



## miniCT - Operating Manual



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© 2022 Valeport Ltd

Valeport Ltd  
St Peter's Quay  
Totnes TQ9 5EW  
United Kingdom

Phone: +44 1803 869292  
email: sales@valeport.co.uk  
Web: www.valeport.co.uk

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# 1. INTRODUCTION

This manual covers the basic specifications, deployment and maintenance procedures for the:

- miniCT Direct reading CT sensor

The instruments can be controlled by sending commands directly, using a suitable terminal emulation program such as HyperTerminal.

The instrument is based on Valeport's existing "mini" sensor range. The product is available in either 500m rated Acetal or 6000m rated Titanium housing. The housing material has no effect on instrument function or operation. Where illustrations show plastic housing, it may be taken that the instructions apply equally to titanium housing, and vice versa.

The product has been designed to be simple to use and maintain, as well as being small and lightweight for easy handling and deployment.

## 2. SPECIFICATION

### 2.1. Materials

Part	Material
Main housing	Titanium (6000m) or Acetal (500m)
Sensor bulkhead	Titanium (6000m) or Acetal (500m)
Conductivity Sensor (6000m)	Titanium structure, polyurethane coating, ceramic core
Conductivity Sensor (500m)	Acetal structure, ceramic core
Temperature Sensor	PRT in titanium housing with polyurethane backing

### 2.2. Power

External	9 – 28v DC input
miniCT	<250mW (20mA @12v)

### 2.3. Connector

Standard is SubConn type MCBH6F

(In Titanium on Titanium housings, in Brass on Acetal housings)

Alternatives may be supplied on request

Wiring Information can be found in the [Wiring Information](#) section

### 2.4. Output

Instruments are fitted with both RS232 and half-duplex RS485 communications as standard, selected by pin choice on the output connector.

Protocol is 8 data bits, 1 stop bit, no parity, and no flow control.

Baud rate is factory set to 19200.

User may choose between 2400, 4800, 9600, 19200, 38400, 57600, 115200.

fast data rates may not be possible with low baud rates. Continuous output at 1, 2, 4 or 8Hz

## 2.5. Performance

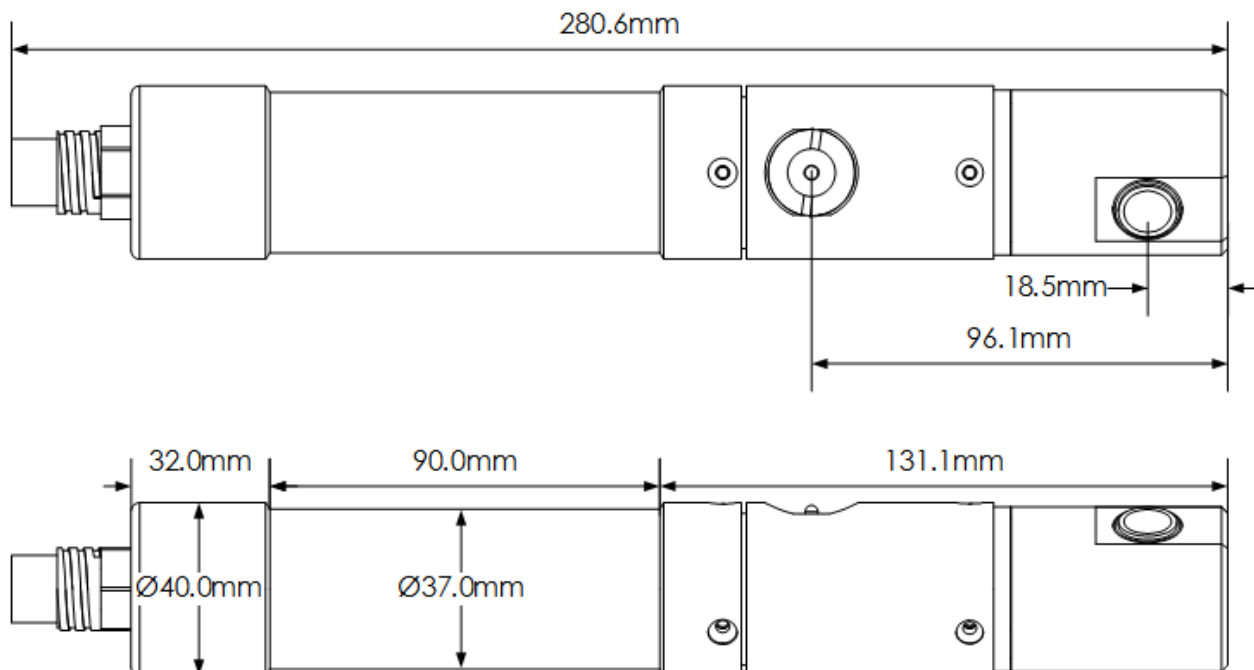
Sensor		miniCT
Conductivity	Range	0 – 80mS/cm
	Accuracy	±0.01mS/cm
	Resolution	0.001mS/cm
Temperature	Range	-5 to +35°C
	Accuracy	±0.01°C
	Resolution	0.001°C

For operation in freshwater it is advised to contact Valeport who will optimise the calibration procedure for your requirements.

Certain features of the sensors used in the “mini” range are designed specifically to enable high quality data to be delivered:

Conductivity (miniCT)	
Construction Materials:	The materials used in the Valeport Conductivity sensor have been specially chosen to resist compression at high pressure; This unique approach ensures that it performs within specification under even the harshest of field conditions.
Digital Sampling Technique:	A new digital sampling technique allows the Valeport conductivity sensor to operate with significantly less noise and greater long term stability than traditional inductive cells.

## 2.6. Dimensions



### 3. DATA REQUESTS AND OUTPUT FORMATS

The miniCT respond to a series of text commands that are detailed here, for those users who wish to interface the products to other systems. Note that this list is not comprehensive, but will allow the standard functions of the instrument to be accessed. For more detailed information, please contact Valeport Ltd.

#### Notes

- All commands must be confirmed using “Carriage Return” or “Enter” on the keyboard, with the exception of the “Stop” command (#).
- All commands are echoed back by the instrument as they are typed

Code	Followed By	Operation
#		Interrupts instrument when running
M	rate<CR>	Performs continuous measurement at set rate. If rate is omitted then instrument performs continuous measurements at previous rate. 1 ,2, 4 or 8 Hz
S	<CR>	Returns a single reading
#001	;address<CR>	Sets the 485 address
#002	<CR>	Returns the address
#004	<CR>	Read header info
#005	;ON<CR> or ;OFF<CR>	Turns ON or OFF address mode
#006	<CR>	Returns ON or OFF for address mode
#015	<CR>	Returns last result
#026	;valeport_separator<CR>	Sets the Valeport output string separator (4 chars)
#027	<CR>	Returns the Valeport output string separator
#028	<CR>	Set the unit into run mode
#029	<CR>	Read run mode
#032	<CR>	Returns the software version number.
#034	<CR>	Returns the units serial number
#039	;ModeValue<CR>	Set mode without putting unit into run mode Where Mode = M Value = 1,2,4 or 8 for Normal mode (M)
#040	<CR>	Read operating mode.
#059	;baud_rate<CR>	Sets the units baud rate 2400,4800,9600,19200,38400
#082	;X	where X = format: see format details below
#089	<CR>	Reads current output format
#091	;ON<CR> or ;OFF<CR>	Sets miniCT startup mode. OFF=No readings at startup, ON=Readings at last rate at startup
#102	;ON or OFF<CR>	Sets 485 mode
#103	<CR>	Sends 485 mode

### 3.1. Data Formats

Real time data follows the format described below. Use #091 to control whether the instrument starts sampling as soon as power is applied or waits for command.

#### 3.1.1. Format - 3

Example

19.786 46.554

- The data separator is a tab (this may be altered if required).
- Data is presented in the order: Temperature, Conductivity
- The temperature data is given to 3 decimal places. Value is in °C and leading zeroes are included; signed if negative:
  - 21.456
  - 02.769
  - -01.174
- Conductivity (miniCTD) is given in mS/cm, as a fixed length string with 3 decimal places, and leading zeroes if appropriate.

#### 3.1.2. Format - CSV

Example:

023.7720,00.00000,0000.0000,00046.553

- The data separator is a comma
- Data is presented in the order: Temperature, Blank, Blank, Conductivity
- The temperature data is given to 4 decimal places. Value is in °C and leading zeroes are included; signed if negative
- Conductivity is given in mS/cm, as a fixed length string with 3 decimal places, and leading zeroes if appropriate

### 3.1.3. Format - Seabird

Example

23.8015,0.0033

- The data separator is a comma
- Data is presented in the order: Temperature, Conductivity
- The temperature data is given to 4 decimal places. Value is in °C and leading zeroes are included; signed if negative
- Conductivity is given in mS/cm, as a fixed length string with 4 decimal places, and leading zeroes if appropriate

### 3.1.4. Format - Reson

Example

00:00:00, 31-01-2050, 00.003, 23.676, +0.00, 0.00

- The data separator is a comma
- Data is presented in the order:  
Time, Date, Conductivity, Temperature, Blank, Blank;
- Time/Date field are fixed as the miniCT has no internal clock.
- The temperature data is given to 3 decimal places. Value is in °C; signed if negative
- Conductivity is given in mS/cm, as a fixed length string with 3 decimal places, and leading zeroes if appropriate



## 4. WIRING INFORMATION

Systems are supplied with a short (50cm) lead for splicing or testing

SubConn 6 pin male line (MCIL6M)		9 Way D Type	4mm Banana Plugs
Pin	Function	Pin	Pin
1	RS232 GND	5 (Link to 1,6,8,9)	
2	RS232 Tx (Out of sensor) or RS485A	2	
3	RS232 Rx (Into sensor) or RS485B	3	
4	+V		Red Plug
5	Link to Pin 1 for RS485. N/C for RS232		
6 (Link to pin 1 in sensor)	Power GND		Black Plug

Due to colour differences in supplied pigtailed, no colours have been stated. It is, therefore, necessary to check colour to pin number.


## 5. ORDERING AND PART NUMBERS

Part No.	Description
0660005	miniCT - Acetal housing, 500m rated Fitted with: <ul style="list-style-type: none"> <li>• Pressure Balanced Conductivity Cell</li> <li>• PRT temperature sensor</li> </ul> Supplied with: <ul style="list-style-type: none"> <li><input type="checkbox"/> 0.5m pigtail/interface lead</li> <li><input type="checkbox"/> Operating manual and transit box</li> </ul>
0660005-OEM	miniCT sensor - OEM configuration Fitted with: <ul style="list-style-type: none"> <li>• Pressure Balanced Conductivity Cell</li> <li>• PRT Temperature Sensor</li> </ul> Supplied with: <ul style="list-style-type: none"> <li><input type="checkbox"/> Interface lead</li> <li><input type="checkbox"/> Operating manual and system transit case.</li> </ul>
0660006	miniCT - Titanium housing, 6000m rated Fitted with: <ul style="list-style-type: none"> <li>• Pressure Balanced Conductivity Cell</li> <li>• PRT temperature sensor.</li> </ul> Supplied with: <ul style="list-style-type: none"> <li><input type="checkbox"/> 0.5m pigtail/interface lead</li> <li><input type="checkbox"/> Operating manual and transit box</li> </ul>
0660006 - 8	miniCT - Titanium housing, 6000m rated Fitted with: <ul style="list-style-type: none"> <li>• 8 way SubConn connector</li> <li>• Pressure Balanced Conductivity Cell</li> <li>• PRT temperature sensor.</li> </ul> Supplied with: <ul style="list-style-type: none"> <li><input type="checkbox"/> 0.5m pigtail/interface lead</li> <li><input type="checkbox"/> Operating manual and transit box</li> </ul>
Spares	
SCMCIL6F.5	One metre fly lead (MCIL6F) on integral cable for miniCT

## 6. DECLARATIONS OF CONFORMITY

Any changes or modifications to the product or accessories supplied, that are not authorised by Valeport Ltd, could void the CE compliance of the product and negate your authority to operate it. This product has demonstrated CE compliance under conditions that include the use of shielded cables. It is important that you use shielded cables compliant with the product's conformance, to protect from potential damage and reduce the possibility of interference to other electronic devices.

### 6.1. EU Declaration of Conformity - CE Marking




## EU Declaration of Conformity

<b>Manufacturer:</b>	Valeport Ltd
<b>Address:</b>	St Peter's Quay, Totnes, Devon, TQ9 5EW
<b>Certification marking:</b>	CE
<b>Product Description:</b>	Conductivity and Temperature Sensor

We the manufacturer declare that the product **miniCT Probe** is in conformity with the following EU Directives and harmonised standard(s):

EMC Directive 2014/30/EU	Standards
EMC (Article 3.1b)	BS EN 61326-1:2013 (Basic Level)






ROHS Directive 2015/863/EU	Standards
Prevention (Article 4.1)	BS EN IEC 63000:2018

<b>Name:</b>	Surya Dinesh
<b>Position:</b>	Product Support Manager
<b>Place of issue:</b>	Valeport Ltd, Totnes, UK
<b>Date of issue:</b>	13 October 2021
<b>Signature:</b>	

**Valeport Limited**  
St. Peter's Quay, Totnes,  
Devon TQ9 5EW UK

+44 (0) 1803 869292  
sales@valeport.co.uk  
[www.valeport.co.uk](http://www.valeport.co.uk)

VAT No: GB 185 8753 87  
Registered in England No: 1050444

## 6.2. UK Declaration of Conformity - UKCA Marking



### UK Declaration of Conformity

<b>Manufacturer:</b>	Valeport Ltd
<b>Address:</b>	St Peter's Quay, Totnes, Devon, TQ9 5EW
<b>Certification marking:</b>	UKCA
<b>Product Description:</b>	Conductivity and Temperature Sensor

We the manufacturer declare that the product **miniCT Probe** is in conformity with the following UK Statutory requirements and designated standard(s):

Electromagnetic Compatibility Regulations 2016	Standards
EMC (SI 2016 No.1091)	BS EN 61326-1:2013 (Basic Level)

ROHS Regulations 2012	Standards
SI 2012 No. 3032	BS EN IEC 63000:2018

<b>Name:</b>	Surya Dinesh
<b>Position:</b>	Product Support Manager
<b>Place of issue:</b>	Valeport Ltd, Totnes, UK
<b>Date of issue:</b>	13 October 2021
<b>Signature:</b>	

Valeport Limited  
St. Peter's Quay, Totnes,  
Devon TQ9 5EW UK

+44 (0) 1803 869292  
sales@valeport.co.uk  
www.valeport.co.uk

VAT No. GB 955 8753 67  
Registered in England No. 1990444

