OC 7170 - ABS
Counter for EnDat Data Ports

Owner's Manual

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OC7170E4.hex CS 781D

Vor dem Einschalten

Überzeugen Sie sich, ob Ihre Sendung das richtige Gerät Orbit Controls Modell OC 7170-ABS beinhaltet, einschliesslich einer Betriebsanleitung OC 7170-ABS.
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 7170-ABS Programmable Controller.
Operator's Manual OC 7170-ABS.
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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OC7170-ABS is a digital counter for connection to optical lineals and resolvers with EnDat serial Data Ports. The instrument transmits Clock pulses to the resolver and receives the information about the position or the rotation. The information at the display can be scaled upon requirement. Apart of this, additional information from the EnDat system are received and computed.

After switching-on, the data from the resolver are transferred into the instrument, which automatically sets the transmission for the correct number of bits. The position of the optical lineal or the resolver appears at the display. The results at the display can be scaled for required process units and resolution. The constants SCALE, dSCALE, OFFSEt und OrdEr are available in the menu.

If, for any reason, during the positioning the scanning head of the optical lineal is displaced from the correct position and the data are becoming invalid, a warning signal is generated. The display shows an error and the measuring at the display is interrupted. A correcting signal from the keyboard starts the transmission again and the measurement will continue, when the scanning head is placed back into the proper position.

The display can be set to zero - Tara - at any time by using the keyboard. The Tara can be activated or disabled in the menu. When activated, the Tara remains stored also when the instrument is switched-off from the supply.

For Set Points with Transistor Outputs or mechanical Relays, two Analog Outputs and two Serial Data Ports are optionally available.

OC7170-ABS is delivered in a DIN cabinet for panel mount and is supplied from the mains or DC voltage. Pluggable screw terminals for inputs, outputs and supply are at the instruments rear.

1 SPECIFICATIONS

Display: 0 ..... ±999999 with decimal point. Red 7 segment display 4.7 mm.

Inputs: Terminals J2. The inputs are designed for EnDat Signals.

Scaling: *SCALE* Multiplicative constant free programmable with decimal point and sign.
dSCALE Dividing constant of the programmed SCALE. Selection :1 to :100 000.

Display Resolution: *OrdEr* Selection of the decimal point at the full display capacity.

Offset: *OFFSEt* Zero shift free programmable.

Display Hold: InPdiS Display Hold with external logic signal 1 or 0.
The Hold function can be disabled.

Keyboard: Five keys at the front for entry into the menu and for programming of process parameters.

Set Points: OPTION: SP1 ... SP4 free programmable, 6 digit with decimal point and sign. Four NPN open collector transistors 60V/100mA or 4 Relays 5A-230V AC.

Outputs: OPTION: *Analog Output:* 0 ... ± 10V and 0/4 - 20mA generated simultaneously. They are assigned to two display values in the menu steps *An Lo* and *An Hi*.

OPTION: *Serial Ports:* RS232 or RS485 selectable in the menu step *Addr.*
The telegram contains 8 Bits, No Parity, 1 Start, 1 Stop, Baud Rate 600 to 19200.
The address 0 activates RS232, any of addresses 1 ... 31 activate RS485.

Excitation: 5V/350mA isolated.
Optional excitation 5-24VDC/40mA isolated and adjustable is available.

Terminals: Pluggable screw terminals.

Supply: 115 / 230V ±10%, 48 - 60Hz, Option 24VDC (9 ... 36VDC).

Cabinet: DIN 48 x 96 x 150 mm (H x W x D). Panel cut-out 45 x 93 mm.

PLEASE NOTE: Customized instruments can have some menu steps suppressed in the menu or contain other functions or have different specifications. When options are not installed, the corresponding steps might be suppressed in the menu.

2 KEYBOARD

3 PROGRAMMING

After switching-on the instrument displays in roll mode the programmed configuration, e.g. OC7170 - 7170 E3 - 22 Bit, followed by the position information from the resolver or optical lineal.

The menu contains two programming loops. The first loop is for setting of the Output parameters (Output Menu), the second loop is for setting of the Process parameters (Process Menu).
The second menu loop is protected with a Password, which is a free programmable number combination with decimal point.

IMPORTANT: *The factory setting of the Password is 0.00000. When the password has been changed, please note is! When lost, the instrument has to be send to the manufacturer. Operation without Password is described at page 12, H-TEST.*

To enter he first programming loop (Output Menu), press the key MENU. The first parameter is SP1 (Set point 1). Press ACK to enter SP1 and adjust the value of the flashing digit (cursor) with UP or DOWN. The cursor can be positioned with ACK. The decimal point or the sign can be set with UP and DOWN when the cursor is positioned outside the display (no flashing digit at the display).

By pressing the key MENU again, the display returns to SP1. Next menu step can be initialized with the key UP as shown at page 9.

3.1 Menu Steps

KEY	DISPLAY	FUNCTION
MENU	SP 1	Press ACK to display SP1.
UP	rL1	OPEN or CLOSE of Relay SP1 in alarm conditions.
UP	SP 2	Press ACK to display SP2.
UP	rL2	OPEN or CLOSE of Relay SP2 in alarm conditions.
UP	SP 3	Press ACK to display SP3.
UP	rL3	OPEN or CLOSE of Relay SP3 in alarm conditions.
UP	SP 4	Press ACK to display SP4.
UP	rL4	OPEN or CLOSE of Relay SP4 in alarm conditions.
UP	An Lo	Display value for Analog Output 0V and 0/4mA.
UP	An Hi	Display value for Analog Output 10V and 20mA.
UP	An Fn	Function of the Analog Output: 04-20 direct acting. 20-04 inverted.
UP	bAud	Baud Rate of the RS Data Port
UP	rS SEL	Address of the RS Port: 00 = RS232, 01 ... 31 = RS485.
UP	SP 1	Programming loop repeats.
		The key MENU starts the second programming loop.
MENU	PASS	Confirm with ACK. Enter the Password. Factory setting is 0.00000, please note the decimal point.
MENU	SCALE	Scale with decimal point and sign. This number multiplies the display.
MENU	dSCALE	Dividing constant of the SCALE.
MENU	OFFSEt	Display Offset – Zero shift.
MENU	OrdEr	Display resolution ***CCCCCC.*** to ***C.ddddd***.
MENU	InPdiS	Display HOLD - Function: OFF Hold deactivated. HoLd L Hold with log. 0 at the Hold Input. HoLd H Hold with log. 1 at the Hold Input.
MENU	StPASS	Setting of the Password: free number combination. ***Please note the combination set!*** Enter into the menu without Password is described in § 6. *H-TEST* page 12.

Escape from the Menu with the key SET.

3.2 SCALE and dSCALE

To achieve the required reading, multiplication and division are available:
SCALE Multiplicative Constant.
dSCALE Dividing Constant of the SCALE.

Display = Input x Scale : dSCALE + SEt

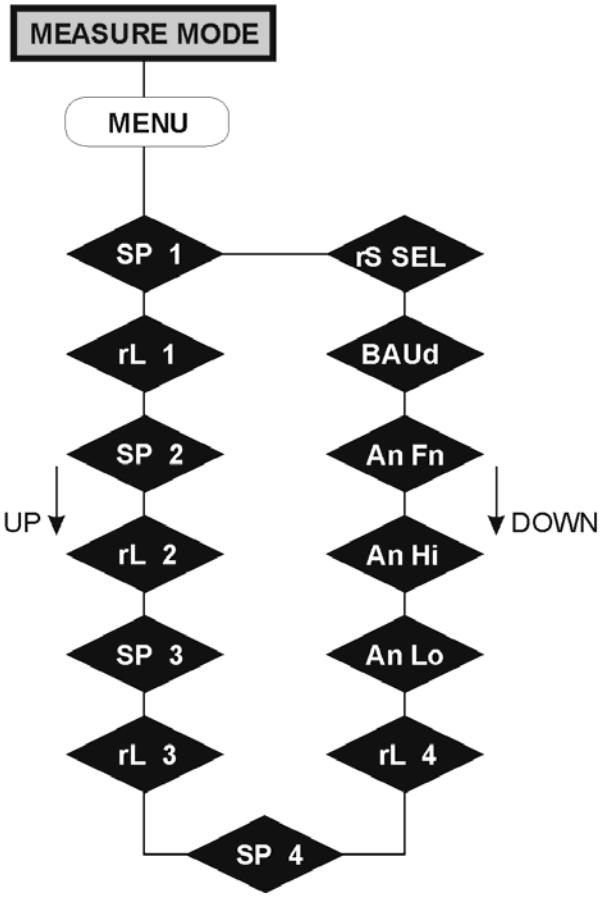
3.3 Example of SCALE and dSCALE

The required scaling is 0.00123456. The display permits 6 digit resolution only. The solution is by using the SCALE and the dSCALE. The SCALE multiplies the input, the dSCALE divides the SCALE:

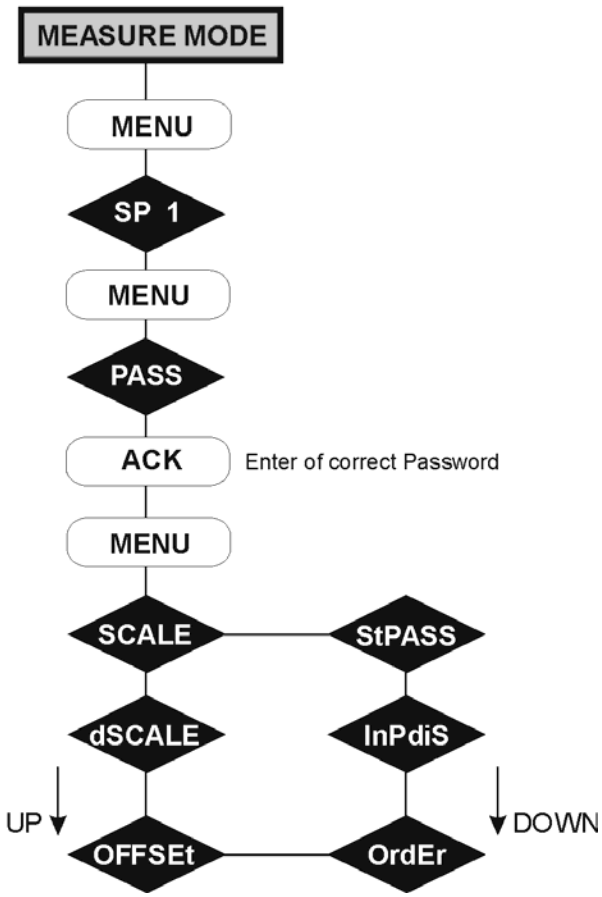
SCALE = 1.23456, dSCALE = 1000

3.4 Output and Parameter Programming Loops

OUTPUT MENU



PARAMETER MENU



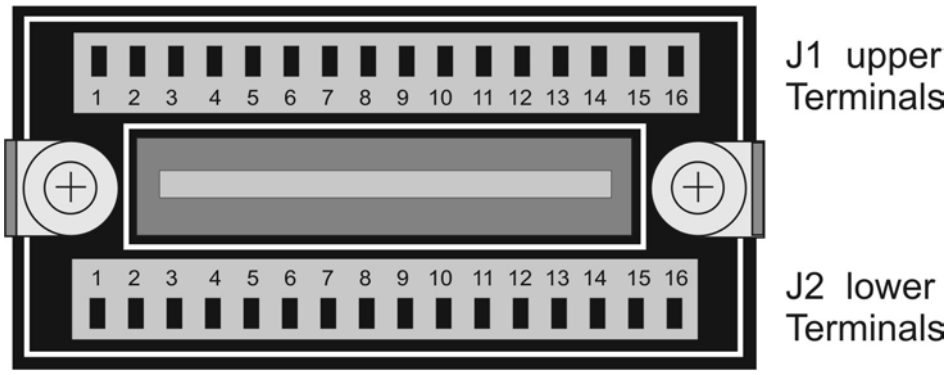
3.5 TARA

The display can be set to Zero by using the Tara Function. When SET is pressed, the display shows CntSEt. When ACK is pressed, the display will reset to zero. The Tara value remains memorized also when the power is switched-off.

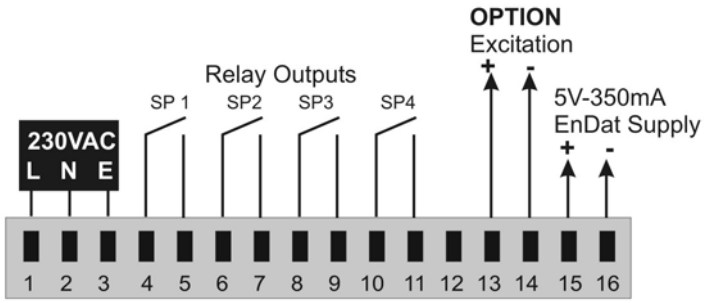
The Tara Function can be activated or disabled in the *HTEST* (page 12, H-TEST):
Tara activated: For all HCF settings from 0 to 127.
Tara disabled: For all HCF settings from 128 to 255.
Default is activated.

4 TERMINALS

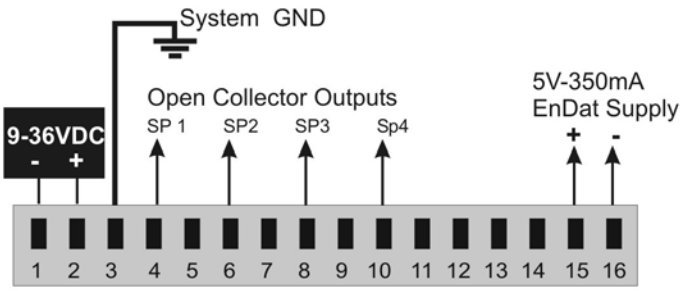
4.1 Instruments rear



4.2 P1 upper Terminals: Mains Supply and Relay Outputs

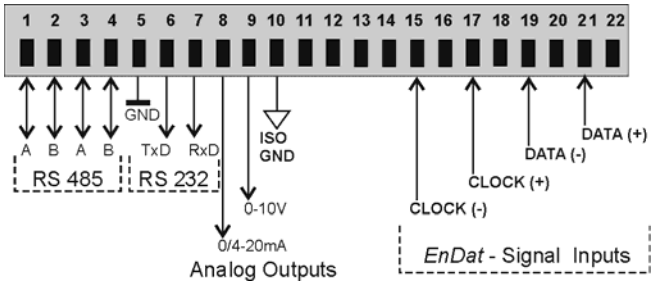


4.3 P1 upper Terminals: DC-Supply and Transistor Outputs



4.4 P2 lower Terminals: Inputs and Outputs

All Options are installed: RS232, RS485 and Analog Outputs



5 OPTIONS

5.1 Analog Outputs - Terminals P2

Two isolated Analog Outputs are generated simultaneously. In the Menu Step *An Fn* they can be assigned to any two required display values as direct acting or inverting.

Voltage Outputs:	-10V ... 10V, max. Load >10 kOhm.
Current Output:	0/4 - 20mA, Load < 400 Ohm.
Isolation:	250V RMS.

5.2 Serial Data Ports - Terminals P2

Two isolated serial ports RS232 and RS485 are available as option.

Format:	8 Bit, No Parity, 1 Start, 1 Stop.
Baud Rate:	1200 to 19200 bd.
Addresses:	00 to 31. The Address 00 activates automatically RS232. One of addresses 01-31 activates automatically RS485.
Isolation:	250V RMS.

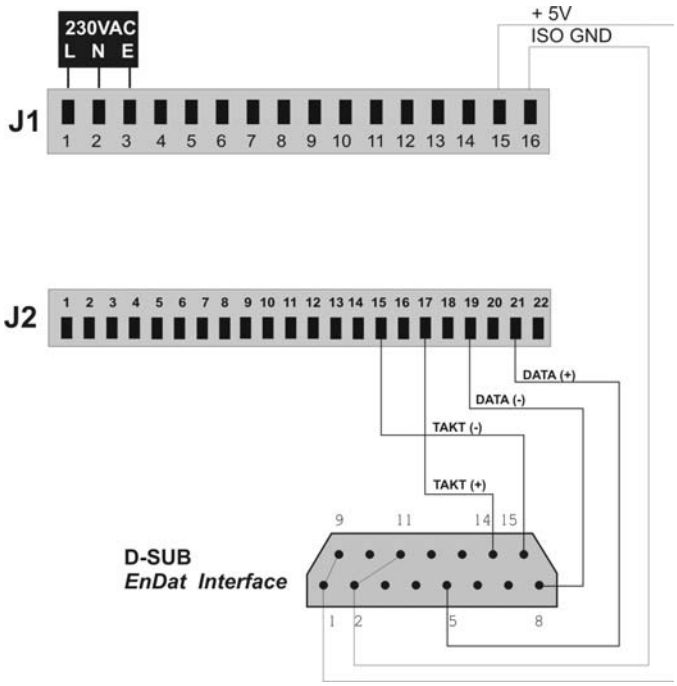
5.3 Set Points SP1 ... SP4 - Terminals P1

Four Transistors or four mechanical Relays 5A-230VAC are optionally available. They can be programmed for OPEN or CLOSE in alarm conditions.

5.4 Connecting to EnDat

Resolver with round connector

Signals	Terminals
DATA (+)	14
DATA (-)	17
CLOCK (+)	8
CLOCK (-)	9



6 H - TEST

The menu contains a Submenu for testing, calibration and activation of installed options. To enter this Submenu press the key MENU during the instrument is switched-on. Keep the key pressed until *HtESt* appears at the display. The Submenu Steps are incremented with MENU, decremented with SET.
First the display segments are tested, after the Analog Outputs *Out-10, Out-5, Out 0, Out 5, Out 10* and the Set Points *SP1...SP4* with Transistor or Relay outputs. The Analog outputs can be measured at the output terminals are calibrated with potentiometers inside the instrument.
The next Submenu step is *HCF XXX*. The number XXX can be set with UP or DOWN between 1 and 255 and opens the Menu for options and the Tara function.

Setting of HCF=66 cancels the Password function and permits the entry into the menu without the Password.

Tara activated: HCF = 0 ... 127
Tara disabled: HCF = 128 … 255

The HCF values (weights) open the menu Steps to the installed options. They are binary additive and have following functions:

HCF 1	Set Point 1 activated
HCF 2	Set Point 2 activated
HCF 4	Set Point 3 activated
HCF 8	Set Point 4 activated
HCF 16	Analog Output activated
HCF 32	RS232, RS485 (BAUD) activated
HCF 64	Address RS485 (RS SEL) activated

Instrument without Options but with Tara: HCF = 0.
Instrument without Options and without Tare: HCF = 128.

Example: 4 Set Points SP1-SP4, Analog Output, Tara: **HCF = 31** (1+2+4+8+16).
4 Set Points SP1-SP4, Analog Output no Tara: **HCF = 159** (128+31).

Each parameter entry must be confirmed with ACK which permits memorizing the values in a non-volatile memory. When during programming MENU is pressed, the programming mode will be interrupted and the measuring mode initialized.

7 POSITION LOST (at optical lineal)

If, for any reason, during the positioning the scanning head of the optical lineal is displaced from the correct position and the data are becoming invalid, a warning signal is generated. The display shows an error *Err A = 5* and the measuring is interrupted. To continue the measurement, press the key SET as long as the display shows *CntSEt*. After this press ACK. A correcting signal is generated and the transmission can continue, provided the scanning head is placed back into the proper position.

8 COMMUNICATION

Two modes of communication via RS232 and RS485 are implemented: Continuous Mode and Request Mode:

8.1 Continuous Mode of Transmission

OC7170-EnDat transmits the Data continuously via RS232 or RS485, when RxD is tied to logic 0 = +10V. The transmission stops with logic 1 = -10V at RxD terminal of the instrument.

8.2 Request Transmission

Bi-directional serial data ports RS232/RS485 permit transmission of the displayed results from OC7170 to a PC and transmission of commands from the PC to OC7170. The process parameters can be changed at the PC, transmit back to OC7170 and stored there.

8.3 Soft Manager for Windows

A software package is available for Windows applications. This software permits programming of OC7170 from the PC, setting of parameters and receiving of measurements from OC7170 at the PC.

9 POWER SUPPLY

The supply is 230VAC, optionally 115VAC or 24VDC are available.

Excitation 5V/500mA from internal DC-DC converter is available for EnDat sensors.

Adjustable excitation 5-24V/40mA can be ordered as Option. The excitation is internally adjustable with a potentiometer. This option is available only at instruments with mains supply.

By using 5V/500mA from internal DC-DC Converter the adjustable excitation us internally used for supplying of the DC-DC. It is not allowed to use the adjustable excitation externally!