KONGSBERG

Instruction Manual

cPAP 30 & cPAP 10

Portable transceiver

KONGSBERG

cPAP 30/cPAP 10 portable transceiver

Instruction Manual

374876/C

Document information

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Copyright

Warning

The equipment to which this manual applies must only be used for the purpose for which it was designed. Improper use or maintenance may cause damage to the equipment and/or injury to personnel. You must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment.

Kongsberg Discovery disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

Disclaimer

Kongsberg Discovery AS endeavours to ensure that all information in this document is correct and fairly stated, but does not accept liability for any errors or omissions.

Support information

If you require maintenance or repair, contact Kongsberg Discovery's support organisation. You can also contact us at the following email address: support.hpr@kd.kongsberg.com. If you need information about our other products, visit https://www.kongsberg.com/discovery/.

Table of contents

About this manual

This manual includes all necessary documentation to safely install, operate and maintain the system.

Target audience

This manual is intended for all users of the system.

Online information

All end-user documentation can be downloaded from our website.

https://www.kongsberg.com/discovery/

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Kongsberg cPAP 30/cPAP 10 portable transceiver

Topics

System description

The cPAP Portable Transceiver unit is used for on-board control and operation of subsea transponders. It is also used for acoustic testing and configuration of Kongsberg cNODE transponders. When used for on-board control and operation of subsea transponders, the unit is used in conjunction with a dunking transducer.

The unit uses Cymbal acoustic protocol for positioning and data link, as well as HPR 400 channels and telemetry. Acoustic link is used for command and data transmission. Super Short Base Line (SSBL) positioning is standard and Long Base Line (LBL) positioning is optional.

The cPAP 30 unit is used for on board operation of all medium frequency (MF) transponders. It is also used to test and configure all MF transponders. The cPAP 10 unit is used for on board operation of all low frequency (LF) transponders. It is also used to test and configure all LF transponders.

The unit has an internal rechargeable battery and is supplied with a test transducer, a serial line cable and a power cable.

Test transducer

Before using the transponder, it is recommended that you do an acoustic test to ensure that the transponder is in full working order. The test transducer must be connected to the unit and set up correctly before an acoustic test can be carried out.

Serial line cable

The serial line cable connects a transponder to the unit. When the connection is set up, the unit can configure or reconfigure the transponder.

Power cable

The power cable connects the unit to a 110/230 VAC power supply. Only use the power cable supplied with the unit. Do not use if damaged or excessively worn. Contact Kongsberg for a replacement.

Note

Do not use the control panel as a storage space when the unit is not in use. Do not place the cable organizer bag and/or the cables on top of the touch screen and close the lid. Doing so may damage the touch screen and the control panel.

Dunking transducers

The unit consists of a cable drum with cable and a dunking transducer.

The cable drum holds 70 metres of transducer cable with a transducer connected to the dunking end of the cable. The on board end of the cable is connected to the cPAP Portable transceiver unit. The cable drum has a handle for unwinding and rewinding the cable and a cable locking pin. Five different configurations are available.

TDD30V medium frequency

The TDD30V medium frequency unit is designed for use in water depths of 1000 m - 4000 m and is equipped with a 30° beam width transducer. It is compatible with cPAP 30, ACU 30 and TTC 30.

TDD303 medium frequency

The TDD303 medium frequency unit is designed for use in water depths of 1500 m and is equipped with a 50° beam width transducer. It is compatible with cPAP 30, ACU 30 and TTC 30.

TDD180 medium frequency

The TDD180 medium frequency unit is designed for use in water depths of 500 m and is equipped with a 180° beam width transducer. It is compatible with cPAP 30, ACU 30 and TTC 30.

TDD30H medium frequency

The TDD30H medium frequency unit is designed for use in shallow water. It is equipped with a 30° horizontal beam medium frequency width transducer. The transducer cable is armoured. It is compatible with cPAP 30, ACU 30 and TTC 30.

TDD103 low frequency

The TDD103 low frequency unit is equipped with a ±30° beam width low frequency transducer. It is compatible with cPAP 10 and TTC 10.

Support information

Should you need technical support for your cPAP 30/cPAP 10 portable transceiver system you must contact a Kongsberg Discovery office. A list of all our offices is available on our website. You can also contact our main support office in Norway.

Manuals and technical information can be downloaded from our support website.

Company name	Kongsberg Discovery AS
Address	Strandpromenaden 50, 3183 Horten, Norway
Telephone 24hr Support	+47 33 03 24 07
Website	https://www.kongsberg.com/discovery/
Support website	Product support A to Z
E-mail address	support.hpr@kd.kongsberg.com

Kongsberg Discovery support is also available in the KM-Support App. Our support application is available for free in the App Store and Google Play. Search for KM-Support. The use of our support application is free of charge. Your mobile phone provider may charge you the cost of the communication.

Operating procedures

Topics

Opening and closing the case

The case latches are fitted with a safety mechanism preventing unintentional opening.

Context

Place the unit on a steady and level surface. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

Procedure

1 Opening the case.
Press and hold the square buttons on the latch handles to release the safety mechanism and pull the latch handles towards you to open the case.

2 Closing the case.
Close the lid and push the latch handles inwards to latch the lid. After latching the lid check that the latches' safety mechanism is engaged.

Note

Do not place the cable organizer bag and/or the cables on top of the touch screen and close the lid. Doing so may damage the touch screen and the control panel.

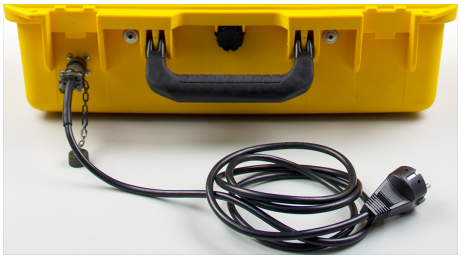
Connecting to AC power and charging the unit's battery

The unit has a rechargeable battery that lasts approximately 3 hours when fully charged. Start charging when the LED battery level indicator turns red. The battery is fully charged when the the LED battery level indicator is all green. The LED battery level indicator is next to the **ON/OFF** switch.

Context

Place the unit on a steady and level surface. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment. Only use the power cable supplied with the unit. Do not use if damaged or excessively worn. Contact Kongsberg for a replacement.

Procedure



1 Connect and secure the power cable to the unit's power connector.
The power connector is located below the left latch.

2 Connect the power cable to a 110/230 VAC power supply.
Check the LED battery level indicator from time to time during charging and stop charging when it is all green.

Note

Always connect and secure the power cable to the unit's power connector before connecting the power cable to an external power supply.

Switching the unit on and off

The **ON/OFF** switch is located on the right, labelled ON OFF.

Context

When switched on, the unit can either run on power from an external 110/230 VAC power supply or on power from the internal battery. It is not necessary to disconnect the unit from the external power supply during use.

Procedure

1 Switching the unit on

Press down the side labelled ON on the **ON/OFF** switch to switch on the unit. An audible click confirms the **ON/OFF** switch is in the on position and that the unit is switched on, and its PC will boot.

Booting up takes approx. 1.5 minutes.

2 Switching the unit off

Press down the side labelled OFF on the **ON/OFF** switch to switch off the unit. An audible click confirms the **ON/OFF** switch is in the off position and that the unit is switched off, and its PC is shut down.

Standby mode

The unit's PC will automatically go into standby mode if no input has been detected for 5 minutes.

Context

In standby mode, the screen will go to sleep and turn black. Wake the screen to return to operational mode.

Procedure

- Touch the screen or move the trackball to wake the screen and to return to operational mode.

Switching on the system

Follow the procedure below to switch on the system.

Context

Place the cPAP portable transceiver and the dunking transducer in a suitable location close to each other. If a risk assessment suggests it, secure the equipment to minimize the risk of injury to personnel and equipment.

Procedure

1 Open the case.

2 Prepare the dunking transducer for use.
See “Dunking transducer pre-use” procedure, page 17

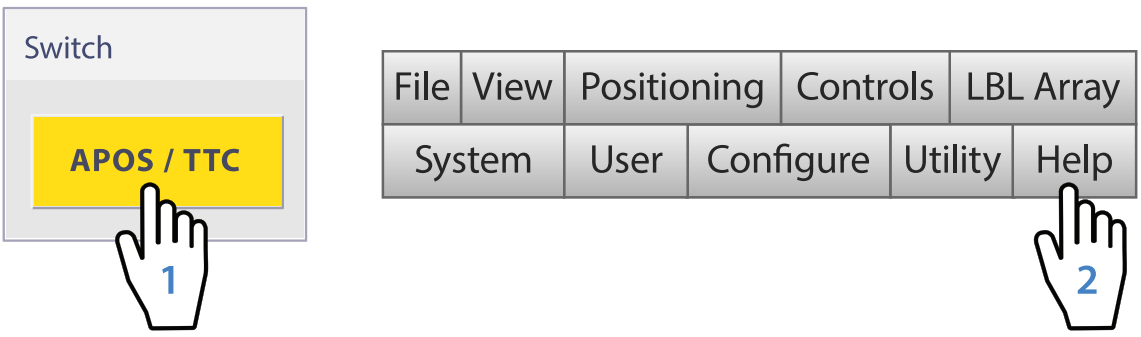
3 Unwind the transducer cable and lower the dunking transducer into the sea.
It should be lowered to a minimum depth of 10 metres below the lowest submerged part of the vessel or platform.

4 Connect the other end of the transducer cable to the **TRANSDUCER** port on the cPAP portable transceiver unit.

5 Switch on the cPAP portable transceiver unit.
The system is ready to use as soon as the PC has booted up.

Control and operation of subsea transducers

The unit allows you to control and operate subsea transponders when used in conjunction with a dunking transducer. See APOS online help for more information. To view APOS online help, select the yellow **APOS/TTC** button on the right hand side of the screen to set the operating mode to APOS and then select the **Help** button in the top right hand corner of the screen.



Switching off the system

Follow the procedure below to switch off the system.

Context

It is assumed that the “Switching on the system” procedure was followed before the system was put into use and that the system is undamaged and intact.

Procedure

1 Switch off the cPAP portable transceiver unit.

2 Disconnect the transducer cable from the **TRANSDUCER** port on the cPAP portable transceiver unit.

3 Close the case.
Move the unit out of harm’s way.

4 Follow the “Dunking transducer post-use” procedure, page 18

Dunking transducer pre-use procedure

Follow the procedure below to prepare the dunking transducer for use.

Context

Place the unit in a suitable location. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

Procedure

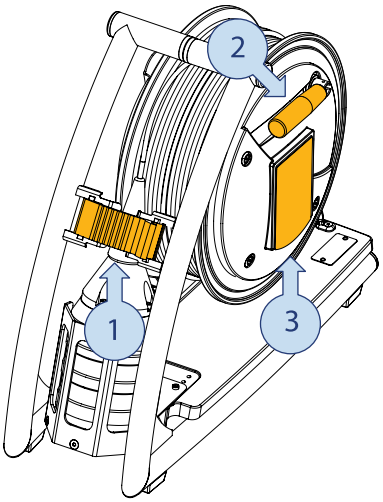
1 Release the locking clip.

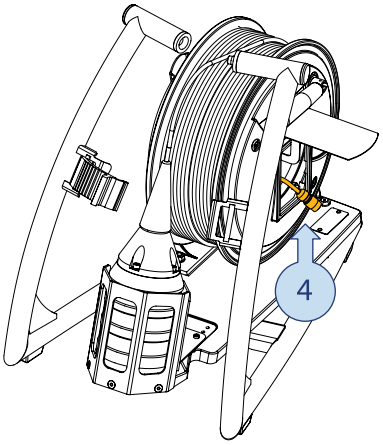
2 Fold out the handle.

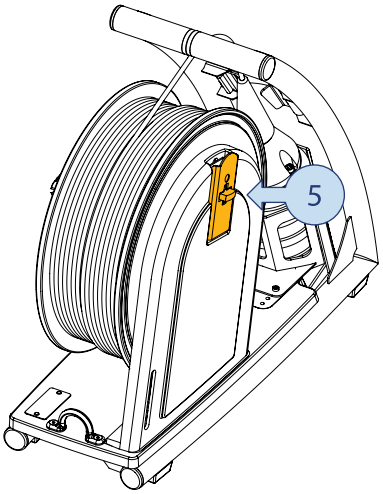
3 Lift up the cover.
The cable for connecting the dunking transducer to the portable transceiver is behind the cover.

4 Uncoil the cable used to connect the dunking transducer to the portable transceiver.

5 Release the cable drum.







Dunking transducer post-use procedure

Follow the procedure below whenever the dunking transducer has been in use.

Context

Place the unit in a suitable location. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

Procedure

1 Rinse the unit thoroughly with plenty of fresh water at low pressure.

2 Rewind the transducer cable.

3 Check that the transducer face is clean and undamaged.

4 Place the transducer in its holder.

5 Check that the locking clip is in good condition and, when it is secured, that it will prevent the transducer from falling out of the holder during transport.

6 Secure the cable drum.

7 Apply a few drops of oil to the ball bearings of the drum and on the handle.

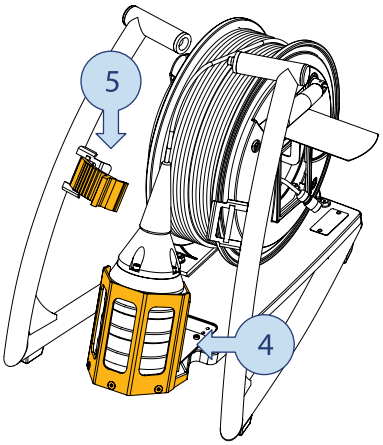
8 Fold in the handle.

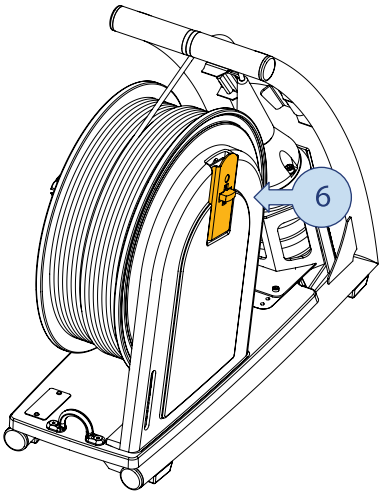
9 Secure the locking clip.

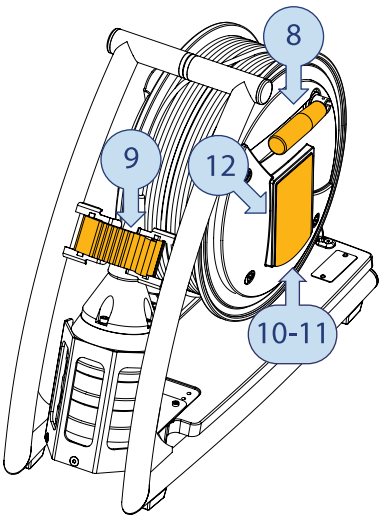
10 Check that the cable connector is in good condition.

11 Coil up the cable.

12 Close the cover.







Doing an acoustic test

Before using the transponder, it is recommended that you do an acoustic test to ensure that the transponder is in full working order.

Context

If a risk assessment suggests it, secure the equipment to minimize the risk of injury to personnel and equipment. The test transducer is for communication in air only so always set the unit's power level to either minimum or low prior to testing.

Procedure

1 Open the case.

2 Switch on the unit.

3 Connect the test transducer cable to the **TRANSDUCER** port in the upper right corner.

4 Place the test transducer face to face with the transponder transducer.

5 Use the left and right arrows to set the power level of the test transducer. The power level is displayed in the field. The power level has two settings, minimum (Min.) and low. The default setting is minimum but either setting is safe to use. Select **SET** to confirm.

6 Enter the transducer's serial number, if necessary.

7 Enter the transponder channel number, if necessary.

8 Select **INTERROGATE** to start the acoustic test. An on-screen green indicator will flash on and off confirming an acoustic contact with transponder and a successful test. The transponder is in full working order.

9 Select **INTERROGATE** again to end the acoustic test.

Configure or reconfigure a transponder

Follow this procedure if the transponder has to be configured or reconfigured.

Context

If a risk assessment suggests it, secure the equipment to minimize the risk of injury to personnel and equipment.

Procedure

1 Open the case.

2 Switch on the unit.

3 Connect the serial line cable to the **SERIAL** port in the upper right corner and to the port at the bottom of the transponder. Connect the serial cable to the port labelled **Signal** or **TP** if there are two or more ports at the bottom of the transponder. If in doubt, consult the transponder manual.

4 Select the on-screen **Transponder Configuration** tab. The **Transponder Configuration** tab contains on-screen buttons that allow the user to configure or reconfigure a transponder via the serial line.

5 Select **Get config from TP** to view the current transponder configuration.
A green horizontal bar at the bottom of the tab, superimposed with the last contact time, confirms that a data transaction can take place between the unit and the transponder. The unit is ready to configure the transponder. A red horizontal bar confirms data transaction failure between the unit and the transponder. In the event of a data transaction failure, check the cable connections and select **Get config from Tp** again to check that a data transaction can take place between the unit and the transponder.

6 Select **Download new configuration** to update the transponder. The transponder's configuration data will be updated.
A green "Reload successful" message in the bottom right corner of the tab confirms that the transponder configuration was successful. A red "Download config failed" message in the lower right corner of the tab confirms the transponder configuration failed. In the event of a transponder configuration failure, check cable connections and select **Download new configuration** again to update the transponder.

7 Do an acoustic test to verify that the transponder is in full working order.

Control panel

Topics

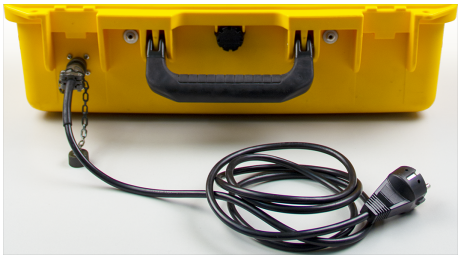
Control panel

The unit's control panel allows you to control and operate subsea transponders when the unit is used in conjunction with a dunking transducer. The control panel also allows you to view and control the settings of a connected device, as well as test, configure and update a connected device. The unit's PC is an integral part of the control panel and is located on the underside of the control panel. The control panel consists of a set of controls and a touch screen with a graphical user interface (GUI).

Controls

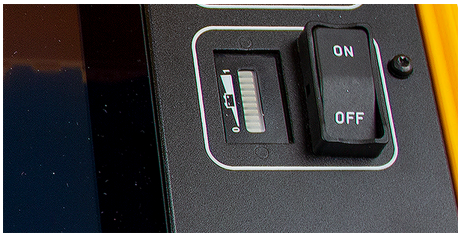
The controls allow you, among other things, to connect the unit to an external power source, to switch the unit on and off, and to connect it to other devices.

The unit has a power connector for connection to a 110/230 VAC power supply. The power connector is located below the left latch. Only use the power cable supplied with the unit.



On top, in the upper right corner there are two ports with protection caps labelled **SERIAL** and **TRANSDUCER**. The serial port is used during transponder configuration and the transducer port is used during acoustic testing. Below these two ports there is a small, latched lid labelled **USB LAN**. Under the lid there are three ports for authorized service personnel only.

The **ON/OFF** switch is located on the right, labelled ON OFF. The LED battery level indicator is next to the **ON/OFF** switch.



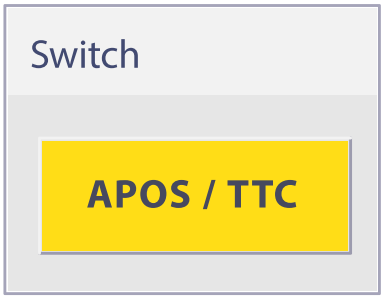
In the lower right corner is a trackball with two buttons. The trackball controls the on-screen pointer. The left button is used for selecting and clicking on-screen objects such as buttons and menu options. The right button is used for presenting on-screen menus and pop-up windows.

Touch screen

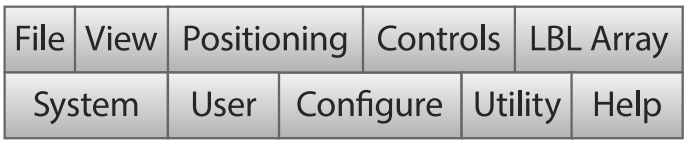
In addition to the aforementioned controls, the unit's control panel includes a touch screen with a graphical user interface (GUI). The touch screen allows you to interact with the unit's PC and set the PC's operating mode.

Operating mode

The operating mode of the PC is either APOS or TTC. By default, the PC boots into TTC mode when the unit is switched on. Select the yellow **APOS/TTC** button on the right hand side of the screen to set the operating mode and to toggle between the two modes.



APOS mode



APOS mode allows you to control and operate subsea transponders when the unit is used in conjunction with a dunking transducer. See APOS online help for more information. Select the **Help** button in the top right hand corner of the screen to display APOS online help.

TTC mode

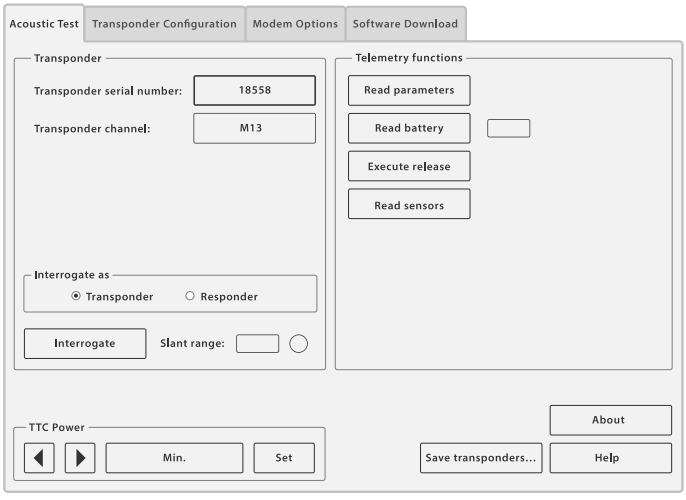
TTC mode allows you to view and control the settings of a connected device, as well as test, configure and update a connected device. In TTC mode, the GUI is a tabbed display with either three or four tabs, depending on the type of device connected.

Acoustic Test tab

The **Acoustic Test** tab contains alphanumeric fields to view the settings of the connected transponder/modem and interactive alphanumeric fields and buttons. The interactive elements allow you to interact with the transponder/modem and do an acoustic test to ensure the device is in full working order.

Description

After entering the transponder/modem serial number and channel, you can check that the transponder/modem is in full working order, read parameters, check battery status, read sensor values and test the release mechanism.



Details

The tab contains the following interactive alphanumeric fields and buttons for interacting with the device connected to the unit:

Transponder serial number

The transponder/modem serial number is entered in this field.

Transponder channel

The transponder/modem channel number is entered in this field.

Interrogate

Select **Interrogate** to start an acoustic test. A green indicator to the right of the **Slant range** field will flash on and off for every interrogation confirming an acoustic contact with the transponder. Select **Interrogate** again to end an acoustic test.

TTC Power

Use the left and right arrows to set the power level of the test transducer. The power level is displayed in the field. The power level has two settings, minimum (Min.) and low. The default setting is minimum but either setting is safe to use. Select **Set** to confirm.

Read parameters

Select **Read parameters** to send an acoustic telegram. While waiting for the response, a dialog box will open showing the status and progress. The acoustic telegram will be re-sent up to 2 times if the first attempt fails. Parameters and values are displayed as soon as the response is received.

Read battery

Select **Read battery** to view the transponder's spent battery capacity.

Execute release

Select **Execute release** to test the transponder/modem release mechanism. Check that the mechanism opens as intended. Please note that if the release mechanism is tested while the transponder/modem is deployed on the seabed and fitted with a floating collar, the device *will* float to the surface.

Read sensors

Select **Read sensors** to select and view the status of the transponder/modem sensors. A dialog box opens and displays a list of the transponder/modem sensors. Select a sensor and select **Read selected sensor** to view its status. Select **Close** to close the dialog box.

About

Select **About** to view the ID and data of the transponder/modem.

Help

Select **Help** to view online help.

Save transponders…

Select **Save transponders…** to save the transponder/modem ID and data to an XML file.

The tab contains the following alphanumeric fields for viewing the settings of the device connected to the unit:

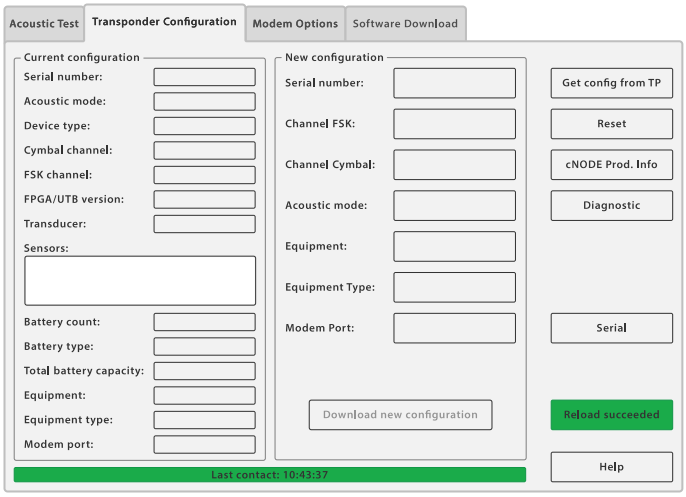
Slant range

The slant range is displayed in the field during an acoustic test.

Transponder Configuration tab

The **Transponder Configuration** tab contains alphanumeric fields to view the settings of the connected transponder, and interactive alphanumeric fields and buttons. The interactive elements allow you to interact with the transponder and to configure or reconfigure the transponder.

Description



The **Transponder Configuration** tab contains interactive elements that allow the user to configure or reconfigure a transponder via the serial line. The transponder must be in contact with the unit before it can be configured or reconfigured. A green horizontal bar at the bottom of the tab, superimposed with the last contact time, confirms that a data transaction can take place between the unit and the transponder. The unit is ready to configure the transponder.

Details

The tab contains the following interactive alphanumeric fields and buttons for interacting with the device connected to the unit:

Get config from TP

Select **Get config from TP** to view the current transponder configuration. The configuration data is displayed in the "Current configuration" section. A green horizontal bar at the bottom of the tab, superimposed with the last contact time, confirms that a data transaction can take place between the unit and the transponder.

Download new configuration

The button becomes active when the green horizontal bar at the bottom of the tab confirms that communication has been established with the transponder. Select **Download new configuration** to configure the connected transponder or to

reconfigure it. The transponder's configuration data will be updated. A green "Reload successful" message in the bottom right corner of the tab confirms that the transponder configuration was successful.

Acoustic mode

Select **Acoustic mode** to toggle between Cymbal mode or FSK mode. Select **Download new configuration** to confirm.

Reset

Select **Reset** to reset and reboot the transponder. A dialog box opens confirming that the transducer has been successfully reset.

cNODE Prod. Info

Select **cNODE Prod. Info** to view the product information of the transponder.

Diagnostic

Select **Diagnostic** to view selected parameters and values of the transponder.

Help

Select **Help** to view online help.

The tab contains the following alphanumeric fields for viewing the settings of the device connected to the unit:

Serial

The **Serial** field is visible when the transponder is connected to the unit via the serial cable.

Serial number

Indicates the transponder serial number.

Acoustic mode

Indicates the type of mode being used to communicate with the transponder. This is either Cymbal or FSK. Communication with the transponder can be made using either Cymbal frequencies (L or M channels) or FSK frequencies (A or B channels). Only one acoustic mode can be active at a time.

Device type

Indicates the type of device currently in contact with the unit. The device can be a transponder, an SCU as part of an ACS system, or a subsea transceiver.

Cymbal channel

Indicates the ID (Lxx/Mxx) of the active cymbal channel used to communicate with the connected device. The field is greyed out if the acoustic mode is set to FSK.

FSK channel

Indicates the ID (Axx/Bxx) of the active FSK channel used to communicate with the connected device. The field is greyed out if the acoustic mode is set to Cymbal.

UTB/FPGA version

Indicates the version number of the UTB software and FPGA (Field Programmable Gate Array) in the transponder. The UTB software can be upgraded in the field. This is done via the unit's serial line cable. To upgrade the FPGA, the transponder must be returned to a Kongsberg service centre.

Transducer

Indicates the type of mode being used to communicate with the transponder.

Sensors

Indicates the type of sensors the transducer is equipped with.

Battery count

Indicates the number of batteries connected to the transponder.

Battery type

Indicates the type of battery the transponder is equipped with.

Total battery capacity

Indicates the total battery capacity in ampere-hours (Ah).

Equipment

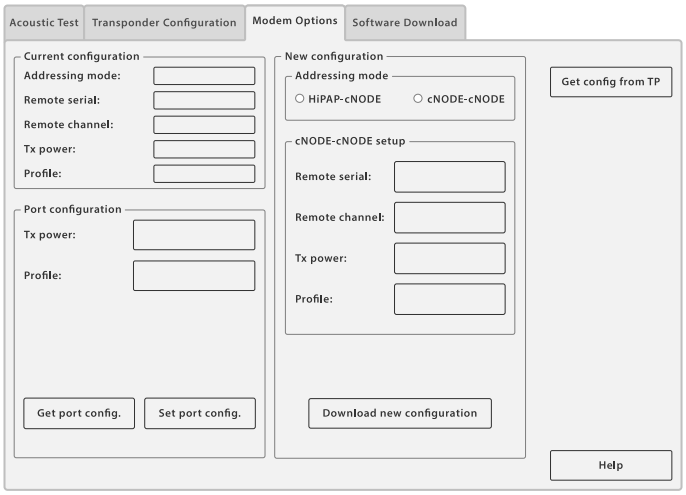
Indicates the type of equipment connected to the unit, typically a transponder.

Modem Options tab

The **Modem Options** tab contains alphanumeric fields to view the settings of the connected modem, and interactive alphanumeric fields and buttons. The interactive elements allow you to interact with the modem and to configure or reconfigure the modem. A modem is a transponder with a built-in modem.

Description

The tab will be visible if there is a modem connected to the unit.



For more information, please refer to Kongsberg's user guide “Modem Configuration”. Contact Kongsberg Discovery for a copy.

Software Download tab

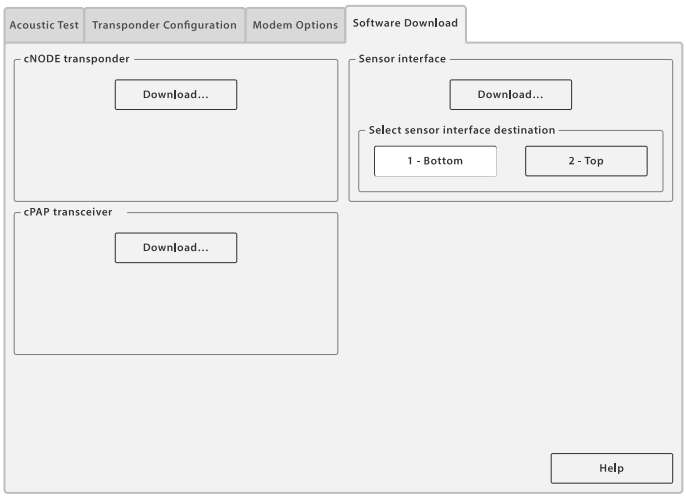
The **Software Download** tab contains buttons that allow you to update the software on a transponder or a transceiver.

Description

Only qualified Kongsberg personnel should access the tab and its download options.

Details

The tab contains the following buttons for updating the software on the connected device:



cNODE transponder

The **cNODE transponder** section includes a download button. Select **Download…** to update the software on a cNODE transponder.

cPAP transceiver

The **cPAP transceiver** section includes a download button. Select **Download…** to update the software on a cPAP transceiver.

Sensor interface

The **Sensor interface** section includes a download button. Select **Download…** to update the sensor interface on the connected device. The default destination for the sensor interface is **1-Bottom**. Select **2-Top** to set the destination to 2-Top.

Help

Select **Help** to view online help.

Maintenance

Topics

Replacing the unit’s battery

The unit's battery is expected to last 10 years when used as intended and maintained as recommended. However, this may vary with use. Follow this procedure if you need to replace the unit’s battery.

Prerequisites

Place the unit on a steady and level surface. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

Procedure

1 Check that the unit is switched off and disconnected from an external power supply.

2 Open the case.

3 Loosen and remove the screws securing the lid supports to the lid.

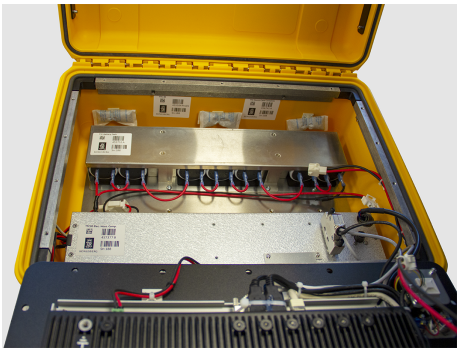
4 Loosen and remove the screws securing the control panel to the case.

5 Carefully lift off the control panel to access the inside of the unit.

6 Disconnect all cables leading to the battery.

7 Loosen and remove the screws securing the battery.

8 Pull the battery towards the front of the suitcase and lift it up.
The battery is held in place by metal clips in the bottom of the case.



9 Insert the new battery.

10 Follow the instructions in the reverse order.

Replacing the unit’s control panel

Follow this procedure if you need to replace the unit’s control panel. The unit's PC is an integral part of the control panel and is located on the underside of the control panel.

Prerequisites

Place the unit on a steady and level surface. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

Procedure

1 Check that the unit is switched off and disconnected from an external power supply.

2 Open the case.

3 Loosen and remove the screws securing the lid supports to the lid.

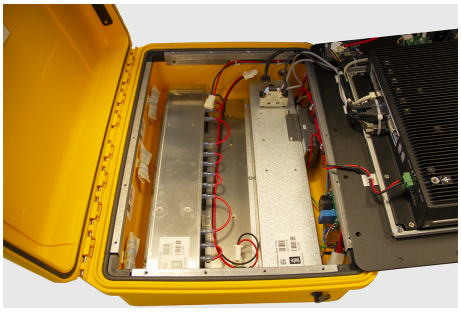
4 Loosen and remove the screws securing the control panel to the case.

5 Carefully lift off the control panel to access the inside of the unit.

6 Disconnect all cables leading to the control panel.

7 Replace the defective control panel with a new one.

8 Follow the instructions in the reverse order.



Preventive maintenance schedule

Preventive maintenance must be carried out periodically in order to preserve reliability and ensure safe operation during the unit's service life. The preventive maintenance schedule for the unit is as follows:

Every 12 months

- Clean the unit.
- Charge the unit's battery.

Cleaning the unit

Cleaning the unit is one of the two preventive maintenance tasks that must be carried out once every year during storage.

Context

Kongsberg recommends that the unit is switched off during cleaning. Use a lint-free, non-abrasive cleaning cloth and a neutral non-abrasive cleaner.

Procedure

1 Place the unit on a steady and level surface.
If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

2 Lightly dampen the cleaning cloth and wipe down the unit's exterior.
Make sure the fabric is not soaked but merely damp.

3 Open the case.

4 Lightly dampen the cleaning cloth and gently wipe down the unit's interior.
Make sure the fabric is not soaked but merely damp. Take care not to get moisture into any of the ports or openings.

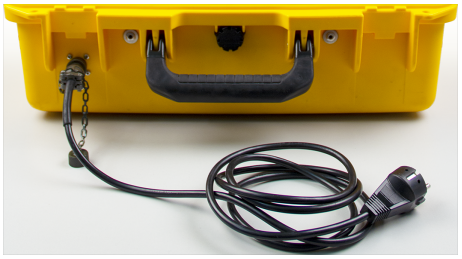
Charging the unit’s battery

Charging the unit’s battery is one of the two preventive maintenance tasks that must be carried out once every year during storage. The unit has a rechargeable battery that lasts approximately 3 hours when fully charged. Start charging when the LED battery level indicator turns red. The battery is fully charged when the the LED battery level indicator is all green. The LED battery level indicator is next to the **ON/OFF** switch.

Context

Charging a battery is a process with an inherent risk so check applicable procedure(s) prior to charging in order to first assess the level of the inherent risk; and then, if necessary, apply suitable controls to mitigate the inherent risk before charging. Follow the charging procedure carefully. Never charge batteries unattended. Only use the power cable supplied with the unit. Do not use if damaged or excessively worn. Contact Kongsberg for a replacement.

Procedure



1 Place the unit on a steady and level surface. If a risk assessment suggests it, secure the unit to minimize the risk of injury to personnel and equipment.

2 Connect and secure the power cable to the unit’s power connector.
The power connector is located below the left latch.

3 Connect the power cable to a 110/230 VAC power supply.
Check the LED battery level indicator from time to time during charging and stop charging when it is all green.

Note

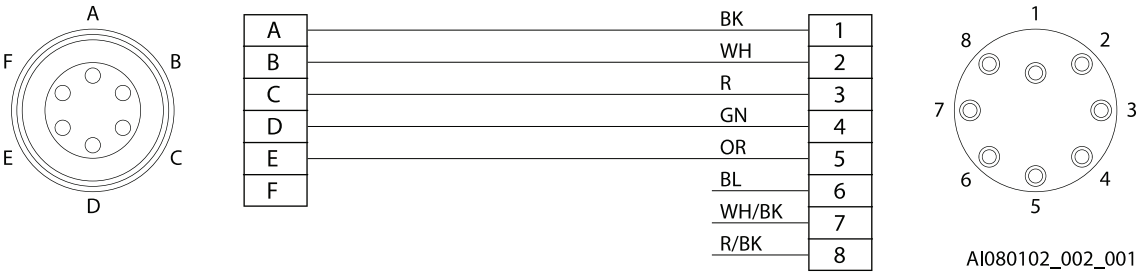
The battery must be fully charged when the unit is put in storage. (Place the unit on a steady and level surface. Secure the unit to minimize the risk of injury to personnel and equipment.) Charge the battery once every year during storage. Charge the battery more frequently if the storage temperature regularly exceeds 25 °C.

Cabling

Topics

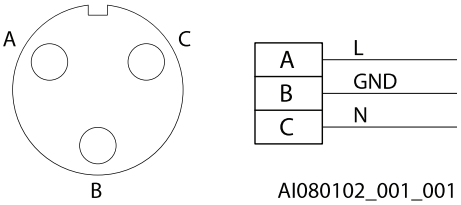
Recommended cable pinouts

TTC serial line cable



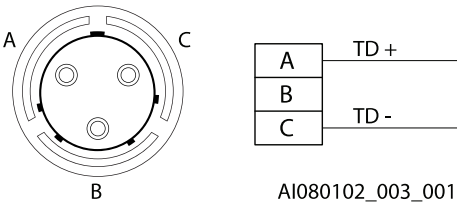
The female connector on the left, seen from the mating side. The male connector on the right, seen from the mating side.

TTC power cable



Female connector seen from the mating side.

Test transducer TTD 309 cable



Male connector seen from the mating side.

Spare parts

Topics

cPAP portable transceiver spare parts

- **Part name:** cPAP 30 portable transceiver
- **Part number:** 463020

- **Part name:** cPAP 10 portable transceiver
- **Part number:** 377913

Dunking transducer spare parts

- **Part name:** TDD30V medium frequency
- **Part number:** 320680

- **Part name:** TDD303 medium frequency
- **Part number:** 301518

- **Part name:** TDD180 medium frequency
- **Part number:** 320822

- **Part name:** TDD30H medium frequency
- **Part number:** 377463

- **Part name:** TDD103 low frequency
- **Part number:** 313665

Test transducer and cables - spare parts

Test transducer

- **Part name:** Test transducer TTD 309
- **Part number:** 312-219822

Serial line cable

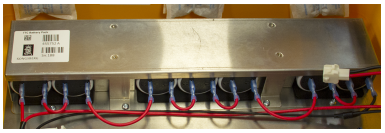
- **Part name:** TTC Serial line cable
- **Part number:** 355047

Power cable

- **Part name:** TTC Power cable
- **Part number:** 375781

Battery spare part

- **Part name:** TTC battery
- **Part number:** 455752



Control panel spare part

- **Part name:** Front panel TTC30
- **Part number:** 454044

Technical specifications

Topics

Environmental requirements

These environmental specifications summarize the temperature and humidity requirements for the cPAP 30/cPAP 10 portable transceiver.

- **Operating temperature:** –5 to +55 °C
- **Storage temperature:** –30 to +70 °C
- **Ingress protection rating:** IP 54

Note

An ingress protection rating of IP 54 is achieved when the case is closed and the power connector protection cap is securely fastened in place.

Performance specification

These performance specifications summarize the main functional and operational characteristics of the cPAP 30/cPAP 10 portable transceiver.

cPAP 30 portable transceiver

- **Operating frequency:** Medium frequency

cPAP 10 portable transceiver

- **Operating frequency:** Low frequency

Power requirements

These power characteristics summarize the supply power requirements for the cPAP 30/cPAP 10 portable transceiver.

- **Input voltage:** 100-240 VAC, 47-63 Hz
- **Battery cell type:** Lead-acid
- **Battery runtime (State of Charge 100%):** Approximately 3 hours

Weight and outline dimensions

These weights and outline dimension characteristics summarize the physical properties of the cPAP 30/cPAP 10 portable transceiver.

cPAP 30 portable transceiver & cPAP 10 portable transceiver

- **Case dimensions:** Width: 488 mm; Depth: 386 mm; Height: 185 mm
- **Weight:** 19.5 kg

Test transducer

- **Cable length:** 2.5 m

Serial line cable

- **Cable length:** 5 m

Power cable

- **Cable length:** 2 m

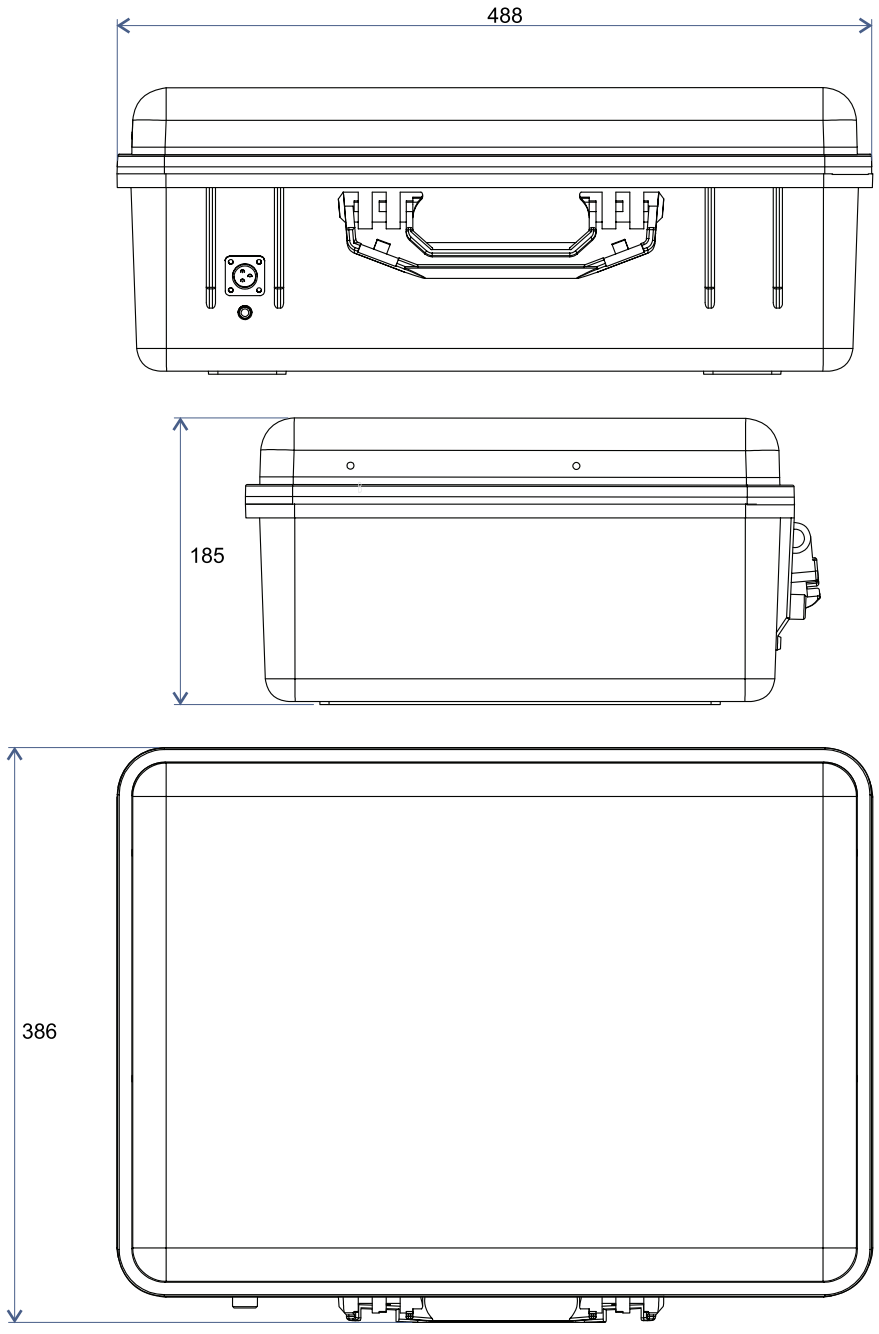
Dunking transducer

- **Dimensions:** Width: 220 mm (closed), 430 mm (open); Depth: 590 mm; Height: 500 mm
- **Weight:** Approx. 25 kg

Drawing file

Topics

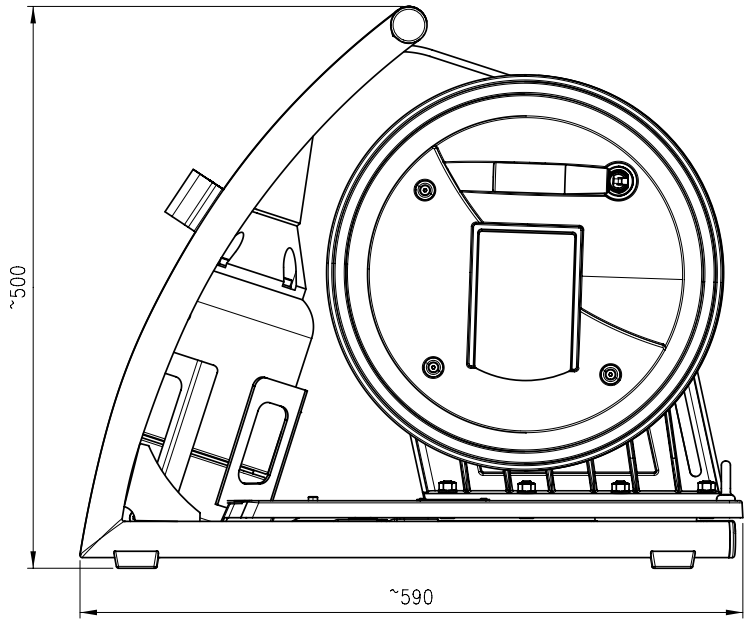
cPAP portable transceiver outline drawing

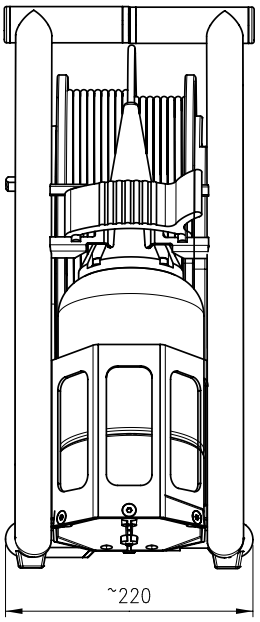


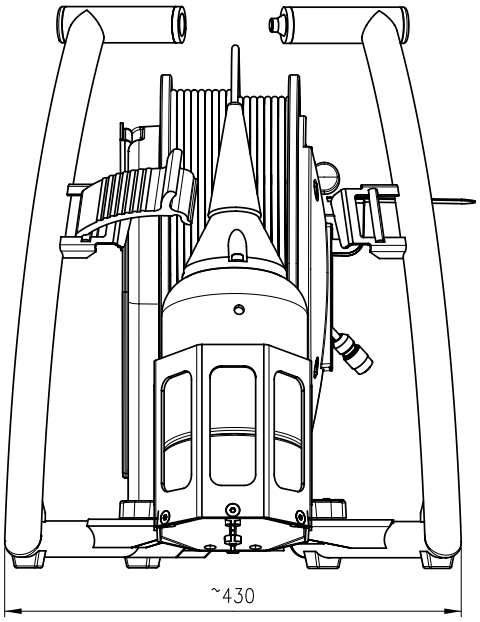
All measurements in millimetres. The drawing is not to scale.
Information may be omitted. Refer to the source drawing for additional details.

[320350] Rev.A
AI031101_001_001

Dunking transducer outline drawing



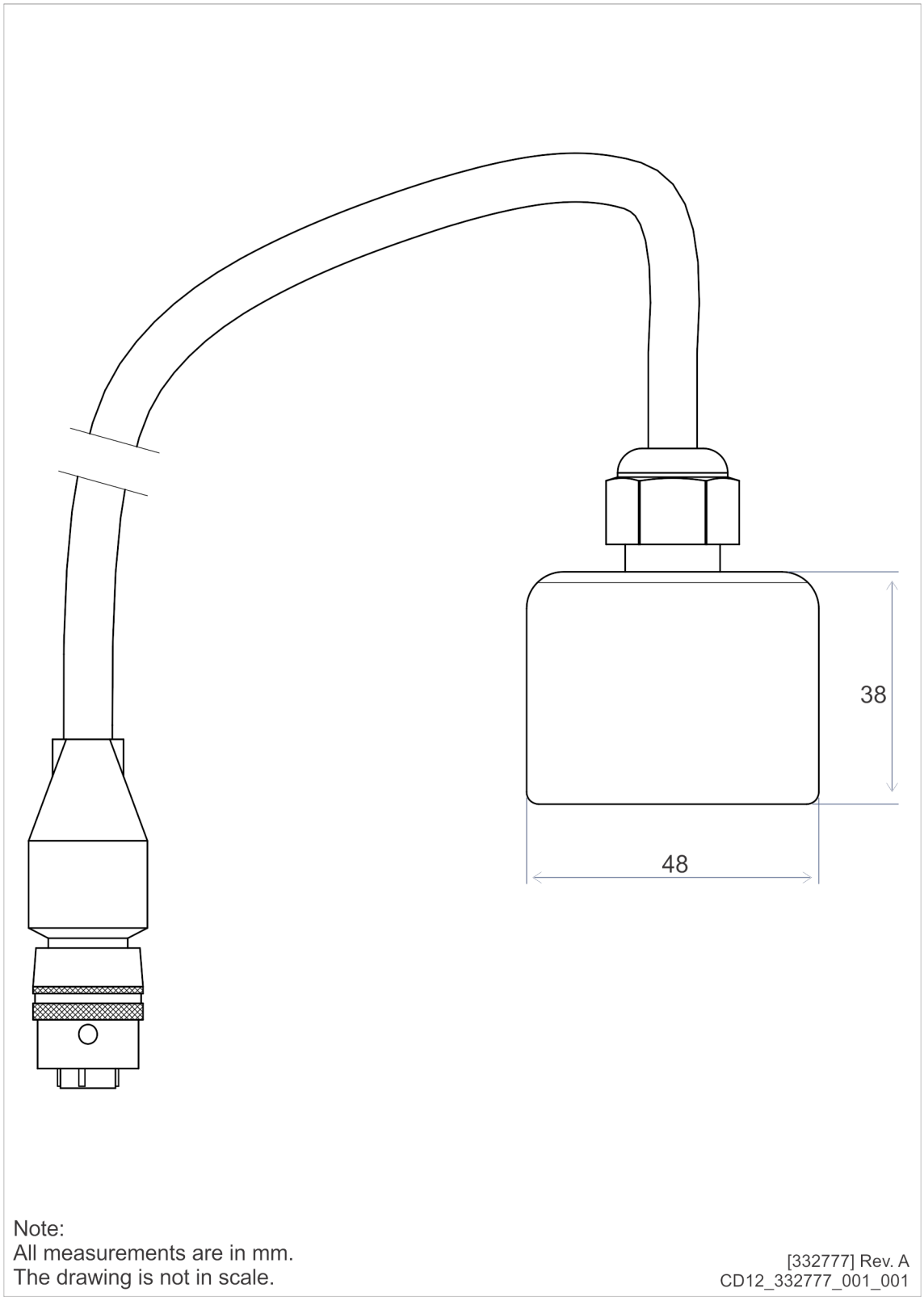




All measurements in millimetres. The drawing is not to scale.
Information may be omitted. Refer to the source drawing for additional details.

[313665] Rev.A
AI030401_003_01

Test transducer outline drawing



Index

R

S

T

W