your interface converter (we recommend COM1).
5. Close Device Manager and Control Panel.
6. Connect transmitter mod. Messenger to Interface converter model USB- Nano.
 USB- Nano connector A: to terminal 13 model Messenger
 USB- Nano connector B: to terminal 14 model Messenger
 USB- Nano Shield: to terminal 15 model Messenger
7. Start the software „Messenger Graph“.
8. Call up the “Main Menu” and select the sub- menu
 Inputs/Outputs – Set COM Port. Please proceed directly with step 10 in case your COM port is assigned to COM1.
9. Enter the in item 4 selected Port (COM-COM4) and enter:
 Baud 57600, Modbus- Normal. Please proceed directly with step 10 in case your COM port is assigned to COM1.
10. Return to the START/EXIT-Menu and select „GO ONLINE”.
 Background of button „GO ONLINE” and the dot in the upper right corner, change to green color.



**Some Windows Installations may come up with the message:
 „Invalid procedure call or argument”.
 Confirm the Message with the OK button.
 Take notice, the dot in the upper right corner has to stay green.**

Wiring Diagram Model LAS / Messenger



Software Installation

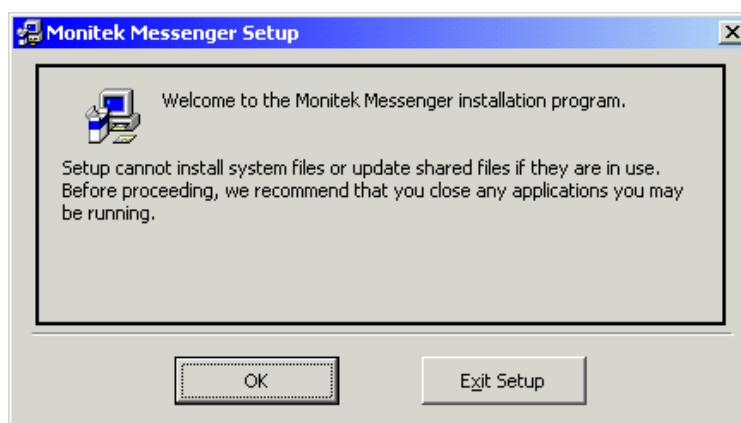
PC Version

System Requirements

Supported Operating Systems	Window XP, Vista, 7
RAM	32MB
Hard Disk Space	5MB

Installation procedure

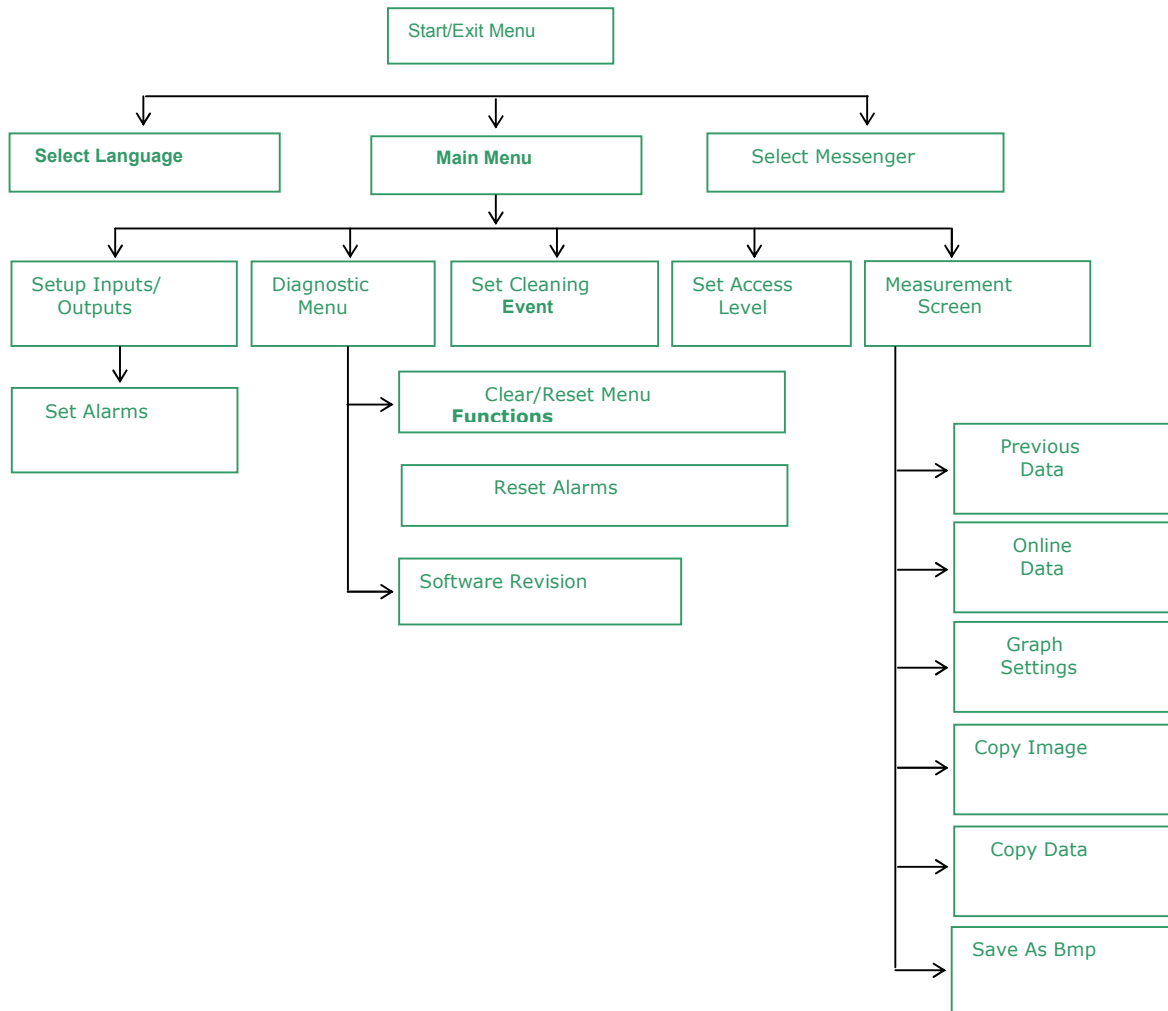
- I. Close any open programs that are running on your computer before starting the installation.
- II. Double click on setup.exe.
- III. As the installation progresses, follow the instructions on the screen. Some Windows system files will be updated to newer versions during installation of Messenger software. If these updates are done, you will be required to reboot your PC. If so, repeat steps 1 through 2 of the installation procedure to continue with the installation. Once the installation of Messenger software is complete, you will be required to restart your computer once again for proper functioning of the software.
- IV. Welcome screen shown below will appear, Click OK to continue the installation process. To abort the installation process click Exit Setup.



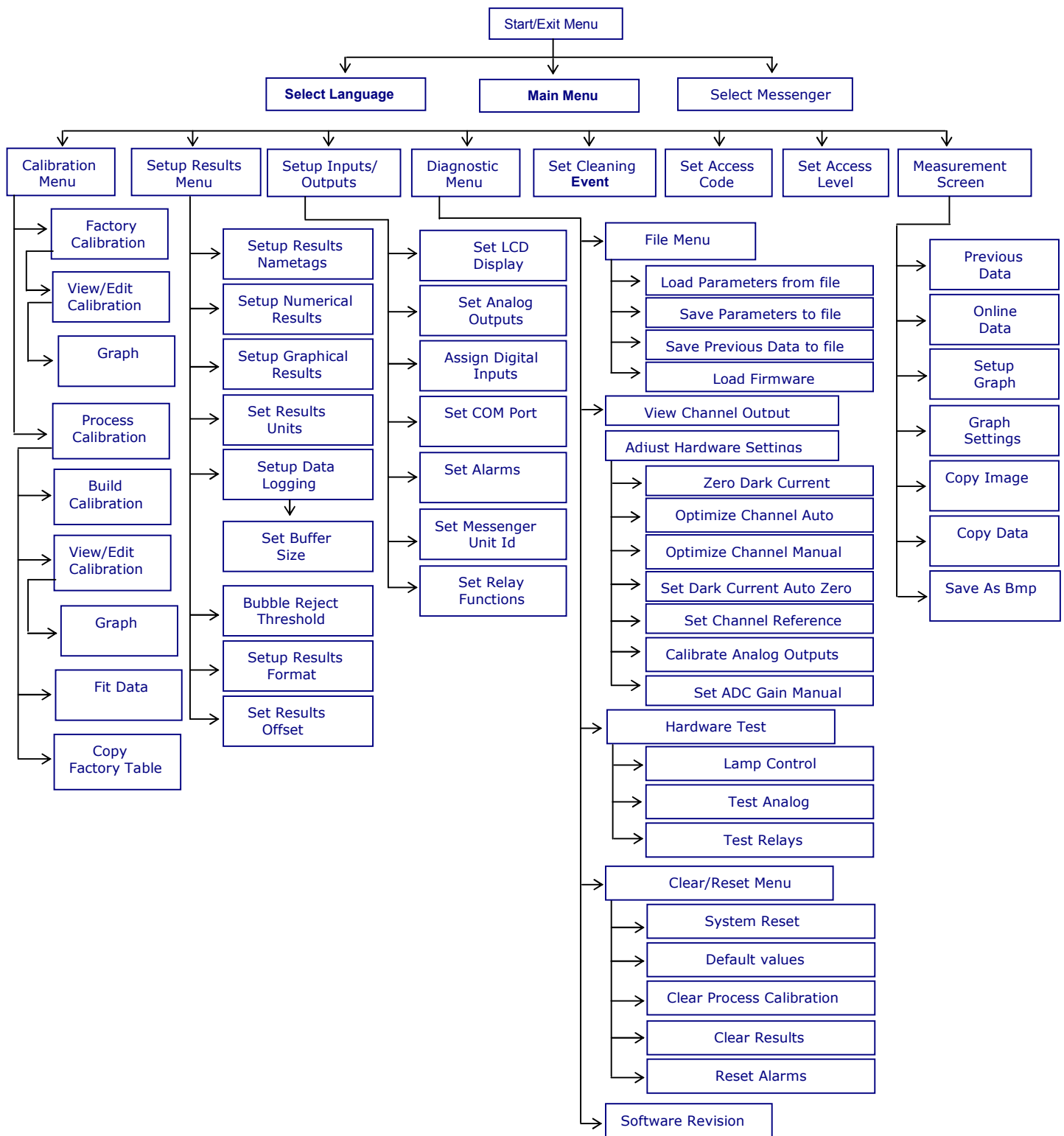
- I. Follow the instructions on the screen to complete the installation.

Menu Layout and Operation

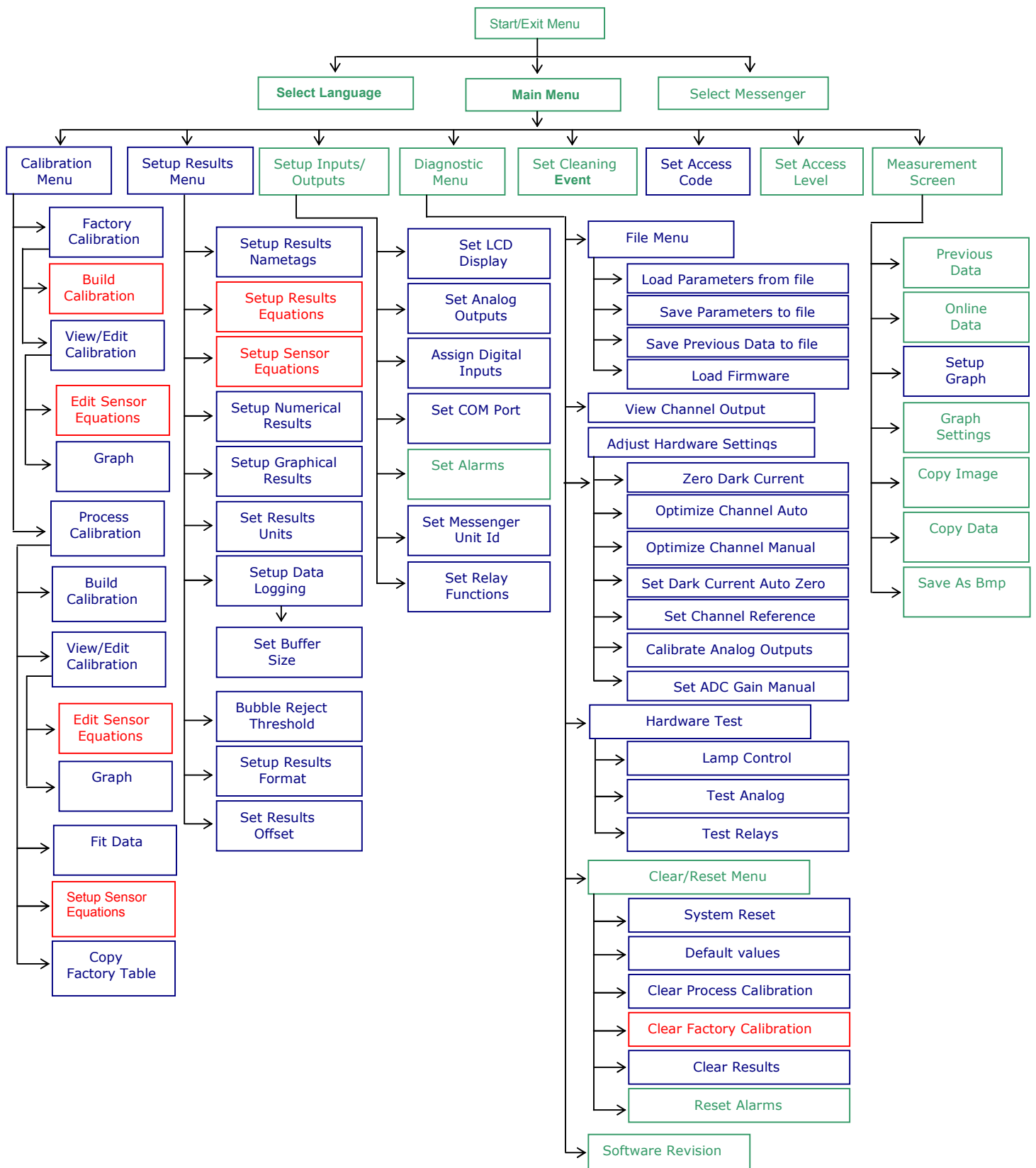
Messenger Software Navigation Tree (Operator)



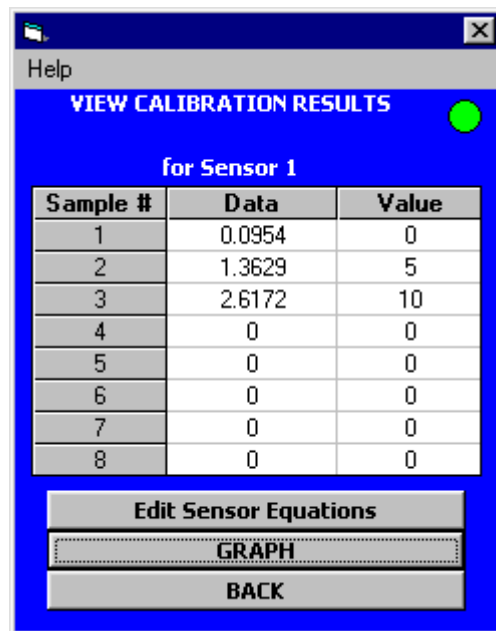
Messenger Software Navigation Tree (Technician)



Messenger Software Navigation Tree (Factory Level)



Setup and Calibration



The system is calibrated at the factory using clean laboratory standards. For best results it can be required that the user calibrate using the process conditions but typically there is no new calibration required in the first 18month after start up. The system has TWO types of calibration that can reference sample measurements: Factory and Process Calibration. The factory calibration is to be used as reference. Calibration may be done in the field using sample conditions; the user may alter the data acquired by the system in the View/Edit calibration screen. Up to 8 data points may be entered and the user may select either a Linear fit or a curve fit equation. For a range where the upper and lower limits are known the curve fit gives the best fit, if the range is extended, select the Linear fit for best approximation.

Take notice:



**There is typically no new calibration required in the first 18month after start up.
Please read chapter "Using the Calibration Filters".**



Field Calibration and Curve Fitting

Help

BUILD PROCESS CALIBRATION TABLE

Sample #

Sensor 1 1

User Value OLD 0

Data 0.0954

Read New Data

STORE New Value

BACK

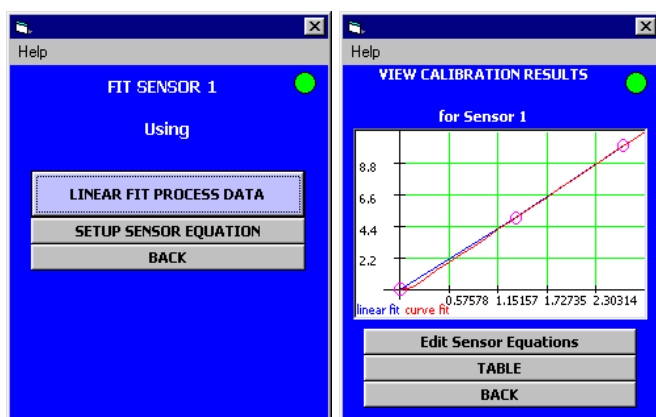
MONITEK MESSENGER includes a feature that allows the user to calibrate the instrument in-line. Once the instrument is installed and operating, data points can be taken and stored using the View/Edit Data selection from the Calibration menu. First select a sample point from 1 to 8 then the user can select “Read New Data”, and the MONITEK MESSENGER will read the current value and store it. At the same time that the user saves that sample into the MONITEK MESSENGER, a manual sample should be taken from the process. This sample should be analyzed for the appropriate content in the laboratory. Once the laboratory has established the value, the user can come back to the “View/Edit Calibration” Data screen and select the appropriate sample point. The user should then enter the laboratory value for that data point. The MONITEK MESSENGER has now stored the proper laboratory value to the actual Data value that the instrument was reading when the sample was taken. This should be repeated for several values at different ranges of the expected operational span of the process.

Take notice:



There is typically no new calibration required in the first 18month after start up.

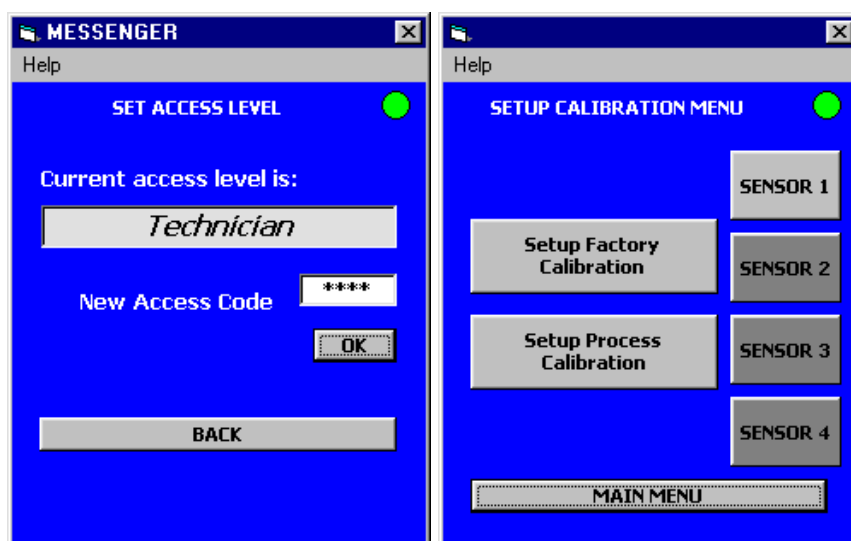
Please read chapter “Using the Calibration Filters”.



Once at least three values have been stored, the system can perform a curve fit. Select Curve Fit from the Calibration menu and the MONITEK MESSENGER will fit a Linear fit or a curve fit through the data points that are entered into the sample data table. The MONITEK MESSENGER will then display the curve, and that calibration curve will become the active curve for the instrument. The MONITEK MESSENGER can be calibrated and programmed to read the same value on the front panel as the concentration value that was determined by the laboratory. This unique method is the ideal way to calibrate an in-line device because it takes into account the real dynamics of the process and allows the device to read out in the same units that the user will receive from the laboratory.

To Access Process Calibration you need to enter “Technician Access” level and to Access Factory Calibration data you need to enter Factory access level. The following procedure explains in step how a Process Calibration may be done:

- Set the Access Level to Technician and then select Calibration menu.



- Select “ Setup Process Calibration” and Then “Build Calibration”
- Up to FOUR sensors may be configured in the Messenger. Typically Sensor #1 corresponds to Result # 1 and Sensor # 2 corresponds to Result # 2 and similar setup for 3 and 4.
- At least three data calibration points are needed to get a good representation of the data curve. If you are only doing Turbidity then all you need is to calibrate sensor #1. Enter the value for the sample in the cell and then press “Read New Data”, you may want to repeat pressing “Read New data” until you feel that the number is fairly the same between successive reads. Press “Store New Value” to store selected values.

Access Levels and Codes

The system has three Access levels:

User:

Technician: Default Access code 1234

Factory: Reserved for Factory Access.

Help

**BUILD PROCESS
CALIBRATION TABLE**

Sample #

Sensor 1 1

User Value OLD 0

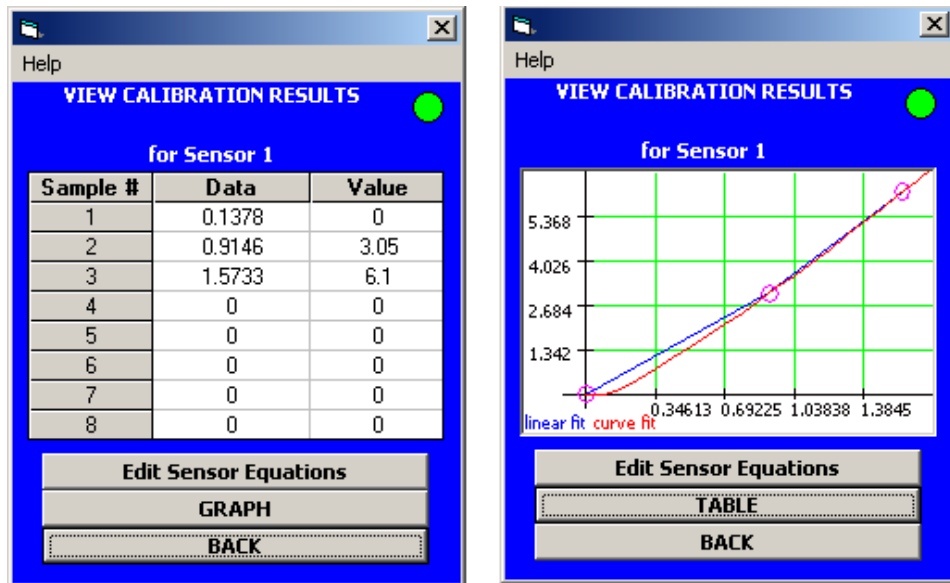
Data 0.0954

Read New Data

STORE New Value

BACK

- You may proceed to enter the various calibration data points by selecting Sample # (1...8) and entering the corresponding values.
- When done go "BACK" to previous menu and select "View/Edit Calibration".
- In View Calibration Results the user may review or edit the calibration data and then view graph to review the shape of the calibration curve as shown below.
- The system will show the Linear fit and curve fit curves. User may select which curve fit represents his process better.

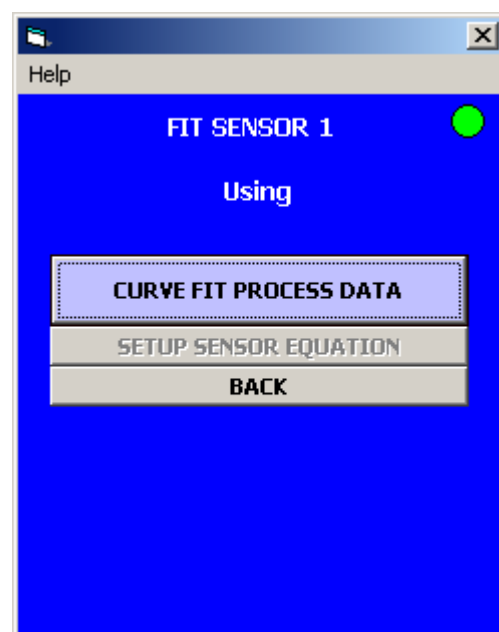


- Using “Fit Data” menu you may select either to use the Factory or Process calibration for sample analysis.



Take Notice:

Fit data is required after each calibration. This function calculates a new calibration curve and writes it to the memory of the Messenger transmitter!



- You may repeat the above procedure for the other sensors that are connected to the Messenger.

Analog Outputs and Alarms

The system includes TWO analog outputs that may be set as 0-20 mA or 4-20 mA or 20-0 and 20-4 mA (Reverse acting). Two additional analog outputs may be added as an option. Also OPTIONAL the user may add "Relay and Digital Inputs card" with four SPDT relays for process alarms or controls, the same board includes 4 digital inputs for additional control by external devices like a PLC (Programmable Logic Controller) or other equipment. The Analog Outputs (4-20 mA) have been calibrated at the factory and may be trimmed or re-adjusted by the user under the "Adjust Hardware settings" screen menu. These analog outputs values are a direct function of whatever values are on the display. The 4-20mA outputs operate over a wide range, a minimum of 25 to 1000 Ohm load.

The alarm contacts are also controlled by the display value. The alarm values are selected and Setup in the "Setup Inputs/Outputs" menu.



Take Notice:
Alarm relays and digital inputs are optional!

	Bubble Reject	Filter Delay
Channel 1	5 %	5 SEC
Channel 2	5 %	5 SEC
Channel 3	5 %	5 SEC
Channel 4	5 %	5 SEC

Buttons: Set Default Values, BACK

The Monitek Messenger also includes a feature that allows the customer to dampen the response of the system, by including added signal filtration. A unique bubble reject feature is also available; this feature allows the system to reject spurious signals caused by bubbles presence. The factory default is set for 5% and Filter response to 5 sec. The Bubble Reject feature control may be accessed from the Setup Results menu.

Display Units



**This Units are shown at Panel PC screen or configuration Software only!
If you have a transmitter with LCD – display, please configure Nametag, measurement unit, and decimal resolution as well in menu “Set LCD- Display”.**

To display the process variable or sample Analysis the user should select MEASUREMENT SCREEN



An interface converter USB to RS485 can not be used to configure the Measurement Screen Menu! Using the converter to access this menu may cause a crash of the Messenger Graph Software!

The display units are the units of measure that the user wants to appear on the display. This bears no relation to the calibration values, it is simply a tag displayed below the sample process result variable. This is selected from Setup Results → Set Results Units.

Help

SET RESULTS UNITS

Result 1

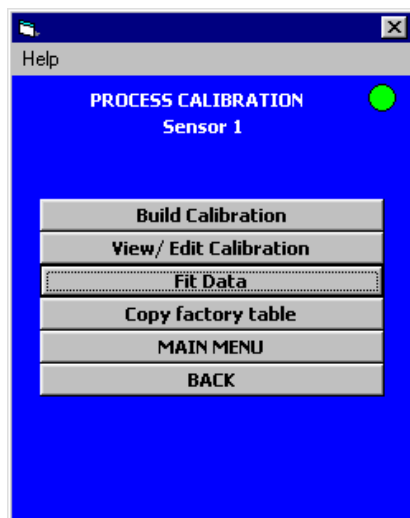
Result 2

Result 3

Result 4

Up to NINE characters may be entered.

Factory Calibration



The user may elect to switch to factory calibration if his measurement data using the process calibration are not correlating. The factory calibration data may be copied into the “Process Calibration” menu by selecting “Copy factory table”. A data fit, on this transferred factory data may now be performed by selecting “Fit Data”, the unit will use the factory calibration data to report the cell sample analysis. At the factory, Formazin standards were used to create the calibration data table. The Sensor is calibrated with at least 3 data points: a nominal 0 FTU / EBC standard, a full-scale standard and a mid point standard. This feature is included to allow easier troubleshooting by referencing known and factory verified calibration. Alternatively the Field process calibrations may be checked against the Formazin- or calibration filter data performed at the factory.

Toggling Between Factory and User Calibration



The user can activate the field calibration or the factory calibration. Selecting “Fit Data” menu allows the user to select which calibration the system uses to Display results. This is intended to give the user the ability to switch between Factory and Process Calibration as a method of checking the existing primary calibration or performing a new primary calibration.

Error and Warning Messages

Error/Warning Messages	Description
Restart the program to change language.	For New Language settings to take effect Restart the Messenger Application
CAUTION! Download-Program required. Messenger will be stopped. Continue anyway?	"Flip" Program is required to load the Firmware. Messenger Device should be stopped to load the Firmware
Save these values?	Existing Parameters have changed. Do you want to save the NEW Parameters
Normalize to 0	Normalize means to set in relation to a selected channel. If this channel is "0", it would result in a "Divide by Zero"!
Warning: All Data in the Messenger will be defaulted to factory settings, Are you sure?	ALL the existing PARAMETERS & PREVIOUS DATA will be lost and Messenger will be defaulted to factory settings
Value out of range	Entered value exceeds the specified range of the parameter
Invalid File Format	Selected file (*.pda) is corrupt
Saving these values will cause in Loss of "Previous Data"	Changing the existing parameters will clear "Previous Data"
Invalid File Extension	Selected file doesn't have .pda extension
No Data Available	Currently there is no "Previous Data" stored
No More Data Points	There are no more data points in the current DATA frame to Navigate
Are you sure you want to clear stored Results	"PREVIOUS DATA" of Selected Result will be cleared
Are you sure you want to clear all stored Results	"PREVIOUS DATA" of ALL Results will be cleared
Port not available	The Selected Comport (RS-232 / RS-485) is used by another Application
Overflow! Reduce gain?	If you try to auto-set the gain, the signal has to be in range. If gain is already high, it has to be reduced to fit signal to range.
Fill blank fields!	Entered data contain NULL values
Please go online	Connect to Messenger Device
Entered code is not correct.	Entered Access Code doesn't match
Unit ID must be an integer between 0 and 255.	Entered Unit ID value is out of range
Invalid Data	Entered Data is Not Valid Ex: - characters entered instead of Numeric value
Are you sure you want to exit this program?	Exits the Application

NO RESPONSE: Please check device ID# or run the search function	Currently no Device exists in the Network with the specified ID. Navigate to Select Messenger and Run the Search Function which gives the List of Devices present in the Network
Changing language requires closing of the program. Are you sure?	Switching to a different Language requires restarting the Application.
All data in the Messenger will be overwritten with data from this device. Are you sure?	Loading the parameters from .pda file will cause ALL the current parameters to be Overwritten.
Access codes cannot be modified in OFFLINE mode	To modify the Access codes switch to ONLINE mode.

You are OFFLINE. Please load file first	To Edit the parameters in OFFLINE mode you need to First load the .pda File.
NO RESPONSE	Communication between GUI and Messenger Device has failed. Verify the connections.
Lower Limit cannot exceed upper Limit	Entered parameter Lower Limit value exceeds the upper limit value.
Optics Fault	Optical Fault has occurred
Lamps Fault	Lamp Fault has occurred
Fault: -- mA	Fault is registered at Analog output. Where -- Represents the fault current.

List of Codes displayed in STATUS BAR of MEASUREMENTS SCREEN are shown below.

1	Alarm 1 Active
2	Alarm 2 Active
3	Alarm 3 Active
4	Alarm 4 Active
CC1	Cleaning Event1 Active
CC2	Cleaning Event2 Active

For Example: -

Code in STATUS BAR “1,3,CC1” indicates that Alarm1, Alarm2 and Cleaning Event1 are currently Active

List of Messages displayed on LCD Display.

OpticFlt	Optical Fault has occurred
LampsFlt	Lamp Fault has occurred
Data Transfer...	Data Transfer between Messenger and GUI in Progress

Internationalization

Select Language

Messenger Software Supports 4 Languages English, German, French and Spanish.

- I. Run the Messenger Application
- II. Choose > **Select Language** to switch to different language

Note: - Selected language should match with Regional settings of the computer

On-Line Help Menus and Related Contents

This section describes the HELP menus and related contents.

Software HELP menus

Main Menu

This menu helps in navigating to various Messenger options.

Choose **Main Menu**

- Calibration Menu
- Setup Results Menu
- Setup Inputs/Outputs
- Diagnostic Menu
- Set Cleaning Event
- Set Access Code
- Set Access Level
- Measurements screen

Set Calibration Menu

Take notice:



There is typically no new calibration required in the first 18 month after start up.
Please read chapter "Using the Calibration Filters".



This menu is used to correlate raw data collected from the sensors (photo detectors) corresponding to a specific standard or sample concentration. Up to 8 different calibration data points can be stored for each of the four sensors read by the instrument. From this information the instrument can construct a lookup table.

Choose **Main Menu > Calibration Menu**

Select the **Sensor**, which needs to be calibrated.

You have two calibration tables, Factory calibration and Process calibration tables. Choose the desired calibration table, which needs to be changed by selecting the respective button

- Factory Calibration
- Process Calibration

Note: Factory calibration table can be altered / viewed using **FACTORY** level Access permissions.

Process Calibration

- Build Calibration
- View/Edit Calibration
- Fit Data
- Copy Fact Table

Build Calibration

For each Sensor, up to 8 different samples can be used during the calibration process.

Select the Sensor number by choosing the **Sensor** Toggle Button.

Select the Sample number by choosing the **Sample** Toggle Button.

Enter the **User Value** (Ex: - Known concentration value of a Standard) in the text box provided. This value can also be changed using **View/Edit Calibration** menu.

Choose **Read New Data** to capture the data.

Choose **Store New Value** to store the data.

Repeat steps 2 to 5 for each sample.

View / Edit Calibration

The selected Sensor number appears on the top. The data present in the selected process calibration table can be viewed/edited using the following option.

To edit **user value** or **data**, Tap/Click on the cell.

Choose **Graph** to view the curve fit based on the **Fit Type** selected.

Choose **Edit Sensor Equations** to alter the Sensor Equations.

Fit Data

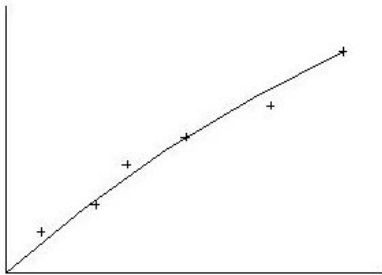
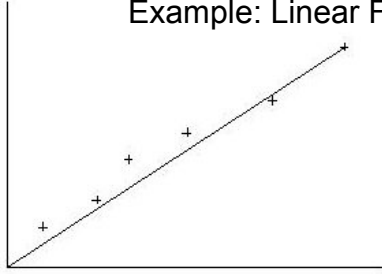


Take Notice:

Fit data is required after each calibration. This function calculates a new calibration curve and writes it to the memory of the Messenger transmitter!

Choose the type of Curve Fit to be performed on the Calibration data. There are 4 options available.

- Linear Fit Process Data
- Curve Fit Process Data
- Linear Fit Factory Data
- Curve Fir Factory Data

Requires a minimum of 3 Samples. Typically used for high concentration (absorption) measurement.	Example: Curve Fit 
Requires a minimum of 2 Samples. Typically used for low concentration (scatter light turbidity / colour) measurement.	Example: Linear Fit 

Copy Factory Table

The selected sensor's factory calibration table is copied to process calibration table.

Factory Calibration

- Build Calibration
- View/Edit Calibration

Build Calibration

For each Sensor, up to 8 different samples can be used during the calibration process.

Select the Sensor number by choosing the **Sensor** Toggle Button.

Select the Sample number by choosing on the **Sample** Toggle Button.

Enter the **User Value** (Ex: - Known concentration value of a Standard) in the text box provided. This value can also be changed using **View/Edit Calibration** menu.

Choose **Read New Data** to capture the data.

Choose **Store New Value** to store the data.

Repeat steps 2 to 5 for each sample.

View / Edit Calibration

The selected Sensor number appears on the top. The data present in the selected factory calibration table can be viewed/edited using the following option.

To edit **user value** or **data**, Tap/Click on the block.

Choose **Graph** to view the curve fit based on the **Fit Type** selected.

Choose **Edit Sensor Equations** to alter the Sensor Equations.

Setup Results

The Setup Results are used for formatting the output that is to be displayed to the user, which is captured from different sensors

Choose **Main Menu > Setup Results Menu**. You will see different Options to format the output

- Setup Results Nametags
- Setup Results Equations
- Setup Sensor Equations
- Setup Numerical Results
- Setup Graphical Results
- Set Results Units
- Setup Data logging
- Bubble Reject Threshold
- Set Results Format
- Set Results Offset

Setup Results Nametag (Panel PC Version only)



This Nametag is shown at Panel PC screen or configuration Software only!
If you have a transmitter with LCD – display, please configure Nametag, measurement unit, and decimal resolution in menu “Set LCD- Display”.

Choose the **Result (1...4)** Text box to specify the Nametags to be displayed for results captured in the Measurements Screen.

For Example: - If the data captured in Result1 is Turbidity then the Nametag for Result1 can be given as "Turbidity"

Setup Results Equation



Only qualified technical personnel must perform this work.

Please read reference manual and contact our service for detailed information



Setup Sensor Equation



Only qualified technical personnel must perform this work.

Please contact our service and ask for the correct equation for you sensor.

Please read reference manual!



Setup Numerical Display (Panel PC Version only)



The Font Size takes effect Panel PC screen or configuration Software only!
If you have a transmitter with LCD – display you will get a fix Font Size in this display.

You can format the Numerical display. Check on relevant **Show Result** checkboxes to select which results need to be displayed during the Numerical display in Measurements screen.

Choose **Font Size** Toggle Button to specify the Font Size (Small / Medium/ Large) with which the results need to be displayed.

- When all results are selected for display Font size can be only **small**.
- When 3 results are selected for display Font size can be **Small/Medium**.
- When 2 or less results are selected for display Font size can be **Small / Medium / Large**.

Choose **Show All** when all results need to be displayed.

Setup Graphical Display (Panel PC Version only)



This Menu takes effect to Panel PC screen or configuration Software only!
If you have a transmitter with LCD – display, please configure the results you like to see in menu “Set LCD- Display”.

You can format the Graphical display in Measurements screen. Check on **Show Result** checkboxes to select which of the results need to be displayed during the Graphical display.

Choose **Range of Values** to specify the Lower & Upper Limits of the Graph.

Choose **Time Step in Minutes** specify time duration with which X-Axis Scale needs to be displayed.

Choose **Show Color** to select the color with which the result should be displayed on the graph.

Note: Time Step in seconds can be specified by entering decimal values. Ex: - 0.1, 0.2.

Set Results Units (Panel PC Version only)



The defined units are shown at Panel PC screen or configuration Software only! If you have a transmitter with LCD – display, please configure Nametag, measurement unit, and decimal resolution as well in menu “Set LCD- Display”.

Choose the **Result (1...4)** Text box to specify the units to be displayed for results captured in the Measurements Screen.

Example: - If the data captured in Result1 is Turbidity then the unit of Result1 can be given as "FTU".

Setup Data Logging



Please read reference manual or contact our support!

Bubble Reject Threshold

Bubble Reject Filter is used to smooth system response when bubbles are passing and based on a data averaging and acts upon a threshold limit set by the user in %change detection.

Choose **Bubble Reject** textboxes to specify the % Threshold.

Choose **Filter Delay** textboxes to specify the delay in sec.

Set Results Format

You can format the results displayed in Measurements screen.

Choose **Number of Decimal Places** for each Result to specify the precision with which the result needs to be displayed in Measurements Screen.

Choose **Allow Values** for each Result to specify whether **POS** (Positive values) or **ALL** (Positive and Negative values) to be displayed in Measurements Screen.

Set Results Offsets (manual zero adjust)

Choose **OFFSET TO RESULT (1...4)** text box to specify the Offset.

You can enter a positive or negative offset to adjust the zero reading for each result.

Example:

Your displayed result is 10ppm (at ultra pure water) instead of 0ppm.
Then you must enter an offset of (-10) to get a 0ppm reading.

Setup Inputs / Outputs Menu

You can configure the Inputs / Outputs of the Messenger Device.

Choose **Main Menu > Setup Inputs / Outputs Menu**. You will see the following Options.

- Set LCD Display
- Set Analog Outputs
- Assign Digital Inputs
- Set Alarms
- Set Messenger Unit ID
- Set Relay Functions

Set LCD Display (Version with LCD- Display only)

LCD version, Enter nametag, measurement unit and decimal resolution

The LCD display Contains 4 Lines, which can be configured to display Results, Sensors, and Temperature. The Buttons “DECs” allow changing the decimal point.

Choose **Line (1...4)**. Enter the text,(Results nametag and measurement unit) which needs to appear on the Line.

Select the **Signal (Results / Sensors / Ambient)** that needs to appear along with the selected **Precision** (Decimal Point).

In order to adjust the contrast of the LCD, Choose "+" / "-" to increment or decrement the value. The default contrast value is 115.

The Maximum text that can be displayed on a Line is 20 characters. When a Signal is assigned only 11 characters of text entered will be displayed and the remaining characters get truncated.

Set Analog Outputs

The system has FOUR independent and assignable Analog 0/4 -20 mA loops, which can be connected to External Devices. Each output will operate from a user-defined RESULT equation. The sub-menus allow you to set all the necessary parameter values for Low and High limits and the required mode for the analog output.

Over range:

Analog Outputs can flag abnormal conditions or upset conditions that can be caused by Malfunction of Optics or by some material coating over the windows. We can assign a range of mV for normal operation. If the range exceeds, a fault is registered and an appropriate error message (OPTICS FAULT) will be displayed on the LCD and Measurements Screen.

How to configure Analog Outputs?

- To configure the Analog Output, Choose the **ANALOG OUT** (Out 1-4).
- Choose **Output** Toggle Button (**Not Assigned / Result1 / Result2 / Result3 / Result4**) to specify the user defined RESULT equation needs to be assigned to ANALOG OUTPUT.
- Choose **Mode** Toggle Button to Specify the Mode (**0/4-20 mA**) Loops.
- Choose **Low, High** text boxes to specify the Low and High mV.
- Choose **Overrange** toggle button to specify the channel (CH1...4) Assign the range of mV for normal operation by choosing the **Low** mV and **High** mV.

Note:

In case any of the Analog Output is not used, make sure that **OUTPUT, OVERRANGE** parameters are **"NOT ASSIGNED"**.

Assign Digital Inputs



Take Notice:
Alarm relays and digital inputs are optional!

Choose Cleaning Event 1...2

Set Cleaning Frequency in Hours = 0

Specify the **Cycle Duration**, and **Purge Time**. Save the settings. Activate the Relay through Assign Digital Inputs. The Cleaning Cycle gets activated ONLY ONCE.

Note: Whenever you are trying to activate a Cleaning Event through **Assign Digital Inputs** make sure that the Cleaning Frequency in Hours is 0. Failing to do so may cause malfunctioning of the Cleaning Event.

Set Alarms



Take Notice:
Alarm relays and digital inputs are optional!
Please contact Chemtronic or read reference Manual.

Set Messenger Unit ID

The UNIT ID is necessary when multi-units are connected on the same bus.

Choose **Unit ID** to specify the ID of the Messenger. The Unit ID should lie between 1...255.

Choose **Messenger Tag** to specify the extra information for easy identification when multiple devices are connected in the network.

Set Relay Functions



Take Notice:
Alarm relays and digital inputs are optional!
Please contact Chemtronic or read reference Manual.

Set Cleaning Event



Take Notice:
Alarm relays and digital inputs are optional!
Please contact Chemtronic or read reference Manual.

Set Access Code

You can set Personal Access code for Operator, Technician and Factory Levels preventing unauthorized personnel from altering key parameters that affect the operation of the unit.

Choose **Operator** text box. An Interface pops up Specify the Operator Password.

Choose **Technician** text box. An Interface pops up Specify the Technician Password.

Choose **Factory** text box. An Interface pops up Specify the Factory Password.

Set Access Level

You can enter the Access code based on the access code entered access level changes. Choose New Access Code text box. An Interface pops up Specify the new Access code.

Note: On entering incorrect access code the Access Level will be defaulted to Operator. The system has three Access levels:

Operator:	Default Access code 123
Technician:	Default Access code 1234
Factory:	Reserved for Factory Access

Measurements Screen (Panel PC version only!)



An interface converter USB to RS485 can not be used to configure the Measurement Screen Menu! Using the converter to access this menu may cause a crash of the Messenger Graph Software!

- Previous Data
- Online Analysis
- Alarm Status

Previous Data

Choose OPTIONS button  on the top right corner of the measurements screen, a popup menu appears.

Choose **Previous Data**.

Entire Previous Data is retrieved. Most recently logged data is displayed as first frame of graph.

Choose **Previous "<"** and **Forward ">"** buttons on the bottom of the graph to scroll through the Previous Data.

Note: This operation may take some time to read the data from device and process the data.

Choose **Numerical / Graph / Bar** Toggle button to switch between display formats.

How can you view value of data point on a graph area?

Tap on the data point you want to view on the graph area, Crosshair appears displaying the X-axis and Y-axis data.

Choose Previous "<" and Forward ">" buttons to scroll through the data in the currently displayed frame.

Tap outside the graph area to remove the crosshair.

How can you customize the Numerical and Graphical display?

Graph settings can be configured using the following screen

- Setup Numerical Display
- Setup Graphical Display
- Graph Settings

Maintenance (Sensor Model LAS) Replacement of Measurement Lamp



Ignoring of the following hints will cause a loss of warranty



Notice:

- Qualified technical personnel must perform repair and maintenance.
- Before beginning any work the sensor must be cleaned and flushed thoroughly. Depending on customers' application product residues can be very dangerous (aggressive, poisonous). Please handle the system very careful due to possible leakage etc.
- Avoid pulling and twisting of the lamp cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please work carefully during the replacement of the measurement lamp.
- Please be sure that no dust or other particles penetrates into the optical assembly.
- In case of dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

Required tools:

- Flat blade screwdriver - 2 mm
- Phillips screwdriver – medium size
- Hexagonal spanner – 2.5 mm
- Small bowl to store components



- Please loosen the upper hexagonal nut of the cable gland by using a 22 mm open-end wrench. Please assure that you do not twist the lamp cable.

Attention!

The lamp cable is marked with “lamp”



- Remove screws



- Shift the lamp arm until you have access to the electrical/cable connections.

- Loosen all wires of the lamp cable by using the 2 mm flat blade screwdriver.



- Loosen Allen screw by using the 2.5 mm hexagonal spanner.

- Remove / replace the measurement lamp..



- Connect the wires of the measurement lamp.

- Tighten Allen screw by using the 2.5 mm hexagonal spanner to fix the lamp.



- Push the measurement arm carefully into it's original position.

- Tighten screws and cable gland.carefully.



Using the Calibration Filters



Ignoring of the following hints will cause a loss of warranty



Notice:

- Qualified technical personnel must perform calibration.
- Before beginning any work the sensor must be cleaned and flushed thoroughly.
- Avoid pulling and twisting of the cable.
- Avoid applying excessive force during assembling and disassembling of the sensor.
- Screw in all bolts and cable glands stalwart only.
- Please be sure that no dust or other particles penetrates into the optical assembly.
- In case of any dirty component please clean carefully by using fresh water and a cloth (lint-free), dry all components by using instrument air.
- Use suitable tools only.

Required tools:

- Hexagonal spanner – 2.5 mm
- Small bowl to drop components

The Sensors model LAS are equipped with a build in calibration adapter. This calibration adapter can simulate two different turbidities by using calibration filters.

Please note:

The sensor must be filled with a low turbidity liquid (normally clean water) to proceed a calibration.



- Please loosen the upper hexagonal nut of the cable gland. Please assure that you do not twist the lamp cable.

- Remove screws.





- Shift the lamp arm until you have access to the calibration adapter.

- Read zero calibration sample first, with calibration adapter in middle position.



- Shift calibration adapter into the position with the lower turbidity value* (chapters 2.2 and 2.3)
- *The calibration adapter is labeled with the specific turbidity values. This turbidity values depend on the technical specification of the sensor as well as on the specified measurement range of the sensor.

- Shift calibration adapter into the position with the higher value* and read this calibration sample by using the Messenger transmitter.
- Please read the chapters 2.2 and 2.3



- Shift the calibration adapter back into middle position.

Push the measurement arm carefully into it's original position.
Tighten screws and cable gland carefully.



Model Messenger Technical Data



- Configuration via PDA, PC or Laptop
- Menu - based, intuitive User Interface
- Instruction Manual available via Help Function
- Serial Interface RS 232C / RS 485 (Modbus RTU Protocol)
- Simultaneous Use of up to 4 Sensors
- Sensors for Turbidity, Colour or Absorption measurement
- Fully Programmable Units (ppm, EBC, FTU, g/l, % TS...)
- Two Independent, fully programmable Cleaning Cycles
- Linearization of Measurement Values
- Integrated Data Logger for up to 8000 Measurement Values
- Recovery via Back-up File

Description:

The universal transmitter model Messenger can be used with all optical sensors of the Monitek series. The Messenger allows the simultaneous use of multiple sensors. Hereby you can use up to four single channel sensors. Even different sensors can be used with one transmitter. The measurement results can be linked together using almost any mathematical equation. This ensures an easy setup of e.g. dosage systems. The programming / calibration of the system will be done via a PC, PDA or Laptop using the menu-based software. Only one PC or Panel PC is required to configure an instrument in a network of up to 255 Messengers. Using the Messenger with an integrated Panel- PC allows the paperless recording or displaying of the measurement results as bar- or line graph's and the configuration without external equipment.

Applications:

- Scatter light turbidity measurement
- Absorption turbidity measurement
- Single channel colour measurement
- Dual channel colour measurement

Operational areas:

- Chemical industry
- Petrochemical industry
- Pulp & Paper
- Beer and beverages

Technical Data:

Supply voltage:	90-260 VAC, 50-60 Hz optional: 24 V AC/ DC	optional digital inputs:	4x 5V High
Power consumption:	maximum 50 VA	Reproducibility:	± 1 %
Relay capacity:	4 Relays fully programmable (48V / 2A)	Temperature:	-10°C to 50°C
Analogue output:	Up to 4x 0/4 - 20mA (isolated)	Enclosure / Protection:	1.4301 / IP65 (NEMA 4X)
Interfaces:	RS 232C / RS 485 Modbus RTU	optional hazardous area:	ATEX Zone I / Zone II

Model LAS Technical Data



- Low maintenance
- Extended calibration interval: Typical 12 month
- Measuring windows directly melted to the Steel
- No additional window gaskets required
- No overreaching components inside the flow cell
- Perfect hygienic design
- Cleaning in place (CIP)
- Build in calibration filters
- Process installation via TH- Varivent plates

Description:

The sensor model LAS uses the principle of light absorption to detect dissolved or suspended particles in liquids. The transmitter model Messenger or CCAB is required to use this sensor. The system has been designed for continuous operation with long life time. The use of metal melted measurement windows without any additional gaskets guarantee for a perfect hygienic design. The installation by using TH-Varivent plates offers a cost saving process installation via standardized flow cells. The implemented calibration filters allow the calibration of the system without using liquid calibration standards. The absorption caused by turbidity will be detected at a wavelength of 850nm. Therefore the measurement results are not affected by product colour.

Applications:

- Product concentration
- Turbidity measurement
- Suspension
- Product separation

Operational areas:

- Breweries
- Beverages
- Dairies

Technical Data:

Line size:	DN 40 – DN 125 (TH- flow cells)	Measurement ranges:	typical 0–50EBC, 0–500EBC
Process pressure:	PN10 / ANSI class 150	Reproducibility:	± 1 %
Process temperature:	maximum 140°C	Detector:	Silica diode
Sensor material:	1.4404 / 316L	Measurement wavelength:	typical 830nm
Sight glass material:	Metaglas	Protection:	IP65 / NEMA4X
Gasket material:	No window gaskets required	Sterilization:	CIP

Declaration of Conformity (CE)

Declaration of Conformity

The Manufacturer of the Products covered by this Declaration is



41 Wellman St., Lowell, MA 01851 USA
Email: liquidparts@galvanic.com
Tel: + 978-848-2701, Fax: + 978-848-2713

The Directives covered by this Declaration: 2004/108/EC
2006/95/EC

The Products covered by this Declaration

Monitek Messenger Transmitter Model # MSG-LD

The Basis on which Conformity is being Declared

The manufacturer hereby declares under his sole responsibility that the products identified above comply with the protection requirements of the EMC directive and with the principal elements of the safety objectives of the Low Voltage directive listed above and that the following standard have been applied: EN / CSA /UL 61010-1

EN 61000-6-2: 2005

EN 61000-6-4: 2007

The technical documentation required to demonstrate that the products meet the requirements of the Low Voltage and EMC directives have been compiled and are available for inspection by the relevant enforcement authorities. The CE mark was first applied in: 2010.

Technical Documentation is available for inspection at these addresses:

Chemtronic Waltmode GmbH
Niederstrasse 14
D-40789 Monheim
Germany

ANAEL, SAS
15, rue Nobel
Zone Industrielle
F-45700 VILLEMANDEUR
France

Authority: V.P. and General Manager, Jack Cotter

Attention!

The attention of the specifier, purchaser, installer or user is drawn to the special measures and limitations to use which must be observed when these products are taken into service to maintain compliance with the above directives.

Details of these special measures and limitations are available on request, and are also contained in the product manuals.

Rev. A effective July 29, 2010