INSTRUCTION MANUAL

KONGSBERG

cPAP 30 and cPAP 10 Portable Transceiver

KONGSBERG

cPAP® Portable transceiver

cPAP 30 and cPAP 10

Instruction Manual

Document history

Rev	Date	Written by	Checked by	Approved by
B	10 August 2016	IJG	HAA	SER
	Updated information regarding test transducer and added part number for cPAP 10 in Spare parts section.			

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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. The user must be familiar with the contents of the appropriate manuals before attempting to operate or work on the equipment. Kongsberg Maritime disclaims any responsibility for damage or injury caused by improper installation, use or maintenance of the equipment.

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Table of contents

1 ABOUT THIS MANUAL

This is the Instruction manual for the cPAP® Portable transceiver unit.

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Manual content

The manual contains descriptions, specifications, procedures, spare parts, outline drawings and illustrations on how to operate and maintain the cPAP Portable transceiver unit.

Abbreviations

APOS	Acoustic Position Operator Station
IP	Ingress Protection
KM	Kongsberg Maritime
LF	Low frequency
MF	Medium frequency
TP	Transponder

2 SYSTEM DESCRIPTION

This chapter gives an overall description of the cPAP Portable transceiver unit.

Topics

cPAP Portable transceiver units

The cPAP Portable transceiver unit is designed to fully operate subsea transponders from a vessel. The cPAP Portable transceiver is used together with a dunking transducer.

- The cPAP Portable transceiver is compatible with both Cymbal and acoustic protocol for positioning and data link and HPR 400 channels and telemetry.
- Acoustic link for command and data transfer.
- SSBL Range measurement positioning.
- LBL Positioning (optional).
- The cPAP Portable transceiver use full APOS menu.

The cPAP Portable transceiver unit is also used for on-deck acoustic testing and configuration of the cNODE and MPT/SPT/MST transponders.

The cPAP Portable transceiver unit is a touch screen/trackball operated transceiver set in a splash proof portable case with a carrying handle and shoulder strap. It has an internal rechargeable battery.

→ *See the outline dimensions of the cPAP Portable transceiver unit in Drawing file on page 23.*

Figure 1 cPAP Portable transceiver unit

cPAP 30

The cPAP 30 is designed to operate, test and configure all medium frequency (MF) transponders

cPAP 30 P/N: 367651

cPAP 10

cPAP 10 is designed to operate, test and configure all low frequency (LF) transponders

cPAP 10 P/N: 377913

→ *See chapter Operation on page 9 for more information about how to operate the cPAP unit.*

The unit comes with:

- Serial Line Cable
- Mains cable

Dunking transducers

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

The cable drum holds 70 m of transducer cable with a transducer connected to the “outer” end. The other end of the cable must be connected to the front of the cPAP 30 Portable transceiver unit.

The cable drum is fitted with a handle for cable roll-out/roll-up on one side and a cable locking-pin on the other side.

TDD30V Medium Frequency

- For use in water depths of 1000 m - 4000 m and with a 30 degree beam width transducer.
- It has a connector for interface with cPAP 30, ACC 401, ACU 30, TTC400 and TTC 30.
- P/N: 320680

TDD303 Medium Frequency

- For use in water depths of 1500 m and with a 50 degree beam width transducer.
- It has a connector for interface with cPAP 30, ACC 401, ACU 30, TTC400 and TTC 30.
- P/N: 301518

TDD180 Medium Frequency

- For use in water depths of 500 m and with a180 degree beam width transducer.
- It has a connector for interface with cPAP 30, ACC 401, ACU 30, TTC400 and TTC 30.
- P/N: 320822

TDD30H Medium Frequency

- For use in shallow water.
- Beam width is 30 degrees horizontal, medium frequency transducer on 70 m armoured cable.
- It has a connector for interface with cPAP 30, ACC 401, ACU 30 and TTC 30.
- P/N: 377463

TDD103 Low Frequency

- A ± 30 degree beam width and low frequency transducer.
- It has a connector for interface with cPAP 10, ACC 401, TTC400 and TTC 10.
- P/N: 023-220879

→ *See Dunking transducer outline dimensions in Drawing file on page 23.*

Transponder configuration (on-deck)

The serial line cable connects a transponder to the cPAP and is used for transponder configuration such as changing acoustic mode and default channels and SW download.

P/N: 355047

Power supply

Mains power cable is used to connect the cPAP to a standard 115/230 Vac mains supply to recharge the internal battery.

P/N: 375781

3 TECHNICAL SPECIFICATIONS

This chapter lists the main technical specification for the TTC.

Topics

cPAP Portable transceiver

Common specifications for cPAP Portable transceiver

Case information

Case dimensions:	386 mm x 488 mm x 185 mm
Weight:	approximately 19.5 kg
Degree of protection:	IP54

→ *Outline dimensions - see drawing in the Drawing file chapter on page 23.*

Electrical details

Input voltage:	100 to 240 Vac (47 to 63 Hz)

Environmental conditions

Operation (in water) temperature:	-5 °C to + 55 °C
Storage temperature:	-30 °C to +70 °C

Batteries

Number of batteries:	1
Cells per battery:	7
Type of cells:	Lead/Acid
Battery output:	14 Vdc
Transmission power (max):	300 W
Continual use:	approximately 10 hours

cPAP 30

Operating frequency:	Medium frequency (MF)

cPAP 10

Operating frequency:	Low frequency (LF)

Dunking Transducer Unit

Length of cable:	70 m

→ *Outline dimensions/weight - see drawing in the Drawing file chapter on page 23*

Serial Line cable

Length:	5 m

→ *Outline dimensions - see drawing in the Drawing file chapter on page 23.*

Mains Power cable

Length:	Approx. 2 m

4 OPERATION

This chapter describes how to start using the cPAP unit

Topics

cPAP Front panel

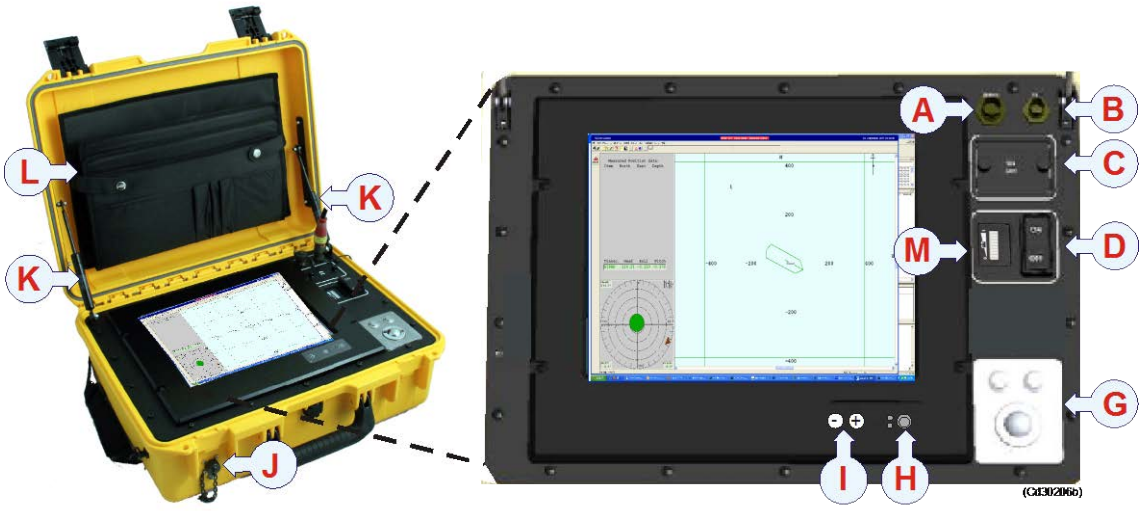


Figure 2 cPAP Front panel

The touch screen is mostly used when performing Acoustic test and Transponder configuration. All other connections and buttons are explained below:

A **Connector** (with protection cap) for Serial line. For service personnel only. (For program downloads and configuration purposes).

B **Connector** (with protection cap) for Dunking transducer cable.

C **Connectors for USB and LAN**. For service personnel only. (Connection to network and possible APOS/PC program download via USB.)

- Placed behind a waterproofed cover. Turn the pegs to lift cover.

D **Power ON/OFF** switch.

G **Trackball** - used to position the cursor on the screen.

Left button: Used to click on buttons, operate menus and select displayed symbols.

Right button: Used to display menus and pop-up windows.

H Stand-by wake up, with two LEDs indicating status.

I Display light (-/+) adjustment.

J Power connector - male 3-pins connector for the mains cable.

- This cable (see **L**) is used to connect the TTC to a standard 230 Vac mains supply, to recharge the internal battery.

K Gas lift springs.

L Battery charge cable in lid folder - supplied with the unit.

M Battery status indicator. The battery should last for approx. 3 hours of continual use.

Turning unit ON and OFF

Turning unit ON

1 Disconnect the cPAP power cable from charging station.

2 Place the cPAP Portable unit in a suitable location and open the lid by pressing the handle knobs and pull the handles towards you.

Figure 3 Opening the cPAP portable case

3 Place the cable drum close to the cPAP.

4 Prepare the cable drum for operation.

- See description in Figure 6.

5 Pull out the transducer cable and lower the dunking transducer into the sea to a depth at least 10 m below the lowest part of the platform's/vessel's keel or thrusters.

- If required - use the handle to reel out the cable.

6 Connect the transducer cable to the connector marked TD on the top right hand side of the screen of the cPAP.

7 Turn on the cPAP Portable transceiver unit by turning on the main power switch ON in order to start the PC program (starting up the system will take approx. 1.5 minutes).

The system is now ready for use!

Turning unit OFF

1 Switch ON/OFF button (D) to OFF position (see cPAP Front panel on page 9).

→ *See APOS Menu on page 13 for more information*

Setting up the cable drum with the dunking transducer

How to open the cable drum

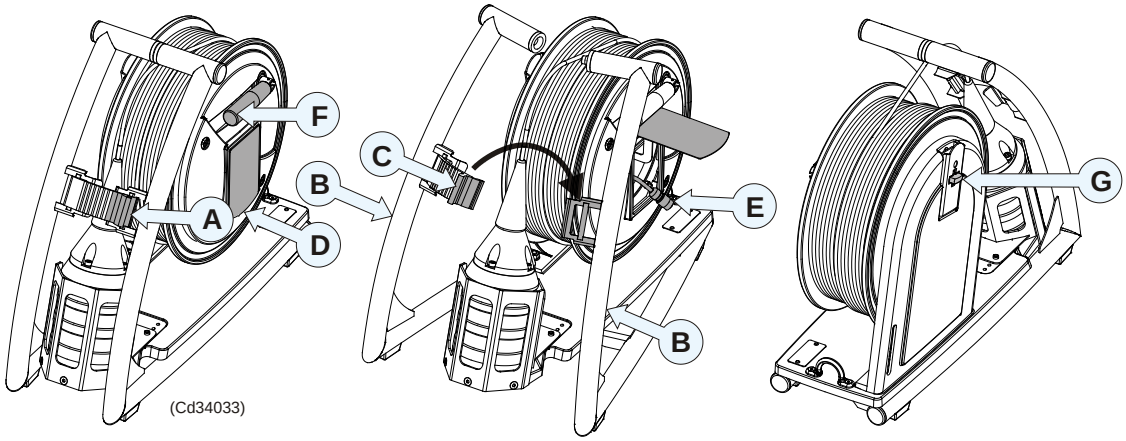


Figure 4 Cable drum with transducer

1 Pull the locking clip (**A**) towards you to open the unit.

2 Fold out the handle (**F**).

3 Lift up the cover (**D**).

- The cable for cPAP connection is placed inside the drum - behind the cover (**D**).

4 Pull out the cable (**E**).

5 To unlock the transducer cable, unlock the locking-pin, by turning the locking-knob (**G**) into vertical position.

How to close the cable drum

Note	*Wash the unit, cable and transducer before storage.*

1. Use the handle to reel in the transducer cable.
2. Place the transducer in the basket.
3. Push the cable locking-pin into position and lock the cable by turning the locking-knob (**G**) into horizontal position.
4. Fold the handle (**F**) into position.
5. Press the two bars (**B**) together and push the locking clip (**C**) into position.
6. Roll-up the cable (**E**), and place it inside the drum.
7. Close the cover (**D**).

cPAP APOS Menu

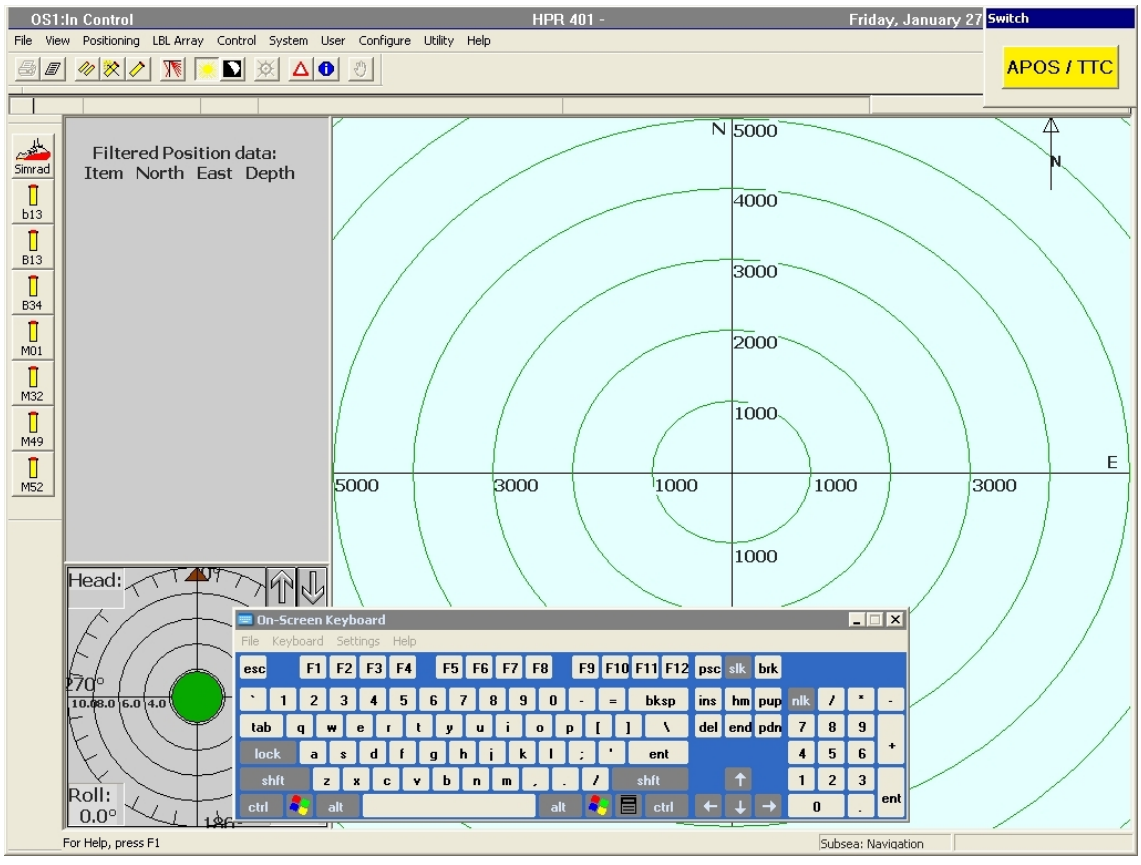


Figure 5 cPAP APOS Menu

The main APOS menu is shown in Figure 7 with an on-the-screen keyboard make the operation easier.

→ *See APOS Online Help on page 14 for more information about APOS operation.*

APOS Online help

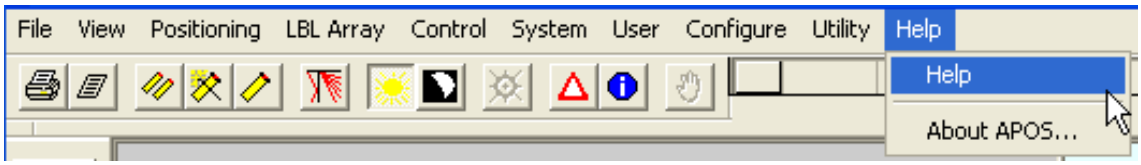


Figure 6 APOS Online help

The APOS Online help button is located on the right hand side toolbar on the top of the page.

1 Select Help on the toolbar.

2 Select Help from the dropdown menu.

3 APOS Online help will appear on the screen.

Operation of subsea transponders

→ *Refer to APOS Online help for more information.*

Transponder test and configuration

TTC Menu

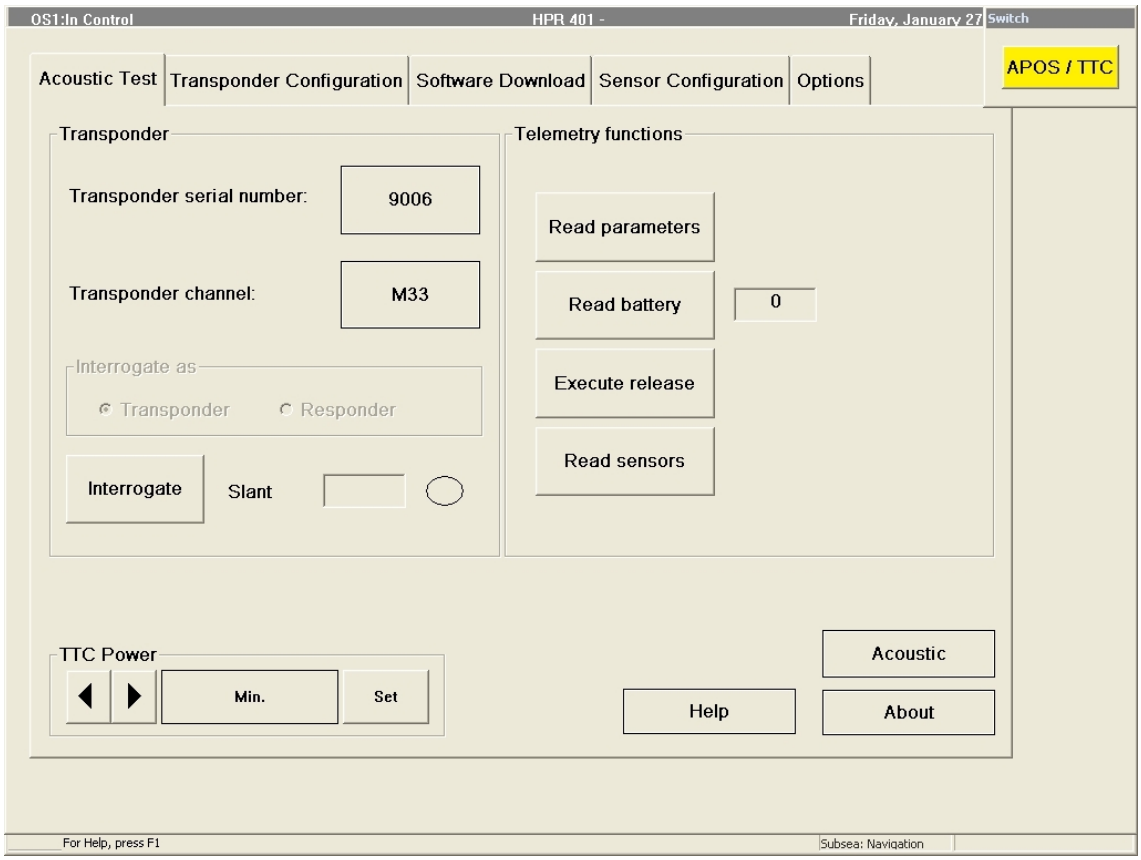


Figure 7 TTC Menu

TCC Menu is used for on-deck transponder test and configuration.

The main menu (see Figure 9) contains the following sub menus:

- Acoustic Test
- Transponder Configuration
- Software Download
- Sensor Configuration
- Options

TTC Menu help button

Figure 8 Help button

This Help button is located on every page in the TTC menu. The Help menu will provide relevant information about the current operation.

APOS / TTC Switch button

Figure 9 APOS/TTC Switch button

The APOS/TTC button is located in the top right corner of the TTC screen.

Select this button to switch between the APOS menu and the TTC menu.

Transponder acoustic test (on-deck)

1 Select TTC Menu.

2 Place the Dunking transducer or (Test transducer (**T**) face to face with the transponder.

3 Communication between the cPAP and the transponder may easily be tested by selecting the ACOUSTIC TEST tab → enter S/N → Transponder channel No. → INTERROGATE.

4 A green lamp will blink on the display if there is acoustic contact with transponder.

5 Press INTERROGATE button again to stop ACOUSTIC TEST.

6 To set cPAP POWER use left/right arrows to choose power level → press SET to confirm your selection.

Transponder configuration (on-deck)

Establish connection with TP

1 Select TTC Menu.

2 Connect the Serial line cable to the upper left connector (**A)** on cPAP (Figure 4 cPAP Front panel on page 9) and the other connector to the bottom of the transponder (**S**).

3 Select TRANSPONDER CONFIGURATION tab.

4 The cPAP will automatically update TP information when connected.

5 The cPAP is ready for configuration when GREEN line is visible.

- If the line is red and no contact is made with the TP → check all cables and try again.

New configuration

1 Press buttons on the right hand side of the screen to change TP info.

2 Press DOWNLOAD NEW CONFIGURATION to update transponder.

3 New transponder info will appear on left hand side of screen.

- If DOWNLOAD NEW CONFIGURATION is unsuccessful a red box will appear on right hand side with message 'Download config failed' → check all cables and try again.

T: Test Transducer connected to communication in air.

S: Serial line connection

Figure 10 Transponder test and configuration

5 MAINTENANCE

Warning

Kongsberg Maritime accepts no responsibility for any damage or injury to the system or personnel caused by drawings, instructions and procedures not prepared by Kongsberg Maritime.

Neither Kongsberg Maritime nor our dealers will accept responsibility for damage or injury to the system or personnel resulting from incorrect maintenance performed on the system.

Topics

→ *cPAP unit on page 18*

→ *Charging the battery on page 19*

→ *Service/repairs on page 20*

cPAP unit

Maintenance will primarily be keeping the unit clean and charging the battery.

- Clean the unit and charge the battery at least every 12 months.

To keep the unit clean, use:

- Soft lint-free cloth
- Bucket
- Mild liquid detergent

Wet the cloth, then wring as much of the water out as possible.

Note

Use only a damp cloth - so there is no possibility of water dripping into the unit.

Charging the battery

During operation:

If the cPAP battery indicator indicates LOW power → connect the charging cable.

Charging options:

A Switch the unit off during charging and then switch it on again when you are going to use it.

B Leave the cPAP switched on during charging.

To start charging:

Mains cable is stored in the lid folder.

1 Connect the cable to the Power connector at the front of the cPAP.

Figure 11 Mains power connector is located at the front of the unit on the left hand side.

Note	*Use the mains cable supplied with the system.*

2 Connect the other end of the cable into a 115/230 Vac mains supply.

- It is important that the battery is fully charged when the cPAP is stored. It must be recharged at least every 12 months.

Service / Repairs

If the unit for some reason should stop working, then DO NOT try to repair the unit yourself. Service/Repairs must ONLY be performed by qualified KM Service personnel. The unit must be sent back to KM office for service/repairs.

6 SPARE PARTS

This chapter lists the parts and modules defined by Kongsberg Maritime as *Line Replaceable Units (LRUs)*.

Topics

Units

KM P/N	Units	Type	Comments
367651	cPAP 30	cPAP Portable transceiver	Medium Frequency
377913	cPAP 10	cPAP Portable transceiver	Low frequency

Note *The unit comes with Serial Line Cable and Mains cable.*

Dunking transducers

KM P/N	Units	Type	Comments
320680	TDD30V	1000 – 4000 m, 30° vertical beam width	Medium Frequency
301518	TDD303	1500 m, 50° beam width	Medium Frequency
320822	TDD180	500 m, 180° beam width	Medium Frequency
TBI	TDD30H	30° horizontal beam width	Medium Frequency
023-220879	TDD103	± 30° beam width	Low frequency

Cables

KM P/N	Units	Type	Comments
355047	Test cable TTC	Serial line cable	Not supplied with the cPAP unit
375781	Mains cable		Supplied with the cPAP unit

Test transducer

KM P/N	Units	Type	Comments
312-219822	Test Transducer	On-deck test transducer	Supplied with the cPAP unit

7 DRAWING FILE

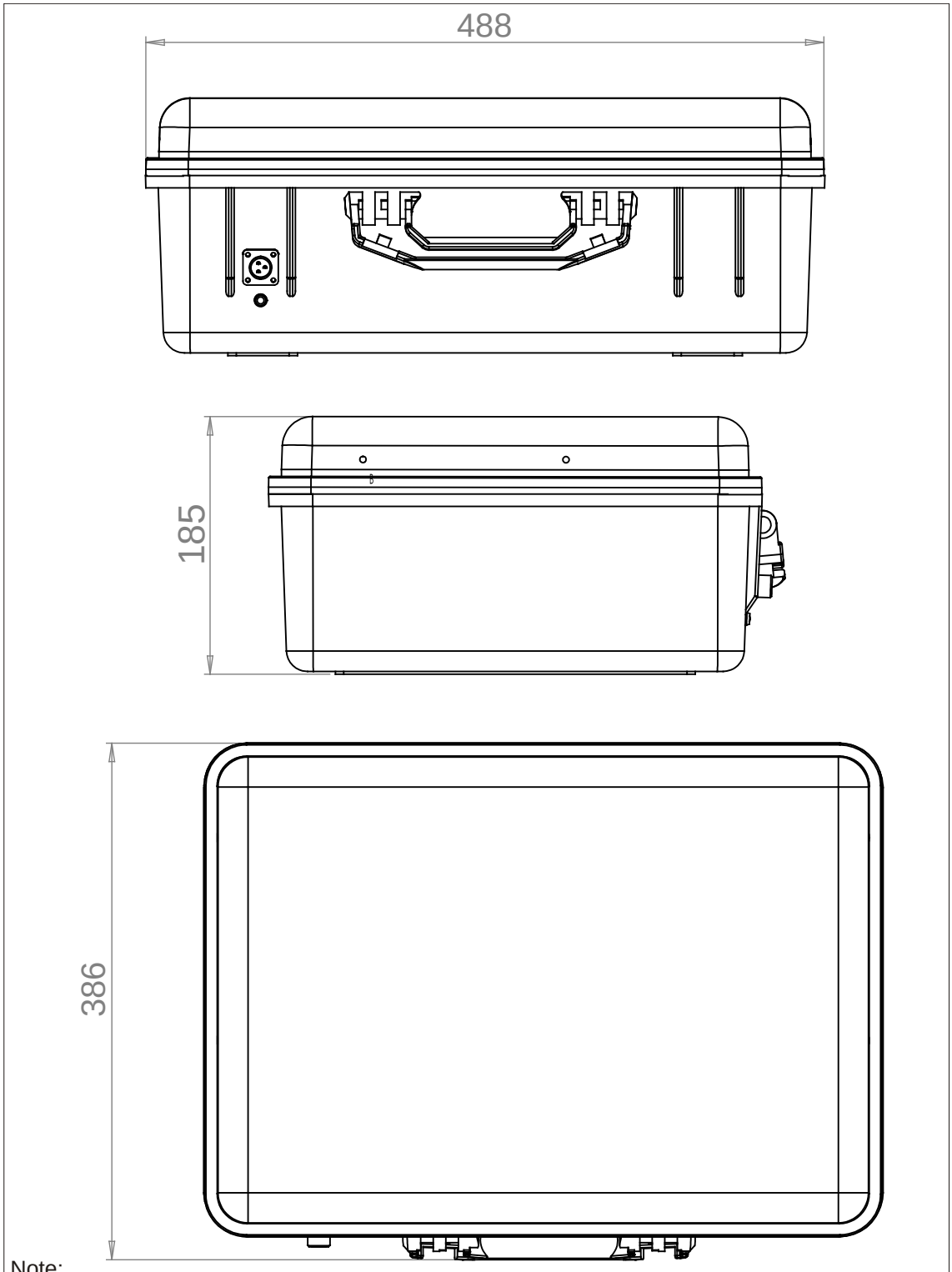
This chapter holds illustrations referred to in various sections in this manual. The illustrations are based on the original system drawings and wiring diagrams.

- The original drawings are available in electronic format on request.

Drawings

Draw. No.	Rev.	Description	Ref.
Cd302025	A	Outline drawing – cPAP unit	on page 24
301714	B	Outline drawing – Dunking transducer unit	on page 25
301714	B	Outline drawing – Dunking transducer with TDD303 MF	on page 26

Outline drawing – cPAP unit



Note:
All measurements are in mm.
The drawing is not in scale.

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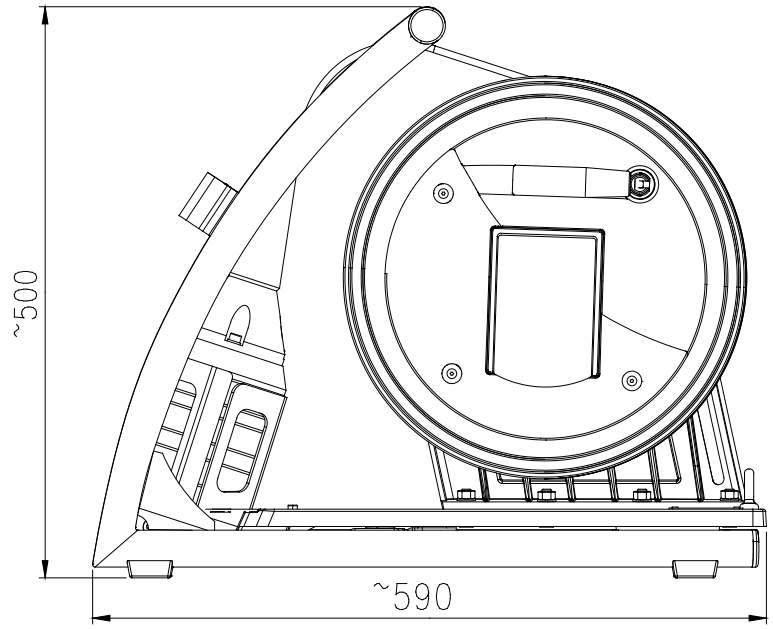
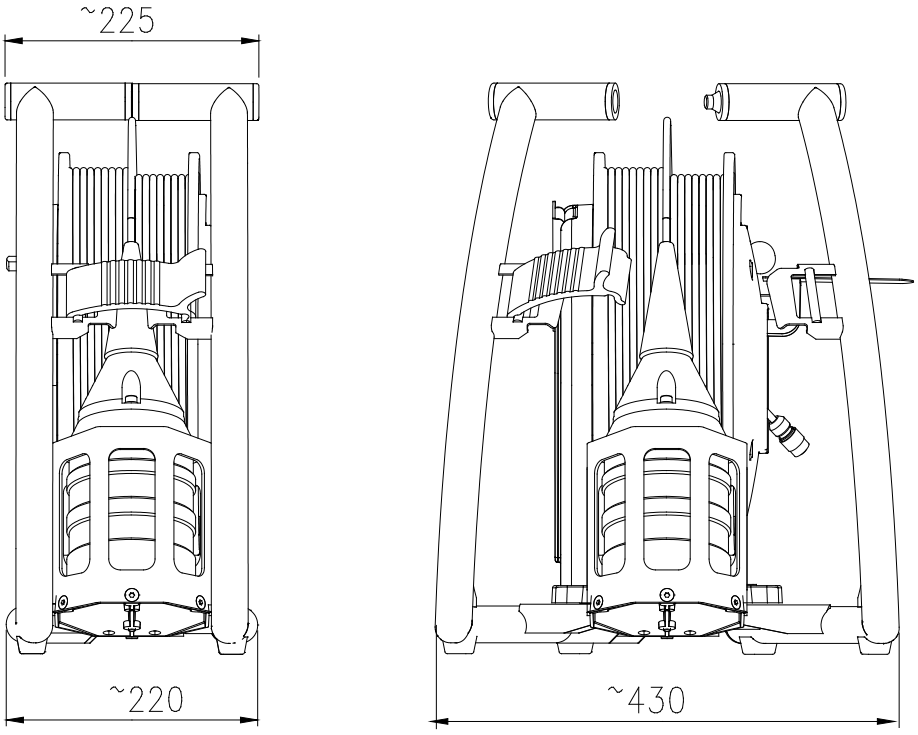
320350 rev. A

Outline drawing – Dunking transducer unit





Weight: Approx 25 kg depnding on type of TD

Note:
All measurements are in mm.
The drawing is not in scale.

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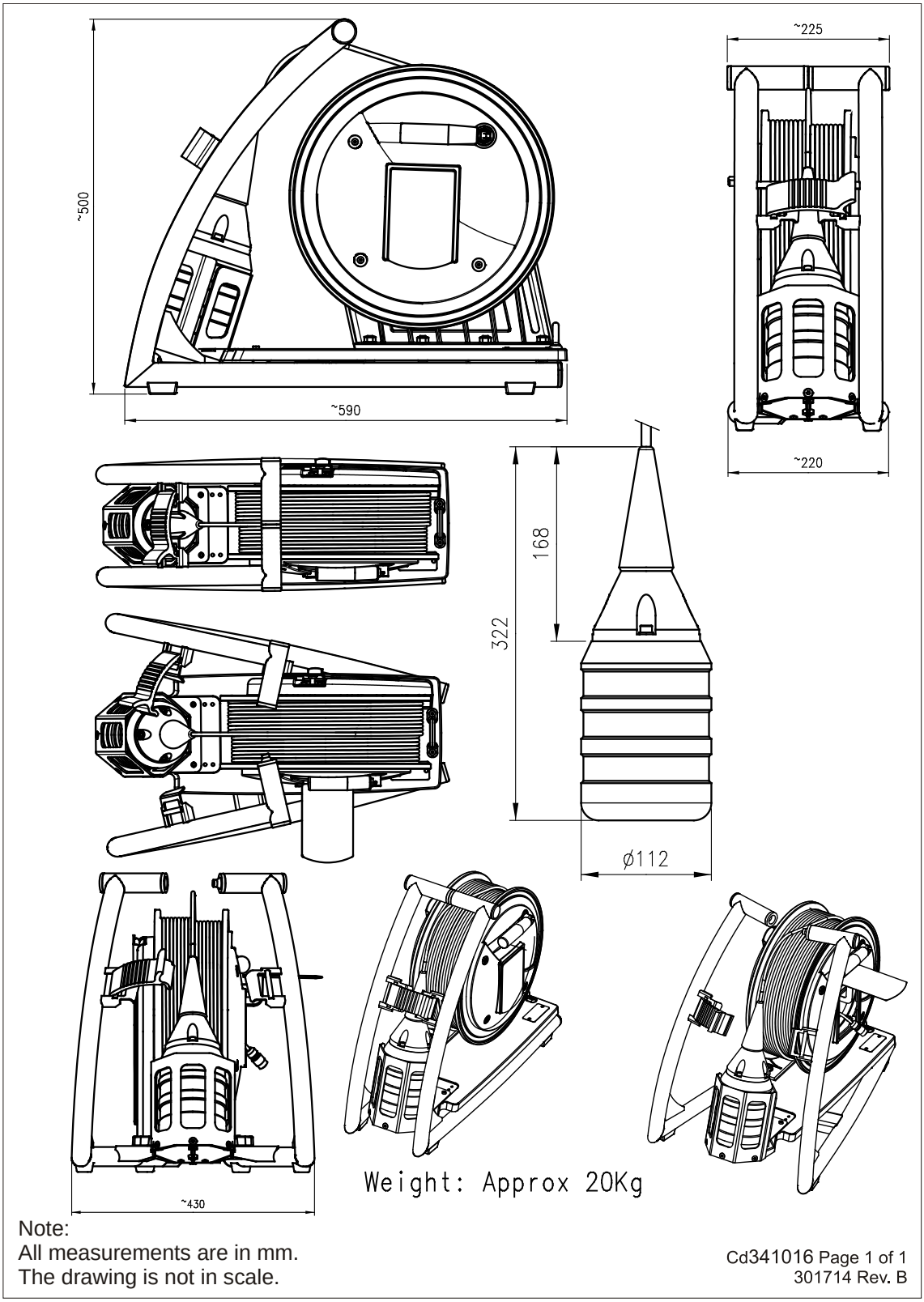
Outline drawing – Dunking transducers with TDD303 MF



Note:
All measurements are in mm.
The drawing is not in scale.

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8 INDEX

The next pages present the index of this manual.