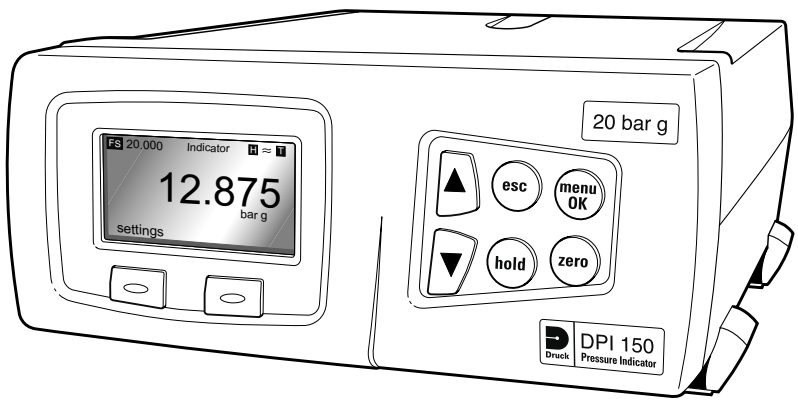
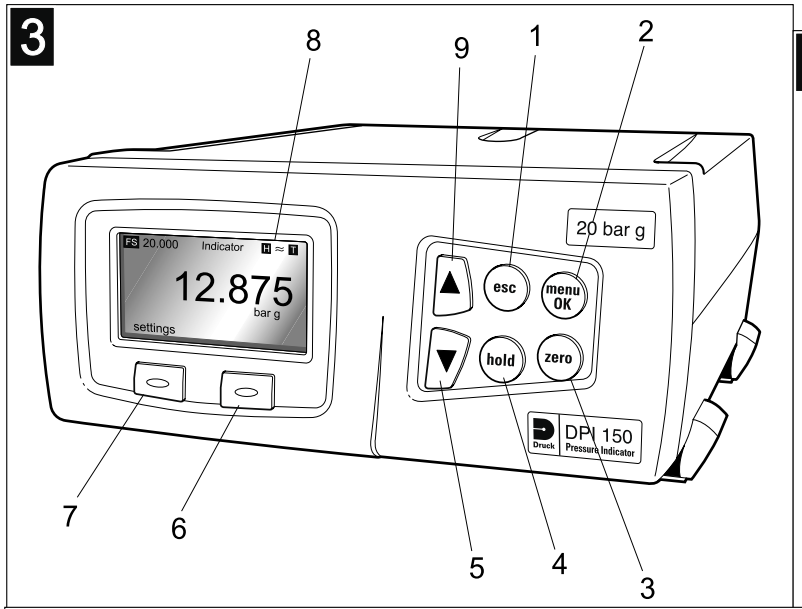
GE Infrastructure
Sensing

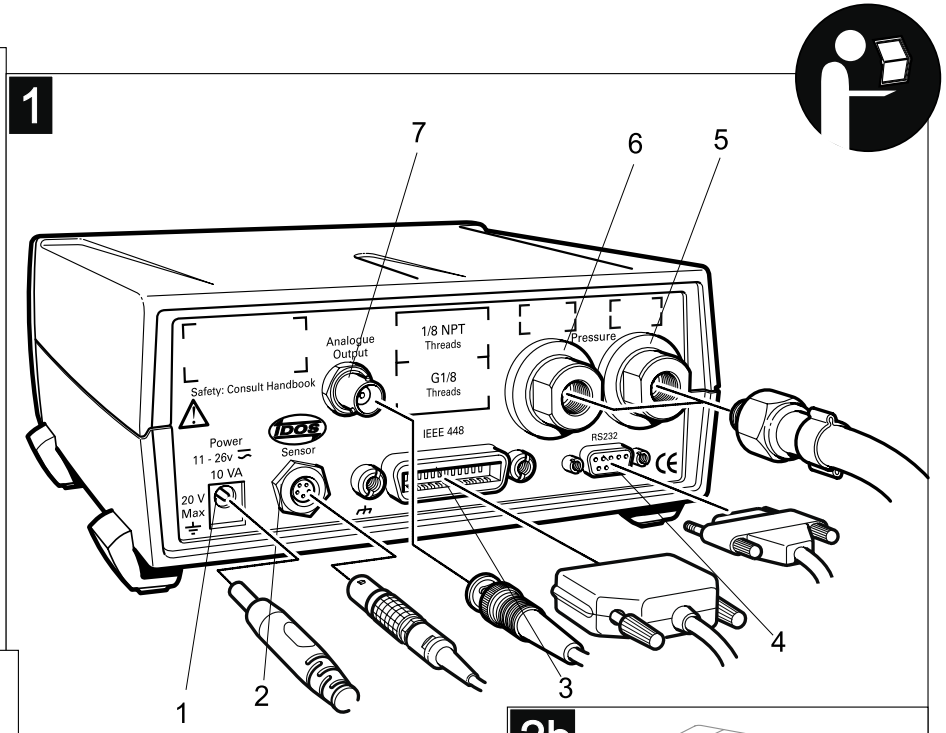
Druck DPI 150

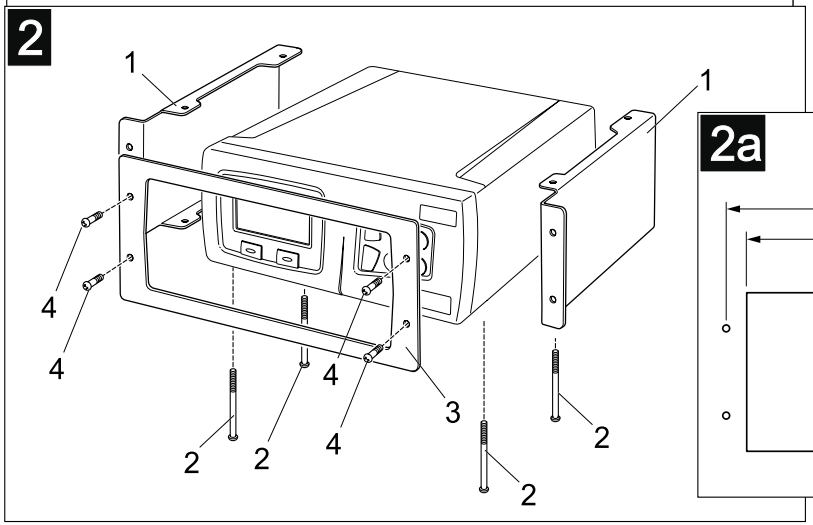
Pressure Indicator

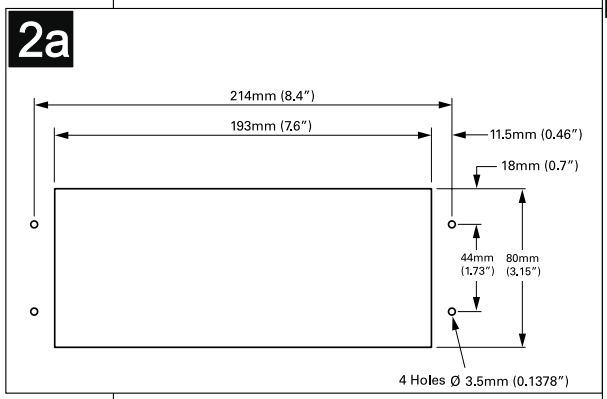
User manual - K344

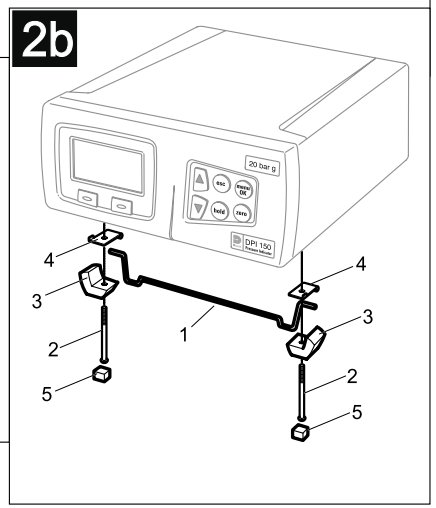



3
8
9
1
2
20 bar g
FS 20.000
Indicator
12.875
bar g
settings
esc
menu
OK
hold
zero
DPI 150
Pressure Indicator
7
6
5
4
3


1
7
6
5
Analogue
Output
1/8 NPT
Threads
G1/8
Threads
Pressure
Safety: Consult Handbook
IDOS
Sensor
IEEE 448
RS232
Power
11 - 26v
10 VA
20 V
Max
4
3
2
1


2
1
1
4
4
4
3
2
2
2
2
2


2a
214mm (8.4")
193mm (7.6")
11.5mm (0.46")
18mm (0.7")
44mm
(1.73")
80mm
(3.15")
4 Holes Ø 3.5mm (0.1378")


2b
20 bar g
DPI 150
4
3
2
5
1
4
3
2
5

English

General Introduction

This manual provides operating instructions for the DPI 150 Pressure Indicator compatible with the requirements of operating the instrument.

Safety

The manufacturer has designed this equipment to be safe when operated using the procedures detailed in this manual. The user must not use this equipment for any other purpose than that stated.

This manual contains safety and operating instructions that must be followed to make sure of safe operation and to keep the equipment in a safe condition. The safety instructions are either warnings or cautions issued to protect the user and the equipment from injury or damage. Use suitably qualified personnel and good engineering practice for all procedures in this manual.

Pressure

Do not apply pressure greater than the maximum working pressure stated in the specification.

Technical advice

For technical advice contact the manufacturer or subsidiary.

Supervisor Security for the Druck DPI 150

GE strongly advise protection of the set-up menus in this equipment. Unauthorised access to the supervisor and calibration menus can result in degraded performance, incorrect settings and inaccuracies. The factory set PIN are as follows:

Supervisor set-up - 0268 press MENU OK
Calibration set-up - refer to Service Manual K382

Codes can be changed to another code of 4 digits; entering 0000 disables this security facility.

Symbols

The following symbols mark this equipment:

Refer to the manual.

CE

This product meets the essential requirements of the relevant EC directives.

ABBREVIATIONS

The following abbreviations are used in this publication.

Note: *Abbreviations are the same in the singular and plural.*

abs	absolute	lbs	pounds
BSP	British Standard Pipe (thread)	m	metre
CAS	calibrated airspeed	mbar	millibar
°C	degrees Celsius	mm	millimetre
const	constant	mmH_2O	millimetres of water
DMM	Digital multimeter	MWP	maximum working pressure
DPI	digital pressure indicator (GE product)	NPT	National Pipe Thread
esc	escape	PIN	personal identification number
°F	degrees Fahrenheit	psi	pounds per square inch
g	gauge	Ref.	reference
(h)	hour	RS232	serial interface communication standard
IDOS	intelligent digital output sensor (GE product)	SCPI	standard commands for programmable instruments
IEEE 488	institute of electrical and electronic engineers standard 488 data	(s)	seconds
inHg	inches of mercury	TAS	true airspeed
kg	kilogram	TBA	to be advised
kts	knots		

CONTENTS

Associated publications

The following e-documents can be downloaded from ***www.gesensing.com***, available from February 2005 onwards.

SCPI Communications Manual K381
Calibration Instructions K382

English

Introduction

The Druck DPI 150 high accuracy, single-range pressure indicator uses the Druck IDOS sensor to produce pressure readings in units of pressure measurement and aeronautical units.

The instrument is contained in a moulded plastic case with integral rubber feet for workbench surface use. Function keys, on the front panel, allow the user to access an operating menu and set-up menu. Two more menus, supervisor and calibration, allow the user to change the PIN codes, communications settings and display language and for calibration of the pressure sensor. A four digit PIN code protects both these facilities. The electrical and pressure connections are located on the rear panel.

The instrument is supplied, as standard, with a RS232 data interface. Options available include an IEEE 488 interface, an analogue output, a barometric reference, negative calibration, external sensor and panel mount kit.

Specification

Conformity

Safety EN61010
EMC emission EN61326
EMC immunity EN61326

Gauge pressure ranges

..... 25, 70, 200, 350, 700 mbar
..... 1, 2, 3.5, 7, 10, 35, 70, 100, 135 and 200 bar

Absolute pressure ranges (using option E, barometric reference)

..... add atmospheric pressure to the above gauge pressures

Maximum working pressure

0 to 350 mbar ..... 2.0 x full-scale
0.7 to 2 bar, 3.5 to 70 bar, >100 bar ..... 1.2 x full-scale

Precision

(includes non-linearity, hysteresis, repeatability and temperature effect between 18°C and 28°C [65° to 82°F]

below 1 bar ..... 0.03% full-scale
1 bar to 200 bar ..... 0.01% full-scale
Stability *below 1 bar* ..... 0.02% of reading/year
Stability *above 1 bar* ..... 0.01% of reading/year

Option E, barometric reference

Pressure range ..... 750 to 1150 mbar absolute
Precision ..... 0.15 mbar

Accuracy

(includes non-linearity, hysteresis, repeatability and temperature effect between 5°C and 50°C [41° to 120°F]

Stability ..... 0.15 mbar/year

Environmental

Temperature
Operating ..... 5° to 50°C (41° to 122°F)
Calibrated ..... 23°C (74°F)
Storage ..... -20° to 60°C (-4° to 140°F)
Humidity ..... complies with Def. Stan. 66-31 8.6 cat 3
Vibration ..... complies with Def. Stan. 66-31 8.4 cat 3
Shock ..... mechanical shock conforms to EN 61010
Pressure connections (female): ..... G1/8 or 1/8 NPT
Weight (approximate): ..... 1 kg (2.2 lbs)

Dimensions

Length ..... 195 mm (7.7”)
Width ..... 185 mm (7.2”)
Depth ..... 75 mm (3.0”)

Analogue Option Electrical Specification

Isolated Voltage Output:-
Output Impedance ..... 5 Ohm
Maximum Load Capacitance ..... 10 nF
Isolated Current Output:-
Maximum Load Impedance ..... 900 Ohm
Maximum Load Capacitance ..... 10 nF
Accuracy
(including pressure measurement uncertainty)
All voltage and current ranges ....±0.05 % FS (18° to 28°C, 12 months)
Update rate ..... 30 updates per second

Installation

Key to 1

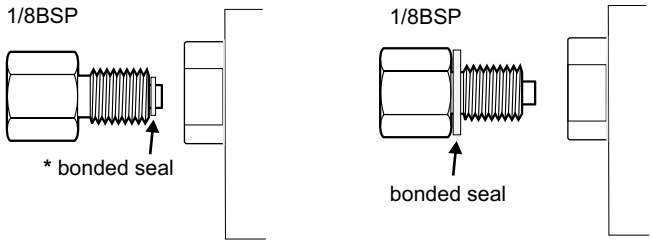
1 power supply
2 external sensor connector UPM or UPM-P
3 IEEE 488 (option)
4 RS232 connector
5 G1/8 or 1/8 NPT gauge pressure connector
6 G1/8 or 1/8 NPT barometric pressure connector
7 analogue output connector (option)

Connections

Note: *Switch off the power supply before connecting or disconnecting the instrument. Isolate the pneumatic supply pressures and depressurise the pipes before connecting or disconnecting the instrument.*

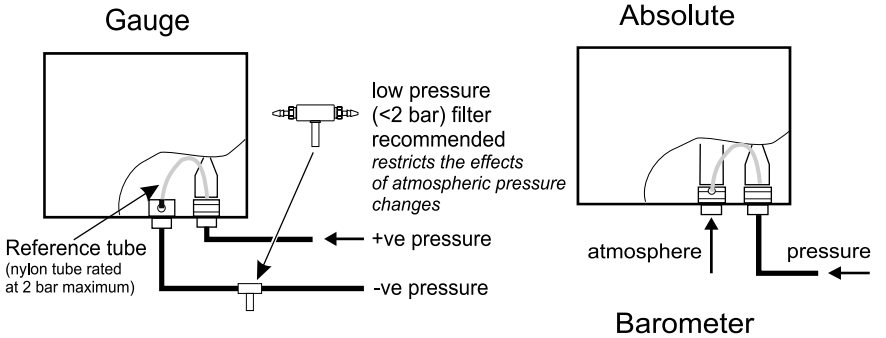
1. Use an appropriate sealing method for all pressure connections.

Method of connection 1/8 BSP (G1/8)

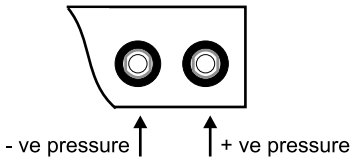


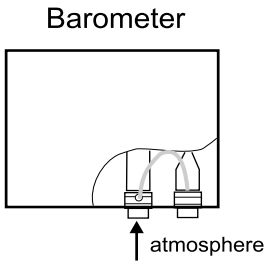
recommended method *alternative method below 100 bar*
**mandatory method 100 bar and above*

Connections for gauge operation ***Connections for barometric option***



IMPORTANT
Check pressure connection
before applying pressure





2. Before use, make sure the SELV power adaptor supplied with the instrument is correct for the power supply voltage. The Safety Extra Low Voltage (SELV) power adaptor complies with EN61010 (including safety requirements for laboratory instruments).

Using other power adaptors

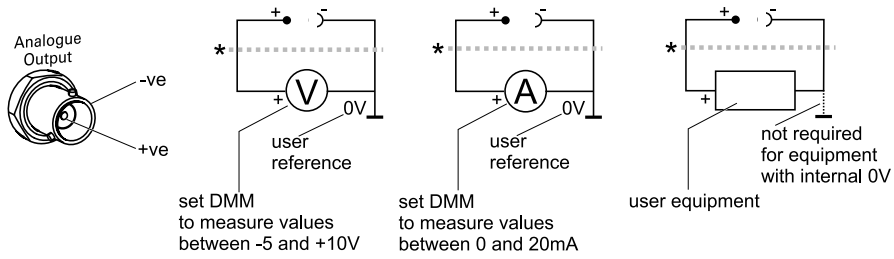
Responsibility of the User

A power adaptor, not supplied with the instrument, must comply with the SELV safety requirements of EN61010*:*

Voltage AC or DC	Power	Polarity
11 to 26	10VA	non-sensitive

3. Connect the power adaptor to the instrument and switch the power supply on.

Analogue Output Option



* If necessary, use ferrite ring and twist pair wiring to reduce electrical interference.

Example ferrite ring:
RS Components part numbers
7427114
7427122
74270095

Panel mounting 2 and 2a

A panel mounted instrument must have the rubber feet removed for the side plates to be secured. The instrument fits into a panel cut-out, the side and front plates of the panel mount kit (option C) secures the instrument to the panel. It is important that a panel mount installation provides enough circulation of air to cool the instrument.

Key to 2

1 side plate
2 screw 45mm *(not part of kit)*
3 front plate
4 screw 3.5mm

Procedure 2

To fit this option requires a panel cut-out of the dimensions shown in 2a.

1. Remove the rubber inserts in the feet of the instrument.
2. Unscrew and remove two 45mm screws (2) attaching two feet on one side of the instrument casing. Retain the two 45mm screws for the next step.
3. Fit the side plate (1) to the side of the instrument casing and secure with the two 45mm screws.
4. Repeat steps 2 and 3 for the other side plate.
5. Locate the assembled instrument behind the cut-out panel and align the four 3.5mm holes in the panel and the holes in the flanges of the side plates (1).
6. Locate the front plate (3) over the front of the protruding instrument and secure the front plate with the four screws (4).

Bench stand 2b

The bench stand lifts the front of the instrument providing a better angle of display and key-pad access for the user.

Key to 2b

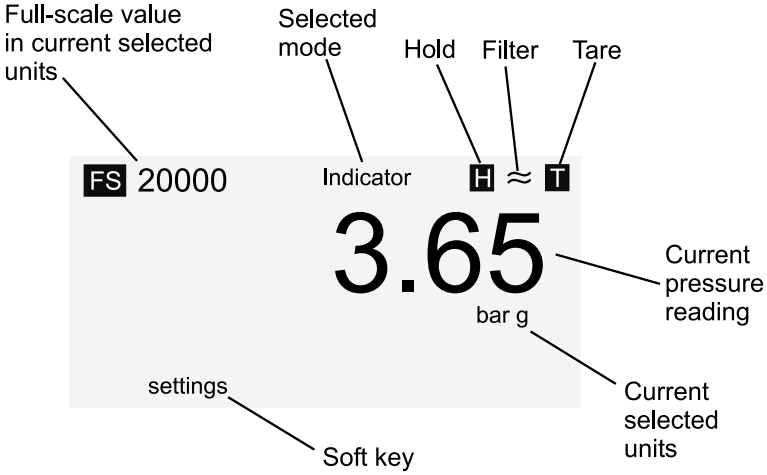
1 stand
2 screw 45 mm
3 foot
4 clip, (left and right)
5 insert, rubber

Operation

English

Key to 3

1	esc key	6	soft key right
2	menu OK key	7	soft key left
3	zero key	8	display
4	hold key	9	up or increase key
5	down or decrease key		

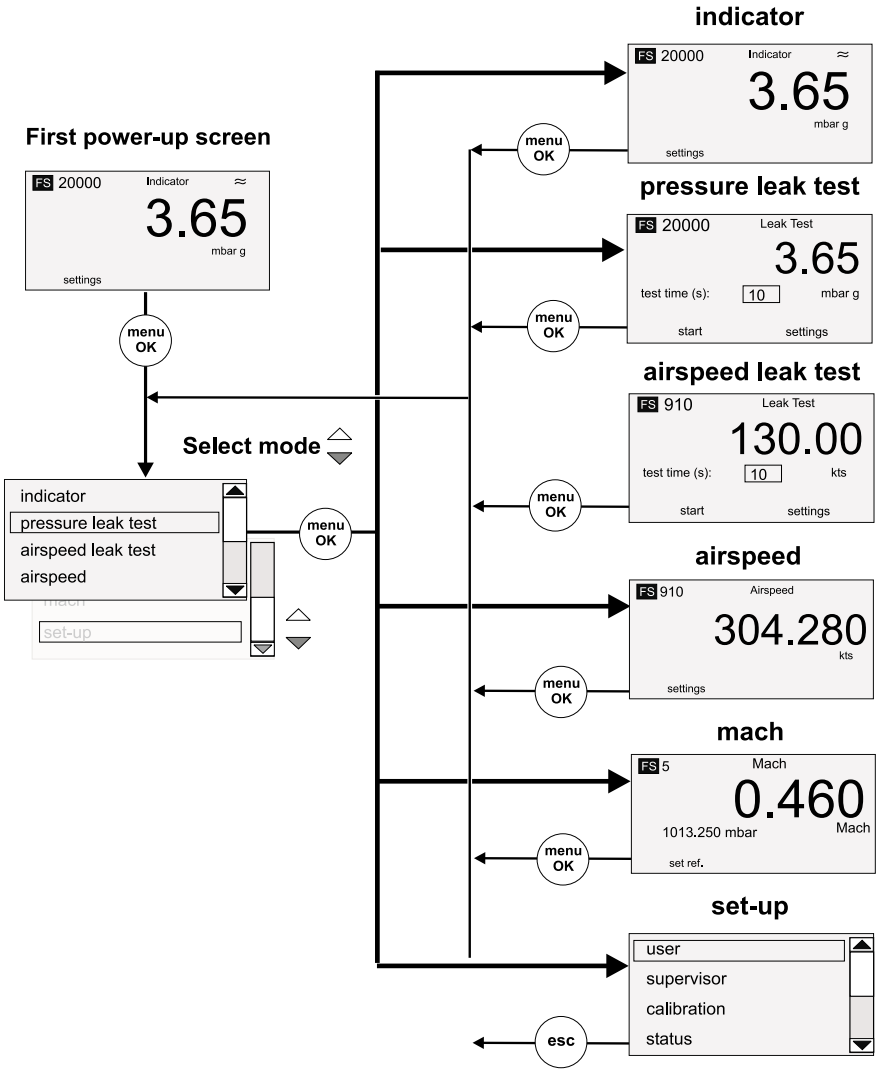


Display

Front Panel Keys

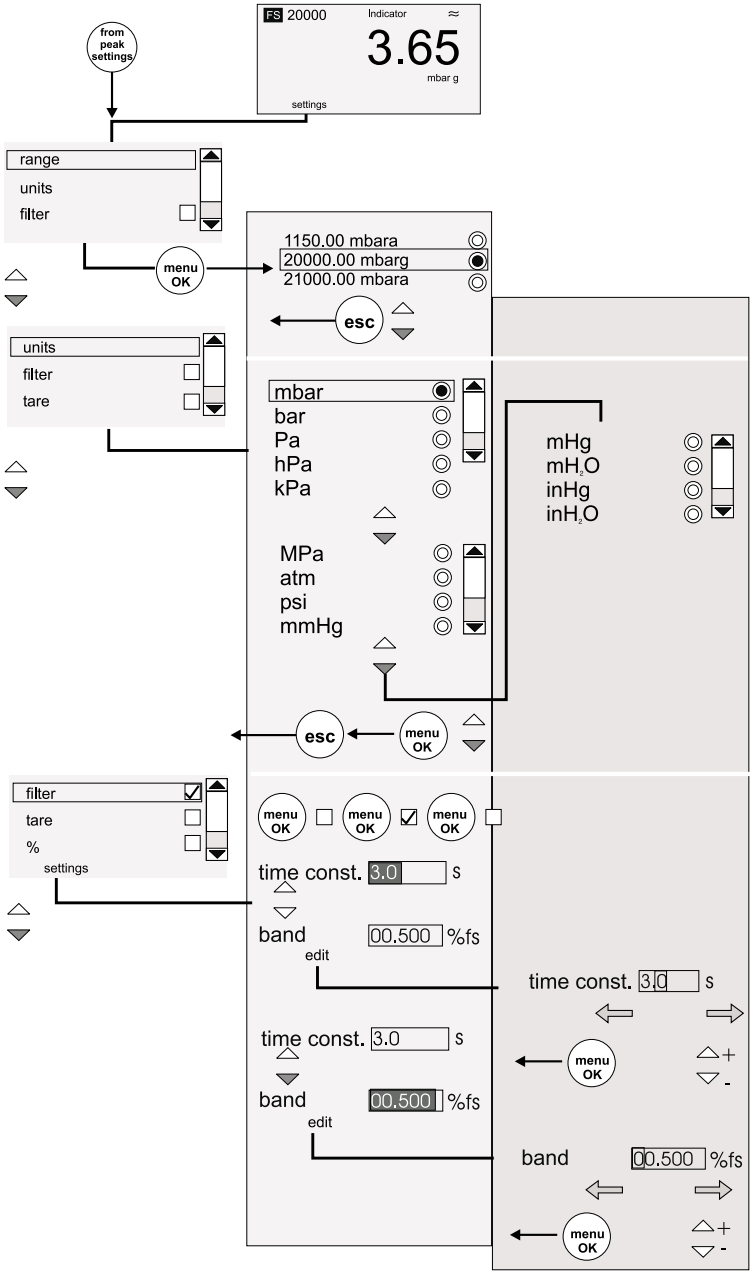
Key	*Function and Comments*
esc	Steps back one selection without changing setting.
menu OK	Steps back one selection sets and saves value. Selects and enters menu.
△ ▽	Moves cursor up and down screen. Increases and decreases value of selected digit.
hold	Freezes displayed value, the instrument continues measuring but does not display measured value until key pressed again.
zero	Changes displayed value to 0.000 and stores the difference (offset) in non-volatile memory of the pressure sensor.

Select mode menu



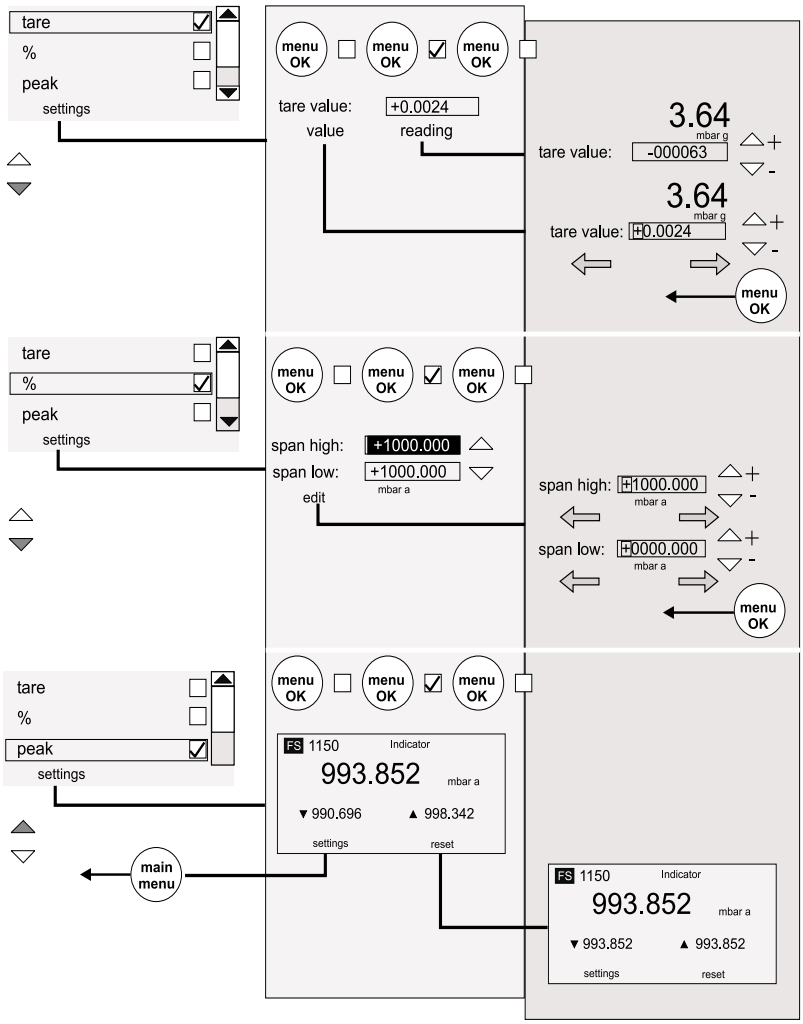
English

Indicator mode



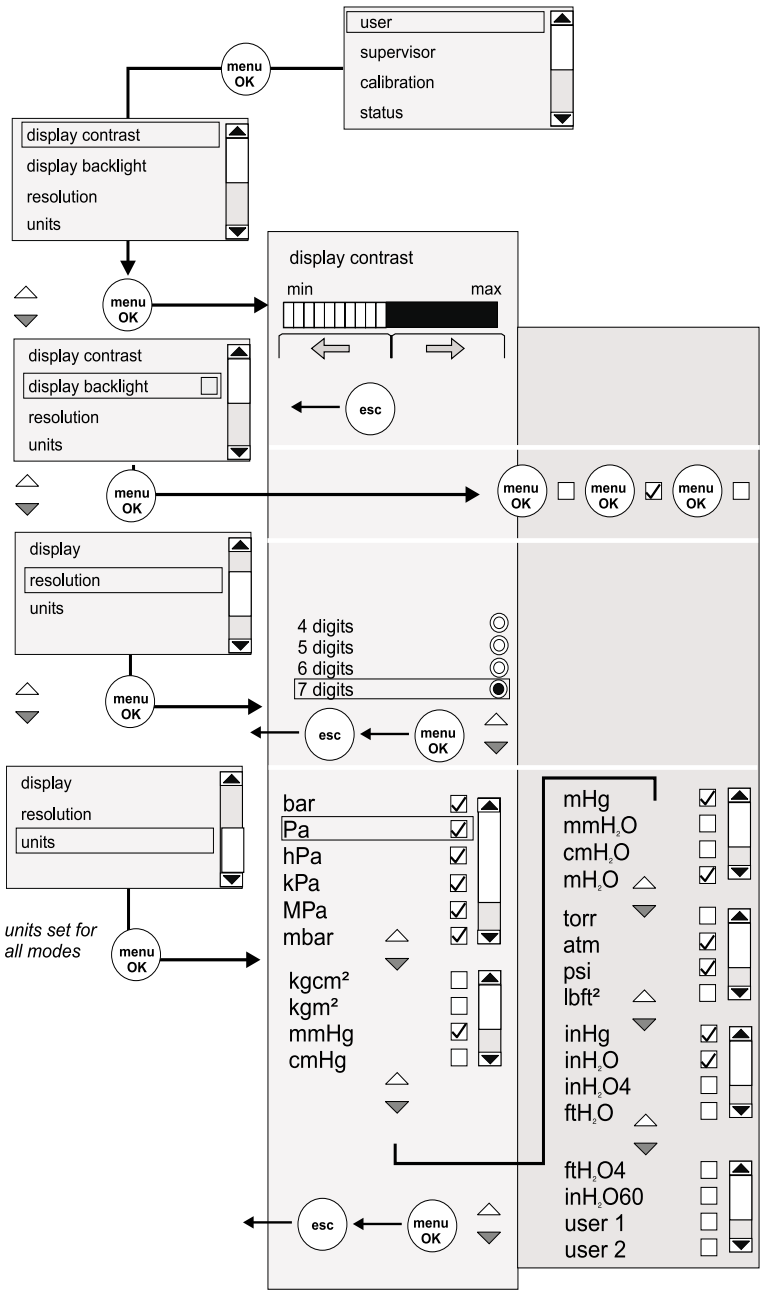
continued/....

Indicator mode continued

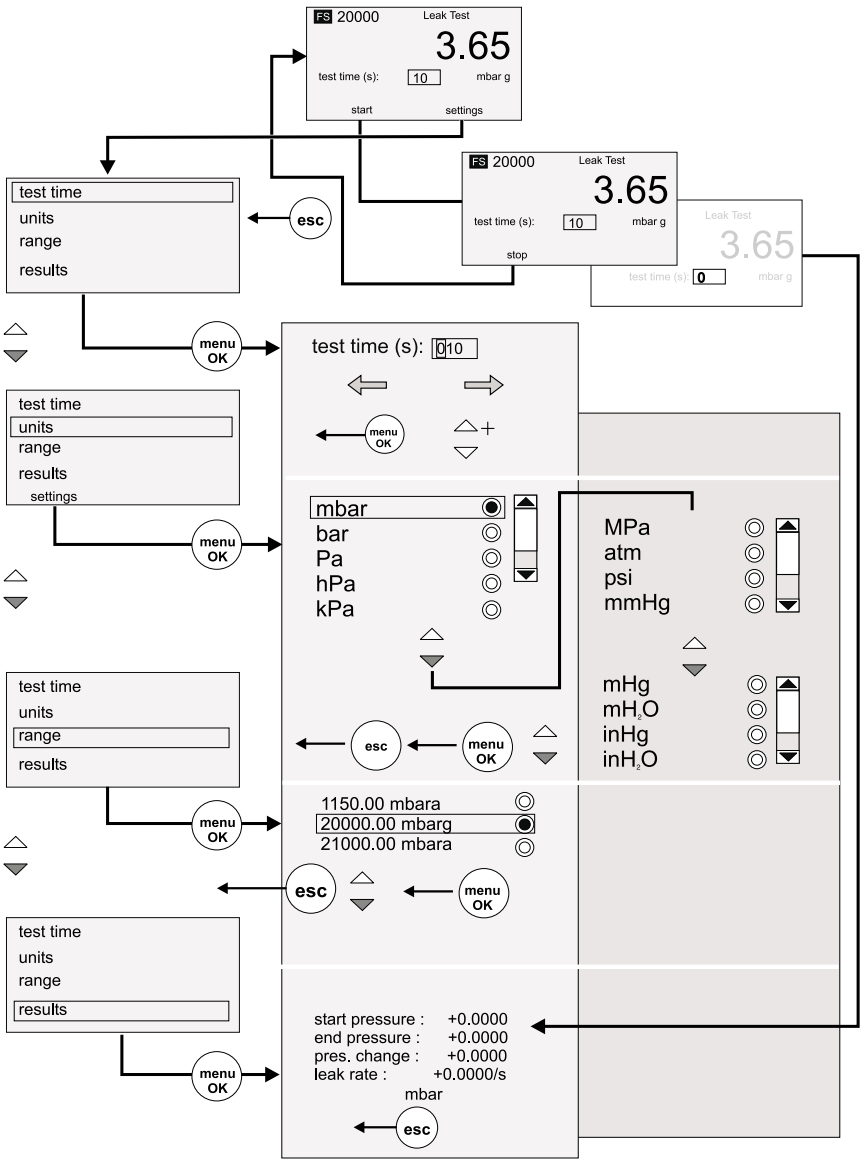


User Set-up

English



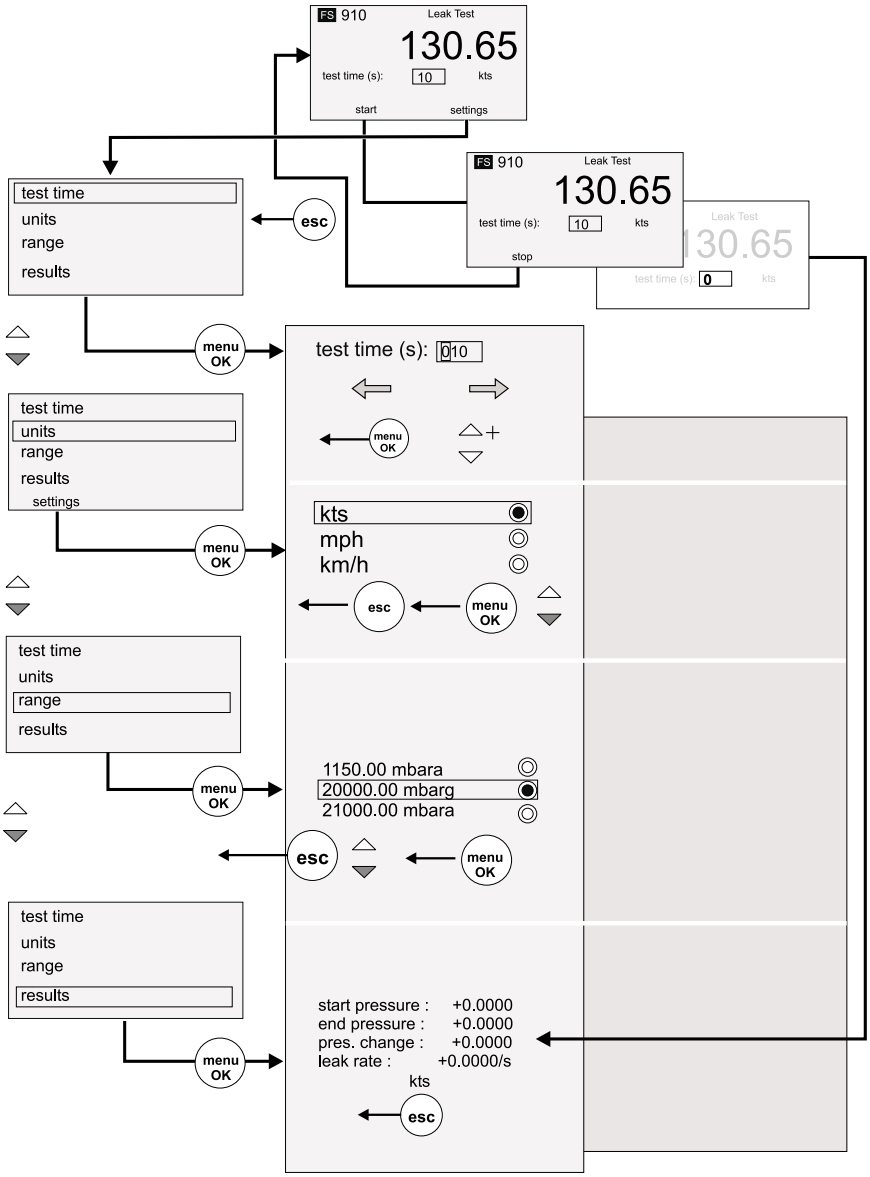
Pressure leak test



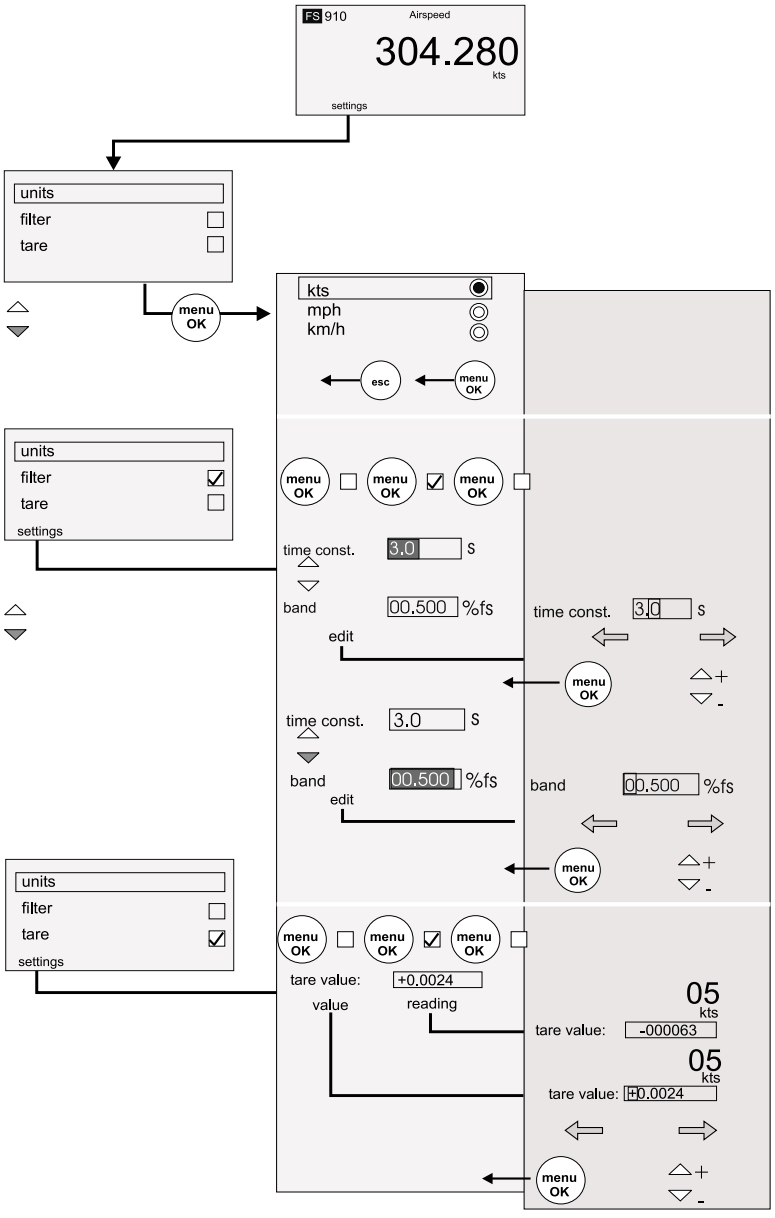
English

Airspeed leak test

(must be correctly enabled)



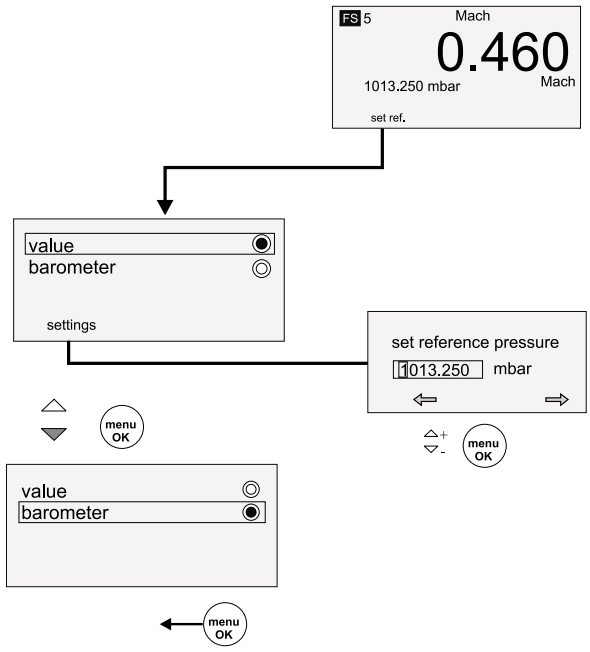
Airspeed
(must be correctly enabled)



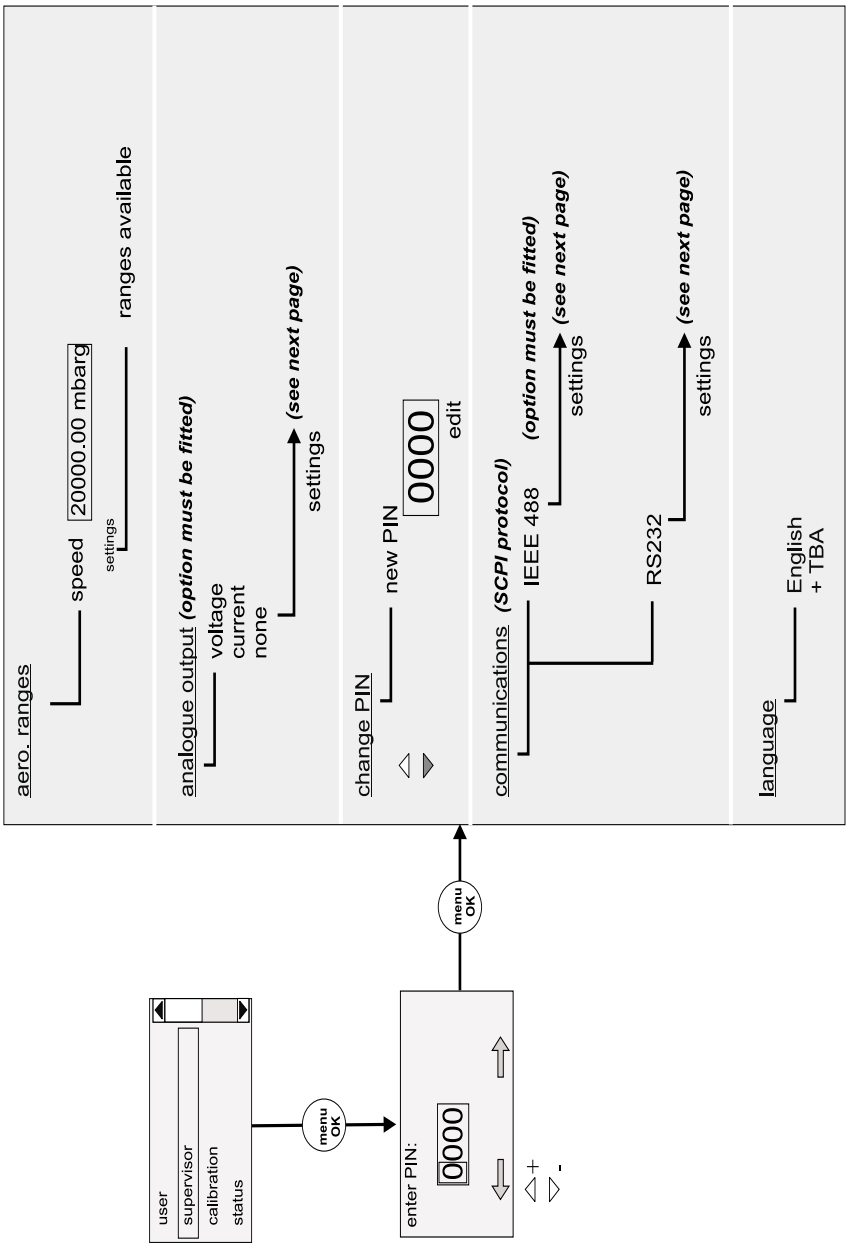
English

Mach

(must be correctly enabled)

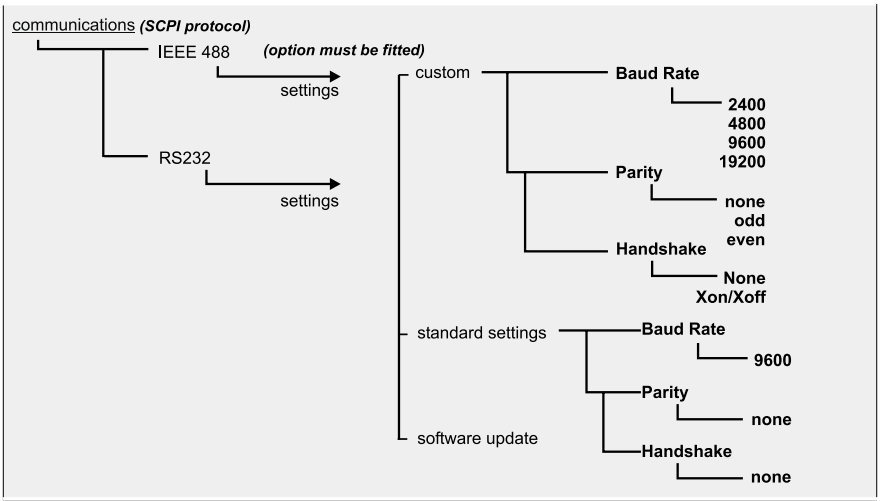


Supervisor Set-up

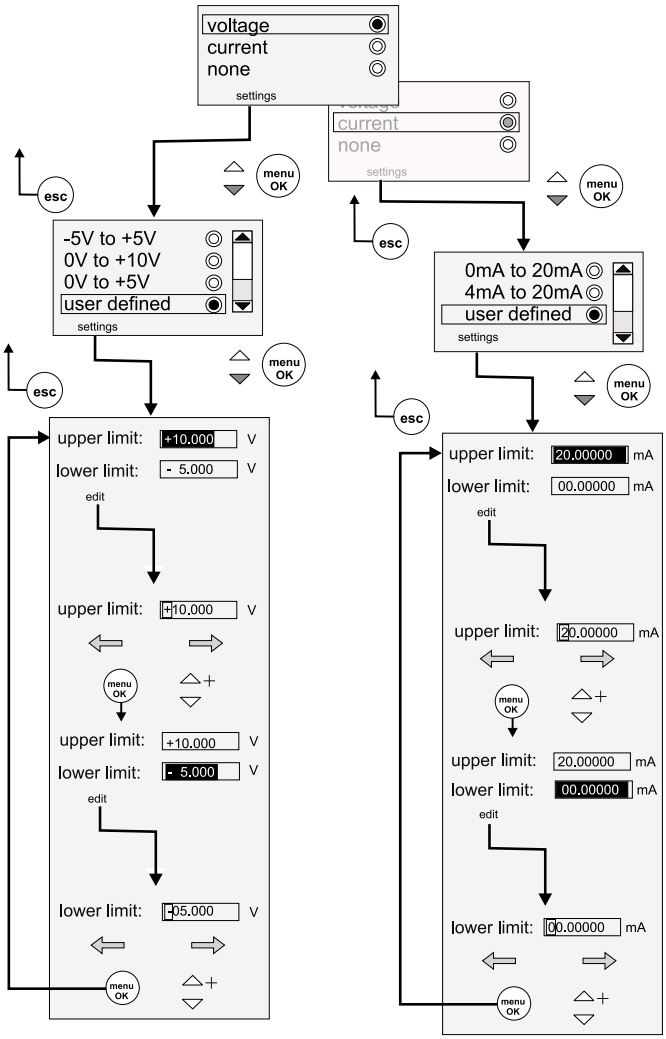


Supervisor set-up (continued)

Communications



Supervisor set-up (continued)
Analogue output option



Status

English