OCB500
Bargraph

Owner’s Manual

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Unpacking Instructions

Remove the Packing List and verify that you have received all equipment, including the following: Model OCB500.
- Operator's Manual OCB500.

If you have any questions about the shipment, please call.

NOTE

When you receive the shipment, inspect the container and equipment for signs of damage. Note any evidence of rough handling in transit. Immediately report any damage.

Programmable Bargraph OCB500

- √ Process Signals mV, mA DC and true RMS
- √ Four Signal Inputs with arithmetic formula
- √ Thermometer Pt-100
- √ Thermometer J, K, R, S, T, B, C
- √ 50 Bargraph Segments, 3 digit Display
- √ Four Set Point Relays 250V-5A AC
- √ 8 Point Linearizing Option
- √ Supply 230VAC or 24VDC

OCB500 is a digital controller with one Bargraph and a three digit numerical display. The controller is key programmable and permits connection to analogue process signals, Pt 100 and DIN Thermocouples with or without cold compensation. Additional three signal channels are optionally available.
The digital display permits a resolution of 999 with selectable decimal point. In the measuring mode the display follows the input signal. In the programming mode the parameters are displayed.

The Menu is accessible with the keys behind the front lens and contains the selection of input signals, setting of four Set Points, colours of the bargraph, scaling of the digital display and the bargraph and calibration of the measuring ranges.

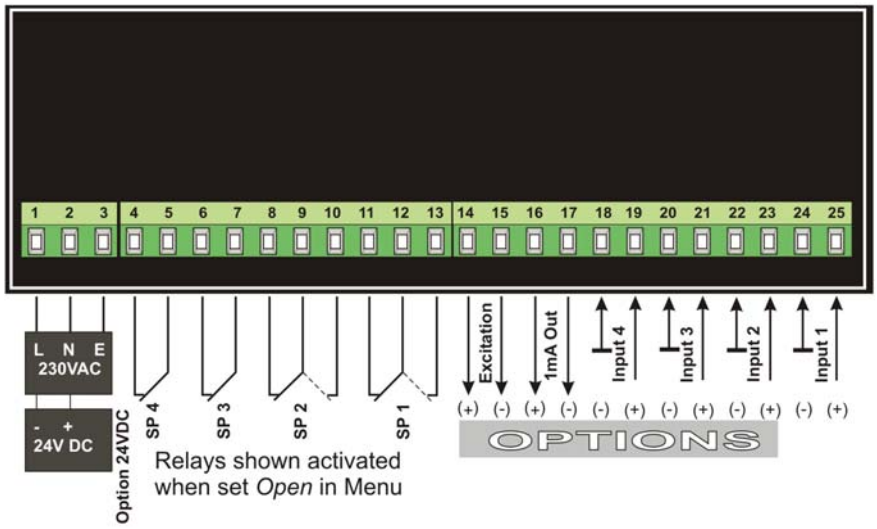
With all four signal channels assembled, the digital display and the bargraph show the results according to the form: *DISPLAY = Coef 0+ADC1*Coef 1+ADC2*Coef 2+ADC3*Coef 3+ADC4*Coef 4*
Whereas *Coef* are the Coefficients and *ADC* are the measured values.

Linearizing in up to 8 points is optionally available. It can be used for linearizing of non linear analogue signals or to display linear signals in non-linear values. Typical application is a linear display of liquids in large tanks.

Fast Peak & Hold Memory with fast reading display is option. The displays follow the input signal of channel 1. Fast peaks up to 4ms are memorized in internal analogue memory and shown at the bargraph and the digital display. With external contact the display will reset to the momentary value.

The controller is enclosed in a DIN case 48 x 144mm and supplied from 24VDC or 115/230VAC. The programming keys are accessible behind the front lens.

TERMINALS

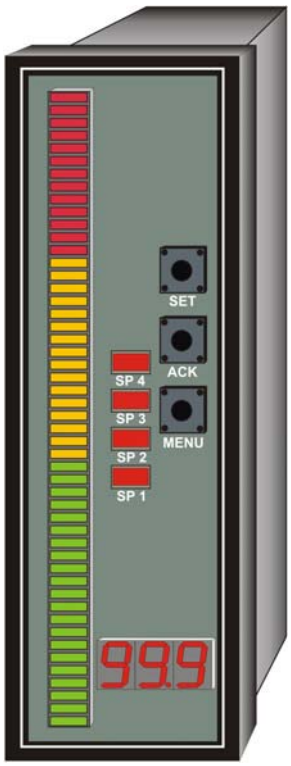


SPECIFICATIONS

Displays:	Bargraph length:	125mm, 50 red, yellow and green segments, 10mm width.
	Accuracy:	± 1 Segment.
	Digital Display:	3 digits 0-999 with decimal points. Digit size 7.6mm.
	Accuracy:	0.1% from value.
Inputs:	* Voltage:	100mV to 250V DC.
	* Currents:	1mA to 5A DC.
	* Thermocouples:	J, K, R, S, T, B, C and Pt-100
	The signal channel 1 permits measurement of true RMS Signals	
Function:	* Scaled Input Signal of one of four Signal Channels	
	* Sum of 4 Analogue Signals according to the form:	
	*DISPLAY = Coef 0+ADC1*Coef 1+ADC2*Coef 2+ADC3*Coef 3+ADC4*Coef 4*	
Set Points:	Four Relays: SP1-SP2 with changing contacts, SP3-SP4 with closing contacts. Activated Set Points are shown with LEDs at the front panel.	
Excitation:	10, 12 or 19V-40mA, jumper selectable (with mains supply only).	
Supply:	115/230V, 10%, 48 ... 60 Hz. Option 18-36VDC or 9-36VDC.	
Cabinet:	DIN 48x144x115mm (WxHxD). Panel cut-out 44x136mm, pluggable screw terminals.	

CONTROL KEYS

The keys MENU, ACK and SET are accessible below the front lens.
They permit setting of parameters, programming of Set Points,
setting of the bar colours and scaling of the input signals.



OCB500 without front lens

MENU STEPS

The key *MENU* opens the Menu and permits scrolling the menu steps at the display. The required parameter will be confirmed with *ACK* and adjusted with *SET*. The flashing digit - Cursor - will be positioned with *SET* and selected with *ACK*. The decimal point and the sign can be set when the cursor is positioned outside the display (no flashing digit). The sign and the decimal point can than be set with the key *SET*.

IMPORTANT! The values have always to be set with a decimal point even after the last digit. (e.g. at SP1: 0.20 = 0.20 or 02.0 = 2 or 020. = 20)

Key	Display	Function
MENU	PAS	Enter the PASSWORT, the combination which has been set in the last Menu step PAS.
MENU	COL	Selection of Bar colours
MENU	SP1	Set Point SP1
ACK	XXX	Value of SP1
MENU	HS1	Hysteresis of SP1
MENU	Fn1	Function of SP1 OPEN or CLOSED
MENU	SP2	Set Point SP2
ACK	XXX	Value of SP2
MENU	HS1	Hysteresis of SP2
MENU	Fn2	Function of SP1 OPEN or CLOSED
MENU	SP3	Set Point SP3
ACK	XXX	Value of SP3
MENU	HS3	Hysteresis of SP3
MENU	Fn3	Function of SP3 OPEN or CLOSED
MENU	SP4	Set Point SP4
ACK	XXX	Value of SP4
MENU	HS4	Hysteresis von SP4
MENU	Fn4	Function of SP1 OPEN or CLOSED
MENU	SnS	Selection of Input Type
ACK	Ln	Linear Process Signal
	Pt1	Pt-100
	tCE	Thermocouple E with Cold Junction Compensation
	CCE	Thermocouple E without Cold Junction Compensation
	tCJ	Thermocouple J with Cold Junction Compensation
	CCJ	Thermocouple J without Cold Junction Compensation
	tCL	Thermocouple K with Cold Junction Compensation
	CCL	Thermocouple K without Cold Junction Compensation
	tCS	Thermocouple S with Cold Junction Compensation
	CCS	Thermocouple S without Cold Junction Compensation
	tCb	Thermocouple B with Cold Junction Compensation
	CCb	Thermocouple B without Cold Junction Compensation
	tCt	Thermocouple T with Cold Junction Compensation
	CCt	Thermocouple T without Cold Junction Compensation
	Cld	Ambient temperature measured with internal sensor at the Terminals.
MENU	bLo	Display value for Bar = Null.
MENU	bHi	Display value for Bar = 100%.
MENU	Co0	Coefficient 0 for Calculation Formula. Additive Offset.
MENU	SL1	Value at the digital display at zero input 1
MENU	SH1	Value at the digital display at maximum value at input 1.
MENU	Co1	Coefficient 1 for Calculation Formula
MENU	SL2	Value at the digital display at zero input 2
MENU	SH2	Value at the digital display at maximum value at input 2
MENU	Co2	Coefficient 2 for Calculation Formula
MENU	SL3	Value at the digital display at zero input 3.

MENU	SH3	Value at the digital display at maximum value at input 3
MENU	Co3	Coefficient 3 for Calculation Formula
MENU	SL4	Value at the digital display at zero input 4
MENU	SH4	Value at the digital display at maximum value at input 4
MENU	Co4	Coefficient 4 for Calculation Formula
MENU	d.P.	Selection of the Decimal Points (Display Resolution).
MENU	Flt	Digital Filter (Averaging)
MENU	FtA	Function of Tare:

OFF switched off

On activated. By first pressing the key *SET* the display shortly shows ***trA*** and both displays reset to Zero. When applied for second time, the display shows ***ntr*** and both displays return to follow the original input signal without Tare. The Tare is cancelled.

OnL „ONLY". The key *SET* resets the display to Zero. No reverse function is available.

NOTE: The TARE remains memorized also when instrument is switched-off. This applies also when the Tare is set with the key and not disabled to OFF in the Menu, and the instrument switched-off. After switch-on the display will show the Offset of the Tare value!

MENU	PAS	Select one of 20 stored Password Combinations. The selected combination has to be entered in order to open the menu.
MENU	run	Measuring Mode

IMPORTANT: By using of one signal channel only set the formula coefficients as follows:
Coef 1= 0 (Display offset), Coef 1 = 1. The remaining channels will be inhibited by setting of coefficients Coef 2 = Coef 3 = Coef 4 = 0.

CALIBRATION

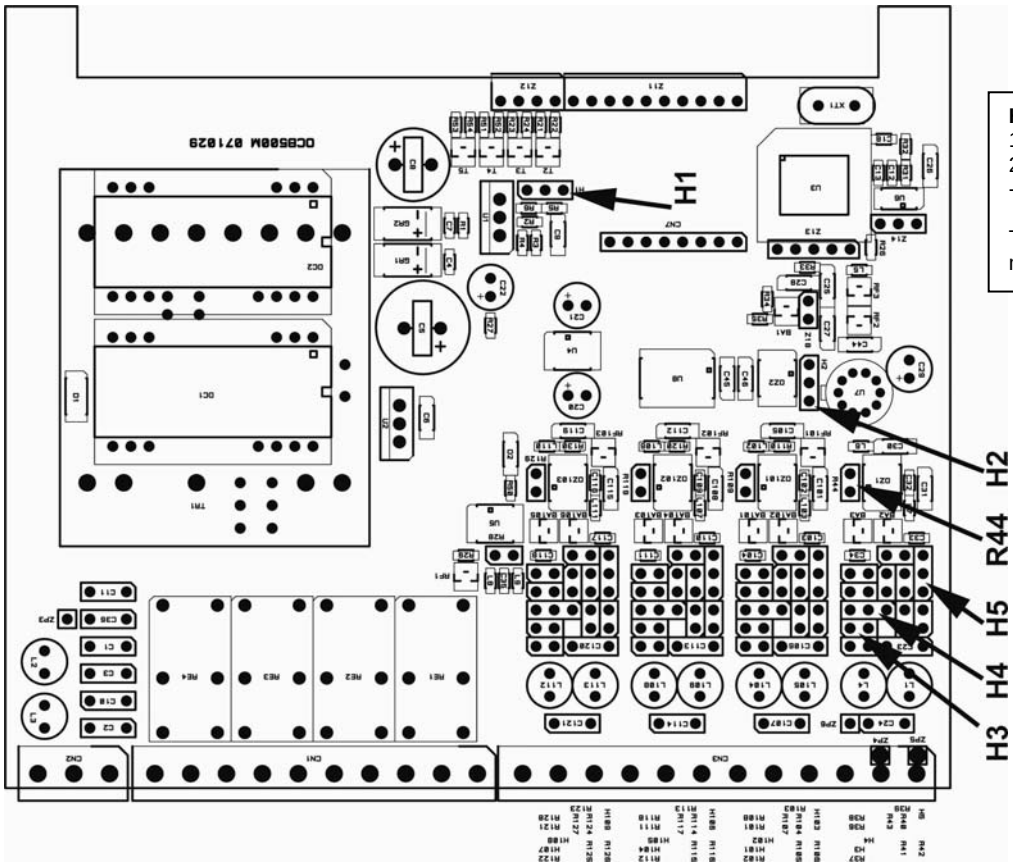
The Calibration of the four Signal Channels is performed it the Submenu **H-TEST**.
To enter the H-TEST, switch-off the instrument, press the key MENU and switch-on again. Keep the key pressed until the display shows ***HtS***.
Advance with MENU to ***Ad1***. The display shows internal converted signal of the Channel 1.
To calibrate the Channel 1, apply Null-Signal (e.g. 4mA) to the input. Press **ACK** until the display shows ***ALo - EE- Sto***. The Zero Signal is calibrated and memorized.
Apply Max-Signal (e.g. 20mA) to the input. Press **SET** until the display shows ***AHi - EE- Sto***. The Maximum Signal is calibrated and memorized.

When signal channels 2-4 are used, the calibration has to be performed accordingly. The key MENU scrolls the calibration steps to the Channels 2-4.
The next menu step is a scaling constant ***c*** which has to be set to 0. The last four steps controls the Set Points SP1-SP4 and activate the front panel LEDs.

At the end of the calibration the instrument has to be switched-off and switched-on again.

MEASURING RANGES

The display and the bargraph are using one scaling. By using of more than one signal channel, all the channels have to be set for same input signal type, e.g. 4-20mA.



H1 – Excitation

1-2	10V
2-3	12V
---	19V not regulated

The excitation is available at mains powered instruments only.

	0/4-20mA	100mV DC	1V DC	10V DC	100V DC	200V DC	AC true RMS
H2	1-2	1-2	1-2	1-2	1-2	1-2	2-3
H3	ON	ON	ON	ON	ON	ON	
H4	1-2	1-2	1-2	2-3	2-3	2-3	
H5	1-2	OFF	OFF	OFF	2-3	2-3	

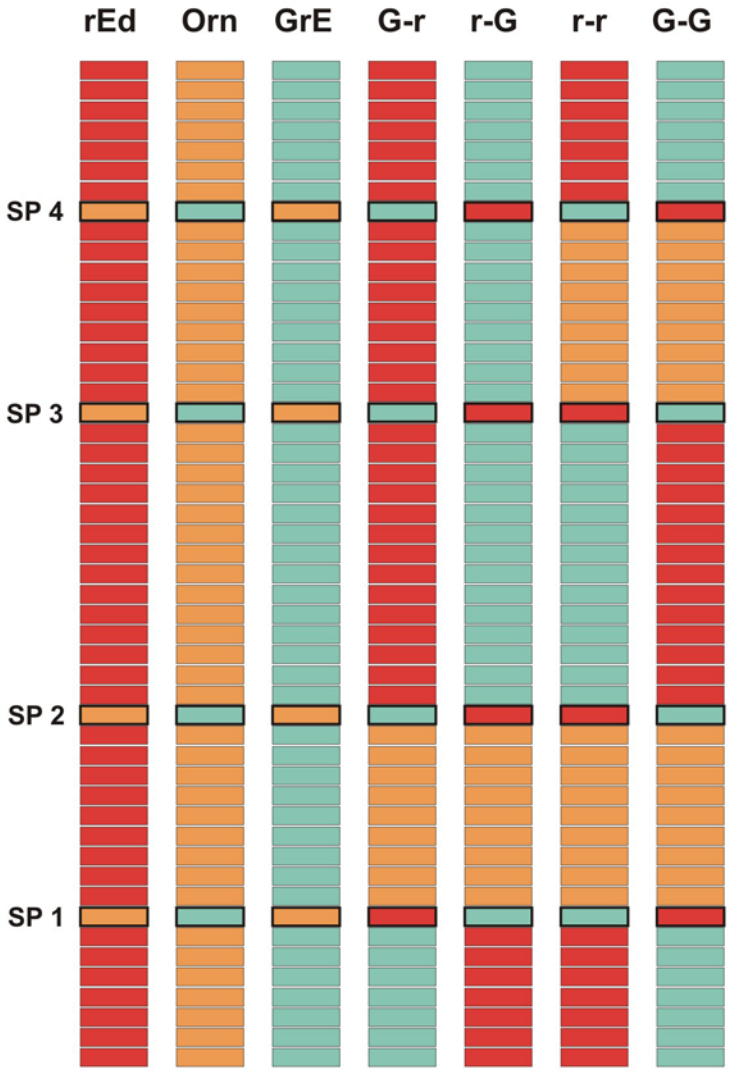
The range setting is shown for signal channel 1. The setting for remaining channels 2-4 is identical. The true RMS measurement is available in signal channel 1 only.

BAR COLOURS

The colour of the Bargraph can be set in the menu step *COL*. Seven possible variations can be selected with *SET* and *ACK* as shown in the table bellow. The Bar can be set for unique RED, GREEN or YELLOW or colour combinations separated by Set Points SP1 – SP4.

When the Set Points are set to zero, the colours of the bar can be set for red, orange or green only.

Menu Step	**Bargraph Colour**	**Separation by Set Points**
rEd	red	Set Points orange
Orn	orange	Set Points green
Gre	green	Set Points orange
G - r	green	Zero to SP1
	orange	SP1 – SP2
	red	SP2 – SP3
	red	SP3 – SP4
	red	SP4 – 100%
r - G	red	0 – SP1
	orange	SP1 – SP2
	green	SP2 – SP3
	green	SP3 – SP4
	green	SP4 – 100%
r - r	red	0 – SP1
	orange	SP1 – SP2
	green	SP2 – SP3
	orange	SP3 – SP4
	red	SP4 – 100%
G - G	green	0 – SP1
	orange	SP1 – SP2
	red	SP2 – SP3
	orange	SP3 – SP4
	green	SP4 – 100%



After selecting the required setting, press MENU and terminate with SET. The parameters will be stored.

BURST TEST and RECOMMENDED GROUNDING

Tester: EM Tester Type UCS 500M2, SN: 0499-41
E.U.T.: OCB500-214, SN: 20912-98, Supply 24VDC
OCB500-114, SN: 20912-87, Supply 230VAC
Mode: Linear, Set LO = 000, Set HI = 100
Input: 4-20mA
Display: 0-100
Bargraph: 0-100%

Test Conditions Zone 1 (Instruments with AC Supply)

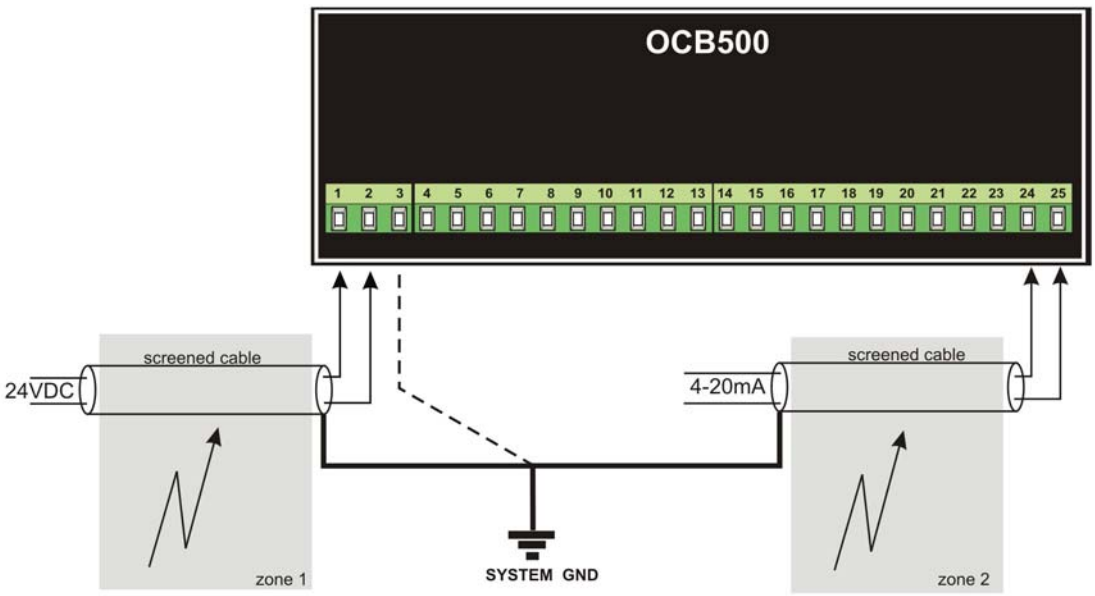
According to:	IEC 61000-4-4 level 3	2000V
	EN 50052-2 generic	2000V

Burst into Antenna 2

Burst	Voltage 2500V,	f = 5 kHz	
		fr = 300 ms	
		td = 15 ms	Coupling +/-

Test Conditions Zone 2 (Instruments with DC Supply)
The supply and the signal lines are tested together in the Antenna Zone 2, see Test Set-Up.
The terminal 1 and the Cable Screen are connected to the **System GND**

Test Set - Up



Test Results

Zone 1: Digital Display and Bargraph without change
Zone 2: Digital Display and Bargraph without change