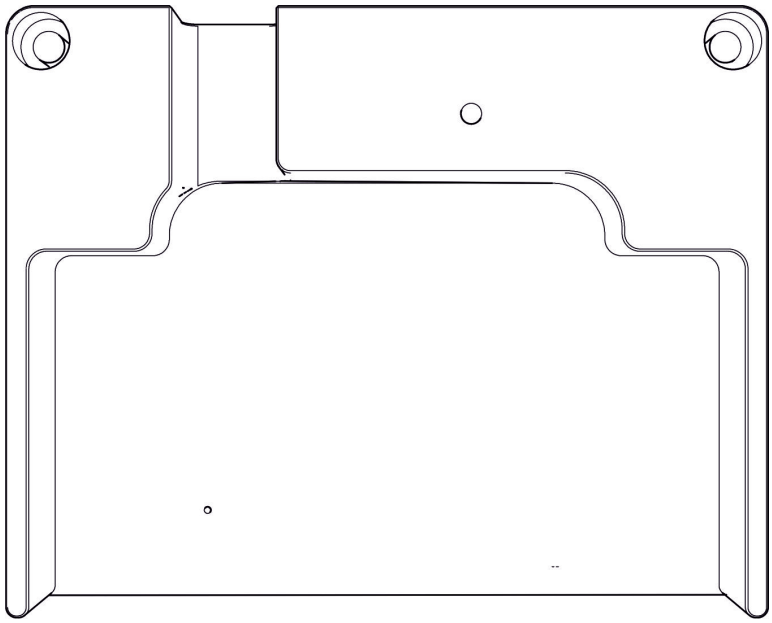
CurelogDock
Interface definition

V1.0



(Fig. Similar)

Change history

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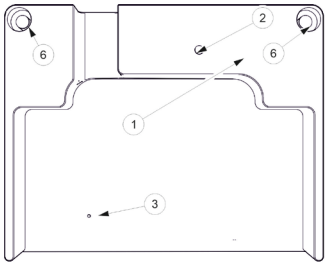
Version	Processor	Date	Amendment
1.0	Paravia	29.04.2024	Creation

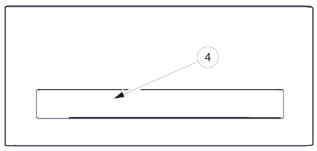
1 Introduction

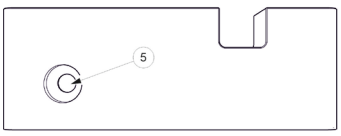
With the curelogDock, measurements can be transmitted to the PLC in a simple yet secure way. RS-485 and RS-232 connections are available for this purpose.

The data evaluation takes place directly in the PLC, so that it is also possible to request a detailed data check on the HMI. The measured values are stored with a CRC-16 checksum.

protected against transmission errors. The component at a glance:







Pos.	Designation	Pos.	Designation
1	curelogDock	**2**	Status LED
3	Reset for curelogDock	**4**	IO connection
5	USB cable for curelog	**6**	Screw fastening
7	DIP switch	**8**	USB for FW update

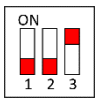
2 Technical data

General data	
Ambient temperature	+10 to 50 °C
Storage temperature	-10 to +60 °C
Maximum housing temperature	< 60 °C
Mounting type	Screws
Dimensions	11 x 9 x 4 cm
Weight	approx. 150 g
Operating voltage	5 V
Input current	< 500 mA
PLC connection	RS48, RS232 or USB
Connection curelog	Mirco USB
Curelog connection	1 piece
Firmware updates	Via USB on the PV
Cooling	none
Noise emission	Lpa < 70 dB at the workplace in normal operation according to DIN 45635 T. 19
Serial port	Baud: 115200 Databits: 8 Parity: None Stop bits: 1

Minimum distances	
Minimum distances, top	5 cm
Minimum clearances, lateral	5 cm

Connections	
I/O connection	Phoenix Contact MC 1.5/15-STF-3.81 Order number: 1827839 Example: 

Pin assignment for RS485 Full Duplex:



Pin:	Designation:
1	+24V
2	GND
3	Not used
4	Not used
5	Z (TX-)
6	Y (TX+(
7	B (RX-)
8	A (RX+)
9-15	Not used

Pin assignment for RS485 Half Duplex:

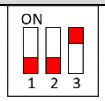
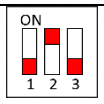
Pin:	Designation:
1	+24V
2	GND
3	Not used
4	Not used
5	B/Z (RX/TX-)
6	A/Y (RX/TX+)
7	Not used
8	Not used
9-15	Not used

Pin assignment for RS232:

Pin:	Designation:
1	+24V
2	GND
3	Not used
4	Not used
5	TX
6	Not used
7	Not used
8	RX
9	Not used
10	Not used
11	GND
12-15	Not used

When using the RS232 interface option, only RX+ and TX+ are required.

Selector switch position

Condition	Description
	RS485 Full Duplex
	RS485 Half Duplex
	RS232

Status LED	Description
Flashing green	Ready for use, no Curelog connected
Flashing red	Curelog connected, data has been transferred

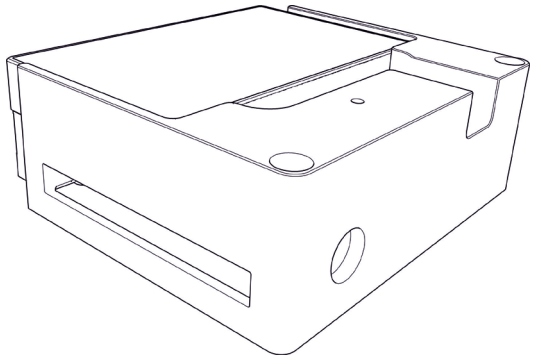
Flashing blue	Curelog connected, data transferred successfully
Glowing yellow	CurelogDock in update mode

SPS (Samples Per Second)

Index in communication	PLC
0	1
1	40
2	80
3	125
4	200
5	500
6	1000
7	2000

3 Installation and operation

1. Set the RS485 / RS232 settings on the DIP switches.
2. Connect the curelogDock to the supply voltage (24 V).
3. Connect the curelog to the curelogDock using the outgoing USB cable.
4. Switch on the curelog.
5. Insert the curelog into the curelogDock.



6. You can now communicate with the curelog.

Example Get Infos:

```
 GetInfo
Info:  0605v1.7    .1076000311852300991.   0000000x4657
```

4 Programming interface

Communication with the CureLog docking station takes place via an RS485/RS232 interface or via USB. RS485 can be used in half and full duplex mode.

Communication with the connected curelog takes place via USB communication with a virtual com port (internal).

There is no need to transmit a life bit to check the operating status. The check is ensured by returning a response to every command sent.

All feedback messages that are sent with content are provided with a checksum (CRC-16). This can be evaluated accordingly for correctness. The checksum is always at the end of a line, separated by TAB, which is part of the data to be checked. The checksum is defined as follows:

Type:CRC-16
CRC Polynomial: 0x8005
Init CRC value: 0x0000
Final XOR value: 0x0000
Reflect data (byte): No
Reflect CRC (word): No
Example (ASCII): 123456789
Result: 0xFEE8

The checksum is omitted for the CureLog docking station commands.

The checksum is always at the end of the answers.

The CureLog docking station only transmits when requested by the master. Only one command/query is processed at a time.

Definitions:

- Baud rate: 115200 baud
- Parity: None
- Data bits: 8
- Stop bit: 1
- CureLog docking station: SLAVE

Type definition:

- BOOL: ASCII representation of the value: "1" = TRUE; "0" = FALSE
- INT: ASCII representation of the value: 12345
- FLOAT: ASCII representation of the value: 1.2345E+01
- STRING: ASCII representation of an alphanumeric character string
- DATE: ASCII representation in DD.MM.YYYY format
- ARRAY[1..8] of .... Separated by {Tab}

Unused digits in INT or FLOAT specifications must be written with "0".
For example, specifying the measuring duration with 250 corresponds to 0250 as the transfer value (with 4 input points).

Command structure specifications:
Commands, characters and values are separated by {Tab}
Command end by {CR}{LF}
Command and data separation by ":"
Commands are identified by "Set"
Requests for mirrored data are marked with "Get" at the beginning
Command length limited to 200 characters
Unintelligible commands are confirmed by :
NACK:No such command!{CR}{LF}

Example: Get{Tab}Info{CR}{LF}

Requests/Commands

Get{Tab}Info	(*Request for device information*)
Get{Tab}ChInfo	(*Request channel information*)
Get{Tab}MeasInfo{Tab}x	(*Request measurement no. x*)
Set{Tab}SPS:{Tab}x	(*Setting the sample rate*)
Set{Tab}Threshold:{Tab}x	(*Setting the measurement trigger*)
Set{Tab}Language:{Tab}x	(*Setting the system language*)
Set{Tab} Time:{Tab}hh{Tab}mm{Tab}ss	(*Setting the system time*)
Set{Tab} Date:{Tab}DD{Tab}MM{Tab}YYYYY	(*Setting the system date *)
Set{Tab}Remote	(*Sets the device to remote mode*)
Set{Tab}LeaveRemote	(*The device leaves the remote mode*)
Set{Tab}DisplayText:{Tab}x	(*Setting a display text - only in remote mode *)

Error handling / timeout:

- Timeout for command processing; default value: 200 ms
- Time interval for retransmission; default value: 200 ms

5 Command overview

All commands are terminated with carriage return and line feed (0x0d 0x0a).
When setting parameters, command and parameter are separated with Tab (0x09).
Information in the answers is separated by tabs and ended with carriage return and line feed
Examples:

```
Get{Tab}Info
Info:{Tab}0605{Tab}v1.7.10{Tab}760003{Tab}1{Tab}1{Tab}85{Tab}2{Tab}30{Tab}0
{Tab}99{Tab}1.000000{Tab}0x4657

SetSPS:{Tab}0{CR}{LF}
0{CR}{LF}

Get{Tab}MeasInfo:{Tab}4
Measurement 4 not available. Only 3 measurements available.{Tab}0xb9e
```

The {Tab} is not shown below for better readability.

Name:	Data type:	Value range:	Comment:
Info	N/A	N/A	Query the device information
MeasInfo	INT	1...n	Query measurement no. x
ChInfo	N/A	N/A	Querying the channel information
PLC	INT	0..7	Setting the sample rate
Threshold	FLOAT	0.00...n	Setting the measurement trigger
Language	INT	0..1	Setting the system language
Time	INT	0..9	Setting the system time
Date	INT	0..9	Setting the system date
Remote	N/A	N/A	Sets the device to remote mode
LeaveRemote	N/A	N/A	The device exits remote mode
DisplayText	STRING	Max 16 characters	Sets a display text
EraseFlash	N/A	N/A	Clears the memory of the curelog

6 Commands overview

	Command	Answer	Description
Device info	Get{Tab}Info	Info: Serial number , Firmware version, Type number, PLC (0 - 7), Number of stored measurements, Battery charge in %, Number of sensor channels, Maximum number of measurements, Set language (0-> English, 1 -> German), Free memory in %, Set threshold (float), CRC-16	Displays information about the device; the number of saved measurements is important here GetInfo Info: 0605v1.7 .1076000311852300991. 0000000x4657
Channel information and calibration factor	Get{Tab}ChInfo	ChInfo: Name Sensor channel 1 Measuring range sensor channel 1 Calibration factor sensor channel 1 Name Sensor channel 2 Measuring range sensor channel 2 Calibration factor sensor channel 2 ... CRC-16	Outputs information about the sensor channels, such as the channel name, measuring range and calibration factor. The order of the information corresponds to the order in which the measured values are sent. Get ChInfo ChInfo: UVBB-S20000 0. 002778UVBB-U20000 0. 0024720xf3be

Information on stored measurements	Get{Tab}MeasInfo:{Tab}xx
	(xx -> measurement number)
		MeasInfo:
		No. Measurement
		SPS,
		
		Peak measured value sensor channel 1 in mW/cm²,
		Peak measured value sensor channel 2 in mW/cm²,
		...
		Dose Measured value sensor channel 1 in mJ/cm²,
		Dose Measured value sensor channel 2 in mJ/cm²,
		...
		
		Start time Hour,
		Start time Minute,
		Start time second,
		Start date Day,
		Start date Month,
		Start date Year,
		
		Threshold of this measurement (float)
		CRC-16
			Information on each measurement, if available
			The PLC set for the measurement is important here in order to calculate the measuring time.
			
			`Get MeasInfo: 1`
			`MeasInfo: 114. 2100004. 0100008. 3000006 .7900001349526520241. 0000000xa194`

Set time	Set{Tab}Time:{Tab}hh{Tab}mm{Tab}ss	Time:{Tab}hh{Tab}mm{Tab}ss
		CRC-16
			Sets the device time
			
			`SetTime : 093012`
			`Time: 930120xa95a`

Set date	Set{Tab}Date:{Tab}DD{Tab}MM{Tab}YYYYY	Date:{Tab}DD{Tab}MM{Tab}YYYY
		CRC-16
			Sets the device date
			
			`SetDate :03052024`
			`Date: 3520240x1632`

Set PLC	Set{Tab}SPS:{Tab}x?
	
	x -> Index of the PLC from 0-7
	
	Index in communication / PLC
	0 / 1
	1 / 40
	2 / 80
	3 / 125
	4 / 200
	5 / 500
	6 / 1000
	7 / 2000
		SPS:{Tab}x
		CRC-16
			Sets the measured values per second
			
			`SetSPS : 4?`
			`SPS: 40xd83d`

Set measurement trigger	Set{Tab}Threshold:{Tab}ts	Threshold:{Tab}ts CRC-16	Measurement trigger means that a measurement that is started only records values when the measurement trigger is exceeded. In addition, the dose is calculated for values above the threshold.

	ts -> measurement trigger as decimal number with dot as separator		SetThreshold : 1,000 Threshold: 10xc798
Change language	Set{Tab}Language:{Tab}0 or 1 0 -> English 1 -> German	Language:{Tab}0 or 1 CRC-16	Sets the device language SetLanguage : 1 Language: 10xa053
Delete memory	Set{Tab}EraseFlash	Erase flash done CRC-16	Deletes the entire memory. When the deletion is complete, "Finish" is sent Set EraseFlash Erase flash done0x3db3
Remote mode	Set{Tab}Remote	EnterRemote CRC-16	Locks the display and shows "REMOTE MODE Do not disconnect". Text sent via SetDisplayText is displayed here. SetRemote EnterRemote0xe255
Remote mode leave	Set{Tab}LeaveRemote	Remote left CRC-16	Unlocks the display Set LeaveRemote Remote left0x679
Set display text	Set{Tab}DisplayText:{Tab}Text	DisplayText:Text CRC-16	Writes the text in the display. The text should not be longer than 16 characters. This command only works in remote mode, otherwise "NACK:No such command!" is returned. Set DisplayText: Customer

			DisplayText: Customer0x9f15

7 Errors / faults

The following instructions and error messages are intended for the user. They are intended to help ensure proper operation. Possible reasons and remedies are given.

Function / Display	Meaning	Measures
The curelog cannot be switched on	Battery empty	Charge the battery.
	Malfunction	Reset the device. To do this, press the reset button on the side with a thin object.
The irradiance is too low	Sensor ages	Have the sensor recalibrated
	Sensor dirty	Clean the sensor (e.g. with ISOPROPANOL)
The curelog does not send any data	Device off	Switch on the device
	Not connected	Check USB connection

8 Spare parts

Please contact us for replacement orders:

Opsytec Dr. Gröbel GmbH
Am Hardtwald 6-8
76275 Ettlingen
Germany
Phone +49 - 7243 - 94 783 - 50
Fax +49 - 7243 - 94 783 - 65

Visit us on the Internet: www.opsytec.de

When operating with damaged components or third-party components, no guarantee can be given for the accuracy of the measured values. Furthermore, compatibility with third-party components is not guaranteed.

	**⚠ CAUTION**
	Damaged components or third-party components Operational safety cannot be guaranteed when operating with damaged components or third-party components. There is a risk of injury and material damage may occur. - Replace damaged parts immediately - Only use original parts, spare parts and accessories

9 Declaration of conformity

CE

Manufacturer :	Company name: Opsytec Dr. Gröbel GmbH Street: Am Hardtwald 6-8 Place: 76275 Ettlingen Country: Germany
Authorized person for compiling the technical documentation:	Company name: Opsytec Dr. Gröbel GmbH Street: Am Hardtwald 6-8 Place: 76275 Ettlingen Country: Germany
Product:	Radiometer / Dosimeter curelog
Type designation:	curelogDock
Type number:	680005 XXXX

The manufacturer hereby declares that we have developed, designed and produced the above-mentioned product(s) under our sole responsibility and that the product complies with the following standard(s) or directive(s) in this declaration:

2014/35/EU
"Directive of the European Parliament and of the Council on the harmonization of the laws of the Member States relating to the making available on the market of electricity
Equipment intended for use within certain voltage limits on the market (Low Voltage Directive)".

2014/30/EU
"Directive of the European Parliament and of the Council on electromagnetic compatibility (EMC Directive, recast)"

The conformity of the designated product with the provisions of the Directive is demonstrated by full compliance with the following standards:

DIN EN 60204-1:	Safety of machinery - Electrical equipment of machines Part 1: General requirements (IEC 60204-1:2005, modified)

Ettlingen, 29.04.2024

signed. Dr. Mark Paravia

10 NOTES

	**⚠ CAUTION** **THESE INSTRUCTIONS CONTAIN IMPORTANT SAFETY INSTRUCTIONS.** KEEP THESE INSTRUCTIONS IN A SAFE PLACE.