INSTRUCTION MANUAL
4-Channel Measuring Unit 5304 (0.1µm)
4-Channel Measuring Unit 5314 (0.01µm)

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1 Introduction

The 5000 Series measuring instruments are highly sensitive devices designed to connect inductive halfbridge transducers (probes). Tesa compatible.

The range of options offered by these units makes the solution of many measuring applications possible.

1.1 Technical Data

- Maximum 4 half bridge inductive transducers (probes) Tesa compatible
- Static and dynamic measurements
- Dynamic: MAX, MIN, T.I.R. and average
- Overall or individual indication of accepted/rejected results
- 7 galvanically separate outputs
- 2 galvanically separate inputs
- Memory capacity of 1000 measured values
- Output of every measured value on RS232
- Output of the measured value memory content on RS232
- Operating temperature 10°C-40°C (room temperature)
- 24V supply
- Measuring speed

Resolution	Measuring speed per channel	
	with 1 channel	with 2 – 4 channels
1µm	3ms	3ms
0.1µm	3ms	11ms
0.01µm	40ms	40ms

1.2 Components

List of components:

1. Display
2. (Operation) Function keys
3. Numeric Keypad
4. Power ON-OFF Key
5. Baseplate
6. Baseplate Assembly Screws (4x)
7. Backplate
8. 24V Adapter receptacle
9. Transducer (Probe) T1...T4 receptacle
10. RS232 receptacle
11. CAN receptacle
12. Digital I/O receptacle
13. Ground Wire receptacle

Important: The appropriate protective caps must cover unused connections at all times!

2 Start up

2.1 Installing your Series 5000 comparator:

- Unpack the comparator and check components.
- Plug the power adapter into a wall outlet or other power source.
- Connect the power adapter to the back of the comparator.
- Connect the ground wire to the ground wire receptacle.
- Connect the other end of the ground wire to the measuring fixture.
- Press ON_OFF
- Select language

The measuring instrument is now ready for start up. We recommend that the operator always calibrates (zero sets) the unit before taking new measurements.

If the language does not need to be changed each time the unit is turned on, see chapter 4.2.1.

2.2 Factory settings:

The Series 5000 comparator is shipped with standard factory settings. This allows for immediate operation of the comparator upon receipt.

Basic menu:

- Language: selected when the unit is turned on
- Transducers (probes) selected: 4
- Results selected: 4
- Result 1 = Probe 1 (static)
- Result 2 = Probe 2 (static)
- Result 3 = Probe 3 (static)
- Result 4 = Probe 4 (static)

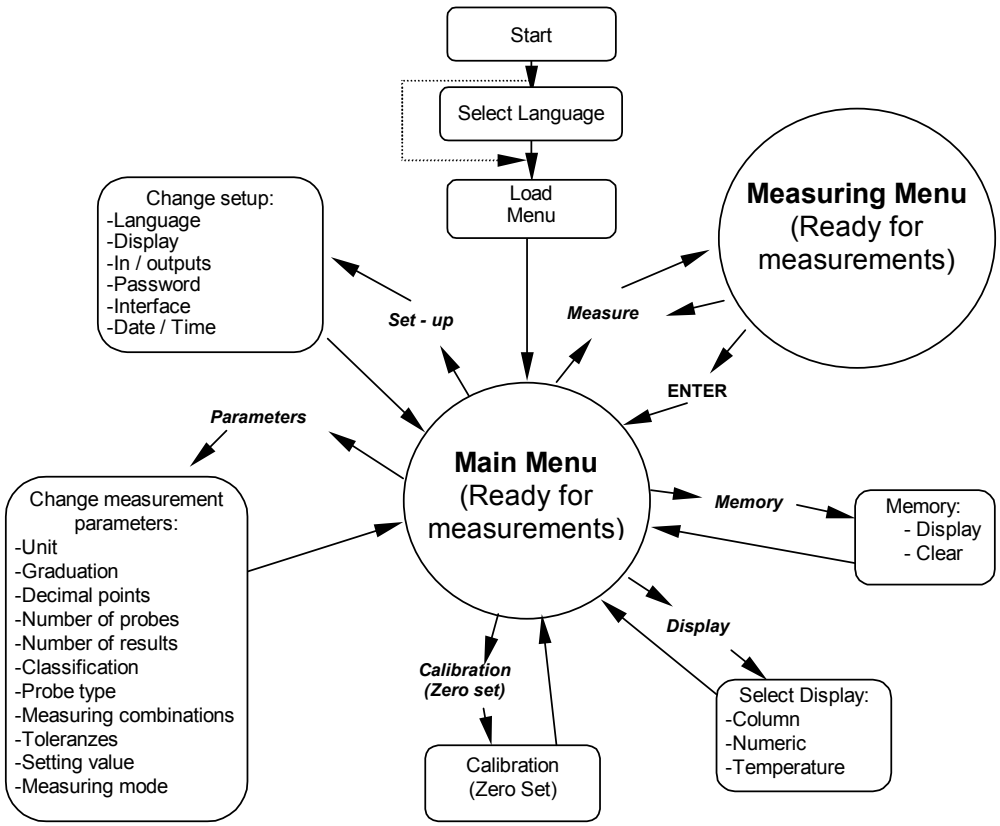
These parameters can be changed by the user at any time.

2.3 Grounding:

If the measuring fixture is already grounded, the instrument will also be grounded when a connection is established between the fixture and the comparator. Grounding is necessary both for the safety of the operator and for reliable measurement data acquisition.

If you have any questions or encounter any problems, contact your company electrician or an electrical installation company.

3 Software structure



4 Quick-Start (Procedure setup)

4.1 Basics

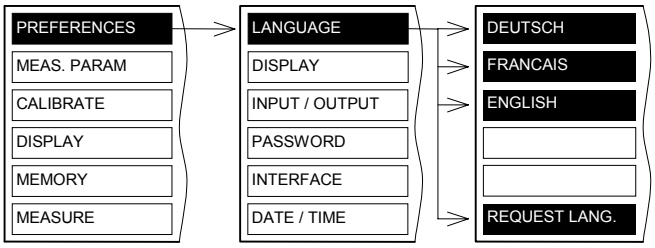
Please note: the basics of the 5000 Series software are as follows:

- Use the function keys to select a menu.
- To exit from a selected menu or to confirm a numeric input, press Enter.
- To change a number, first select the corresponding number on the menu. (0If a number is supposed to be changed, one must dial first this number with the corresponding menu item) The cursor will appear after the last digit. Using the backspace key, erase the old value and type in the new value. Store by pressing Enter.
- To confirm a numeric input, press the Enter key within 10 seconds of the final entry otherwise the sytem will erase the new value and revert to the old value stored in memory.

4.2 General settings

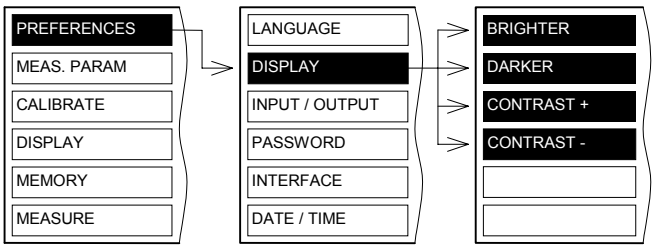
In order to make the setting up of your system as simple as possible, we recommend following the steps indicated on the menu:

4.2.1 Language



- Setting → Language → German
  or
- Setting → Language → French
  or
- Setting → Language → English
  Select a language
- Setting → Language → Select → On
  or
- Setting → Language → Select → Off
  The language may be turned on or switched off.

4.2.2 Display

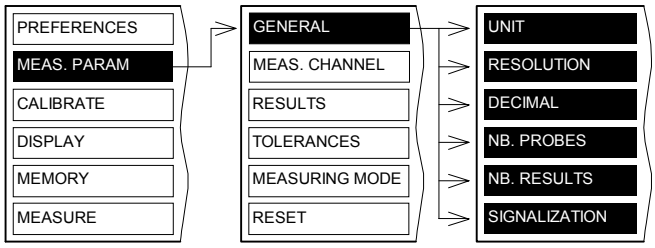


- Setting → Display → Lighter
  or
- Setting → Display → Darker
  Select display brightness
- Setting → Display → Contrast +
  or
- Setting → Display → Contrast -
  Select display contrast

4.3 Measuring parameters

4.3.1 General measuring parameters

Configure the measuring parameters in the following sequence:

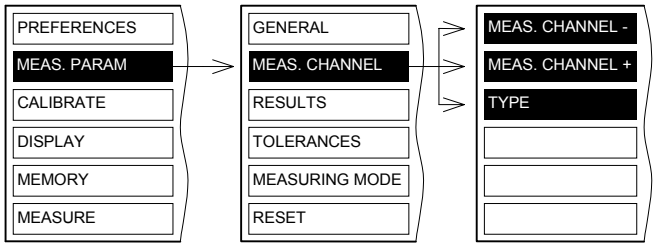


- Parameter ➞ general ➞ measuring mode
  select "mm" or "inch"
- Parameter ➞ general ➞ resolution
  select 1µm or 0.1µm (0.01µm with 5314)
- Parameter ➞ general ➞ decimal places
  select 3 or 4, minimum value = 1 or 0.1µm (5 places for 0.01µm only with 5314)
  With resolution 1µm a maximum of 3 decimal places can be displayed, with a 0.1µm resolution max. 4 decimal places can be displayed.
- Parameter ➞ general ➞ number of transducers
  choose between 1...4
- Parameter ➞ general ➞ number of results
  choose between 1...12
- Parameter ➞ general ➞ display
  choose between

RES. No.	: Which results should be digitally displayed
TOLERANCE	: 3 classifications (too big, accepted, too small).
TOLERANCE/ CONTROL LIMITS	: 5 classifications (too big, upper control limit, accepted : lower control limit, too small).
NUMERIC CLASSIF.	: 2-64 identical classifications within the upper and lower tolerance limits .
RANGE	: A fixed measuring range between ±10µ...±1000µ can be selected. (This selection will override the digital display.)

4.3.2 Type of measuring unit

Configure the measuriing unit as follows:

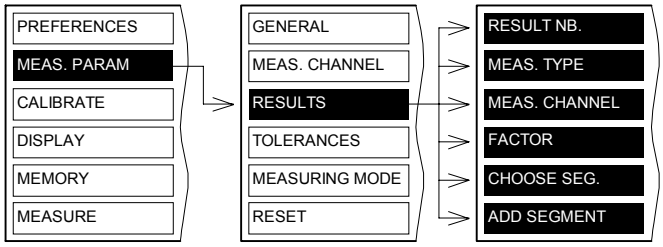


- Parameter ➞ Measuring channel ➞ Measuring channel -
  or
- Parameter ➞ Measuring channel ➞ Measuring channel +
  the measuring channel can be selected with these menus.
- Parameter ➞ Measuring channel ➞ Type
  choose between

AUTO:	The unit recognizes the connected transducers (can only differentiate between 2920N/GT21 und 2975/GT61. Products from manufacturers other than Pretec or Tesa are not automatically recognized - the automatic probe recognition cannot be utilized
2920N/GT21:	The sensitivity of the listed transducer can be selected.
2975/GT61:	The sensitivity of the listed transducer can be selected.

4.3.3 Results

Configure the results as follows:



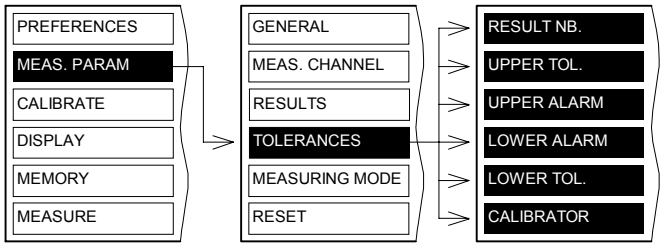
- Parameter ➞ Results ➞ Result No.
  press this key until the desired result is displayed
- Parameter ➞ Results ➞ Measuring type
  choose between "direct", "maximum", "minimum", "T.I.R." and "average"
- Parameter ➞ Results ➞ Measuring channel
  input the desired measuring channel and press Enter
- Parameter ➞ Results ➞ Factor
  input the desired factor, (base value = 1.0000)
- Parameter ➞ Results ➞ Combinations
  combinations can be selected
- Parameter ➞ Results ➞ New combinations
  A new combination can be selected only when the cursor is on the lowest (empty) field

A formula consists of maximum four combinations:

$$R1 = \pm(T1 \bullet Factor1) \pm(T2 \bullet Factor2) \pm(T3 \bullet Factor3) \pm(T4 \bullet Factor4)$$

4.3.4 Tolerances

Configure the tolerances (*) as follows:



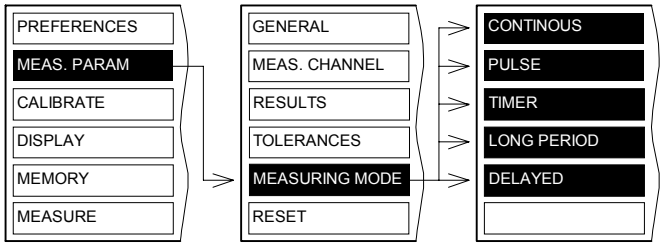
- Parameter ➞ Tolerances ➞ Result No.
  press this key until the desired result is displayed
- Parameter ➞ Tolerances ➞ Upper tolerance
  input the upper tolerance as an absolute value, i.e.. z.B. 12.725
- Parameter ➞ Toleranzen ➞ Upper alarm (control) limit
  input the upper alarm (control) limit as an absolute value, i.e.. 12.715
- Parameter ➞ Tolerances ➞ Lower alarm (control) limit
  input the lower alarm (control) limit as an absolute value, i.e.. z.B. 12.685
- Parameter ➞ Tolerances ➞ Lower Tolerance
  input the lower tolerance as an absolute value, i.e.. 12.675
- Parameter ➞ Tolerances ➞ Setting master
  input the actual value of the setting master as an absolute value, i.e., 12.700

In the above example the parts must be in the range of 12.700 ±0.025, whereas the outer 10µm of the tolerance will trigger the alarm (control) limit.

***** the upper and lower tolerance/alarm (control) limit equates to maximum and minimum measuring ranges, upper alarm (control) limit and lower alarm (control) limit respectively.

4.3.5 Measuring Modes

The taking of measurements can be configured as follows:

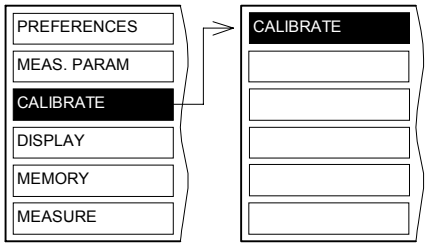


- Parameter ➞ Measuring mode ➞ Continuous
  Continuous update of measured values. The latest measurements taken by the keypad or external control (footswitch) will be stored in memory.
- Parameter ➞ Measuring mode ➞ Pulse
  Displays the most recently captured measured values. The latest data is transmitted via external control or keypad to the display and then stored in memory. The measured value will be displayed until it is replaced by the next measurement. Dynamic measurements which are pulse transmitted are captured continuously as long as the enter key on the keypad is being operated or the external control is active.
- Parameter ➞ Measuring mode ➞ Timer
  In timer mode, using keypad entry or external controls one measurement per „x“ ms (up to max.65000ms) can be taken.
- Parameter ➞ Measuring mode ➞ Long Period
  Measurments by keypad entry or external controls will be taken every „x“ ms. This function allows a procedure to be evaluated and protocol taken over a longer period of time. Minimum interval range is 1 sec.
- Parameter ➞ Measuring mode ➞ Delayed
  A measurement delay can be achieved in this setting. After activation of the keypad entry or external control, a delay of „x“ms will occur before the measurement is taken. This function may be used with Continuous, Pulse, Timer or Delay mode (max. delay 65000ms).

Press the Enter button until you are in the Main Menu. The unit is now ready for measurement.

4.4 Calibration (Zero Setting)

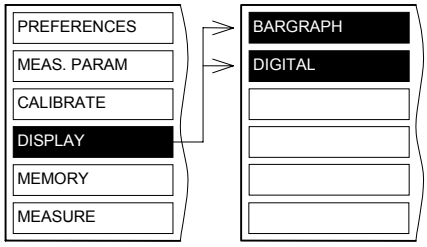
The unit is calibrated (zero set) as follows:



- Parameter ➞ Calibrate ➞ Calibrate
  In the zero set mode, the positions of the transducers connected to the unit are displayed as bar graphs. The transducers must be adjusted so that they are within the displayed limits – ideal range would be close to the zero setting. The settings will be saved when the calibration (zero set) button is depressed. Press Enter to exit the menu without performing a calibration (zero setting) procedure.

4.5 Display

This option allows the user to select the preferred display mode.



- Display ➞ Bar Graph

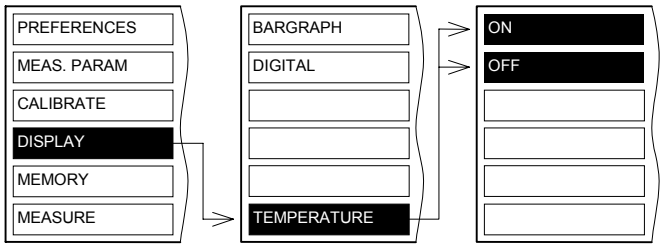
  The results will be displayed as bar graphs. The exact measured value is also displayed digitally below the bar graph.
  The following symbols indicate an out of tolerance condition:
  +++ : Rejected: above upper tolerance limit
  +OK : accepted: above upper alarm (control) limit
  OK : Accepted: measured value within tolerance and alarm (control) limits
  -OK : Accepted: below lower alarm (control) limit
  --- : rejected:below lower tolerance limit
  Max. four results can be displayed in bar graph mode.

- Display ➞ Digital

  The results are digitally displayed in a table. Max. 12 results can be displayed in this mode.

4.5.1 Temperature

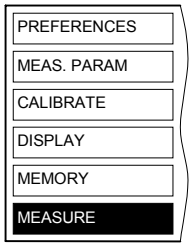
A sensor registers the internal temperature of the measuring unit. In order to avoid inaccuracies and instability, the internal temperature should lie between 20 ˚C and 55°C corresponding to the ambient temperature of 10°C to 40°C.



- Display ➞ Temperature ➞ On
  or
- Display ➞ Temperature ➞ Off
  The internal temperature display can be turned on or off.

4.6 Measurement Activation

The measurement can be activated either by external controls or via keypad entry.

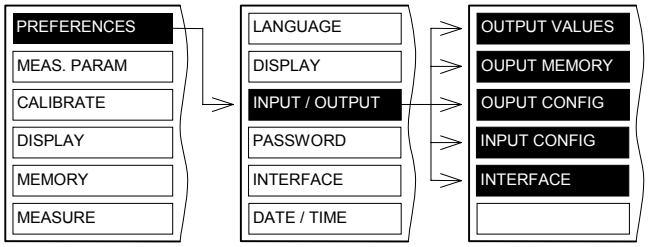


- Measuring — After the first measurement has been activated, the unit automatically goes into measuring mode. Press **Enter** to exit this mode.

5 Description of additional functions

5.1 Input/Output

The following functions can be selected in this menu.



- Preferences ➞ Input/Output ➞ Output Values
  Output values interface can be turned on or off
  Output of each individual result after each measurement is taken.
  (Format: see output of stored value from memory)
- Preferences ➞ Input/Output ➞ Memory output
  Output from memory of all measured values
  The format is as follows:

  “Measurement number“ CHAR(32)
  “Result number“ CHAR(32) „Date“ CHAR(32) „Time“ CHAR(32)
  “Measured value“ CHAR(10)CHAR(13)

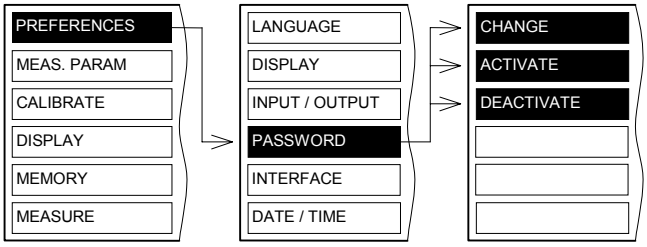
  Example:
  000001 R01 06.07.01 10:17 10.101
  000001 R02 06.07.01 10:17 6.050
  000001 R03 06.07.01 10:17 9.050
  000001 R04 06.07.01 10:17 0.080
  000002 R01 06.07.01 10:17 10.014
  000002 R02 06.07.01 10:17 6.007
  000002 R03 06.07.01 10:17 9.007
  000002 R04 06.07.01 10:17 0.037
  000003 R01 06.07.01 10:17 10.019
  000003 R02 06.07.01 10:17 6.010
  000003 R03 06.07.01 10:17 9.010
  000003 R04 06.07.01 10:17 0.040

5.2 Password

Activating a password, limits the user to the following selections:

- Preferences ➞ Password
- Calibration (Zero Set)
- Measure

Passwords are assigned through the following menu:



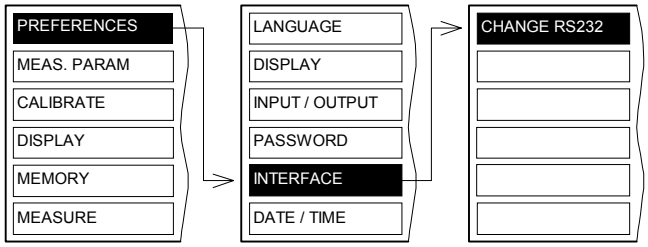
- Preferences ➞ Password ➞ Change
  enter a 4 digit password
- Preferences ➞ Password ➞ Activate
  activate the password. When a password is activated, the parameters of the menu preferences and measuring parameters can no longer be changed. Zero settings (calibration) and measurements can only be entered through use of the function keys.
- Preferences ➞ Password ➞ De-activate
  deactivation of the password function allows the operator full use of all input methods. It is recommended that the password funtion be deactivated.

5.3 Password forgotten

In the event that the password has been forgotten, the main password “6789” can be selected. This password is valid at all times.

5.4 RS232

The serial interface can be selected in this menu:

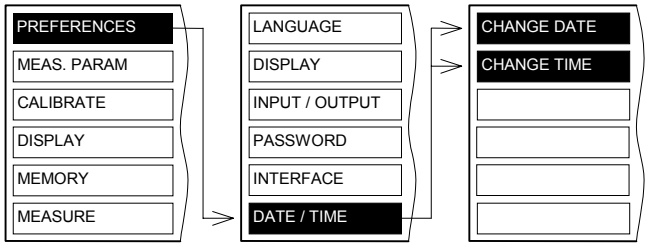


- Preferences ➞ Interface ➞ Change RS232
  By pressing these keys, the following baud rates can be selected:

Baud	Parity	Databit	Stopbit
9600	NO	8	2
9600	Even	8	2
4800	NO	8	2
4800	Even	7	2

5.5 Date/Time

Set date and time as follows:



- Preferences ➞ Date / Time ➞ Change Date
  Use the number keys to input the new date
  Input sequence: Day Month Year ➞ Enter
  (Input format is shown on the display)
- Preferences ➞ Date / Time ➞ Change Time
  Use the number keys to input the new time
  Input sequence: Hours. Minutes. Seconds. ➞ Enter
  (Input format is shown on the display)

6 Interface

A superior system allows communication through a variety of digital in and output options. For optimal performance, we recommend that only the PRETEC connecting cable be used. These cables are specifically designed for industrial use and ensure stable and reliable operation of the unit.

6.1 Digital Inputs

6.1.1 Description

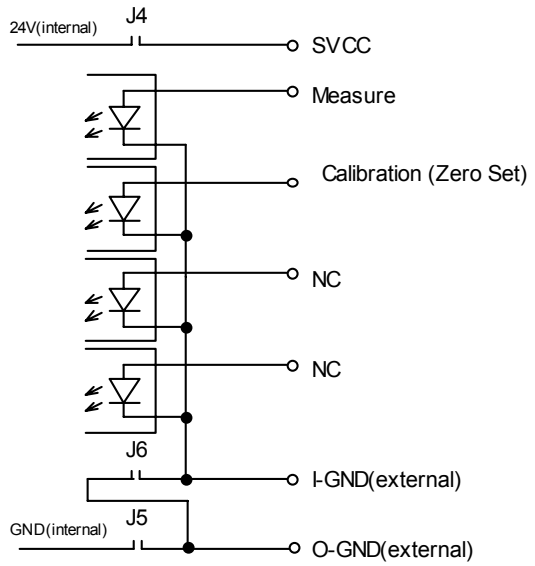
Two digital ports allow remote operation of the unit through external controls, e.g. a PLC.

- Measurement (active = high)
  when a signal (high) is sent, a measurement is taken. Warning: before measurements can be taken, the ready to measure port must be active.
- Calibrate (zero set) (active = high)
  if this signal is activated at the same time as the measuring signal (active = high) the unit will be calibrated (zero set). Warning: before the unit can be calibrated (zero set), the ready to measure port must be active.

6.1.2 Electronic Values and Settings

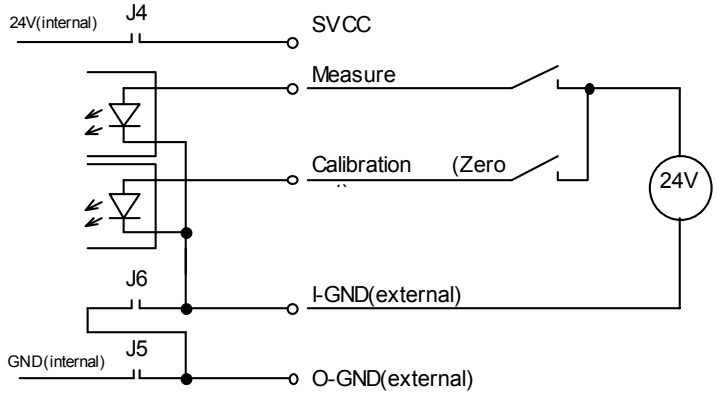
Symbol	Settings	Value	Unit
SVCC	-	18...30	[V_{DC}]
V_{IN}(low)	-	<1	[V_{DC}]
V_{IN}(high)	-	18...30	[V_{DC}]
I_{IN}	V_{IN}=24V	<10	[mA]
$V_{Isolation}$	J4, J6 open	2000	$V_{AC\ RMS}$

6.1.3 Diagram



6.1.4 Calibration and Measurement with External control

Bridges J4 and J6 should be left open when using external controls to transmit a measuring or calibration (zero set) signal.

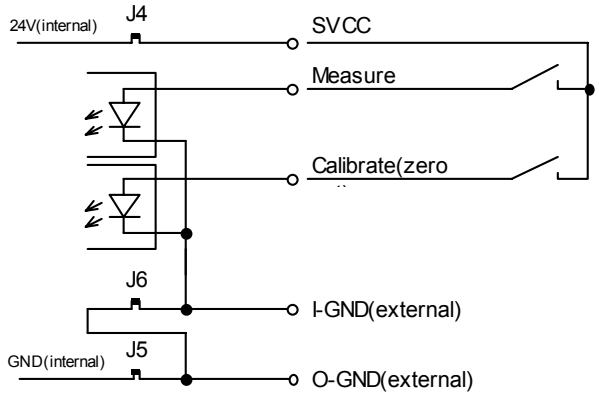


6.1.5 Calibration (Zero Set) and Measurement with Internal control

To use the internal control for measurement and calibration (zero set) bridges J4 and J6 must be closed.

Warning: with this configuration, the galvanic separation of the inputs does not apply.

Warning: The internal control can be used only for outputs singely or inputs and outputs together. It is not possible to use the internal control for the inputs singly and supply the outputs from external.



6.2 Digital Outputs

6.2.1 Description

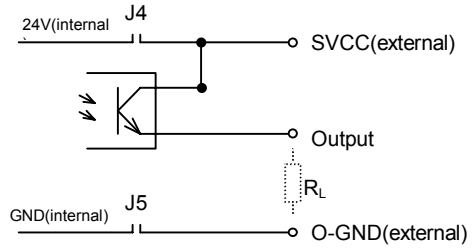
Seven digital outputs allow information from the measuring unit to be reviewed through external controls, e.g. a PLC.

- Ready to measure (active=high)
  as soon as the unit is ready to take measurements, this signal is activated
- Sig1-Sig6 (active=high)
  the programming of the unit determines signalization or classification. Programming is described in chapter 4.3.1 General Measuring Parameters

Signal	Signalization Description	Classification Description
Sig1	Below lower tolerance limit	Class 1(binary)
Sig2	Below lower alarm limit	Class 2(binary)
Sig3	Within alarm limit	Class 3(binary)
Sig4	Above upper alarm limit	Class 4(binary)
Sig5	Above upper tolerance limit	Class 5(binary)
Sig6	All results within tolerance limits	Class 6(binary)

6.2.2 Internal Circuit

Open collector output. A display or other load must connect the output and 0-GND.



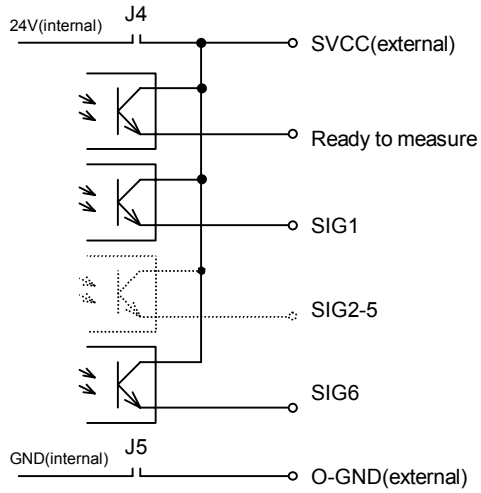
6.2.3 Electronic Values and Settings

Symbol	Settings	Values	Unit
SVCC	-	18...30	[V_{DC}]
V_{OUT}(low)	-	0.5	[V_{DC}]
V_{OUT}(high)	-	SVCC - 0.5	[V_{DC}]
I_{OUT}(low)	With internal control	500 1.)	[mA]
I_{OUT}(high)	With internal control	500 1.)	[mA]
I_{OUT}(low)	With external control	500 2.)	[mA]
I_{OUT}(high)	With external control	500 2.)	[mA]
$V_{Isolation}$	J4 and J5 open	2000	$V_{AC\ RMS}$

1.) maximum 500mA total (limited by AC adaptor)

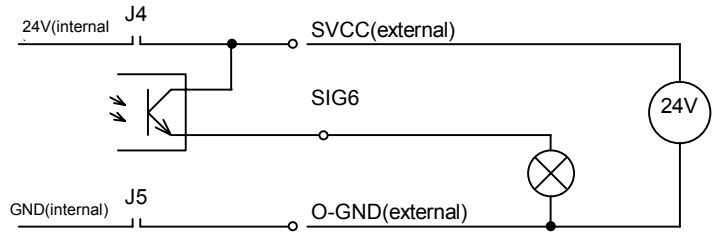
2.) maximum 4A total (limited by output driver)

6.2.4 Diagram



6.2.5 Signalization with External Control

In order to use digital outputs with external control, bridges J4 and J5 should be open. The following example shows how to connect a signal light to indicate „all results accepted“. The signal light turns on if all results are accepted.

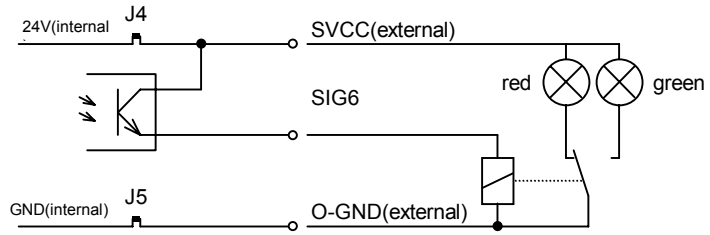


6.2.6 Signalization with Internal Control

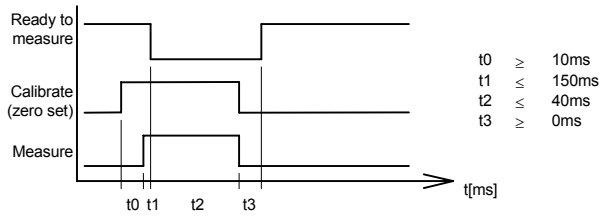
In order to use the digital output signal with internal controls, bridges J4 and J5 should be closed.

Warning: with this configuration, the galvanic separation of the outputs does not apply.

The following example shows how to connect two signal lights (red = rejected, green = accepted). When one of the results is rejected the red signal light will light up, otherwise the green signal light will be lit.



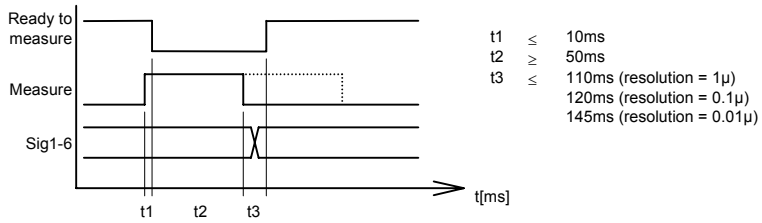
6.2.7 Operating Sequence for Calibration (Zero Setting) Procedure



The sequence for calibration is the following:

- check if ready to measure = activ
- set calibrate
- set measure
- ready to measure becomes passiv
- let calibrate and measure min. 40ms activ
- set calibrate and measure passiv
- ready to measure becomes activ

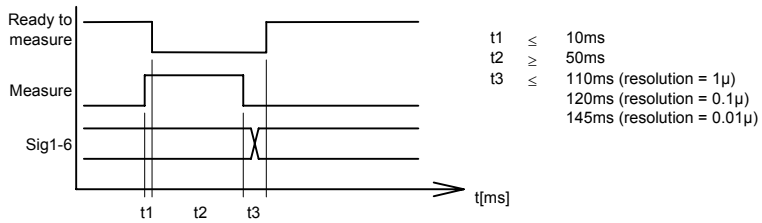
6.2.8 Operating Sequence for Measuring Procedure (static mode)



The sequence for measuring is the following:

- check if ready to measure = activ
- set measure activ
- ready to measure becomes passiv
- let measure min. 50ms activ
- set measure passiv (can be done later)
- signalisation
- ready to measure becomes activ

6.2.9 Operating Sequence for Measuring Procedure (dynamic mode)



The sequence for measuring is the following:

- check if ready to measure = activ
- set measure activ
- ready to measure becomes passiv
- let measure min. 50ms activ
- set measure passiv
- signalisation
- ready to measure becomes activ

6.2.10 Additional Information for the Operating Sequence

The times indicated in the last two chapters are values which are captured when the unit is in pulse mode and the calculated results as well as the graphic projections are displayed. The actual capture of the measurements occurs much quicker than indicated. (See chapter 1.1 Technical Data).

6.3 RS232 Interface

The RS232 interface relays measuring data, settings, etc... to the user.

Cables other than the **PRETEC** cables should not be used when connecting the RS232 interface. **PRETEC** cable are specially designed for industrial use and ensure that the unit will continue to function reliably.

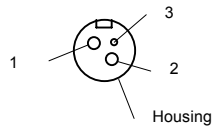
6.4 CAN Interface

The CAN interface is only intended for internal use.

Use only the **PRETEC** cable when connecting the CAN interface. It has been specially manufactured for industrial use and ensures that the unit will continue to function reliably.

7 Connector assignment

7.1 24V Connector



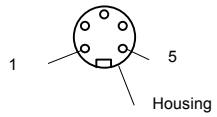
View of the back of the unit

Pin assignment:

1	24V
2	0V
3	NC

Housing = NC

7.2 Transducer Connector



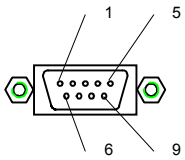
View of the back of the unit

Pin assignment:

1	Energizing VoltageSIN
2	GROUND (=DGND)
3	Signal Out
4	Detect
5	Energizing Voltage COS

Housing = GROUND

7.3 RS232 Connector

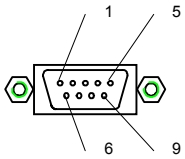


View of the back of the unit.

Pin assignments:

1	CD
2	RD
3	TD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

7.4 CAN Connector

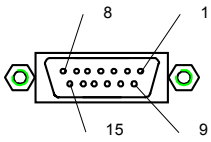


View of the back of the unit.

Pin assignments:

1	NC
2	CAN_L
3	GND
4	NC
5	NC
6	GND
7	CAN_H
8	NC
9	+24V

7.5 IO Connector



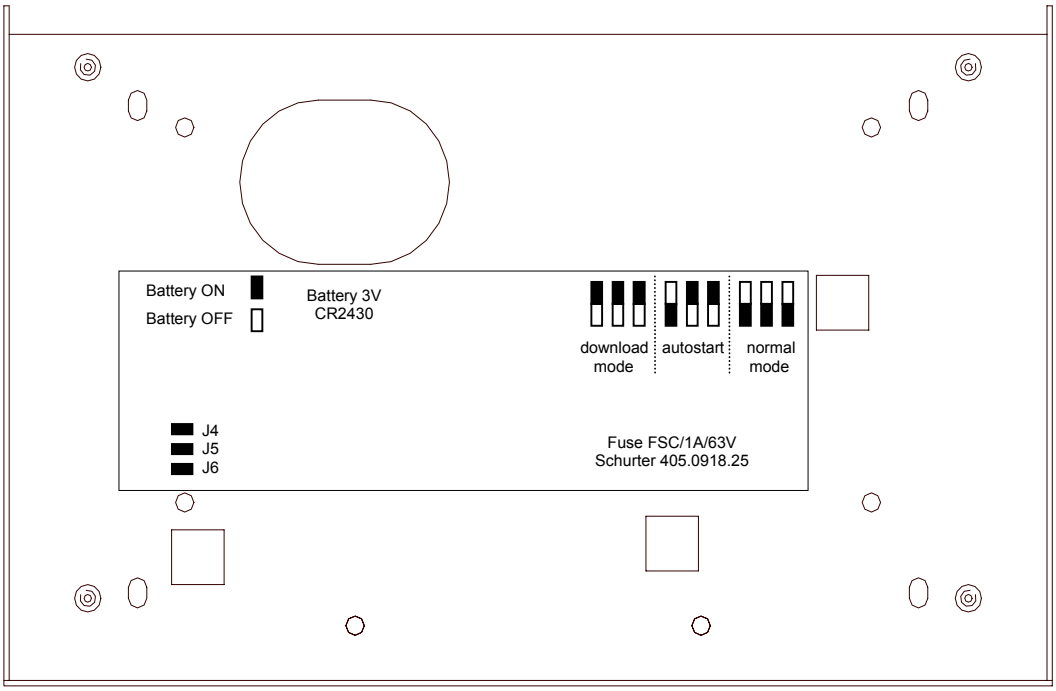
View of the back of the unit

Pin assignments:

1	Ready	9	SVCC
2	Sig 1	10	Measurements
3	Sig 2	11	Calibrate(zero set)
4	Sig 3	12	NC
5	Sig 4	13	NC
6	Sig 5	14	I-GND
7	Sig 6	15	O-GND
8	NC		

8 Service

The battery, the fuse, and the complete hardware configuration are accessible to the user after the base plate has been removed.



View of the underside of the unit after the base plate has been removed.

8.1 Changing the Battery

To retain measuring values and parameters in memory, the unit is supported by a Lithium battery. The life of a battery is approximately five years.

Changing the battery:

1. Unplug the 24V power supply.
2. Unscrew the four rubber feet on the underside of the unit – the base plate can now be removed.
3. Disconnect the battery (see description on the base of the unit).
4. Change the battery.
5. Connect the battery.
6. Replace the base plate and tighten the screws in the rubber feet.

Please note: Use only the 3V battery shown ***CR2430***

After changing the battery, clear measuring data and calibrate (zero set) the unit.

8.2 Changing the fuse

To change a defective fuse:

1. Unplug the 24V power supply
2. Unscrew the four rubber feet on the underside of the unit – the base plate can now be removed.
3. Using a pair of fine pliers, replace the defective fuse. To position the fuse correctly, see the description on the base of the unit.
4. Replace the base plate and tighten the screws in the rubber feet.

Warning! Use only the following fuse: Type FSC/1A/63V

8.3 Automatic startup

In order to facilitate startup using a 24V power supply, the unit can be programmed with the following configuration:

1. Unplug the power supply
2. Unscrew the four rubber feet on the underside of the unit – the base plate can now be removed
3. Select the bridge setting according to the description on the base of the unit.
4. Replace the base plate and tighten the screws in the rubber feet.

With the installation of a 24 V power supply enabling automatic startup, the on / off key on the front of the unit is bypassed.

8.4 Download new software

The download of new application software (updates, upgrades, expanded functions) is handled through the RS232 interface.

For assistance, please contact your **PRETEC** representative.

9 Application Setup Documentation

Menu	Possibilities	Selection
Parameter \ General \ Unit	Metric, Inch	
Parameter \ General \ Resolution	1µm, 0.1µm, 0.01µm	
Parameter \ General \ Decimal places	1...5	
Parameter \ General \ Qty. Probes selected	1...4	
Parameter \ General \ Qty. Results selected	1...12	
Parameter \ General \ Signalization	Off, Tolerance, Tolerance & Control limits, Numeric, Range	
Parameter \ Measuring channel \ Input channel 1		
Parameter \ Measuring channel \ Input channel 2		
Parameter \ Measuring channel \ Input channel 3		
Parameter \ Measuring channel \ Input channel 4		
Parameter \ Results	Direct, Maximum, Minimum, T. I. R. , Average +/- T1...T4 * 0.0001...9999.999 etc...	R1 = _____ __ T___ * ____ __ T___ * ____ __ T___ * ____ __ T___ * ____ R2 = _____ __ T___ * ____ __ T___ * ____ __ T___ * ____ __ T___ * ____ R3 = _____ __ T___ * ____ __ T___ * ____ __ T___ * ____ __ T___ * ____ R4 = _____ __ T___ * ____ __ T___ * ____ __ T___ * ____ __ T___ * ____
Measuring parameter / Tolerances	Result 1, Upper Tolerance Result 1, Upper control limit Result 1, Lower control limit Result 1, Lower Tolerance Result 1, Setting value ...	R1 = _____ (OT) _____ (OA) _____ (UA) _____ (UT) _____ (E) R2 = _____ (OT) _____ (OA) _____ (UA) _____ (UT) _____ (E) R3 = _____ (OT) _____ (OA) _____ (UA) _____ (UT) _____ (E) R4 = _____ (OT) _____ (OA) _____ (UA) _____ (UT) _____ (E)
Measuring parameter\Measuring activation	Continuous, Pulse Timer Long Period Delay	_____ _____ms _____ms _____ms

10 Troubleshooting

Problem	Possible Cause/Solution
Data is lost when the unit is turned off.	Dead or missing battery
Displays wrong measurement	Wrong selection of probe sensitivity e.g. Pretec, Mahr, ...
Unreasonable measured values	Wrong type of probe e.g. LVDT, only half bridge with Tesa sensitivity are accepted
Unit will not turn on	Remove all external connections (RS, CAN und IO) Try turning the unit on again. If the unit still fails to turn on, the fuse, the unit itself, or the AC adaptor may be defective. A further possibility would be a short in a connector that may prevent the unit from functioning. (Until the short in the connector has been cleared, the AC adapter has reduced the voltage being delivered to the unit)
The unit locks up by probe set up or connection of RS232	Check if the unit ground is connected to the machine ground and the machine is properly grounded

11 Notes