flowscreen

Operating Instructions flowscreen

ViscoTec

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1 Introduction

Dear customer,

Congratulations on buying your flowscreen analysis system; we hope you find it easy to operate successfully.

This analysis system will give many years of satisfactory operation provided it is correctly operated and maintained. We value your feedback to help us in our efforts to maintain our standards of quality at the highest possible level. We would be happy to consider any suggestions you may have on how we might improve our products.
Do you have any questions? We look forward to hearing from you:

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1.1 Function description

The flowscreen analysis system is designed and produced for the monitoring of dosing processes. Up to two pressure sensors can be attached. The pressure values determined from the measurement signals are shown on a graphic display.

Measurement begins either when reaching a predefined threshold value due to pressure build-up, or after application of a start signal, e.g. from a stored program control (SPC). The display can be adapted for the current application in the view for the axes of pressure and time.

AAn error message is indicated via a red LED if the defined limits for pressure build-up, pressure gradient during dosing and pressure reduction are exceeded, depending on mode selected:

- range (pressure build-up, pressure gradient during dosing and pressure reduction)
- overpressure (exceeding a predefined maximum pressure)

An error tolerance number can be set for each attached sensor. See also 4.5.1.

1.2 General information on the menu guide / operation

The flowscreen analysis system is operated via a touch screen using the stylus provided.

The operating menu is largely self-explanatory. System states are depicted via symbols and plain text.

1.3 Description of software operation

In order to ease legibility, details on using the software interface that are considered too basic are not described.

If for example, a certain button must be pressed, the generally understandable information is not mentioned, with the necessary action and logical result described in brief.

Example

Long form	Short form
Click the "Save" button, the XY window is opened.	<*Save*> ► XY opens

1.4 Previous knowledge

The operator requires no particular previous knowledge. It is assumed that the operator is familiar with the use of a touchscreen interface and the characteristics of a dosing process.

2 Scope of supply

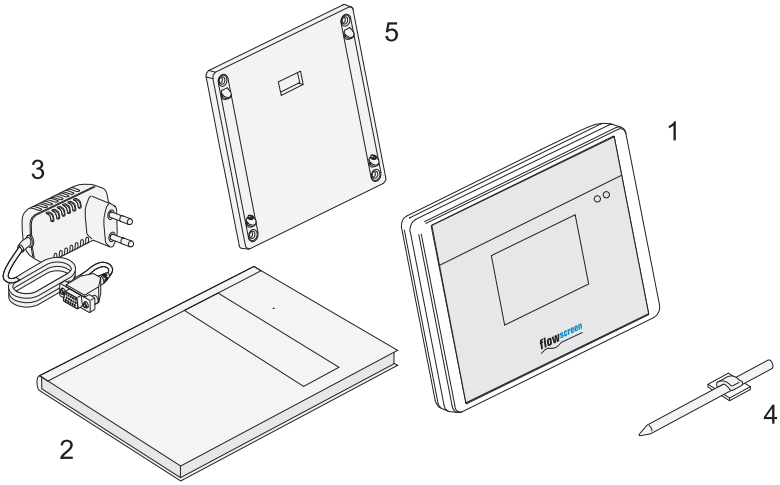


Fig. 1

1	Flowscreen
2	Manual
3	Power supply unit
4	Touch pen
5	Bracket for flowscreen housing

3 Safety

3.1 About these operating and maintenance instructions

If reference is made to a component in a figure, the part has a key number.
The following symbols are used:

•	Work step
-	List
*	Reference to a comment
Bold text	Breakdown, note
Tip	Special note
Italics	Term or button on the screen display
➡	Reference to technical information about operation and / or about preventing damage.

3.2 Informal safety measures

The operating instructions must always be kept at the place the analysis system is used.

3.3 Correct use, warranty

The flowscreen analysis is intended for monitoring dosing processes in environments that are not protected against explosions.

The product warranty may be voided by any

- conversions or modifications
- use of non-original spare parts
- Repairs by persons or organisations not authorised by the manufacturer

that are done without the explicit and written approval of the manufacturer.
The manufacturer shall bear no liability whatsoever for damage resulting from failure to follow the operating instructions.

4 Operation

4.1 General overview

1	Display	See
2	Connection sensor 1	8
3	Connection sensor 2	8
4	System plug, power supply and signal management	8
5	RS232 port	
6	USB port	4.9
7	Inaktiv	
8	On / off switch	
9	LED error, illuminates when an error is detected	4.5.1
10	LED no error, dosing ok	

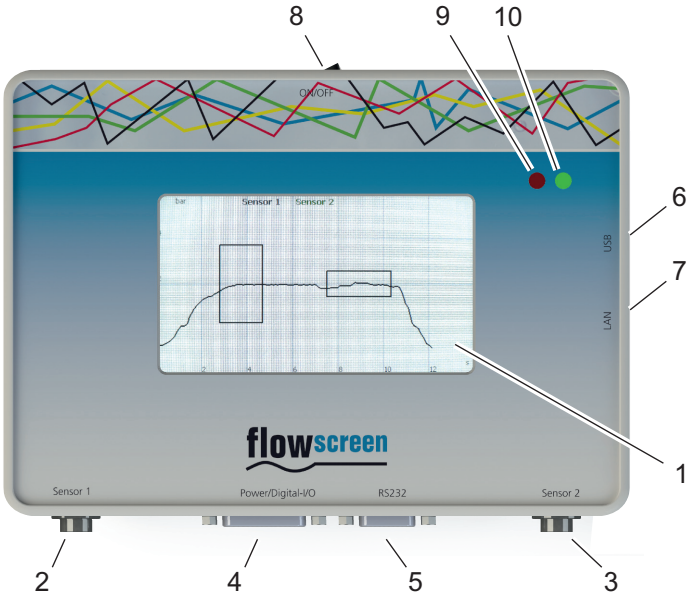
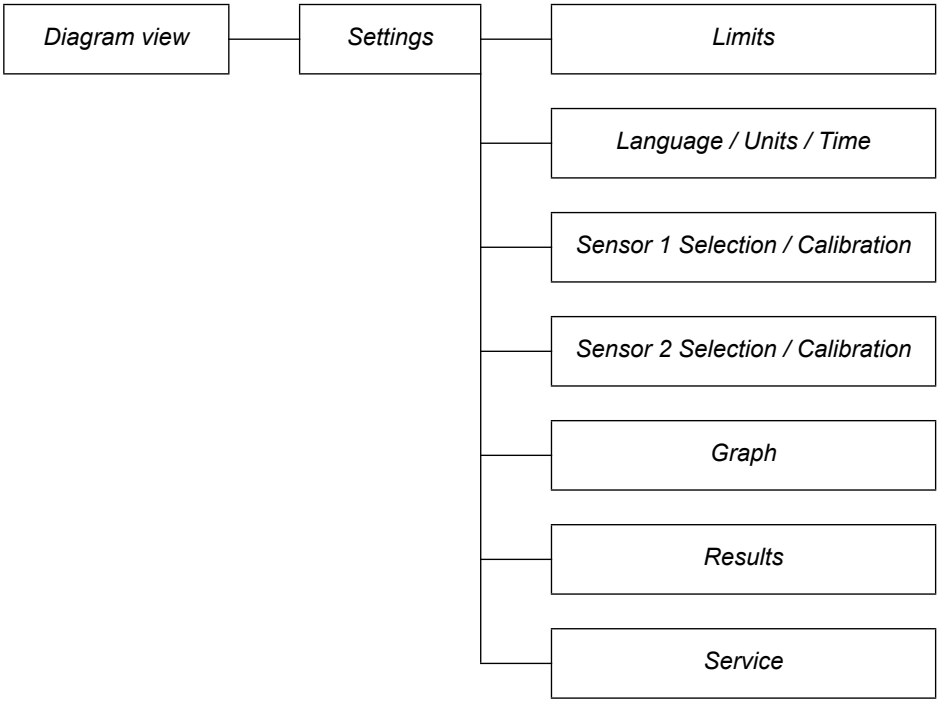


Fig. 2

4.2 Navigation in the touchscreen menu

The *Settings* menu is opened by touching the touchscreen in the diagram view.
The back button (arrow pointing left) goes back a level.



4.3 Switching on

- Move the on / off switch to the ON position. The machine automatically carries out a self-test. Then diagram view appears as follows, depending on the operating mode selected:

Range mode

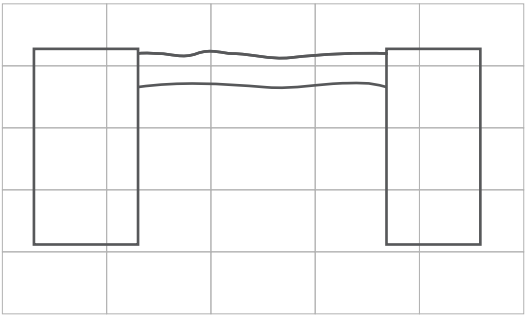


Fig. 3

Overpressure mode

Fig. 4

- If required, save the measuring range B (envelope curve) (see 4.5.5). This is stored permanently until a new definition is given.

4.4 Starting up

- Move the on / off switch to the OFF position.
- Connect the power supply to connection (4).
- Attach the sensor(s) (connection 2 and 3).
- Add extra connections (USB, RS232, system plug) if required.
- Move the on / off switch to the ON position.

4.4.1 Language units time

- <*Settings*> <Language / Units / Time>

The settings options are self-explanatory, follow the information on the screen.

4.4.2 Defining sensors and connections

- <*Settings*> <*Sensor X Selection / Calibration*>

Select Channel
Pin allocation in the sensor cable plug (see 8). Factory setting is *Pin 4*. In this selection, the channel allocation of the sensor concerned can be defined or the channel deactivated.

4.4.3 Calibrating the sensors

- <*Settings*> <*Sensor X Selection / Calibration*>

Calibration
The sensors are set ex-works with the values 0 bar (*Zero Value*) and 16 bar (*Full Scale*). If other sensors are to be connected, these values must be adjusted according to the manufacturer's information.

4.5 Base settings

4.5.1 Results / error messages

- *<Settings>* <Results>

<Error after x faults> = After this number of consecutive defective dosings (pressure value outside of measuring range), the error LED illuminates red.

4.5.2 Start and end of the measurement

- *<Settings> <Sensor X select / calibrate> Measurement start/end at*

Selection:

Pressure	Enter the pressure value that defines Start/End. **Important**: The threshold value (1) for Start must be greater than the value emitted by the sensor in pressureless state (production tolerances). Otherwise the recording system will record permanently.
Start/Stop Signal	Start measurment by an external signal e.g. programmable logic controller (system plug (4))

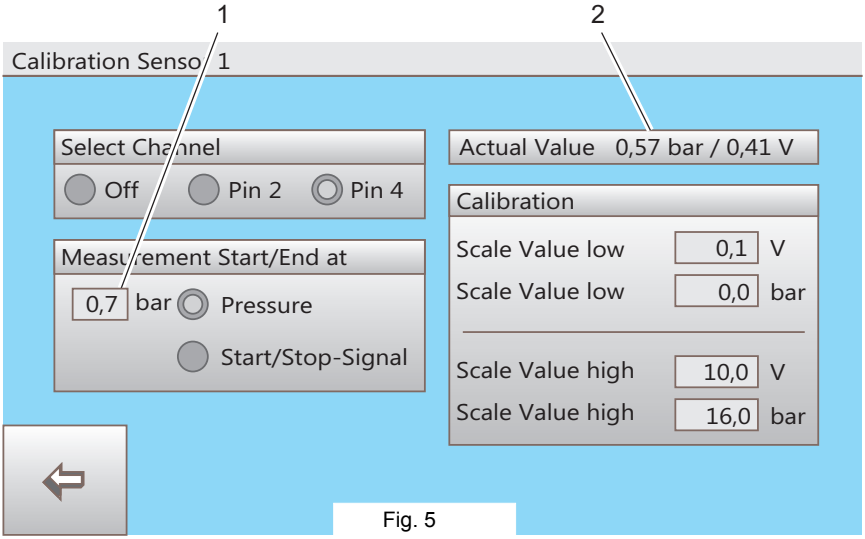


Fig. 5

4.5.3 Diagram, size in display

- Determine the dosing to be measured in seconds.
- Determine the maximum dosing pressure*.
- Set diagram size: <*Settings*> <*Graph*> <*Graph*>

  For active analysis (see 4.5.5) the maximum value which can be set for X and Y depends on the maximum values of the boxes or the envelope for these to be displayed completely.

  - *max. X-Value* = Duration of the dosing in seconds, plus approx. 20%
  - *max. Y-Value* = Maximum dosing pressure in bar[1)], plus approx. 20%

* Tip: If the pressure development for the dosing process is unknown, the pressure can be read off from the display. Follow: <*Settings*> <*Sensor X Selection / Calibration*> in <*Current Value*> to display the value measured by the sensor. The maximum readable value in a representative dosing can be used as an approximate Y-value.

4.5.4 Select operating mode

Determine whether the flowscreen analysis system should analyse measurement ranges or overpressure: <*Settings*> <*Graph*> <*Mode*>

Selection:

Range	Pressure monitoring within set tolerances
Overpressure	Overpressure monitoring

[1)] or psi. depending on setting

4.5.5 Setting *Range* operating mode

General

The settings are possible if the *Range* operating mode is switched on (see 4.5.4). The pressure gradient of a dosing (1) can be monitored and displayed for each connected sensor with three different measurement ranges (see Fig. 6). The diagram size in the display must be set at least large enough to correspond to the pressure and time values of the display.

A stable and reproducible dosing process is required for effective pressure monitoring.

Measurement range	Setting	Description
A	Box1	Pressure build-up phase
B	Envelope curve	Pressure gradient, resulting from the three reference measurements
C	Box2	Pressure reduction phase

The dosing is judged to be error-free if the pressure gradient (1) of the dosing (as shown) is within the tolerances determined by ranges A, B and C.

In the event of an error, the error LED (9) illuminates if the set error threshold has been reached (See 4.5.1).

The measurement starts (adjustable for each sensor) either when a pressure threshold is reached or via an external start signal applied to the system plug (4) (see 4.5.2).

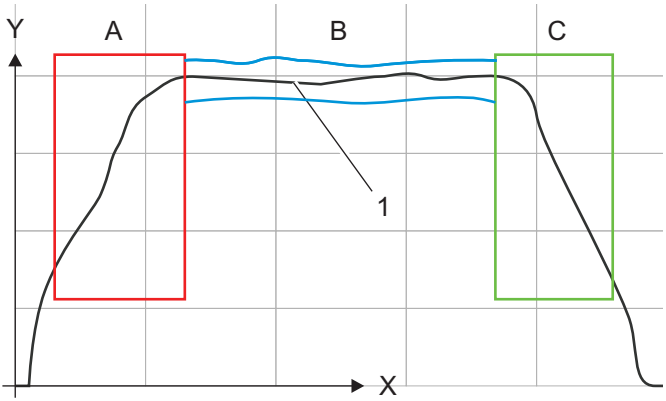


Fig. 6

Monitoring of the three measurement ranges can activated and deactivated individually for each sensor.

Make settings for pressure build-up (A) and pressure reduction phase (C)

- *<Settings>* *<Limit values>* and *<Sensor 1>* (1)[1)]

- Select *Box1* (2)

- Enter values for pressure ***build up*** phase (A) (3), *Box 1* (4) appears in the measurement gradient display

- Enter values for pressure ***reduction*** phase (C). To do this, select Box2 (5) and proceed as described above.

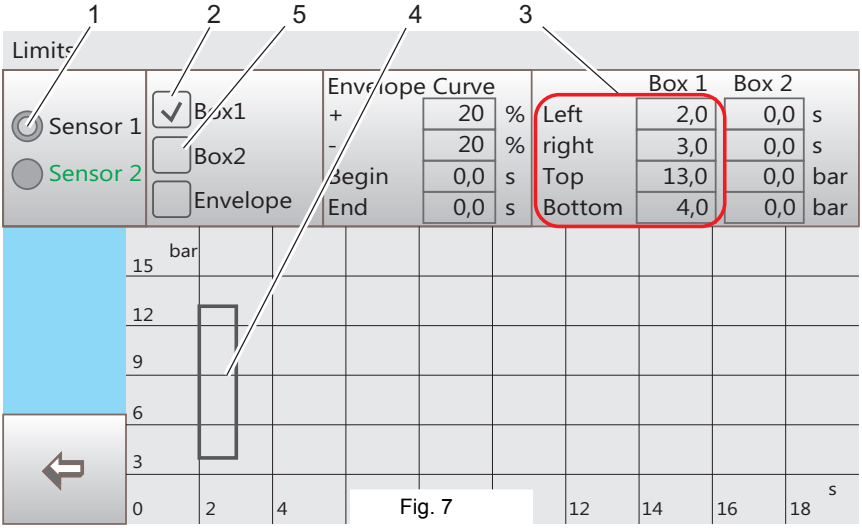


Fig. 7

Note Unrealistic values are corrected.

[1)] Assuming that a sensor is connected to Sensor 1 port.

B Pressure gradient

- *Envelope* (7)[1], the dialog field Envelope (8) is displayed[2]. If an envelope has been saved, a new envelope can only be entered when the existing one has been deleted with <*delete*> (see (10) in Fig. 9).

- Enter basic data (10) for the envelope as follows:

  - In order for the pressure analysis to be performed without interruption between the pressure build-up and pressure reduction phase (9), the value for *Start* and *End* must be entered according to Boxes 1 and 2. When creating/editing Box 1 and Box 2, the values are transferred automatically. They can be changed if required. In case of an amendment, the envelope curve has to be redefined.

  - Define the tolerance range of the envelope curve via the input values + and - in percent.The evaluation (OK or NOK) of the pressure gradient results from these values.

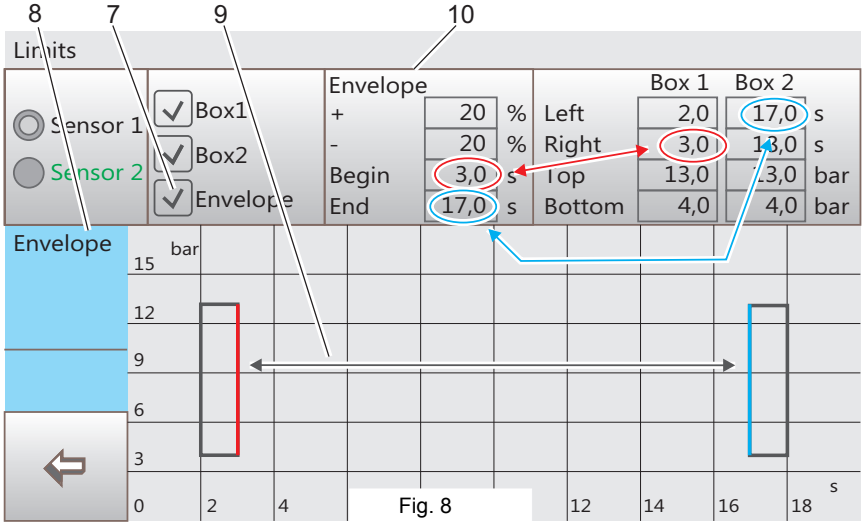


Fig. 8

[1] Assuming that the pressure gradient is to be analysed
[2] Measuring period <2s envelope curve not possible

- Start a dosing process which is depicted by the pressure gradient (9) determined by the pressure sensor.
- Start a second and a third dosing process. An acknowledgement (11) is shown for each dosing process. When the third dosing process has been recorded, the envelope is saved and depicted graphically (see Fig. 10).

  <Delete> (10) deletes the pressure values previously stored and a resulting envelope.

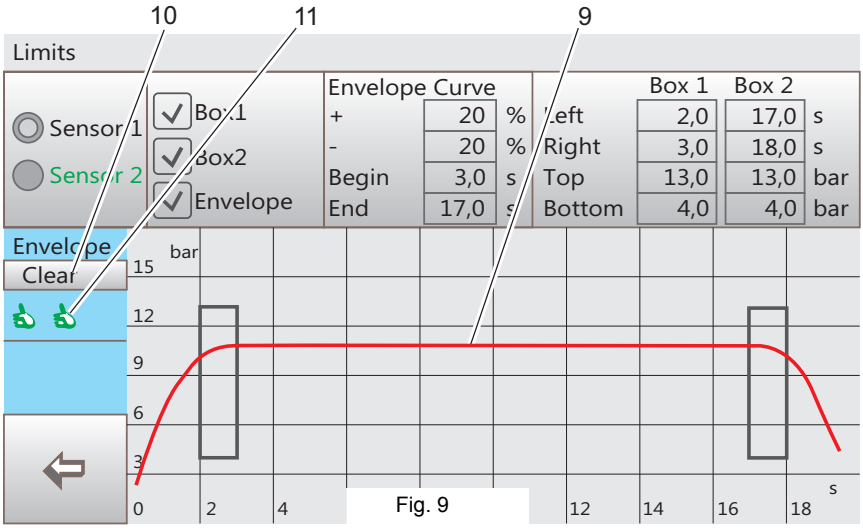


Fig. 9

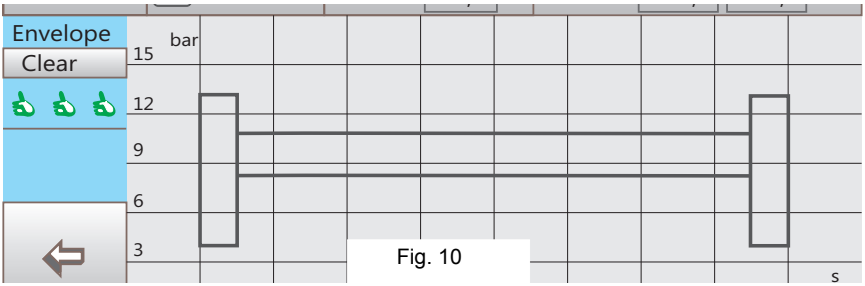


Fig. 10

- Where required, select <*Sensor 2*> (6) and enter the values for the pressure build-up and pressure reduction phase and the envelope. To do this, proceed as described above.

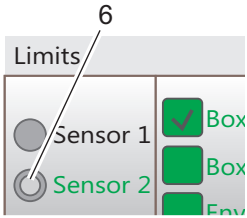


Fig. 11

The flowscreen analysis system is now ready for use in *Range* operating mode.

4.5.6 Setting *Overpressure* operating mode

General

The settings are possible if the *Overpressure* operating mode is switched on (see 4.5.4). A overpressure value (2) can be monitored and displayed for the pressure gradient (1) of the dosing for each connected sensor.

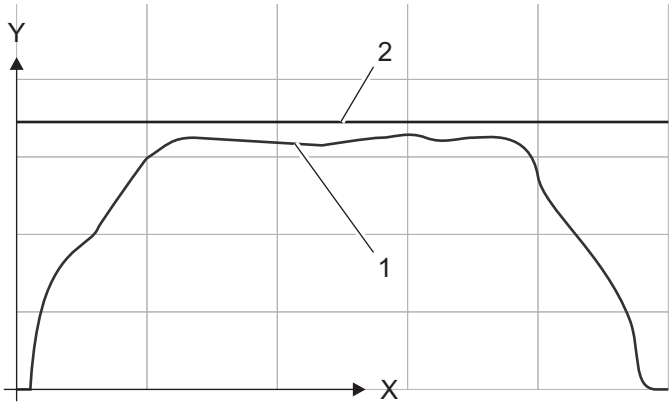


Fig. 12

- <*Settings*> <*Limits*>
- Set or activate *Limit Overpressure* for the respective sensor. The overpressure value (2) is displayed during a measurement. The overpressure (2) value is displayed during the measurement.

The flowscreen analysis system is now ready for use in *Range* operating mode.

4.6 Performing measurements

Measurement operation requires the settings from the following sections:
- 4.4, Starting up
- 4.5, Base settings

The flowscreen analysis system is then ready for operation (to switch on, see 4.3).

For *Range* operating mode, ensure that the measurement ranges of the dosing phases required for analysis (see Fig. 6) are selected (Box1, Box2 and envelope).

Measurement display
The pressure / time gradient of each measurement (pressure curve) is shown on the display.

Error display/ - counting
If adjusted parameters/ tolerances during one or more measurements will be exceeded, an optical signal can be detected (red LED). In addition error signals from the system plug (4, view 4.1) are available for further use.

The error counter increments by a value of 1 each time an error occurs. Subsequent fault-free dosing clears it again. Only after reaching the defined error count (threshold value) by successive faulty measurements is an error set.

Example for *Message after 2 errors*:
If the function *Message after x errors* was stored with a value 2 in the menu point Results (see 4.5.1), the fault signal (red LED) is given after 2 faulty measurements in immediate succession.

Dosing	Tests total	Tests ok	Tests not ok	LED
1 ok	1	1	0	
2 ok	2	2	0	
3 nok	3	2	1	
4 ok	4	3	1	
5 nok	5	3	2	
6 nok	6	3	3	

Error reset
<*Reset Counter*> (diagram view) ► Error counter is reset to 0. At the same time, the counter for error-free measurements is also reset to 0. All counters can be shown via <Settings><Results>.

4.7 Switching off

Move the on/off switch to the OFF position to switch off the flowscreen analysis system.

4.8 Data Export

The measurement values may transferred to a PC via the RS232 interface. Two different export formats are available (setting in *Results* menu):

- Long version, all measurement values = Data export "*full*"
- Short version, time and analysis = Data export "*short*"

Export format per sensor:

	Date / Start time	Time / Pressure data	Error *	Limit
Short version	x		x*	x*
Long version	x	x	x*	x*

* If the areas Box1 and/or Box2 are activated, the export format is given the set values (see 4.5.5) and a corresponding message in the event of an error. The stored data (*.txt) can be processed (Excel or similar).

The export format is selected in the "Results" menu.

4.9 Software update (firmware)

General
The current version number can be read out via <*Settings*> in the lower-right corner of the display.

USB for software update

For more information and current sofware version please contact the manufacturer.

5 Service

Reset to factory default settings
<*Settings*> <*Service*> Enter digit sequence 3425 <*Enter*> <*Activate Button Reset Default Settings*> <*Reset Default Settings*>

Calibrate touchscreen
<Settings> <Service> Enter digit sequence 3425 <Enter> <Touch calibrate>

6 Technical data

Installation	Wall mounting Front panel mounting * Table version *
Power supply Mains adapter Analysis system	 230 VAC / 50 Hz 24V DC
Current input	200 mA / 24V
Power consumption	0.5 W
Protection class	IP40
Display / resolution	4.3“ TFT with resistant touch screen, 480 x 272 pixels
Construction type	Enclosed plastic housing
Dimensions LxWxD, approx. cm	19 x 13.5 x 3.5
Weight, approx. g	460
Serial interfaces	RS232: 57600 Baud, 8 databits, no parity, one stop bit (57600/8N1)
Input / output signals Input analogue Input digital Output digital	 0-10V galvanically isolated 24VDC galvanically isolated 24VDC max. output current optokopplers 10 mA Open Collector-Outpot (NPN, negativ switching)
Interfaces	RS 232 USB (A port)
Measurement programmes	Measurement without analysis Measurement with analysis over max. 2 masurement windows and 1 x envelope curve (freely configurable)
Measuring period	0,1s - 40 min
Sampling rate	Dynamic adaption - dependend on measuring period (2Hz - 200Hz) Measuring period <2s envelope curve not possible

* Option

7 Declaration of Conformity

We,

ViscoTec – Pumpen- u. Dosiertechnik GmbH
Amperstr. 13, 84513 Töging

hereby declare that the product described below meets the fundamental requirements of the following European Directives in its design and construction, as well as in the configuration placed on the market by us:

2004/108/EC	Electromagnetic Compatibility
2006/95/EC	EC Low Voltage Directive
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS)

Product designation: Analysis system flowscreen

Harmonised European norms applied:

EN 61326-1:2013	Electromagnetic Compatibility
EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use - Part 1
EN 50581:2012	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances (RoHS)

Töging, 17 June 2014

Georg Senftl
Managing Director

8 Pin allocations

Sensor plug (2 and 3, see 4.1)

Pin	Description
1	Power supply 24V DC
2	Signal input 0-10V
3	GND
4	Signal input 0-10V

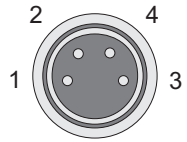


Fig. 13

(Flash direction: on the plugs)

System plugs (4, see 4.1)
Input / output signals are arranged as optocouplers.

Pin	Description
1	Power supply 24V DC
2	Input, start sensor 1
3	Input, start sensor 2
4	Input, reset error counter
5	- -
6	Output, ready (connected when device is operating)
7	Output, error sensor 1
8	Output, error sensor 2
9	Output, accumulated errors sensor 1
10	Output, accumulated errors sensor 2
11	Output, overpressure switch-off
12	- -
13	- -
14	GND for inputs
15	GND power supply

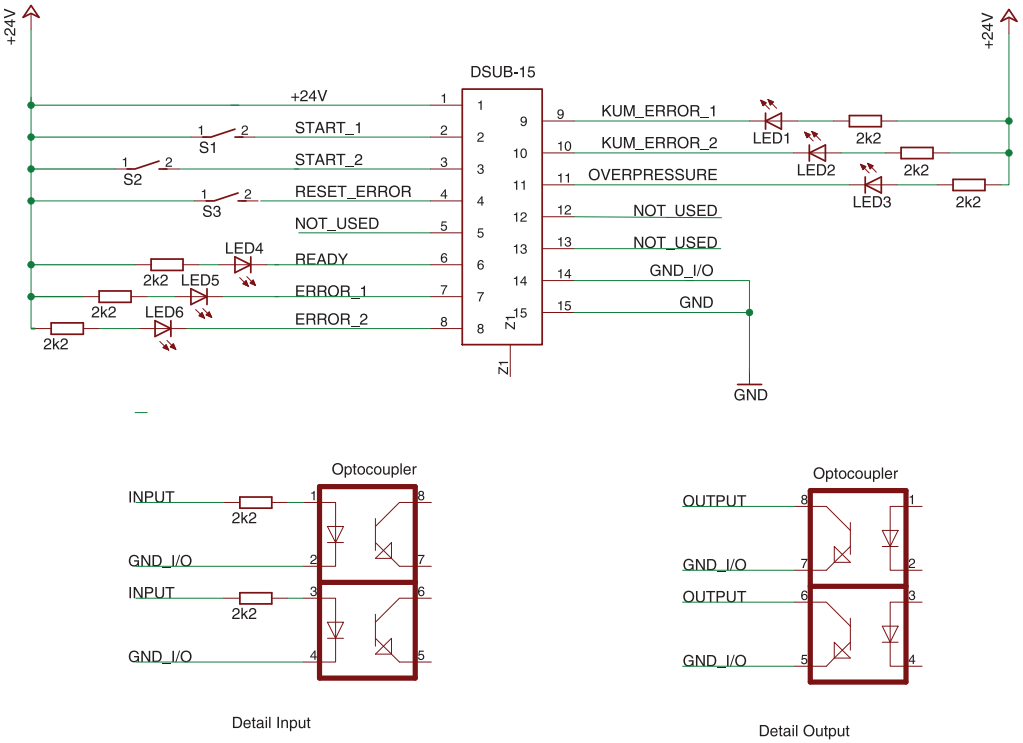


Fig. 14

9 Accessories

	Description	Article number
1	Flowscreen*	21122
2	Operating Instructions*	21205
3	Power Supply*	21138
4	Touch pen*	21217
5	Bracket for flowscreen housing	21216
	Without figure :	
6	Mounting frame	21294
7	Table housing	21123
8	Cable extension "Extender" 5m	21296
10	Cable extension "Extender" 10m	21295

* see Fig. 1, page 7

10 Disposal

Please dispose of the analysis system in an environmentally safe way. All materials must be handled in accordance with the appropriate recycling requirements.

Notice

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