LARGE BARGRAPH

OC2001-57
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 OC 2001-57 beinhaltet, einschliesslich einer Betriebsanleitung OC 2001-57.
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 1 730 2753 oder Fax: +41 1 730 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 OC 2001-57 Programmable Bargraph.
Operator's Manual OC 2001-57.
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 +411 730 2753 or Fax +411 730 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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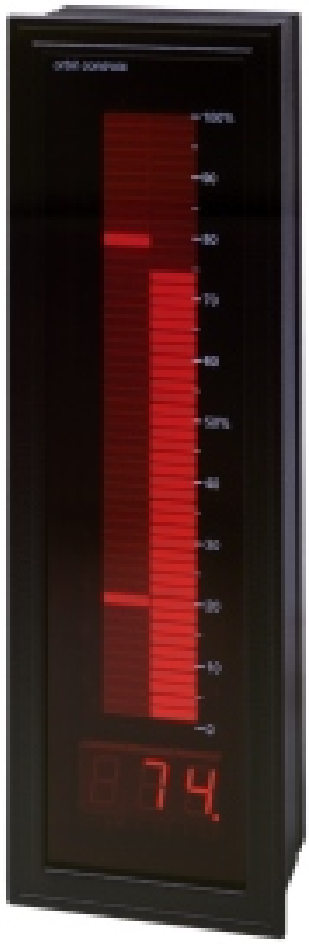
Large Bargraph OC2001 - 57



- √ **Inputs DC or AC true RMS**
- √ **Process Signals 0/4 - 20 mA**
- √ **Thermometer Pt-100, Pt-1000**
- √ **Thermocouples J, K, R, S, T, B, C**
- √ **50 or 100 Segments, 250 to 1000 mm**
- √ **3 or 6 digit Display**
- √ **Linearizing free programmable**

OC2001-57 is a large display with two Bars. The bars can be controlled separately or simultaneously. When separately controlled, the right bar follows the input signal, the left bar indicates the setting of the Set Points. In the parallel mode the two bars follow the input signal. Each bar contains 50 red LED segments. Displays with 100 or 200 segments and the display height up to 1000mm are available.

The digital display with three or six digit can be ordered. It measures the input signal with high resolution. In programming mode the display shows the menu parameters. Optionally the left bar can be ordered to display a second input signal.

Nearly any DC or AC signal can be applied, such as RTD and Thermocouples, Process Signals, Frequencies and Pulses, Resistors and Potentiometers, Strain Gauges and many others. The signal is processed and scaled at the display and at the bargraph in required process values.

Four linearizing methods are incorporated for non-linear signals or non-linear display values. Also a Polynom linearizing method can be used for signals which can be described by a Polynom of fifth degrees.

All DIN thermocouples can have the cold junction compensated automatically with internal sensor or can be compensated externally. Also RTD thermometers such as Pt-100, Pt-200 and Ni can be connected and processed.

Model OC2001-57 is enclosed in black Aluminium cabinet and supplied from the mains or DC source (Option). A keyboard at the rear permits setting of process parameters.

SPECIFICATIONS

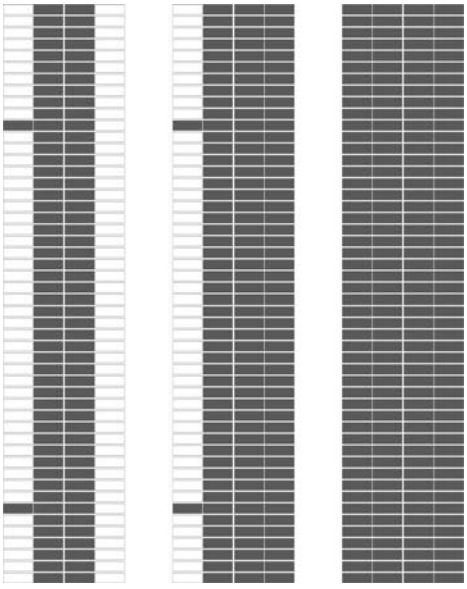
Displays:	Bars A and B, red 50 Segments, 20 mm/bar, height 250 mm.	
	Option:	100 red Segments, 40mm/bar, height 500 mm.
	Option:	200 red Segments, 40mm/bar, height 1000 mm.
	Bargraph A:	Input Signal
	Bargraph B:	8 Set Points with up to 4 Relays and 4 Transistor Outputs.
		Option: Second Bar for second input signal.
	Digital Display:	3 digit display 20mm, 0 ... 999 with decimal point
		6 digit display 15mm, 0 … ± 999999
Inputs:	* Voltage 200mV to 250V DC or true R.M.S.	
	* Currents 20mA to 5A DC or true R.M.S.	
	* Thermocouples J, K, R, S, T, B, C and Pt-100, Pt-200 and Ni.	
Accuracy:	DC:	± (0.02%+1digit) from value.
	RMS:	DC - 5 kHz: ± (0.1% from Value+ 3 Digits).
	Pt-, Ni-:	± (1°C + 1 Digit).
	T/C:	± (1°C + 1 Digit).
Set Points:	Option: Two or four Relays 5A-230VAC and 4 open collector Transistors 60V-100mA.	
	Adjustable Hysterese 0 … ± 999999.	
Output:	Option: Analogue Output 0 …± 10V und 0/4-20mA, 12 bit resolution.	
Tempco:	± 25 ppm/ °C.	
A-D-C:	± 100 000 Measuring Increments scalable. Sampling Rate 200ms.	
Linearity:	± (1 LSB + 1 Digit).	
Tara	The Tara Function can be activated in the menu step *tArA*. Applying the key SET the display shortly shows *tArA* and sets to zero. Applying the key SET for second time the display shows *notArA* and returns to follow the non-tare signal.	
Filter	An averaging filter with constants 1 to 99 is incorporated.	
Data:	Option: RS232 or RS485, with 8 Bit, 1Start, 1 Stop, 1200-19200bd, Address 1-31.	
Supply:	115/230V, 10%, 48 ... 60 Hz. Option 24VDC	
Terminals:	Supply:	Mains Connector
	Signals:	D-SUB
Cabinet:	Aluminium black coated cabinet, IP65 at the front, for panel, wall or ceiling mount.	

PARAMETERS

For setting of new parameters an external 6 digit display is reqired or the instrument has to be send to the factory.
The key **MENU** opens the Menu. The required parameter will be confirmed with **ACK**. .
With **UP** or **DOWN** the parameters will be set.
The flashing digit - Cursor - can be positioned with **ACK**. The sign and the decimal point can be set after the cursor is positioned outside the display range (none of the digit is flashing).
The key **UP** sets the decimal point, the key **DOWN** sets the sign. The key **SET** terminates the programming and the display returns to the measuring mode.

KEY	DISPLAY	FUNCTION
MENU	SEt Sen	Selection of the input characteristic
	LinEAr	Linear Characteristic for DC and AC Signals
	POLYn	Polynom fifth degree
	LintAb	Linearizer Type 1
	tabLin	Linearizer Type 2
	tabtab	Linearizer Type 3
	Pt 100	RTD Thermometer with 100Ω @ 0°C
	tC E	Thermocouple E with external compensation
	tCC E	Thermocouple E with internal compensation
	tC J	Thermocouple J with external compensation
	tCC J	Thermocouple J with internal compensation
	tC L	Thermocouple K with external compensation
	tCC L	Thermocouple K with internal compensation
	tC S	Thermocouple S with external compensation
	tCC S	Thermocouple S with internal compensation
	tC b	Thermocouple B with external compensation
	tCC b	Thermocouple B with internal compensation
	tC t	Thermocouple T with external compensation
	tCC t	Thermocouple T with internal compensation
	tC C	Thermocouple C with external compensation
	tCC C	Thermocouple C with internal compensation
	Cold	Cold Junction Temperature
MENU	SetInP	0.0 1 Setting for bipolar inputs, e.g. 0-20mA, 0-2V etc.
		0.2 1 Setting for shifted inputs, e.g. 4-20mA.
		-1 1 Setting for bipolar input signals, e.g. –20 ... +20V.
MENU	Set LO	Display value at minimum input signal e.g. for 4mA = 000000.
MENU	Set HI	Display value at maximum input signal e.g. 20mA = 50000.
MENU	bAr LO	Bar value for minimum signal e.g. for 4mA = 0.
MENU	bAr HI	Bar value for maximum signal e.g. 20mA = 100 Segments.
MENU	tArA	Tara of the display OFF or ON. When ON is selected, the key SET is activated and the display will be set to zero.
MENU	OrdEr	Display resolution C.ddddd to CCCCCC.
		Option: Display in °C or °F
		tmp-C.d from -99.0 ºC to 999.0 ºC
		tmp-C from -99 ºC to 999 ºC
		tmp-F.d from -99.0 ºF to 999.0 ºF
		tmp-F from -99 ºF to 999 ºF
MENU	Count	Counting of the LSD (last significant digit): cnt 1 =1, 2, 3....9, 0,
		cnt 2 = 2, 4, 6, 8, 0
		cnt 5 = 5, 0, 5, 0, ...
		cnt 0 = dummy zero
MENU	dISPL	dSP 1 ... 16. Number of sample measurements for one display change.
MENU	FILtEr	OFF, 1 ... 99. Averaging Filter.
MENU	FnSP1	Function of the relay SP1.Selection between OPn and CLA at the alarm conditions.

		(**OPn** = open in Non-Alarm conditions and closed at the SP, **CLS** = closed in Non-Alarm conditions and open at the SP).
	SP 1	Set Point 1. Selection: -999999 to 999999. The relay is activated when the display arrives at the SP1 or higher values
	HSt 1	Hysterese of SP 1. Selection: -999999 to 999999
		…. Similar for Set Point 2(SP2) to Set Point 8(SP8)
MENU	An Fn	Analogue Outputs OFF or ON. When ON, the outputs are activated.
MENU	bAUd	Baud Rate 1200 to 19200 bd.
MENU	Adr rS	Address: rS 232 (RS232 activated) or Adr 01 … 31 for RS485.
MENU	SEL bAr	Display Type: no bAr **Only for digital displays**
		bAr 30 30 Segments
		d3-b30 3 Digit, 30 Segments
		d6-b30 6 Digit, 30 Segments
		bAr 50 50 Segments
		d3-b50 3 Digit, 50 Segments
		d6-b50 6 Digit, 50 Segments
		bAr 100 100 Segments
		d3-100 3 Digit, 100 Segments
		d6-100 6 Digit, 100 Segments
		d3-200 3 Digit, 200 Segments
		d6-200 6 Digit, 200 Segments
MENU	Fn bAr	Bar Type: HLF, FLL or 3br
MENU	StArt	Measuring Mode



3br **HLF** **FLL**

PARAMETERS (Set Points and Bar Type)

The key **MENU** opens the Menu. The required parameter will be confirmed with **ACK**.
With **UP** or **DOWN** the parameters will be set. The key **SET** terminates the programming and the display returns to the measuring mode.

KEY	**DISPLAY**	**FUNCTION**
MENU	SP1	Set Point 1. Selection: 1 to 100%. The relay is activated when the display arrives at the SP1 or higher values
	Fn1	Function of the relay SP1. Selection OPn or CLS at the alarm conditions. **OPn** = open in Non-Alarm conditions and closed at the SP. **CLS** = closed in Non-Alarm conditions and open at the SP.

…. Similar for Set Points 2(SP2) ….Set Point 4(SP4)

MENU bAr Bar Type: HLF, FLL or 3br
MENU StA Measuring Mode

Negative measured values are displayed with two decimal points at the 3 digits dispaly, e.g. **-0.25 = 02.5.** and with all decimal point flashing with 6 digit display, e.g. **-250 = 0.0.0.2.5.0**.

LINEARIZING METHODS

The implemented Software offers four linearizing methods. They can be selected in the menu Step ***Set Sen*** as POLYN, LINTAB, TABLIN and TABTAB.

POLYNOM
The implemented Polynom is of fifth degree. The coefficients are 6 digits with sign and decimal point free programmable, the power of the coefficients can be selected from 0 to ± 5.
The Polynom can be entered with the keyboard or via the serial data port in a format:

DISPLAY = ± Coef $5x10^{\pm5}$ ± Coef $4x10^{\pm4}$ ± Coef $3x10^{\pm3}$ ± Coef $2x10^{\pm2}$ ± Coef $1x10^{\pm1}$ ± Coef $0x10^{\pm0}$

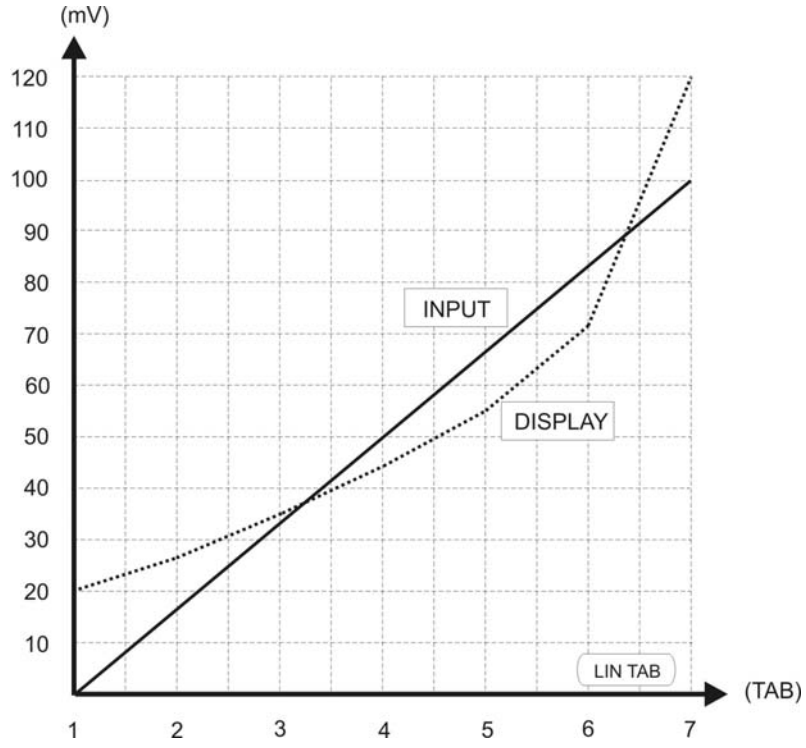
LINTAB
Will be used in applications in which a linear signal generates non-linear display readings. Up to 38 linearizing points are available.

TABLIN
Will be used in applications in which a non-linear signal generates linear display readings. Up to 38 linearizing points are available.

TABTAB
Will be used in applications in which a non-linear signal generates non-linear display readings. The input signal is shown at the display; with the keyboard the values can be overwritten to required values. Up to 19 points are available for this linearizing type.

LINTAB

Linear input signal, non-linear display readings.
Example: Linearizing in 7 points.



Parameter

Set Lo = 0
Set Hi = 100
SetSEn = LinTab
Coef = 7
Tb st = 0
Tb in = 16.6667
Tb1 = 20
Tb2 = 26
Tb3 = 35
Tb4 = 44
Tb5 = 55
Tb6 = 72
Tb7 = 120

Fig. 1

Range Setting:	**SetLo** = 0, **SetHi** = 100
Type of Linearizing:	**SetSEn** = LinTab
Linearizing Points:	**Coef** = 7
Position of first linearizing point:	**Tb st** = 0

The input signal of 0-100mV (Fig. 1) is subdivided into 7 points. This determines the parameter **tb in**.

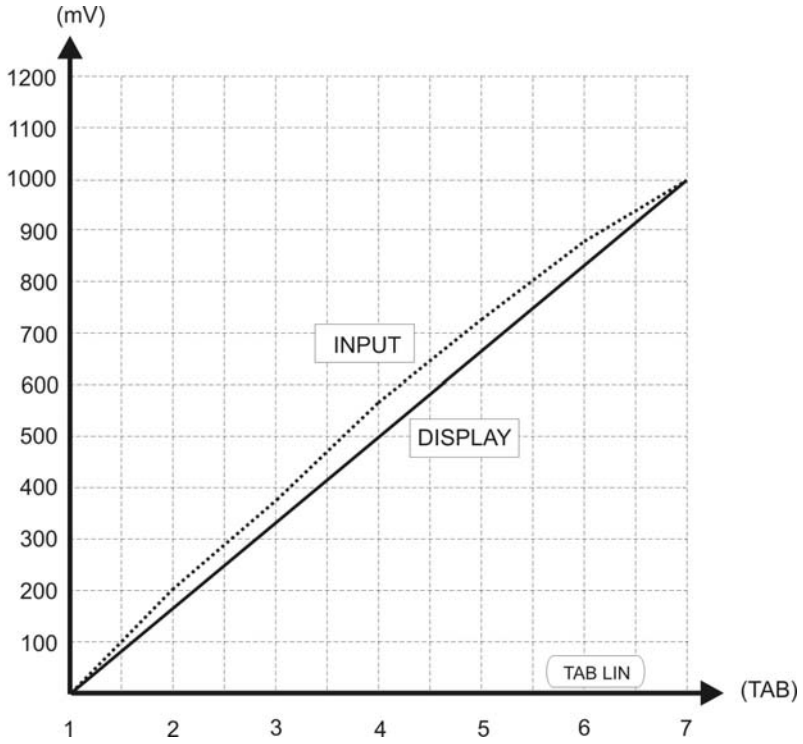
$$\frac{\text{Set Hi}}{\text{Coef - 1}} = \frac{100}{7 - 1} = 16{,}6667$$

The points will be assigned to display values:

Tb1	for	0mV	➔	20
Tb2	for	16.7mV	➔	26
Tb3	for	33.3mV	➔	35
Tb4	for	50mV	➔	44
Tb5	for	66.7mV	➔	55
Tb6	for	83.3mV	➔	72
Tb7	for	100mV	➔	12030

TABLIN

Non-linear input signal, linear display readings.
Example: Linearizing in 7 Points.



Parameter

Set Lo = 0
Set Hi = 1000
SetSEn = TabLin
Coef = 7
Tb st = 0
Tb in = 166.667
Tb1 = 0
Tb2 = 200
Tb3 = 380
Tb4 = 570
Tb5 = 720
Tb6 = 870
Tb7 = 1000

Fig. 2

Range Setting: **SetLo** = 0, **SetHi** = 1000
Type of Linearizing: **SetSEn** = TabLin
Linearizing Points: **Coef** = 7
Position of first linearizing point: **Tb st** = 0

The input signal of 0-1000mV (Fig. 2) is subdivided into 7 points. This determines the parameter **tb in**.

$$\frac{\text{Set Hi}}{\text{Coef - 1}} = \frac{1000}{7 - 1} = 166,667$$

The points will be assigned to display values:

Tb1	for	0 mV	➔	0
Tb2	for	200 mV	➔	166.7
Tb3	for	380 mV	➔	333.3
Tb4	for	570 mV	➔	500
Tb5	for	720 mV	➔	666.7
Tb6	for	870 mV	➔	833.3
Tb7	for	1000 mV	➔	1000

TABTAB

The input and the display readings are non-linear.
The instrument measures the input signal. With the keyboard the readings can be corrected upon demand.

Example: Linearizing in 7 points (14 coefficients).

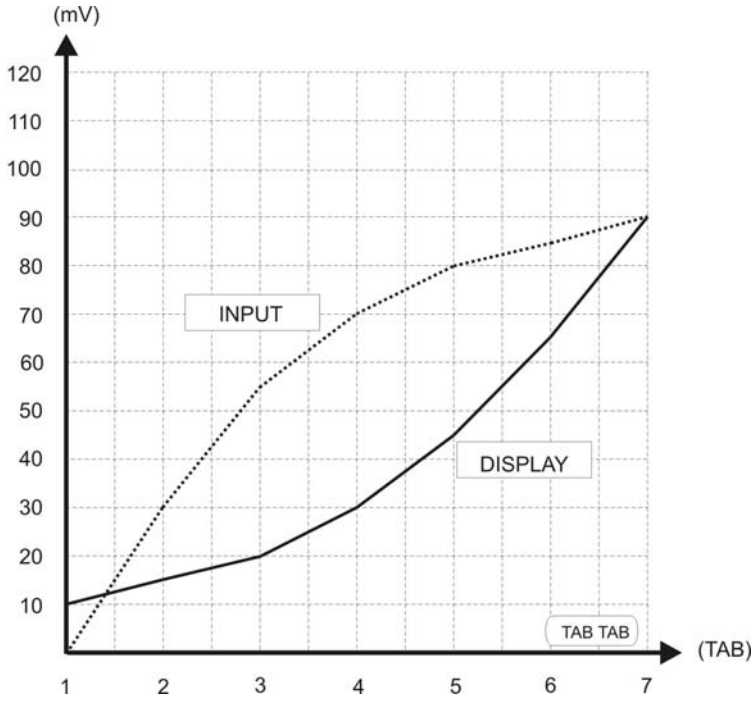


Fig. 3

Parameter		
6 Digit		**4 Digit**
Set Lo	= 0	SetL
Set Hi	= 100	SetH
SetSEn	= tabtab	ttAb
CoEf	= 14	CoEf
tb st	= 0	tbst
tb ln	= 0	tbln
tbi 01	= 10	ti01
tbd 01	= 0	td01
tbi 02	= 15	ti02
tbd 02	= 30	td02
tbi 03	= 20	ti03
tbd 03	= 55	td03
tbi 04	= 30	ti04
tbd 04	= 70	td04
tbi 05	= 45	ti05
tbd 05	= 80	td05
tbi 06	= 65	ti06
tbd 06	= 85	td06
tbi 07	= 90	ti07
tbd 07	= 90	td07

Range Setting: **SetLo** = 0, **SetHi** = 100
Type of Linearizing: **SetSEn** = TabTab
Linearizing Points: **Coef** = 14
The parameters **tb st** and **tb ln** are not relevant and are set to 0.
Programming steps shown for first two linearizing points:

Key	**Display**	
MENU	SetSEn	
ACK	tAbtAb	select with UP or DOWN
MENU	CoEF	
ACK	14 COE	select with UP or DOWN
MENU	td St, tb ln	The setting is not relevant. Both set to 0.
MENU	tbi 01	Apply the first point of the input signal from the calibrator.
ACK	XXXXXX	The value from previous programming is shown.
SET	LinEAr	Display changes for momentary value from the calibrator.
SET	StorE	The momentary signal value is memorized and displayed.
MENU	tbd 01	Recall of the first display value.
ACK	XXXXXX	Select the required display reading with UP, DOWN and ACK.
MENU	tbi 02	Apply the second point of the input signal from the calibrator.
ACK	XXXXXX	program all 14 linearizing points as shown in this example. Press MENU followed by SET at the end. The display changes into the measuring mode.

POLYNOM

The implemented Polynom is of fifth degree. The coefficients are 6 digits with sign and decimal point free programmable, the power of the coefficients can be selected from 0 to ± 5.

The Polynom can be entered with the keyboard or via the serial data port in a format:

DISPLAY = ± Coef 5x10$^{\pm 5}$ ± Coef 4x10$^{\pm 4}$ ± Coef 3x10$^{\pm 3}$ ± Coef 2x10$^{\pm 2}$ ± Coef 1x10$^{\pm 1}$ ± Coef 0x10$^{\pm 0}$

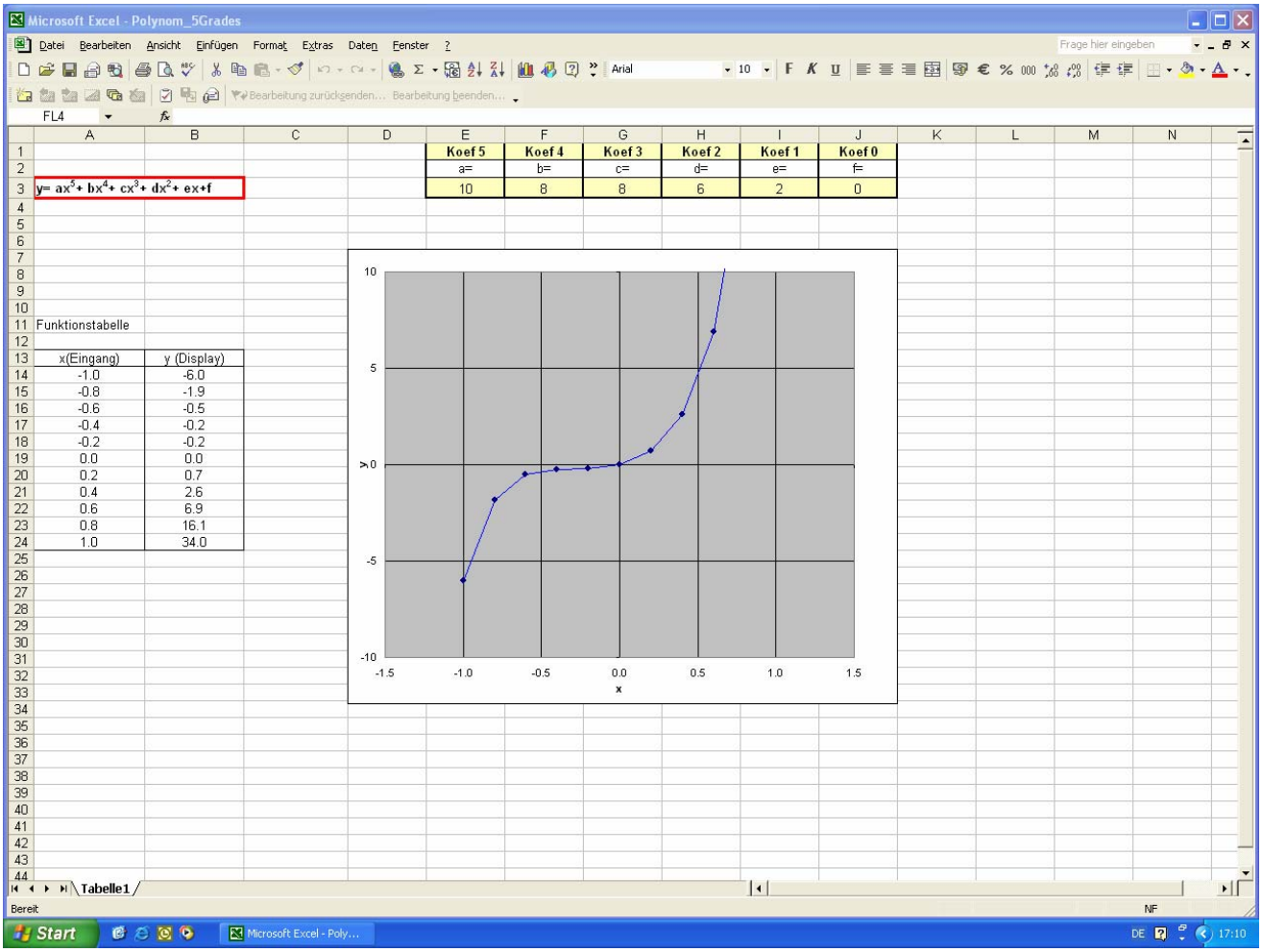
Example

Measuring Range -1V … +1V selected in Menu, Step **Set In**

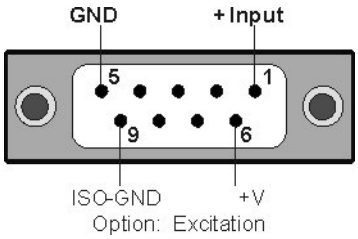
Coef 5 = 10 Coef 2 = 6
Coef 5 = 1 Coef 2 = 0

Coef 4 = 8 Coef 1 = 2
Coef 4 = 0 Coef 1 = 0

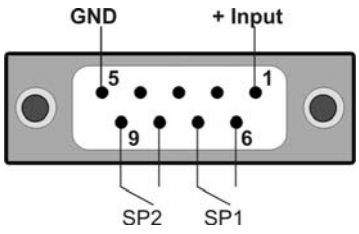
Coef 3 = 8 Coef 0 = 0
Coef 3 = 0 Coef 0 = 0



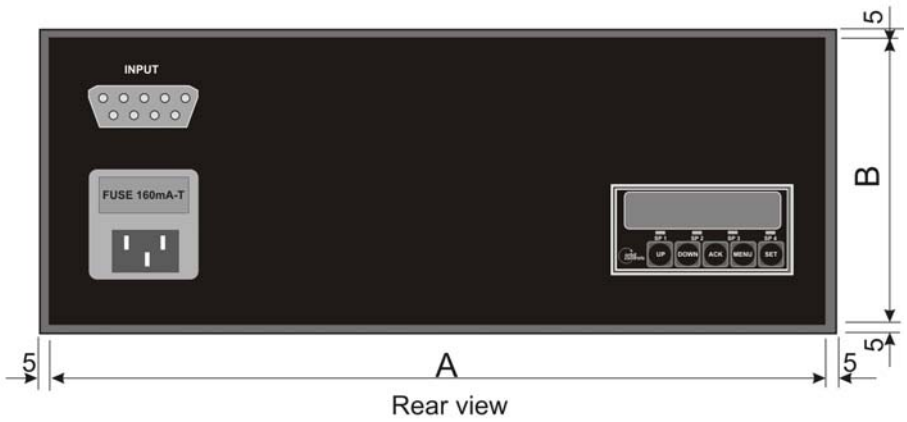
TERMINALS - DC Signals



Option: 2 Set Point Relays



DIMENSIONS



Model	A	B
OC2001-57-250mm	368	112
OC2001-57-500mm	643	173
OC2001-57-1000mm	1146	176

Panel Cut-Out: A x B

SERVICE MENU - *HtESt*

The **HtESt** Service Menu permits the calibration of the measuring range and the activation of the implemented options. After the supply is applied to the instrument, press the key **SET** when the text appears at the display. The display segments are checked the signal channel can be calibrated, the set points (option) controlled and the analogue outputs (option) generated. The key **MENU** increments the test steps forward, the key **SET** backward.

Segments All display segments are activated

AdC ADC internal DC value of the input signal
ATTENTION: Apply zero input signal prior entering this Step!

1.25XXX Apply zero input signal. The display shows the internal reference of 1.25V. To calibrate the zero reading, press **DOWN**. The display shows ***Ac LO***. Keep pressing **ACK** until the display shows ***EE StO***. The zero reading is stored.

2.2XXXX Apply the maximum signal value and wait until the display reading is quiet. Press **UP**. The display shows ***AC HI***. Keep pressing **ACK** until the display shows ***EE StO***. The maximum reading is stored.

rES The display shortly shows ***rES*** and switches into measuring mode. Leave the maximum signal value applied. The display reading corresponds to the value set in the menu step **Set HI** of the main menu.

SP1 Set Point 1 and the Relay 1 are activated.
.
.
.
.
SP8 Set Point 8 and the Relay 8 are activated.
Out-10 Analogue Output -10V and 0/4 mA are generated (0 or 4mA selectable).
Out -5 Analogue Output -5V and 5/8 mA are generated.
Out 0 Analogue Output 0V and 10/12 mA are generated.
Out 5 Analogue Output 5V and 15/16 mA are generated.
Out 10 Analogue Output 10V and 20 mA are generated.
StArt Measuring Mode.