OCB501-A
Bargraph
for analogue signals

Owner's Manual

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Vor dem Einschalten

Überzeugen Sie sich, ob Ihre Sendung das richtige Gerät Orbit Controls Modell OCB501-A beinhaltet, einschliesslich einer Betriebsanleitung OCB501-A.
Vor dem Einschalten des Gerätes überprüfen Sie die Anschlüsse und die Versorgungsspannung. Ein falsch angeschlossenes Gerät kann beschädigt werden und damit auch die mitverbundene Folgeelektronik. Für falsche Handhabung wird jede Haftung abgelehnt.

ZU BEACHTEN

Dieses Gerät wurde sorgfältig verpackt. Falls es bei Ihnen in beschädigtem Zustand eintrifft, benachrichtigen Sie unverzüglich den Orbit Controls Kundendienst (Tel: +41 44 730 2753 oder Fax: +41 44 730 2783) und nehmen Sie einen Schadenrapport auf, welchen Sie auch von der Transportgesellschaft unterschreiben lassen. Bewahren Sie bitte das Verpackungsmaterial für eventuelle Reklamationen auf.

Unpacking Instructions

Remove the Packing List and verify that you have received all equipment, including the following:
- Orbit Controls Model OCB501-A.
- Operator's Manual OCB501-A.

If you have any questions about the shipment, please call the Orbit Controls Customer Service Department.

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 to the Orbit Controls customer service, Phone +41 44 730 2753 or Fax +41 44 730 2783 and to the shipping agent.
The carrier will not honour damage claims unless all shipping material is saved for inspection. After examining and removing contents, save packing material and carton in event the reshipment is necessary.

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Safety Considerations

The instrument must be protected by power supply fuse to fulfil the safety considerations of EN 61010-1 + A2.

The instrument is not suitable for explosive environments!

EUROPEAN NORMS
OCB501 controllers comply with the European Union EMC directive 89/336/EWG.

They meet the requirements of the European standards:
EN 55 022, class B
EN 61000-4-2, -4, -5, -6, -8, -9, -10, -11.

The instrument is suitable for general purpose industrial applications.

CONNECTIONS
The power supply lines should be separated from the signal lines to prevent interference.

CE

Programmable Bargraph OCB501-A

- √ Process Signals mV, mA DC and true RMS
- √ Two signal channels
- √ Free scalable Displays
- √ Display dimming 0-100%
- √ 50 Bargraph Segments, 3 digit Display
- √ Three color selection
- √ Four Set Point Relays
- √ Supply 115/230VAC. Option: 24VDC

OCB501-A is a digital controller with one Bargraph and a three digit display. The controller is key programmable and permits connection to analogue process signals, Pt 100 and DIN Thermocouples with or without junction compensation. The intensity of the displays can be set between 0 and 100% in 1% steps or controlled with external analogue signal (Option). Additional signal channel can optionally be ordered for arithmetic operations of two processed signals:

*DISPLAY = Coef 0+ADC1*Coef 1+ADC2*Coef 2, w*hereas *Coef* are free programmable Constants and *ADC* are the measured values.

The Bargraph and the Digital Display are free scalable. The digital display permits a resolution of 999 counts with selectable decimal point. In the measuring mode the display follows the input data. In the programming mode it shows the parameters. Floating point arithmetic is used.

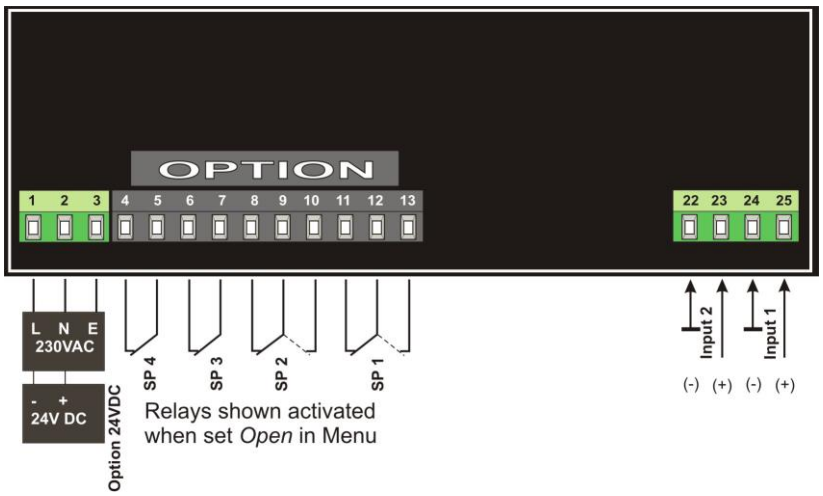
Menu is accessible with three keys behind the front lens and contains the setting of four Set Points, Colors of the Bargraph, Scaling of the Digital Display and the Bargraph and Calibration of signal channels.

Set Points SP1 and SP2 define the switching points of the Bargraph colors and also of the Relay 1 and Relay 2. The color sections red, green or orange can be set across the entire bargraph length. Additional Set Points SP3 and SP4 control Relays 3 and 4.

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

Bargraphs for horizontal and vertical mount are available. The standard scale is 0-100%. Customized scales can be ordered upon request.

1 TERMINALS



Input 1: Process signal measured
Input 2: Process signal measured for calculation with Input 1

Option: Input 2 can be ordered for Display Intensity Control with 0/4-20mA or 0-10V.

2 SPECIFICATIONS

Displays:	Bargraph length:	125mm, 50 red, yellow and green segments, 10mm width.
		Accuracy: ± 1 Segment.
	Digital Display:	3 digits, 7.6mm red, -99 … 999 with decimal points.
		Accuracy: 0.1% from value.
Input 1:	* Voltage:	100mV to 250V DC.
	* Currents:	1mA to 5A DC.
	* Thermocouples:	J, K, R, S, T, B, C
	* RTD:	Pt-100
	* RMS (Option):	Voltage or current in frequency range DC to 1kHz
Input 2:	* Voltage:	100mV to 250V DC.
	* Currents:	1mA to 5A DC
	* Option:	4-20mA or 0-10V for Intensity Control

Colors: Bargraph colors selectable in three color sections determined by SP1 and SP2,

Set Points: 4 Relays 5A/230VAC or 4 open collectors 60V-100mA

Excitation: 10, 12 or 19V-40mA, available at mains powered instruments only.

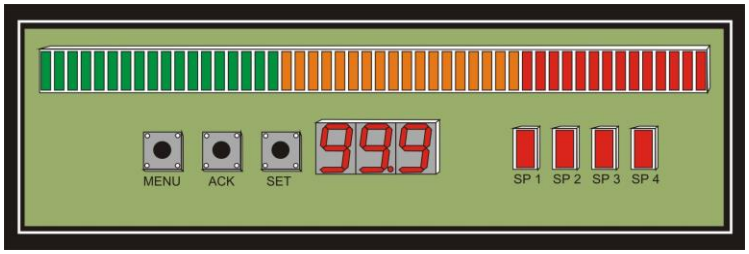
Supply: 230VAC. Option 18-36VDC/3W.

Cabinet: DIN 48x144x115mm (W x H x D). Panel cut-out 44x136mm, pluggable screw terminals.

3 CONTROL KEYS

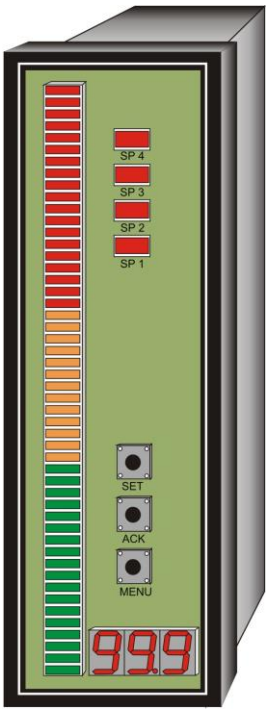
The keys MENU, ACK and SET are accessible behind the front lens.
They permit setting of parameters, bargraph colors and scaling of the bargraph and the digital display.

OCB501-AH for horizontal mount
OCB501-AV for vertical mount



OCB501-AH without front lens

OCB501-AV without front lens



4 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 sign and the decimal point will be set with *SET*, when the cursor is positioned “outside” the display (no visible flashing digit).

IMPORTANT! The values have to be set with a decimal point even after the last digit (e.g. 020.)

Key	Display	Function
MENU	PAS	Password, combination set in the last menu step PAS
MENU	COL	Bargraph color selection one of 27 color combinations: GGG, GGO, GGr, GOG, GOO, GOr, GrG, GrP, Grr, OGG, OGO, OGr, OOG, OOO, OOr, OrG, OrO, Orr, rGG, rGO, rGr, rOg, rOO, rOr, rrG, rrO, rrr (G=green, O=orange, r=red)
MENU	SP1	Set Point SP1 first color break point
ACK	XXX	Value of SP1
MENU	HS1	Hysteresis of SP1
MENU	Fn1	Function of SP1 OPEN or CLOSED
MENU	SP2	Set Point SP2 second color break point
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 von SP3
MENU	Fn3	Function of SP3 OPEN or CLOSED
MENU	SP4	Set Point SP4
ACK	XXX	Value of SP4
MENU	HS4	Hysteresis of SP4
MENU	Fn4	Function of SP1 OPEN or CLOSED
MENU	SnS	Type of Input Signal
ACK	Ln	Linear Process Signal
	Pt1	Pt-100
	tCE	Thermocouple E with internal Junction Compensation
	CCE	Thermocouple E without internal Junction Compensation
	tCJ	Thermocouple J with internal Junction Compensation
	CCJ	Thermocouple J without internal Junction Compensation
	tCL	Thermocouple K with internal Junction Compensation
	CCL	Thermocouple K without internal Junction Compensation
	tCS	Thermocouple S with internal Junction Compensation
	CCS	Thermocouple S without internal Junction Compensation
	tCb	Thermocouple B with internal Junction Compensation
	CCb	Thermocouple B without internal Junction Compensation
	tCt	Thermocouple T with internal Junction Compensation
	CCt	Thermocouple T without internal Junction Compensation
	Cld	Ambient temperature measured with Junction Sensor at the terminals Junction compensation KTY81-100 or KTY81-200 will be selected in the HTEST

MENU	bLo	Value at the digital display for Bargraph = ZERO
MENU	bHi	Value at the digital display for Bargraph = 100%
MENU	SL1	Value at the digital display for Zero Signal at INPUT 1
MENU	SH1	Value at the digital display for maximum value at INPUT 1
MENU	SL2	Value at the digital display for Zero Signal at INPUT 2
MENU	SH2	Value at the digital display for maximum value at INPUT 2
MENU	Co0	Additive calculation constant - Offset
MENU	Co1	Multiplicative constant of the signal value in channel 1
MENU	Co2	Multiplicative constant of the signal value in channel 2 DISPLAY = Co0+Co1*INPUT1+Co2*INPUT 2
MENU	dc.P	Decimal Point (Digital Display Resolution)
MENU	INT	Intensity (***don*** = 0-100% selection, ***doF*** = 100% firm. ***don*** or ***doF*** selected in ***HtS***.
MENU	Flt	Averaging Filter
MENU	FtA	TARE - Function *OFF* Off - disabled *On* ON - enabled. When *SET* key pressed, the display shortly shows ***trA*** and sets the both displays to zero. When pressed for second time the display shows ***ntr*** and returns to the non-tare signal. The Tare function is canceled. *OnL* ONLY – with the key *SET* the display will always be set to zero.

NOTE Once set, the Tare remains activated even when the supply is switched-off. This has to be considered when the Tare is set and the Menu step **FtA** is ***OFF***

MENU	PAS	Selection of one from 20 stored combinations which enables entry into the Menu.
MENU	run	Measuring Mode

NOTE: By using one signal channel only set Coef 0=0 (Display offset=0), Coef 1=1, Coef 2=0.

5 CALIBRATION and SUBMENU *HtS*

The two Signal Channels can be calibrated in the Submenu ***HtS***. To enter ***HtS***, switch-off the instrument, press the key **MENU** and switch-on again. Keep the key pressed until the display shows ***HtS***.
The ***HtS*** parameters can be scrolled at the display with **MENU**. First the display segments are tested, next the calibration can be performed. The signal channels can be calibrated as described for 4-20mA at both Inputs:

Advance with **MENU** to ***Ad1***.
Apply 4mA to input 1. The display and the bargraph show internal converted signal value.
Press **ACK** until the display shows ***ALo - EE- Sto***.
Apply 20mA to input 1. The display and the bargraph show internal converted signal value.
Press **SET** until the display shows ***AHi - EE- Sto***.
Signal Channel 1 (4-20mA) is calibrated and the parameters are stored.

Advance with **MENU** to ***Ad2***.
Use the same steps as for Ad1.

Advance with MENU to select **t-1** or **t-2**, Junction Compensation for KTY81-100 or KTY81-200.
Advance with MENU to select the control of the displays intensity: **don** (intensity adjustable from 0 to 100%) or **doF** (maximum intensity 100%).

The last four steps in the ***HtS*** submenu control the Set Points SP1-SP4 and activate the front panel LEDs and the Relays, when assembled.

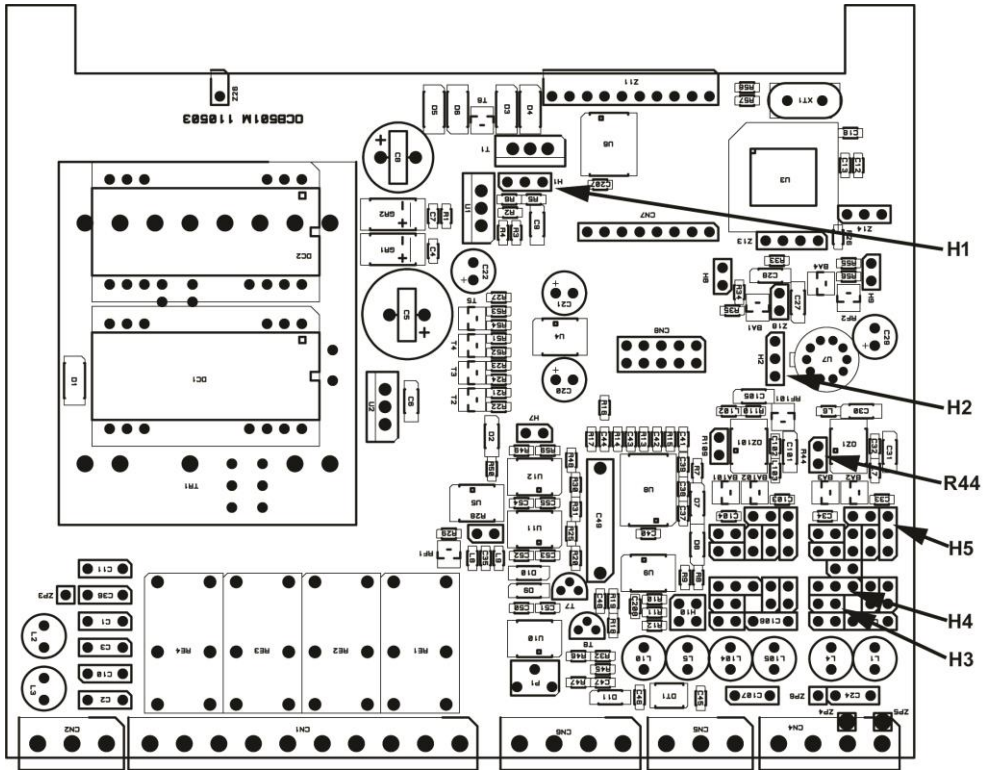
The key MENU closes ***HtS*** and switches into the measuring mode. The display shows **run**.

To store the settings, switch-off and switch-on the supply.

6 MEASURING RANGES

The Digital Display and the Bargraph can use different scaling set in the menu. If two channels are used, they have to be of the same type, e.g. both 4-20mA.

MAIN BOARD LAYOUT



H1 – Excitation

1-2	10V
2-3	12V
---	19V non-regulated

The Excitation is available with main powered instruments only.

RANGE SELECTION valid for both signal channels

	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	True RMS is Option
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. Settings for channel 2 are identical.
True RMS measurement is an option available in signal channel 1 only.

7 TWO SIGNALS CALCULATION

The display shows the calculation of signals in channels 1 and 2 according to following equation:

DISPLAY = Co0+Co1*INPUT1+Co2*INPUT 2

Co0 Additive constant - Offset
Co1 Multiplicative constant of the signal value in channel 1
Co2 Multiplicative constant of the signal value in channel 2

8 BURST TEST and RECOMMENDED GROUNDING

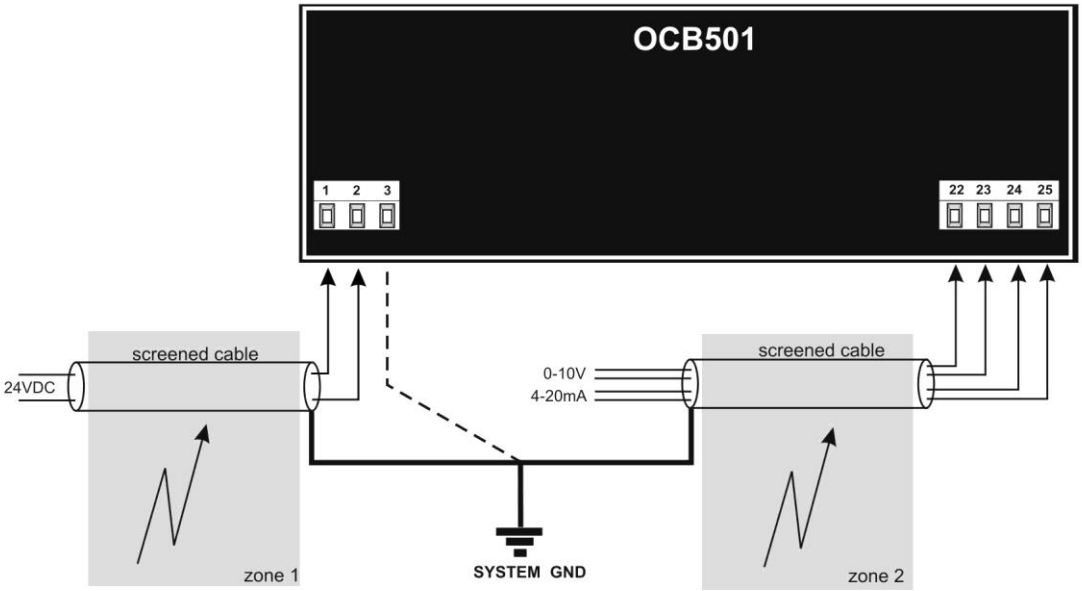
Tester:	EM Tester Type UCS 500M2, SN: 0499-41		
E.U.T.:	OCB501-AH-214, SN: 2110500, Supply 24VDC		
	OCB501-AH-114, SN: 2110500, Supply 230VAC		
	Set LO = 000, Set HI = 100		
	Input 1:	4-20mA	setting 20mA
	Input 2:	0-10V	setting 10V full intensity
	Display:	100	
	Bargraph:	100%	

Test Conditions	**Zone 1**	
According to:	IEC 61000-4-4 level 3	2000V
	EN 50052-2 generic	2000V

Antenna Injections	**Zone 2**		
Burst	Voltage 2500V,	f = 5 kHz	
		fr = 300 ms	
		td = 15 ms	coupling +/-

DC powered instrument are tested with power cord and signal input in Zone 2 at conditions shown in "Antenna Injections" above.

Test Set - Up



Test Results

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