Ergänzung zur Bedienungs-Anleitung (Manual)
Typ C900 und Serie LPM 3

LPM 3
C900

1. Die **Digital-Handmanometer** der **Serie LPM 3** bestehen aus dem Anzeigegerät ***C900*** sowie einem darauf optimierten speziellen Druckmessumformer.
   Das Anzeigegerät ist in diesem Fall bereits auf den dazugehörigen Messumformer skaliert, und zwar - abhängig vom Messbereich - entweder in „mbar" oder in „bar".

2. Bei **Digital-Handmanometern** der **Serie LMP 3** ist das ***C900*** auf „Mode 1" voreingestellt (siehe Seite 12 des ***C900***-Manuals), also Eingang 4...20 mA mit aktiver Sensorspeisung, Abtastrate „Normal Mode".

3. Wenn ein **Digital-Handmanometer** der **Serie LMP 3** zur Messung von Druckspitzen verwendet werden soll (vorzugsweise Typ LMP 3-3), so ist gem. ***C900***-Manual Seite 12 der Modus von „Mode 1" auf „Mode 4" umzustellen.

4. Bei **Digital-Handmanometern** der **Serie LMP 3** ist der zur Verfügung stehende Druckmessbereich aus dem Etikett auf dem Druckmessumformer ersichtlich.
   Falls eine andere Druckeinheit (statt „mbar" bzw. „bar") im Anzeigegerät **C900** dargestellt werden soll, so kann gem. ***C900***-Manual Seite 14 ff. die Skalierung entsprechend geändert werden (Anzeigewert bei 4 mA Ausgangssignal = Messbereichsanfang und Anzeigewert bei 20 mA Ausgangssignal = Messbereichsende).

5. **NULL-STELLUNG (Nullierung / Nullpunktkorrektur):**
   Wenn an das Anzeigegerät ***C900*** ein Messumformer angeschlossen wurde, kann eine Korrektur des Nullpunktes (Anzeigewert bei Messbereichsanfang) erforderlich sein:
   Nehmen Sie diese gem. *C900*-Manual - Seite 17 vor (C900-Funktion „CAL").

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1. The **Leitenberger Portable Manometer LPM 3** are supplied as a precision indicator type ***C900*** together with a special optimized pressure transmitter.
   In this case, the ***C900*** instrument is already scaled for the related pressure transmitter, in „mbar" or „bar" - depending on the pressure range.

2. The **Leitenberger Portable Manometer LPM 3** are supplied with ***C900*** instrument switched to „Mode 1" according to ***C900*** manual page 12 (input 4...20 mA with active sensor supply, normal sampling interval).

3. If you like to measure pressure peaks with the **Leitenberger Portable Manometer LMP 3**, please switch the mode from „Mode 1" to „Mode 4" according to ***C900***-manual page 12.

4. At the **Leitenberger Portable Manometer LMP 3** you can see the supported pressure range on the label of the pressure transmitter. If you prefer to use another pressure unit, you may change the scale of the ***C900*** indicating instrument according to ***C900***-manual page 14 ff (displayed value at 4 mA output and displayed value at 20 mA output).

5. **ZERO-ADJUSTMENT (correction of ZERO):**
   If there is a transmitter connected to the ***C900*** indicator, an adjustment of the zero-point may be necessary. Please refer to ***C900***-manual page 17 (***C900***-function „CAL").

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C900

Version V1 (8/2004)

CE

Contents

1 Read before operating for the first time

- Please read the operating manual carefully before using the appliance and observe all instructions.
- Please note the measuring ranges of the reading recorders (overheating can result in damage).
- Observe storage and transport requirements (protect the device from direct sunlight).
- Technical data as well as storage and transport requirements can be found on the data sheet.

Appropriate use:

- The measuring device must only be operated within the specified technical parameters.
- The measuring device must only be used under the conditions and for the purposes for which it was designed.
- Operational safety can no longer be guaranteed in the case of modifications or adaptations.

C900

2 C900

The new **C**ompact series of hand-held measuring devices for measuring currents (0/4…20mA) and voltages (0…10V) features:

- a large display with background lighting
- simple operation by means of a thumb wheel
- robust and elegant housing
- high precision and resolution
- integrated power supply for 4...20mA sensors
- Sampling rate up to 1000 Hz in FAST MODE
- low price

3 The display

◄ Top menu with date and time

◄ Measurement display

◄ MAX, MIN and AVG measurement display

◄ Bottom configuration and adjustment menu

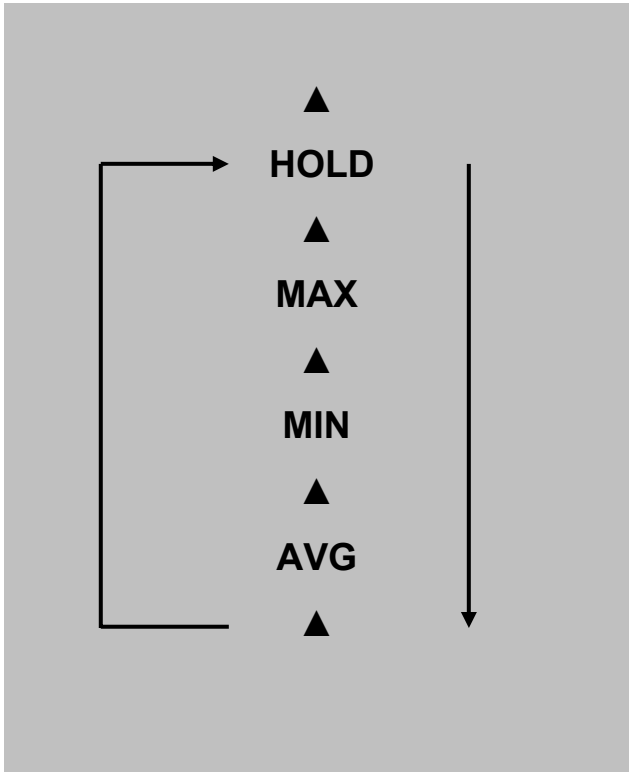
4 Operation

THUMBWHEEL

In contrast to conventional hand-held measuring devices the C900 measuring device does not have a keypad but rather a ***THUMBWHEEL*** on the left-hand side of the device.
The wheel can be turned up or down through 15° and can also be pressed in the centre position.
Turning the wheel up selects the top menu. Turning the wheel down selects the bottom menu for configuration and adjustment.
Pressing the thumbwheel in the centre position switches the device on or off and confirms input values.

The 3 positions of the **THUMBWHEEL**

Symbol used in text ▶		To switch on: press briefly To switch on with light: press for approx. 2 seconds To switch off: press for approx. 2 seconds (no menu activated) Pressing briefly (in normal operation – no menu activated): deletes the min/max memory
Symbol used in text ▲		Activating the top menu with **HOLD MAX MIN AVG**. Select with ▲, confirm with ►, cancel with ▼ or by pressing nothing for 20 seconds.
Symbol used in text ▼		Activating the bottom configuration and adjustment menu Select with ▼, confirm with ►, cancel with ▲or by pressing nothing for 20 seconds.



5 The top menu

The standard functions:

HOLD MAX MIN AVG

can be selected in the top menu. Make your selection with ▲. The selected function flashes and is confirmed with ►. Once confirmed, the function stops flashing and is steady on the display. You can exit the menu by pressing ▼ or by not pressing anything for 20 seconds.

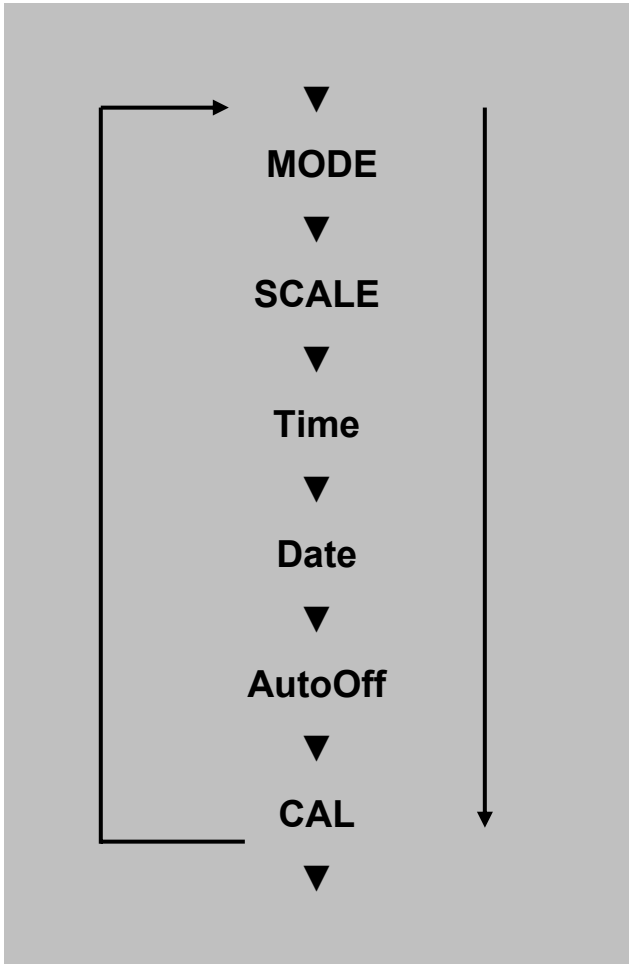
Hold: Hold “freezes” the measured value.

MAX: MAX displays the maximum value recorded while activated.

MIN: MIN displays the minimum value recorded while activated.

AVG: AVG displays the arithmetical average value while activated.

The maximum value/minimum value/AVG memory is deleted by switching off the C900 and then switching it back on or by briefly pressing ► in normal operation.



6 The bottom menu

In the bottom configuration and adjustment menu, the functions:

MODE SCALE Time Date AutoOff CAL 1

can be selected. Make your selection with ▼. The selected function flashes and is confirmed with ►. You can exit the menu by pressing ▲ or by not pressing anything for 20 seconds.

You can select MODE and SCALE from the menu using arrows at the bottom edge of the display.

Illustration: C900 MODE selection

MODE: MODE is used to select the operating mode of the C900. The C900 supports a total of five different operating modes (see table):

Mode	Input range	Sampling interval	Display
1	4...20mA Sensor supply active	0.5s (2Hz) Normal mode	**П 1** **I 420**
2	0...20mA Sensor supply inactive	0.5s (2Hz) Normal mode	**П 2** **I 020**
3	0...10V Sensor supply inactive	0.5s (2Hz) Normal mode	**П 3** **U 10**
4	4...20mA Sensor supply active	1ms (1000Hz) Fast Mode	**П 4** **F 420**
5	0...20mA Sensor supply inactive	1ms (1000Hz) Fast Mode	**П 5** **F 020**

You can make your selection with ▲ and ▼ and confirm with ►. The original works setting is mode 1

Modes 1...3 are recommended for very precise measurements. Settings 4 and 5 are used to detect fast pressure peaks, e.g. in hydraulic systems. The values on the display are updated twice a second, irrespective of the set mode. You can bring up the peak values using the MAX/MIN function.

During normal operation in fast modes 4 and 5 an average is issued, measured over the last half second.

The selected mode is displayed when the appliance is switched on depending on the C900 display/version number.

SCALE: SCALE is used to select the scale range of the C900. The maximum value is entered in the top row, beginning with the right-hand digit. You can then enter a point or another digit or a “-“.The active digit flashes while you are making your selection until you confirm by pressing ►. The display will then jump one value to the left (point/figure). Once you confirm a space or “-“, the cursor will jump to the bottom row. If you confirm a space or a “-“ here too, you will exit the menu and the settings will be accepted. The maximum value range is +/- 19999. The min value is entered in the bottom row.
The default value is 0. It is recommended you use the value range as fully as possible for precise measurements (MODE 1...3). For measurements in FAST mode (MODES 4 and 5) the value range should be between 100 and 1000 digits. It is not possible to enter units.

The number of decimal places is defined when entering the max value and also applies to the min value.
If you enter identical values for the max value and the min value, the C900 will signal “SCALE OFF” and will show the current/voltage measured directly in the display.

If nothing is entered within 20 secs the process will be aborted and the previous scale restored.
Changes to the scale reset the user calibration to zero.
The selected scale range or SCALE OFF is displayed when the appliance is switched on depending on the C900 display/version number.

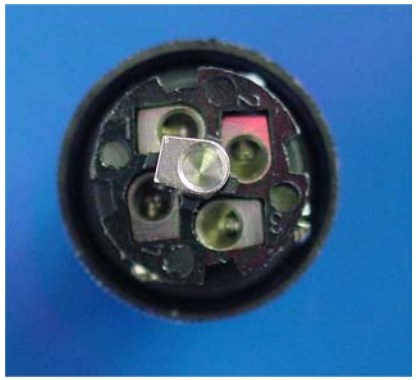
Time: sets the time. Hours and minutes are entered one after the other. Make your selection with ▲ and ▼; confirm with ►.

Date: sets the date. Day, month and year are entered one after the other. Make your selection with ▲ and ▼; confirm with ►.

AutoOff: AutoOff is used to set the time in minutes for automatic switch-off. If OFF (<1) is set, the device will never switch off automatically. Make your selection with ▲ and ▼; confirm with ►.

CAL: CAL (single-point calibration) sets the offset for the measurement. The actual value is displayed in the top area. The offset value flashes in the bottom area. This can be incremented with ▲ and decremented with ▼. ► confirms the set value. The menu then closes automatically. A margin of +/- 10% of the range defined in the Scale menu is allowed as an offset.
User calibration is not possible with “scale off”.

The original works settings can be achieved by setting the offset to 0.0.



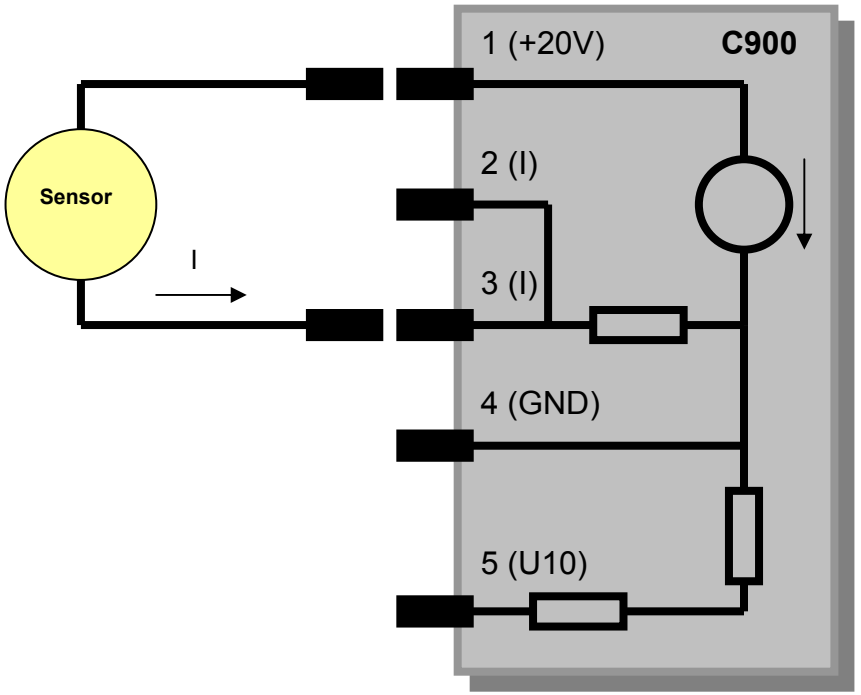
Sensor plug C900

Important: If the sensor current exceeds 25mA, the supply will be disconnected for approx. 3 seconds and “IFAIL” will appear in the display.

7 Pin assignment and sensor connection

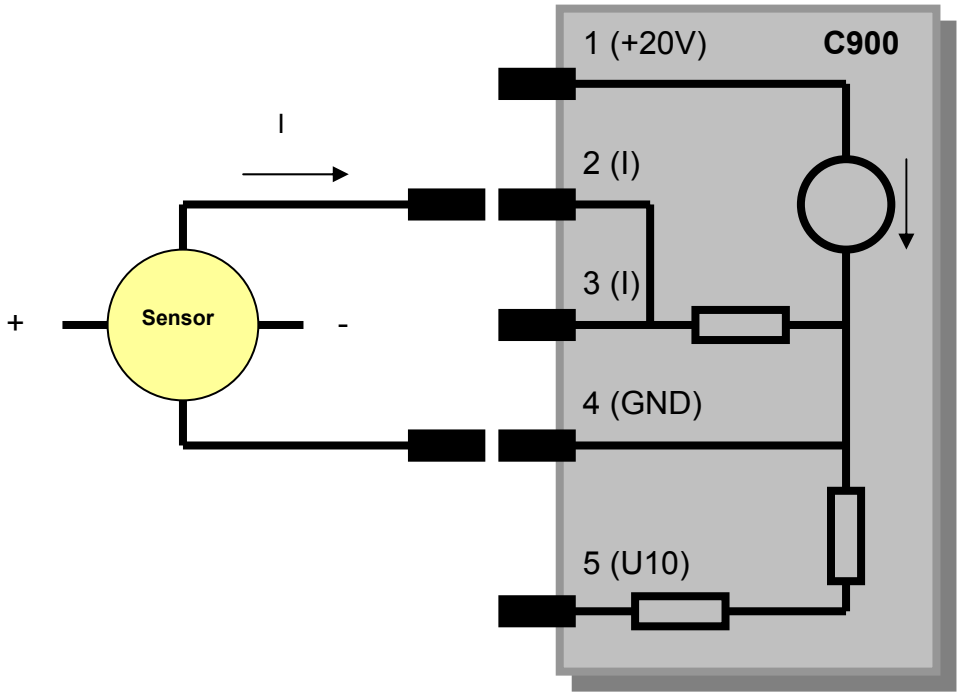
Please use only original accessories to connect sensors.

Connection for MODE 1 and MODE 4



Connection diagram: 4...20mA with active supply (MODE 1+4)

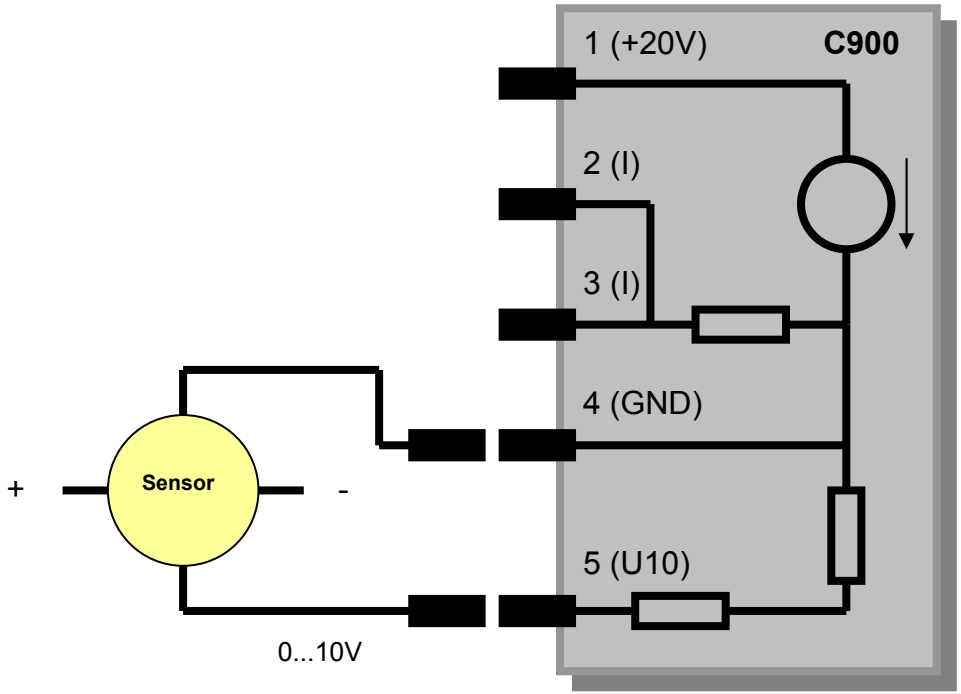
Connection for MODE 1, MODE 2 and MODE 5



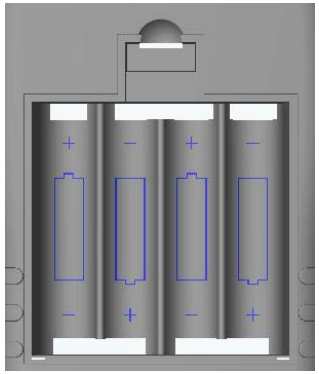
Connection diagram: 0/4...20mA with external sensor supply

(MODE 1, MODE 2 and MODE 5; **MODE 4 not permitted**)

Connection for MODE 3



Connection diagram: 0...10V, sensor with external supply (MODE 3)



Open battery compartment of a C900

8 Replacing batteries

If “BAT” appears in the display, the device requires new batteries. Open the battery cover on the back of the device. Remove the discharged batteries and replace them with new ones.

Please use only high quality alkali IEC LR6 AA batteries. Do not use rechargeable batteries!

When inserting the batteries please ensure that they are the right way round, and use only high-quality batteries.

9 Maintenance and adjustment

Recalibration should only be carried out by specialist staff or, better still, at accredited laboratories.
Clean the device with a damp cloth as and when necessary.
Do not use any cleaning fluids, just clean water to dampen the cloth.