



KONGSBERG

EA640

Single beam hydrographic echo sounder

Quick installation guide

This manual provides you with information required to install the Kongsberg EA640 Single beam hydrographic echo sounder.

Caution _____

The EA640 echo sounder must never be powered up when the ship is in dry dock. The transducer will be damaged if it transmits in open air. To prevent inadvertent use of the EA640, disconnect the mains power whenever the vessel is in dry dock.

Document information

- **Product:** Kongsberg EA640
- **Document:** Quick installation guide
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Note

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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.

Comments

To assist us in making improvements to the product and to this manual, we welcome comments and constructive criticism.

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For technical support issues, please contact km.support@km.kongsberg.com.

Support information

If you require maintenance or repair, contact your local dealer. You can also contact us using the following address: km.hydrographic.support@kongsberg.com. If you need information about our other products, visit <http://www.km.kongsberg.com>

Installing the EA640 hardware units

Topics

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Installing the WBT using the integrated brackets

The EA640 WBT is normally positioned in a dedicated room in the vicinity of the transducer. The physical length of the cables limit the physical distance between each transducer and the WBT. The WBT can be installed vertically or horizontally using the integrated mounting brackets. Four bolts are used, two on each side.

Prerequisites

A suitable location for the WBT must be defined prior to installation. We recommend that it is mounted as close to the transducers as possible. The unit can in principle be mounted anywhere on board the ship, provided that the location is dry and ventilated.



The length of the transducer cables limits where the WBT can be installed.

The unit can be mounted in any direction and on any surface provided that the environmental requirements are met.

Note

If you mount the WBT on a bulkhead, position the unit so that all the connections are facing down.

Procedure

- 1 Place the WBT in the selected position.
- 2 Secure the unit using 6.5 mm bolts through the two mounting brackets.
Make sure the cable connections are facing down if the unit is installed on a bulkhead or wall.
- 3 Connect the cables.

Note

When you connect the cables, make sure that they are all properly secured, and able to withstand the vibration and movements of the vessel.

Installing the WBT in a 19" cabinet

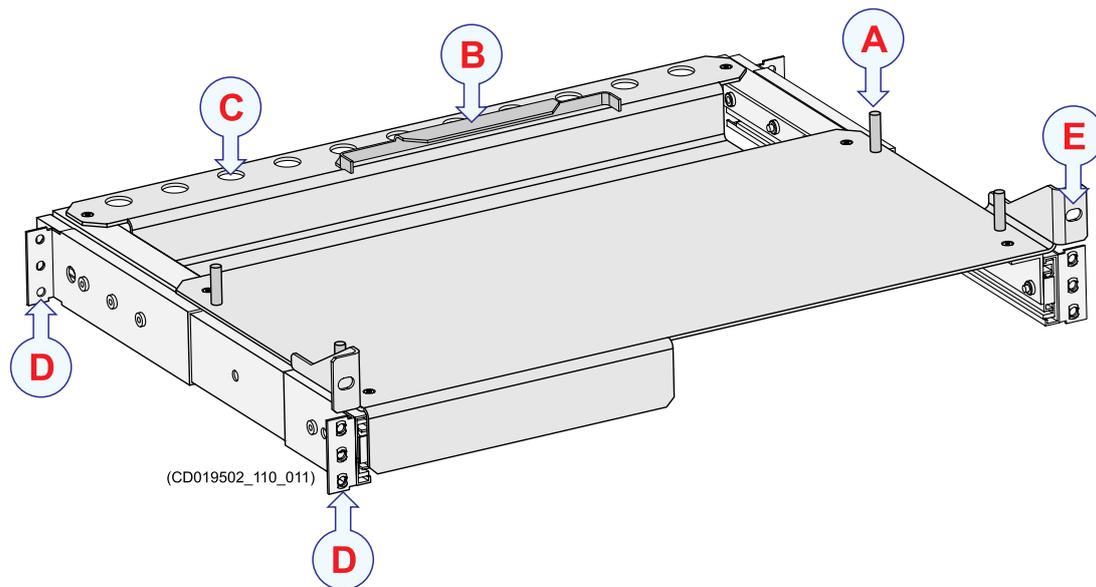
The WBT can be installed in a 19-inch cabinet by means of an optional drawer. You will need one drawer for each WBT unit.

Prerequisites

It is assumed that the WBT Cabinet has already been installed.

Context

If your EA640 comprises more than one WBT, you can use the optional WBT Cabinet. This 19" cabinet holds maximum seven WBTs with power supplies, as well as an Ethernet switch and a power distribution panel. Each WBT is then installed on a dedicated WBT Drawer in the rack.



- A** *Mounting bolts for the WBT*
- B** *Mounting bracket for the power supply*
- C** *Holes for fastening and securing the cables*
- D** *Mounting bolts for the drawer assembly*
- E** *Mounting bolts for the drawer*

Procedure

- 1 Place the WBT on the WBT Drawer.
- 2 Mount the transceiver and the power supply using the brackets, bolts and nuts provided.

- 3 Mount the WBT Drawer into the 19-inch cabinet.
- 4 Connect the cables.

Note

When you connect the cables, make sure that they are all properly secured, and able to withstand the vibration and movements of the vessel.

Installing a commercial computer

The Operator Station can be installed inside a console, inside a suitable cabinet, in a 19" rack or on a desk. Make sure that adequate ventilation is available to avoid overheating.

Prerequisites

You must be equipped with a standard set of tools. This tool set must comprise the normal tools for electronic and electromechanical tasks, such as screwdrivers, pliers, spanners, a cable stripper etc. Each tool must be provided in various sizes. We recommend that all tools are demagnetized to protect your equipment.

A suitable location for the computer must be defined prior to installation. Observe the compass safe distance.

Context

For installation of a commercial computer, refer to the manual supplied by the manufacturer.

Note

Make sure that the chosen computer meets the EA640 requirements. The design and construction must allow for marine use, and the computer must be able to withstand the movements and vibrations normally experienced on a vessel. Verify that you have easy access to cables and connectors, and that the computer can be installed in a safe and secure way.

Standard office computers may not be well fitted for maritime use. The motions and vibrations experienced on a vessel may reduce the computer lifetime considerably. While installing a commercial computer, use your common sense to improve the installation method suggested by the manufacturer.

Procedure

- 1 Prepare the location and the necessary tools.
- 2 Observe the installation requirements.

- a Depending on its physical properties, install the computer inside a console, in a cabinet or 19" rack, or on a desk.
- b Choose a position to fit the available cable lengths between the computer and the other units it connects to.
- c Observe the compass safe distance.
- d Make sure that enough space is made available for maintenance purposes.
- e Make sure that adequate ventilation is available to avoid overheating.
- f Ensure that the installation method allows for the physical vibration, movements and forces normally experienced on a vessel.

Note _____

In order to allow for future maintenance, we strongly advice that you mount the unit with its cables and connectors available for immediate access.

- 3 Verify that the chosen location meets the installation requirements.
- 4 Provide ample space around the computer.

You must be able to reach and use the front and rear mounted connectors and devices. It is also important that you allow for easy access to all the cables, and enough space for inspection, maintenance and parts replacement. If relevant, make sure that the space allows you to open the computer for unobstructed access to its internal parts.

Note _____

Make sure that you can access both the rear and front side of the computer after it has been installed.

- 5 Install the computer.
Observe the applicable documentation provided by the manufacturer.
- 6 Connect the cables.

Note _____

When you connect the cables, make sure that they are all properly secured, and able to withstand the vibration and movements of the vessel.

Mounting the WBT Cabinet

The WBT Cabinet is a customized 19"-inch instrument rack fitted with powerful shock absorbers. The cabinet can contain maximum seven custom drawers, and each of these will hold one WBT and its power supply. An Ethernet switch and a power distributor panel are included the bottom of the cabinet.

Prerequisites

We assume that you are equipped with a standard set of tools. This tool set must comprise the normal tools for electronic and electromechanical tasks, such as screwdrivers, pliers, spanners, a cable stripper etc. Each tool must be provided in various sizes. We recommend that all tools are demagnetized to protect your equipment. The following specific tools are required for this task:

- Power drill
- Welding equipment

We recommend that you install the WBT Cabinet before you install the WBT Drawers and the transceivers.

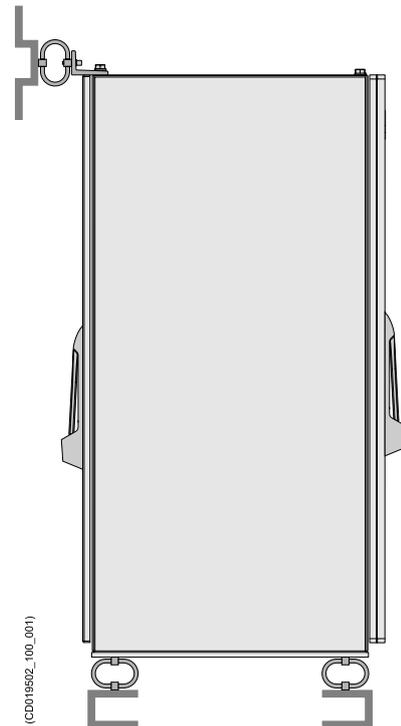
Context

The cabinet is mounted on the shock absorbers. It is mounted on the deck, and secured against a bulkhead. Alternatively, you can place it next to other similar cabinets, and use these for support.

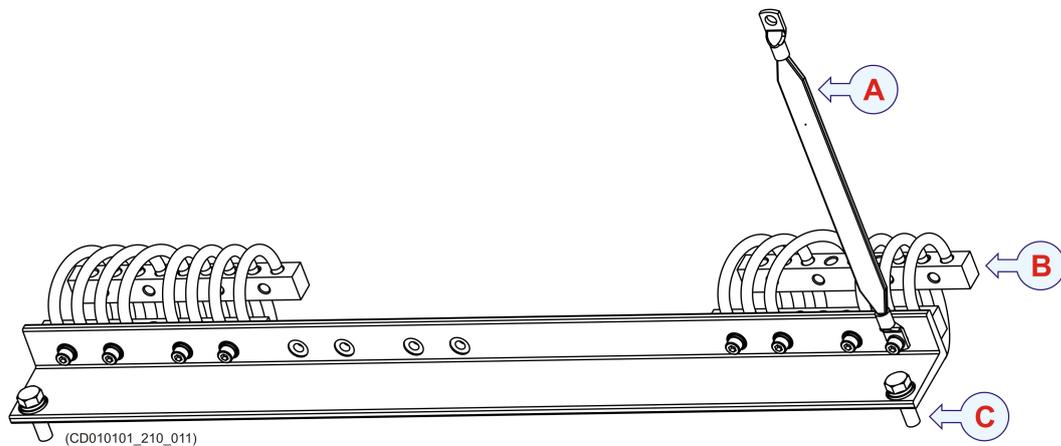
If required for easier cable access, the cabinet can be lifted up from the deck by placing "U" shaped steel profiles under the shock absorbers. Additional distance from the bulkhead can be obtained by designing and installing suitable mounting brackets.

The installation of the cabinet must be planned and prepared by the installation shipyard in close cooperation with the end user. Relevant installation drawings with mounting details must be provided by the shipyard.

Verify that the location meets the environmental requirements defined for the EA640.



Use bulkhead support bracket(s) to make installation easier, and/or "U" shaped profiles to make more space for cables under the cabinet.



- A** *Earth strap*
 - B** *Bolt this shock absorber to the bulkhead.*
 - C** *Secure the shock absorber assembly to the top of the cabinet using these two bolts.*
- All cables will enter through the bottom and/or the top of the cabinet.

Procedure

- 1 Prepare the installation of the cabinet.
 - a Observe the outline dimensions drawing.
The drawing is located in the *Drawing file* chapter in this manual.

Note

The outline dimensions drawing shows the initial size of an empty cabinet. When the cabinet is completed for normal operation, the weight will compress the bottom shock absorbers slightly. You must take this into consideration when you plan the mounting.

- b Determine the location of the unit.
- c Verify that the location meets the sonar room requirements
- d Verify that the location meets the environmental requirements defined for the EA640.
- e Verify that the location is within range of the transducer cables.
- f Verify that the location offers ample space around the cabinet to allow for cables, maintenance and parts replacement.
- g Determine the installation method.
- h Make all necessary installation drawings.
- i If relevant, design and manufacture bulkhead support bracket(s) and/or "U" shaped steel profiles.

Note

The use of "U" shaped profiles and bulkhead support bracket(s) is optional.

- 2 Mount the "U" shaped profiles.
 - a Design and manufacture the "U" shaped profiles, and make sure that they will support the weight of the complete cabinet.
 - b Make the required mounting holes to accept the bottom frame (with shock absorbers).
 - c Position the profiles on the deck, and mount them using bolts or welds.
- 3 Mount the bottom frame.

The bottom frame is fitted with four shock absorbers. If you have used "U" shaped profiles, place the frame on top of these.
- 4 Mount the bulkhead support bracket(s).
 - a Design and manufacture the bulkhead bracket(s).
 - b Make the required mounting holes to accept the top shock absorbers.
 - c Position the brackets on the bulkhead, and mount them using bolts or welds.
- 5 Mount the top shock absorber assembly.
 - a Remove the four lifting lugs.
 - b Mount the top shock absorber assembly using two of the same holes.
 - c Use spare bolts to close the remaining lifting lug holes.
- 6 Place cabinet in its correct position on the bottom frame.
 - a Use four bolts through the bottom frame to secure the cabinet.
 - b Mount the top shock absorbers to the bulkhead support bracket(s).
- 7 Fasten the earth strap.

Mounting the drawers in the WBT Cabinet

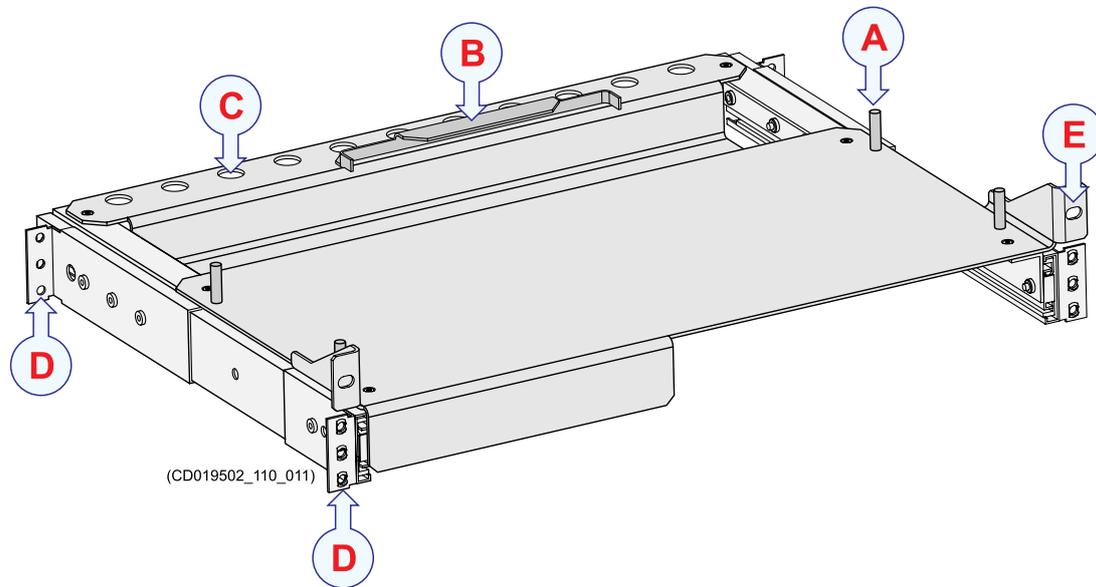
The WBT Cabinet can contain maximum seven custom drawers. Each drawer will hold one WBT and its power supply. The drawer is mounted in the same way as any other equipment designed for 19" racks using standard tools.

Prerequisites

You must be equipped with a standard set of tools. This tool set must comprise the normal tools for electronic and electromechanical tasks, such as screwdrivers, pliers, spanners, a cable stripper etc. Each tool must be provided in various sizes. We recommend that all tools are demagnetized to protect your equipment.

Context

We recommend that you mount all the empty drawers into the WBT Cabinet before you mount the WBT unit on each drawer.



- A** *Mounting bolts for the WBT*
- B** *Mounting bracket for the power supply*
- C** *Holes for fastening and securing the cables*
- D** *Mounting bolts for the drawer assembly*
- E** *Mounting bolts for the drawer*

Procedure

- 1 Decide where in the cabinet you wish to mount the drawers.
- 2 Mount each drawer using six bolts on each side (**D**).
- 3 Pull out the drawer.
- 4 Remove the power supply bracket (**B**).
- 5 Place the power supply on the drawer, and mount the bracket (**B**) to secure it.
- 6 Mount the WBT using the bolts provided (**A**).

Further requirements

Connect the cables.

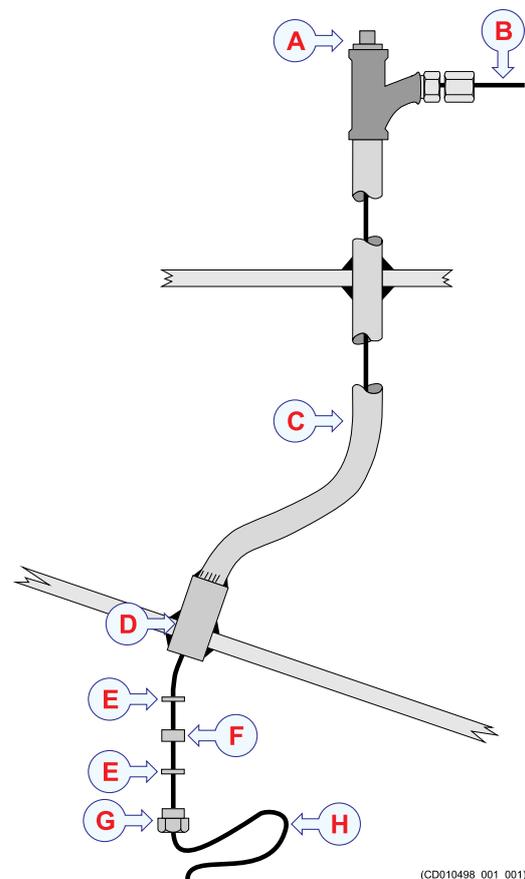
Designing, manufacturing and mounting the steel conduit

A steel conduit is used to protect the transducer cable. The conduit serves two purposes. It will protect the cable, and shield it from electric noise. Depending on how the steel conduit is terminated over the transducer, it may also secure the watertight integrity of the vessel.

Prerequisites

- A** *Service access (optional)*
- B** *To transceiver*
- C** *Steel conduit*
- D** *Stuffing tube, penetrates the hull plating*
- E** *Washer*
- F** *Rubber gasket*
- G** *Packing nut*
- H** *Cable service loop over the transducer*

- All relevant vessel and transducer drawings must be available.
- All relevant work instructions, procedures and standards must be available.
- The physical location of the transducer has been determined.
- The installation method has been determined.
- The cable gland (stuffing box) has been installed.
- All relevant personnel (naval architects, designers, skilled shipyard workers) and tools must be available.



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Context

The installation shipyard must provide all necessary design and installation drawings, as well as the relevant work standards and mounting procedures. If required, all documents provided by the shipyard for the physical installation of the EA640 must be approved by the vessel's national registry and corresponding maritime authority and/or classification society. Such approval must be obtained before the installation can begin. The shipowner and shipyard doing the installation are responsible for obtaining and paying for such approval.

Important

Finalize the steel conduit installation before you pull the transducer cable through it. Make sure that there are no spatter, sharp edges or protruding objects that can damage the transducer cables. If a cable is damaged, and penetrated by water, the transducer will be damaged beyond repair.

Procedure

- 1 Based on the vessel drawings, the physical properties of the decks and bulkheads, and the physical locations of the transceiver and the transducer, design the steel conduit.

The steel conduit must preferably be straight. Start the conduit immediately above the transducer, and terminate it well above the water line. If you must introduce bends on the steel conduit, take the size of the transceiver plug and the minimum cable bending radius into consideration.

- 2 Manufacture the steel conduit according to the relevant production standards.
- 3 Mount the steel conduit.

Secure the steel conduit to decks and/or bulkheads with welds. Observe relevant requirements and guidelines from the classification society, and make sure that the conduit is properly supported, strong and watertight.

Note

The quality of the welding is critical to the safety of the vessel. Welding must only be done by a certified welder.

- 4 If relevant, allow the relevant maritime authority and/or classification society to inspect and approve the design and the installation of the steel conduit.

Installing the transducer(s)

The installation of the transducer (or transducers) is a key task for successful installation of the EA640 Single beam hydrographic echo sounder. Not only will you need to penetrate the vessel's hull, you must also to select a physical location for maximum performance and minimum acoustic and electric noise.

Prerequisites

To get a full overview of the installation, you need all relevant vessel drawings. You also need the drawings provided for each transducer.

Context

Necessary information for the installation of each transducer can be found in the end user documentation provided with the transducer.

Procedure

- 1 Based on the shape and properties of the hull, determine the physical location of the transducer.
Make sure that all possible considerations are made to reduce the noise.
- 2 Based on the shape of the transducer housing, and the mounting devices available, determine the installation method.
- 3 Design, manufacture and mount the necessary fairing, installation blister, keel box and/or tank that is required to mount the transducer.
- 4 Design, manufacture and mount the steel conduit for the transducer cable.
- 5 Unpack the transducer from its transport crate.
- 6 Position the transducer under the mounting location.
- 7 Pull the transducer cable up through the steel conduit.
- 8 Tighten the packing nut on the cable gland properly to avoid leaks.
- 9 Mount the transducer.
- 10 Seal the top of the steel conduit to prevent water leaks.
- 11 Connect the transducer cable to the transceiver.
- 12 If your vessel will operate in waters with a lot of marine growth, consider applying a thin layer of anti-fouling paint to the transducer face.

Mounting the transducer on a blister or drop keel

When all the preparations have been made, observe this procedure for the mounting of the EA640 transducer. If required, additional - and more detailed - procedures must be provided by the installation shipyard.

Prerequisites

- The physical location of the transducer has been defined.
- The steel conduit has been installed.
- A suitable fairing has been designed and mounted.

Note

Whenever relevant, all drawings as well as the physical installation of each device have been approved by the vessel's national registry and corresponding maritime authority and/or classification society.

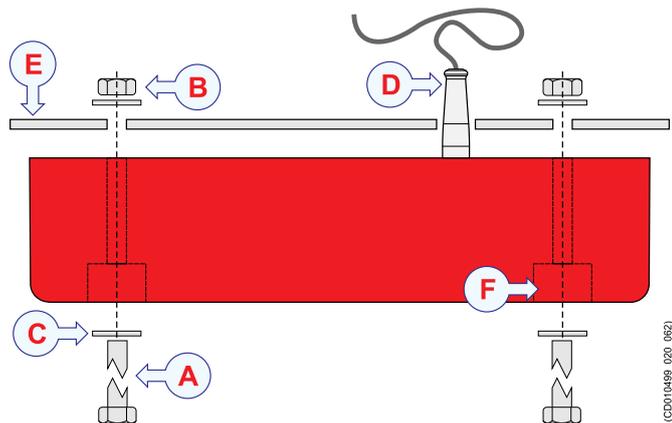
The following special tools are required for mounting:

- Torque wrench for the mounting bolts.
- Loctite 270 (permanent high-strength threadlocker)

Context

This installation arrangement assumes that you can access the inside of the blister or drop keel to mount the nuts. If this is not the case, the transducer transducer must be mounted with threaded steel rods welded to the bottom of the blister.

- A** Bolt with suitable diameter and length
B Nut
C Washer
D Transducer cable
E Blister bottom plate
F Fill with suitable filling compound (putty) to reduce flow noise

**Procedure**

- 1 Lift the transducer up into its location, and align the holes on the transducer with the holes in the blister (or drop keel).

Note

Observe the direction of the transducer. The "forward" marking must point towards the bow of the vessel!

- 2 Insert the two bolts through the transducer and the blister (or drop keel) bottom plate.
- 3 Fasten the two nuts on the inside of the blister (or drop keel).

Use Loctite to secure the nuts.

- 4 Fill the two bolt holes in the transducer with a suitable filling compound (putty), and smooth out the surface of the transducer face.

Note _____

Any obstructions, cracks, dents or unevenness on the transducer face may cause flow noise.

- 5 When the transducer has been secured, inspect the hull area around the transducer face.

Important _____

Ensure that the surface of the transducer face, the hull plating and putty around the transducer is as even and smooth as possible. Obstructions on these surfaces will create problems with turbulent flow.

- 6 If required, allow the relevant maritime authority and/or classification society to inspect and approve the installation.

Mounting the transducer on a steel hull

When all the preparations have been made, observe this procedure for the mounting of the EA640 transducer. If required, additional - and more detailed - procedures must be provided by the installation shipyard.

Prerequisites

- The physical location of the transducer has been defined.
- The steel conduit has been installed.
- A suitable fairing has been designed and mounted.

Note _____

Whenever relevant, all drawings as well as the physical installation of each device have been approved by the vessel's national registry and corresponding maritime authority and/or classification society.

The following special tools are required for mounting:

- Torque wrench for the mounting bolts.
- Loctite 270 (permanent high-strength threadlocker)

Context

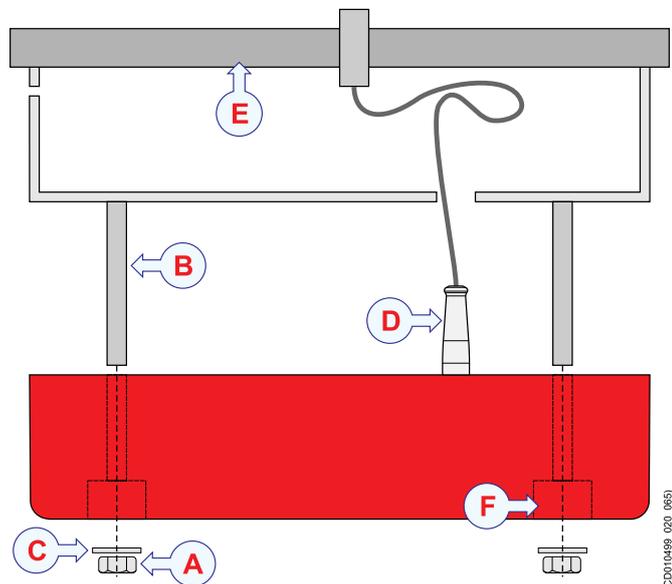
It is very important that the fairing designed for the installation supports the full length of the transducer body. Inadequate support will put the transducer at risk in heavy seas.

The force of the water when the hull falls down may push the transducer up, and may cause damage both to the transducer and to its mounting.

Note

Kongsberg Maritime AS takes no responsibility for any damages to the transducer, the cable or the mounting arrangement, caused by slamming.

- A Nut
- B Threaded rod with suitable diameter and length, welded to the bottom of the fairing
- C Washer
- D Transducer cable
- E Hull
- F Fill with suitable filling compound (putty) to reduce flow noise



Procedure

- 1 Lift the transducer up into its location, and align the holes on the transducer with the threaded rods welded to the fairing.

Note

Observe the direction of the transducer. The "forward" marking must point towards the bow of the vessel!

- 2 Push the transducer in place.
- 3 Fasten the two nuts on the end of each threaded rod.
Use Loctite to secure the nuts.

- 4 Fill the two bolt holes in the transducer with a suitable filling compound (putty), and smooth out the surface of the transducer face.

Note _____

Any obstructions, cracks, dents or unevenness on the transducer face may cause flow noise.

- 5 When the transducer has been secured, inspect the hull area around the transducer face.

Important _____

Ensure that the surface of the transducer face, the hull plating and putty around the transducer is as even and smooth as possible. Obstructions on these surfaces will create problems with turbulent flow.

- 6 If required, allow the relevant maritime authority and/or classification society to inspect and approve the installation.

Cable layout and interconnections

Topics

[Cable plan, page 20](#)

[List of EA640 cables, page 21](#)

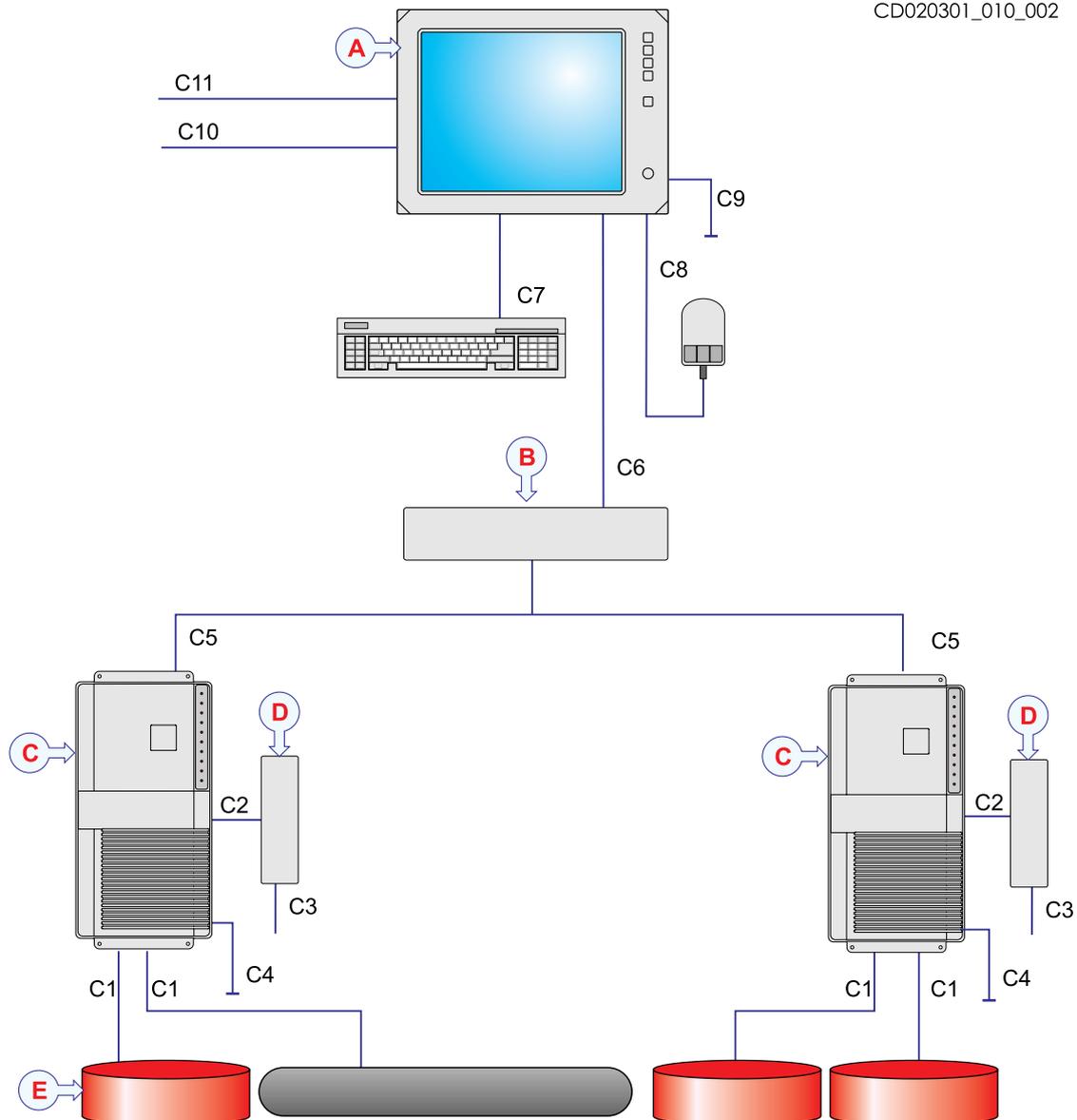
[Installing the EA640 cables, page 22](#)

[Cable drawings and specifications, page 29](#)

Cable plan

The cables are part of the delivery with the main units.

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- A** Operator Station
- B** Ethernet switch
- C** WBT
- D** Power supply
- E** Transducer

An Ethernet switch is required if more than one WBT is used.

A junction box is required if the transducer cable is longer than provided.

List of EA640 cables

A set of cables is required to connect the EA640 units to each other, and to the relevant power source(s).

Cable	Signal	From / To	Min. requirements
C1		WBT / Transducer	See comment 1
C2	DC power cable	Power supply / WBT	See comment 2
C3	AC power cable	Power supply / Vessel mains supply	See comment 2
C4	Ground cable	WBT / Vessel ground	1 x 6 mm ²
C5	Ethernet cable	WBT / Ethernet switch	CAT5-E STP (Shielded Twisted Pair)
C6	Ethernet cable	Operator Station / Ethernet switch	CAT5-E STP (Shielded Twisted Pair)
C7	Keyboard	Operator Station / Keyboard	See comment 2
C8	Mouse	Operator Station / Mouse	See comment 2
C9	Ground cable	Operator Station / Vessel ground	1 x 6 mm ²
C10	AC power cable	Operator Station / Vessel mains supply	See comment 2

Comments

- 1 The transducer cable is provided with the transducer. If you need to splice the transducer cable to make it longer, observe the information in the end user documentation for the relevant transducer.
- 2 The cable is supplied with the EA640 delivery.

Identifying EA640 cables on a project cable drawing

The EA640 is often a part of a project delivery. For such deliveries, specific project cable drawings are established to show all the main cables, and how the various products are connected. In such project cable drawings, the EA640 cables are identified as **EA640/Cx**.

Installing the EA640 cables

Topics

[Connecting one or more transducers to the WBT, page 22](#)

[Connecting power and ground to the WBT, page 26](#)

[Connecting the Ethernet cable from the WBT to the Operator Station, page 27](#)

[Connecting a synchronization cable to the Operator Station using an RS-232 serial interfaces, page 27](#)

Connecting one or more transducers to the WBT

Depending on your operational requirements for the EA640, one or more transducers must be connected to the WBT.

Prerequisites

It is strongly recommended to lay a steel conduit from the cable gland above the transducer to the EA640 transceiver, and to pull the transducer cable through this conduit.

There are several reasons for this.

- It will make it easier at a later stage to replace the transducer.
- It will protect the cables.
- Noise and interference from other electrical equipment is greatly reduced.
- The risk of flooding is greatly reduced when the steel conduit is terminated above the water line.

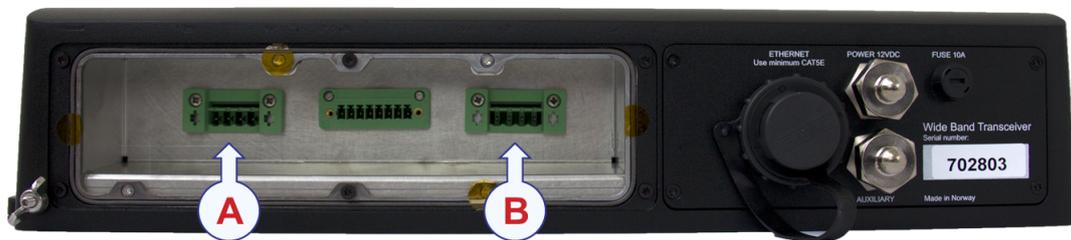
With a steel conduit the installation will satisfy the European Union regulations for electromagnetic compatibility (EMC) interference. Without a steel conduit, there is a risk of reduced EA640 performance.

Context

The WBT used by the Kongsberg EA640 can be set up to work with maximum four -4- operational frequencies. This means that you can use four single frequency/single beam transducers or two dual frequency transducers.

The transducer is connected to a terminal block under a panel plate on the rear of the WBT. The connectors are a part of the WBT delivery.

WBT – Standard



A P1: Transducer: Channel 1 - 2

B P2: Transducer: Channel 3 - 4

WBT – High power



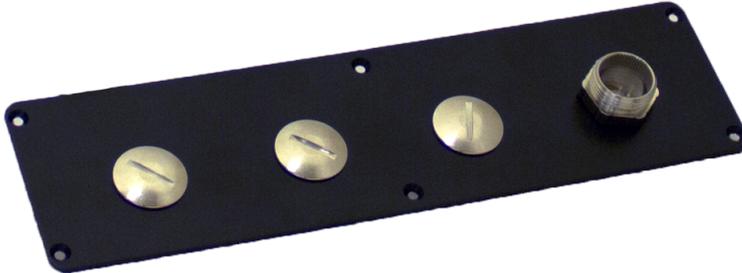
A P1: Transducer: Channel 1 - 2

Procedure

- 1 Pull the transducer cable through the steel conduit.
- 2 Make sure that an ample length of the transducer cable is available for maintenance and replacement.
- 3 Cut the transducer cable.
- 4 Find the panel for the rear side of the WBT, the cable glands, the blind plugs and the nuts.



- 5 Make sure you use the correct size cable gland according to the cable size. The cable glands are included in the delivery.



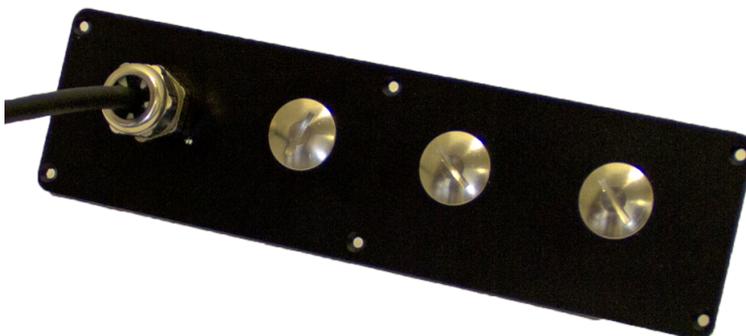
- 6 Use a blind plug to cover the points not in use.
- 7 Pull the transducer cable through the cable glands.
- 8 Remove the insulation on the shield in the transducer cable.



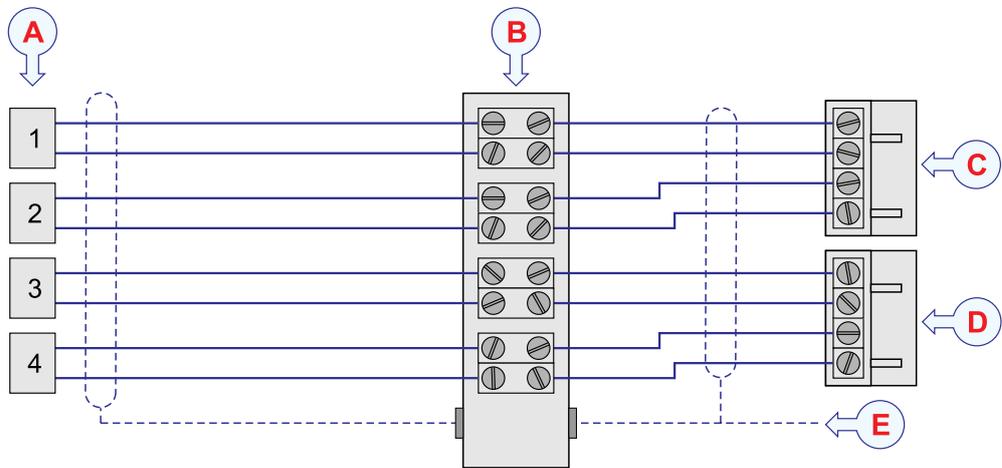
- 9 Cut the shield, to just cover the seal.



- 10 Remove the insulation on the wires in the transducer cable.
- 11 Add an end sleeve to the wires.
- 12 Fit the cable gland.



- 13 Connect the conductors in the transducer cable to the correct pins in the plugs, using the pin-out and the ship's cable plan. Check the license information to see which transducer to install where.



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- 14 Connect the plugs to P1 and P2.
- 15 Make sure the conductive gasket is still attached to the WBT.



- 16 Fasten the panel.



Connecting power and ground to the WBT

The EA640 WBT is powered by a dedicated power supply connected to the AC mains, or from a suitable battery for DC operation. The unit must be properly grounded.

Context

The power for the WBT is provided by a separate power supply. It is normally connected to an uninterruptible power supply, and will automatically detect the mains voltage (230 or 115 VAC) when connected. The output from the power supply is connected to the +12 VDC input socket on the WBT. The AC and DC power cables are provided with the power supply.



Procedure

- 1 Connect the DC cable from the power supply to the +12 Vdc socket.
If you wish to operate your WBT from a DC supply, you can use any suitable battery providing +12 to +15 Vdc.
- 2 Connect the AC mains plug on the power supply to the bulkhead power outlet (or an uninterrupted power supply).
- 3 Connect the grounding cable from the nearest grounding point to the dedicated terminal on the WBT.

Connecting the Ethernet cable from the WBT to the Operator Station

The Operator Station is connected to the WBT using a high speed Ethernet cable.

Context

Note

It is very important that a high quality Ethernet cable is used. You must use CAT-5E STP (Shielded Twisted Pair) quality or better. Using cables with lower bandwidth capacity will reduce the EA640 performance.



Procedure:

- Connect the Ethernet cable from the Operator Station to the Ethernet socket on the WBT.
- If you have a system with more than one WBT you need a switch.

Tip

We recommend having the switch in the sonar room, close to the WBTs. This gives you only one Ethernet cable from the sonar room to the Operator Station.

Connecting a synchronization cable to the Operator Station using an RS-232 serial interfaces

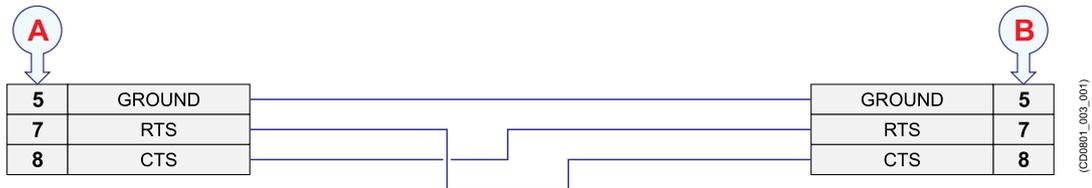
An RS-232 serial line connection using the Request To Send (RTS) and Clear To Send (CTS) signals is common way to connect the EA640 to external devices for synchronisation purposes. The cable is connected to the serial line adapter on Operator Station.

Context

Note that this cable does not support all the signals in the standard RS-232 specification. Unless otherwise specified, these cables must be provided by the installation shipyard.

Important

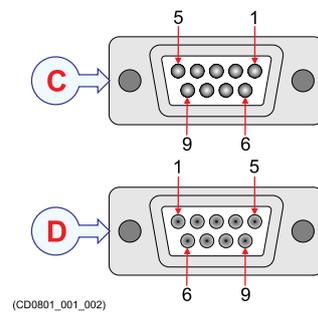
Observe that long runs of unshielded cable will pick up noise easily. This is because the RS-232 signals are not balanced.



- A *Local connection*
- B *Connection on peripheral device*
- C *Female 9-pin D-connector*
- D *Male 9-pin D-connector*

Procedure

- 1 Locate the serial connector on the rear side of the Operator Station.



Note

You must use an RS-232 interface for this purpose.

- 2 Connect the serial cable from the Operator Station to the peripheral device.
- 3 On the peripheral device, wire as described in the relevant documentation.

Further requirements

All serial interfaces must be defined in the EA640 software prior to use.

Cable drawings and specifications

Topics

Transducer, page 29

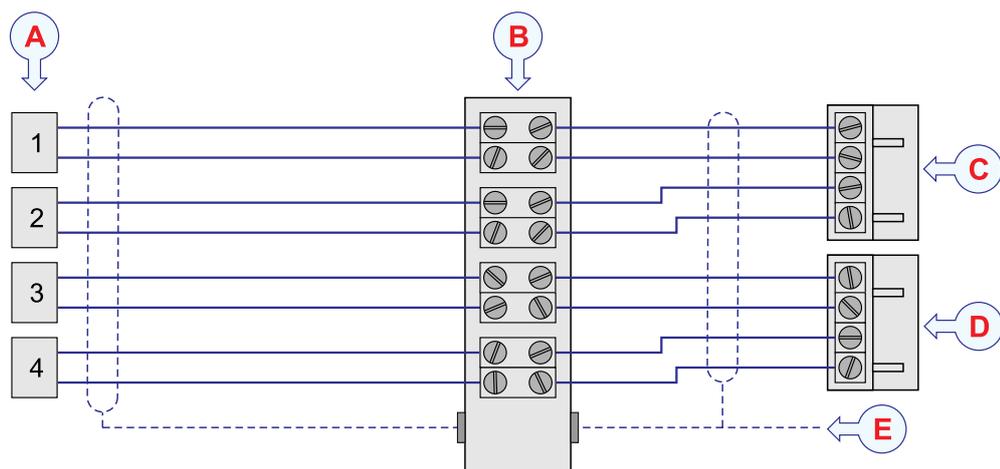
Auxiliary connector on the WBT, page 30

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Transducer

For an EA640 system the WBT can handle up to four channels.



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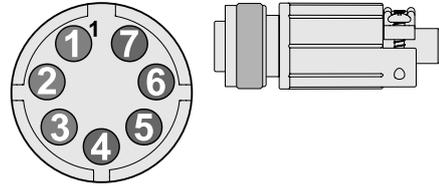
- A *Transducers*
- B *Optional junction box*
- C *WBT transceiver, connector P1*
- D *WBT transceiver, connector P2*
- E *The cable screen must be terminated in the cable gland*

If you need to splice the transducer cable, we strongly recommend the use of a metal junction box with proper cable glands. The cable screen must be connected to the cable glands. The cable screen and the junction box chassis must not be connected to vessel ground. Avoid ground loops. You must use the same type of cable as the original transducer cable, contact Kongsberg Maritime for advice.

Auxiliary connector on the WBT

The transceiver is provided with a dedicated 7-pin connector for auxiliary interfaces.

The Auxiliary socket can be used to interface an external synchronization system (for example K-Sync). This is beneficial when multiple hydroacoustic systems are employed on the same vessel.



The connections are made on pins **2, 3** and **5**.

Pin	1	2	3	4	5	6	7
Use	General Purpose Output	Sync Out	Sync In	Reset	Ground	Not used	Not used

The socket is made to fit a Conxall 7-pin **Mini-Con-X**[®] shielded connector. The connector can be ordered from the manufacturer (<http://www.conxall.com>).

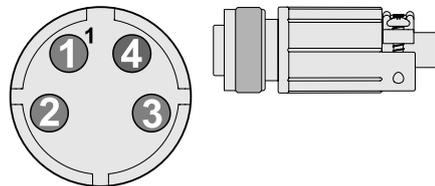
It can also be purchased from Kongsberg Maritime using order number **387563**.

This function is not implemented yet.

Battery power cable

A suitable cable must be provided if you wish to power the WBT from a battery.

The power socket is mounted on the rear panel of the WBT. The socket is made to fit a Conxall 4-pin **Mini-Con-X**[®] shielded plug. One spare plug is included with the EA640 delivery, you can use this if you wish to power the WBT from a battery. The plug can also be ordered from the manufacturer (<http://www.conxall.com>), or purchased from Kongsberg Maritime using order number **390616**.



Pin configuration

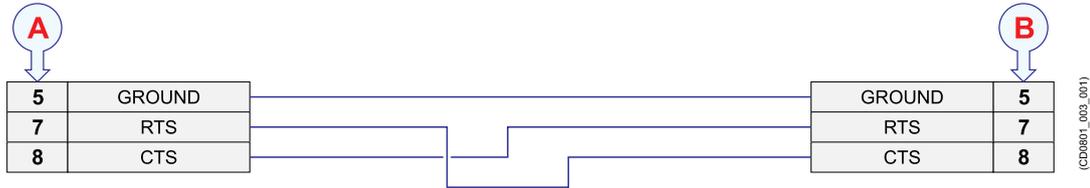
Pin	1	2	3	4
Use	+12 Vdc	0 Vdc	0 Vdc	+12 Vdc

Minimum cable requirements

- **Conductors:** 2 x 1.5 mm²
- **Screen:** None
- **Voltage:** 60 V
- **Maximum outer diameter:** N/A

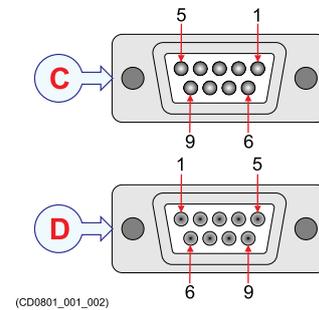
RS-232 used as synchronization trigger (input or output)

An RS-232 serial line connection using the Request To Send (RTS) and Clear To Send (CTS) signals is common way to connect the EA640 to external devices for synchronization purposes.



- A *Local connection*
- B *Connection on peripheral device*
- C *Female 9-pin D-connector*
- D *Male 9-pin D-connector*

This cable takes the control signals on a RS-232 serial line, and uses these as an external trigger. It provides interface with any peripheral unit that requires or controls transmit/receive synchronization. Note that this cable does not support all the signals in the standard RS-232 specification.



Note

This synchronization method can only be used with RS-232 communication. You can only connect two systems together.

Unless otherwise specified, this cable must be provided by the installation shipyard.

Minimum cable requirements

- **Conductors:** 2 x 4 x 0.5 mm²
- **Screen:** Overall braided
- **Voltage:** 60 V
- **Maximum outer diameter:** Defined by the plugs and/or the cable gland

If you need to install a very long cable, increase the cross section.

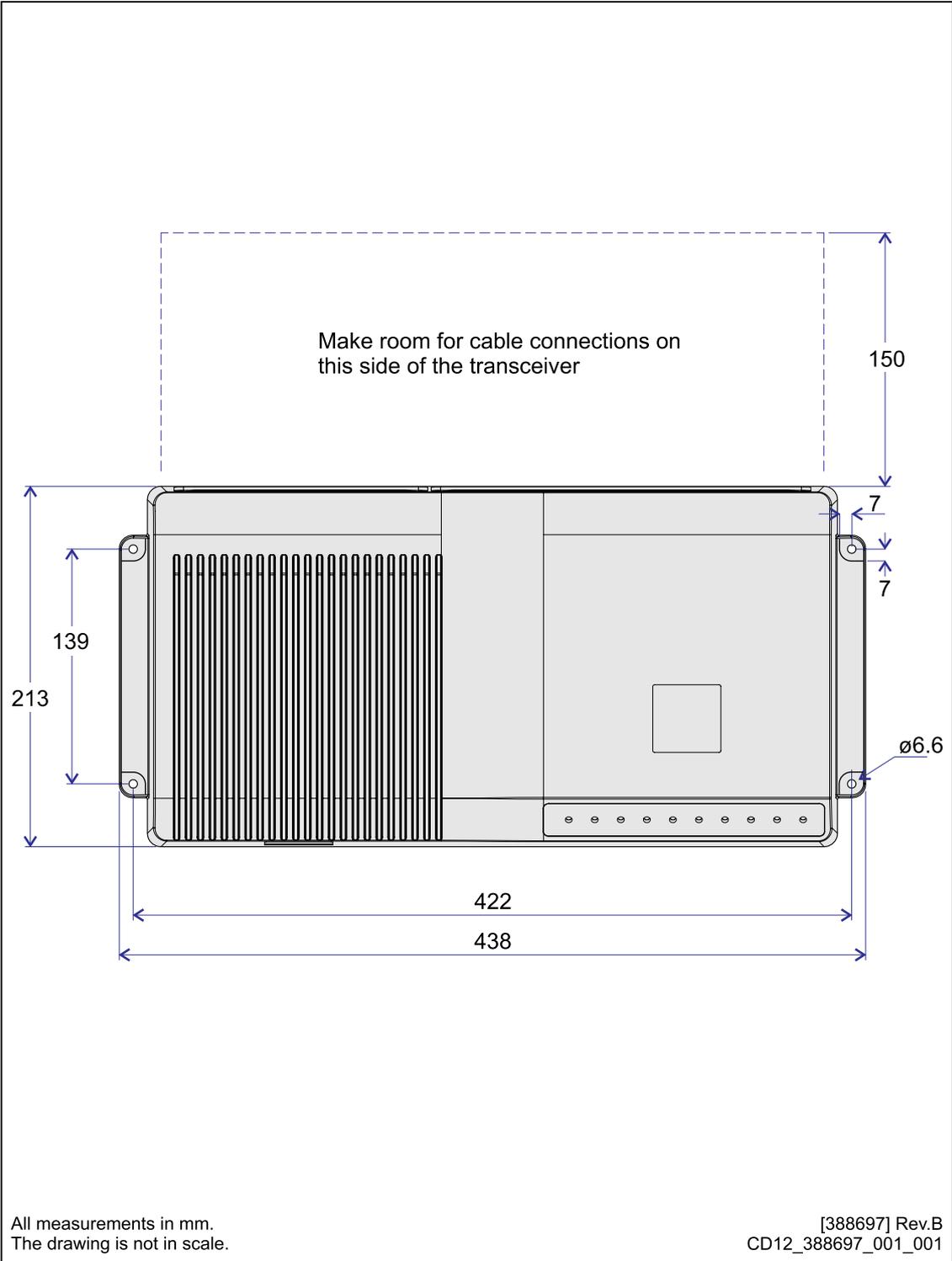
Drawing file

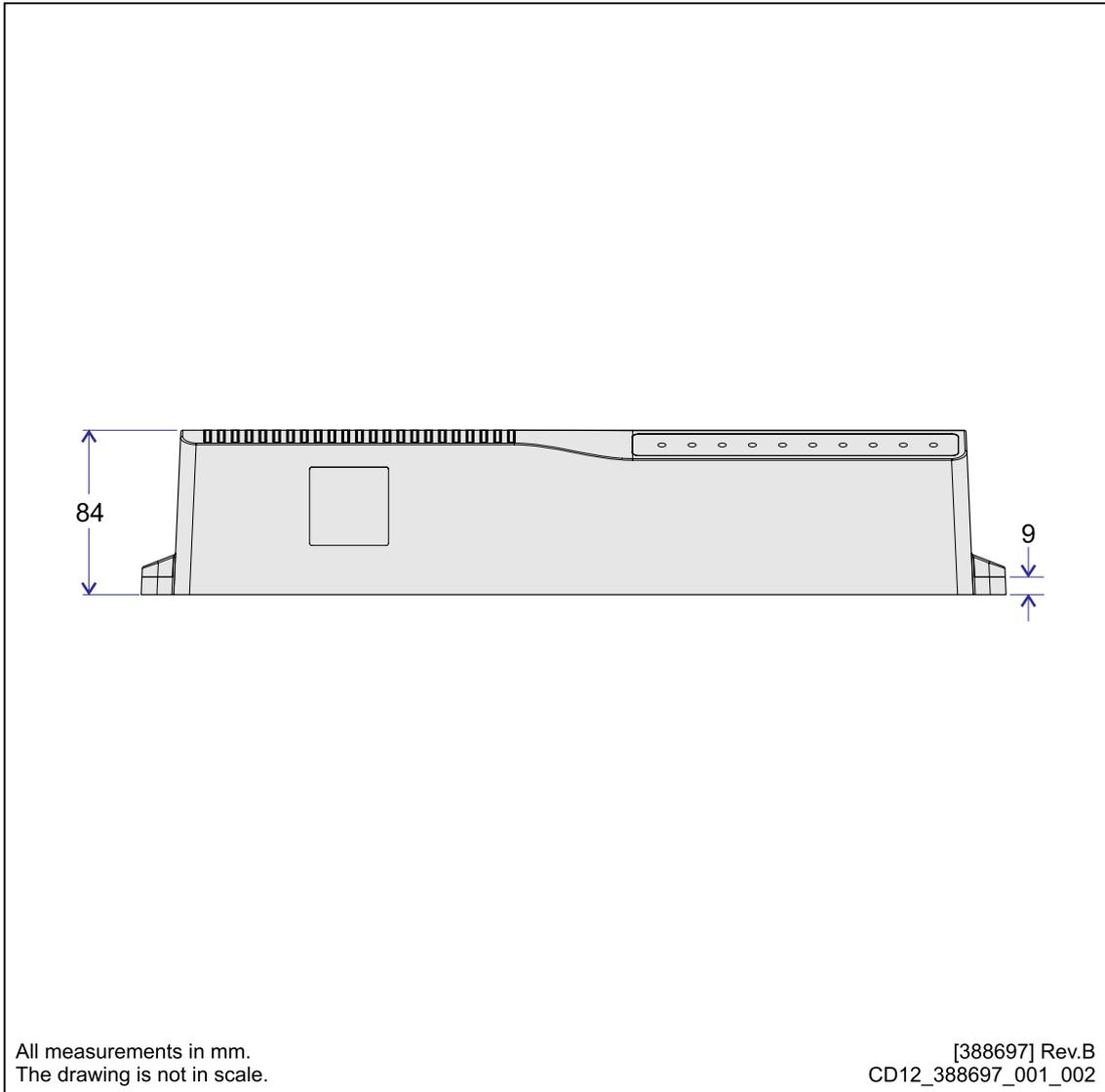
Topics

[388697 WBT outline dimensions, page 34](#)

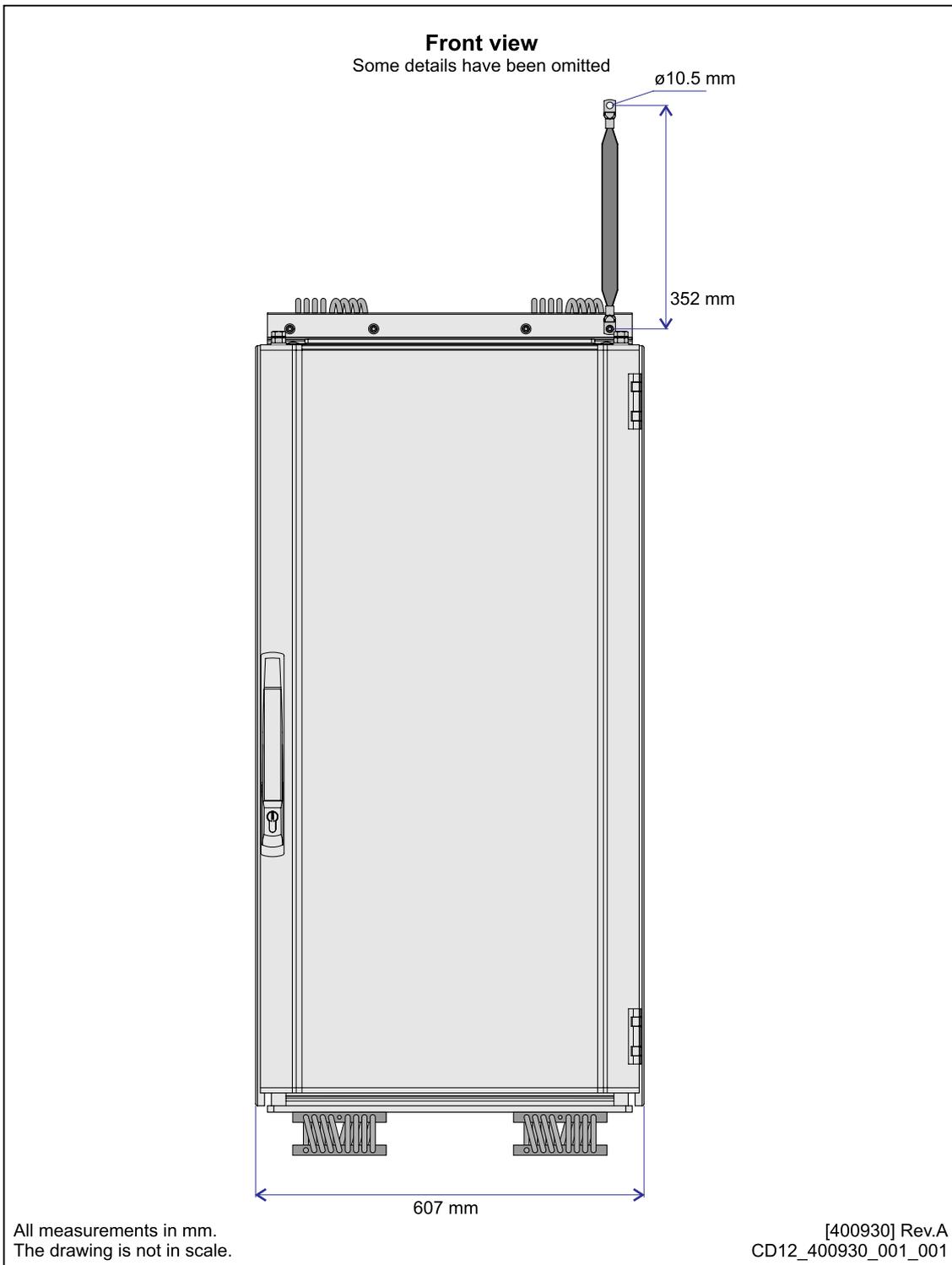
[400930 WBT Cabinet outline dimensions, page 36](#)

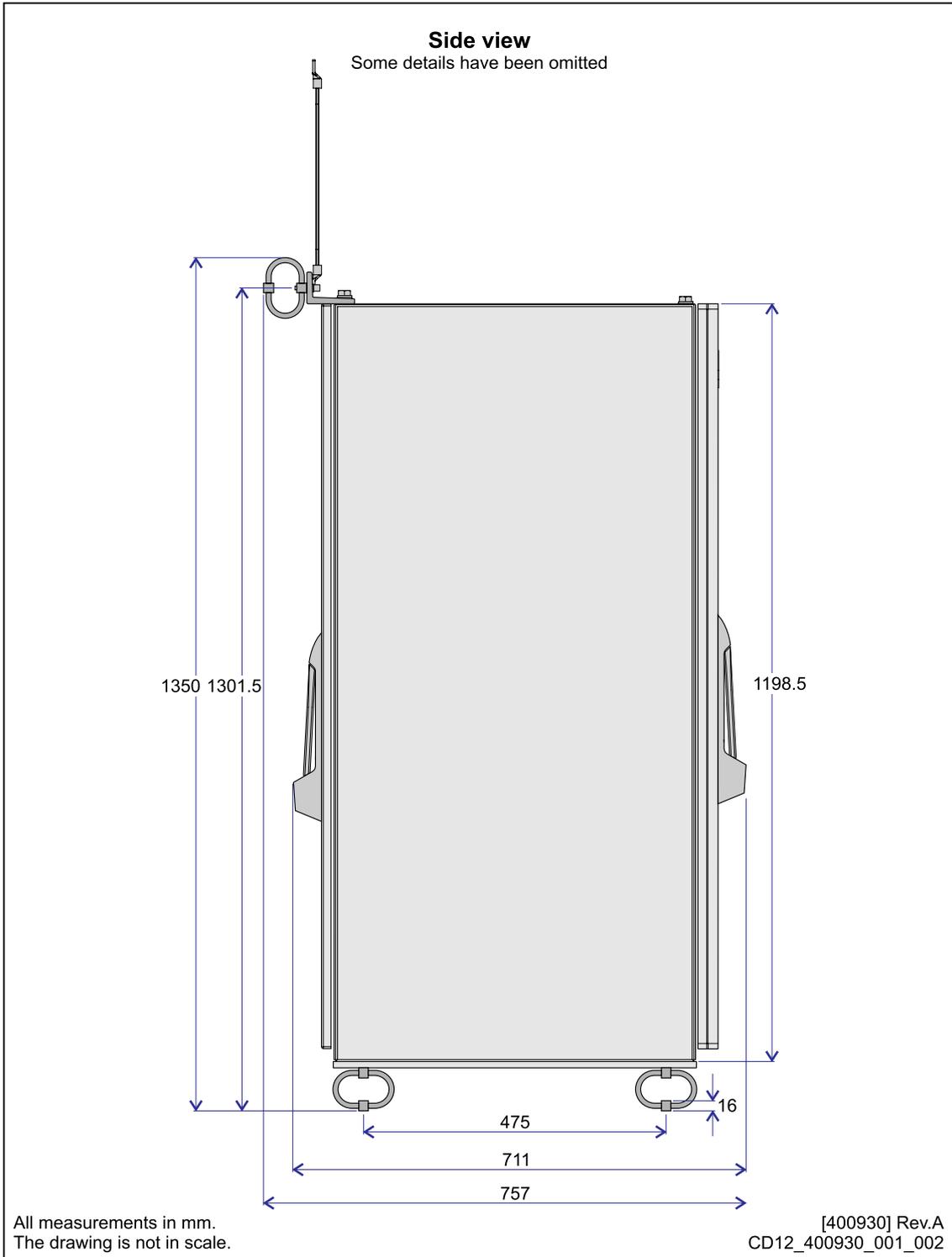
388697 WBT outline dimensions

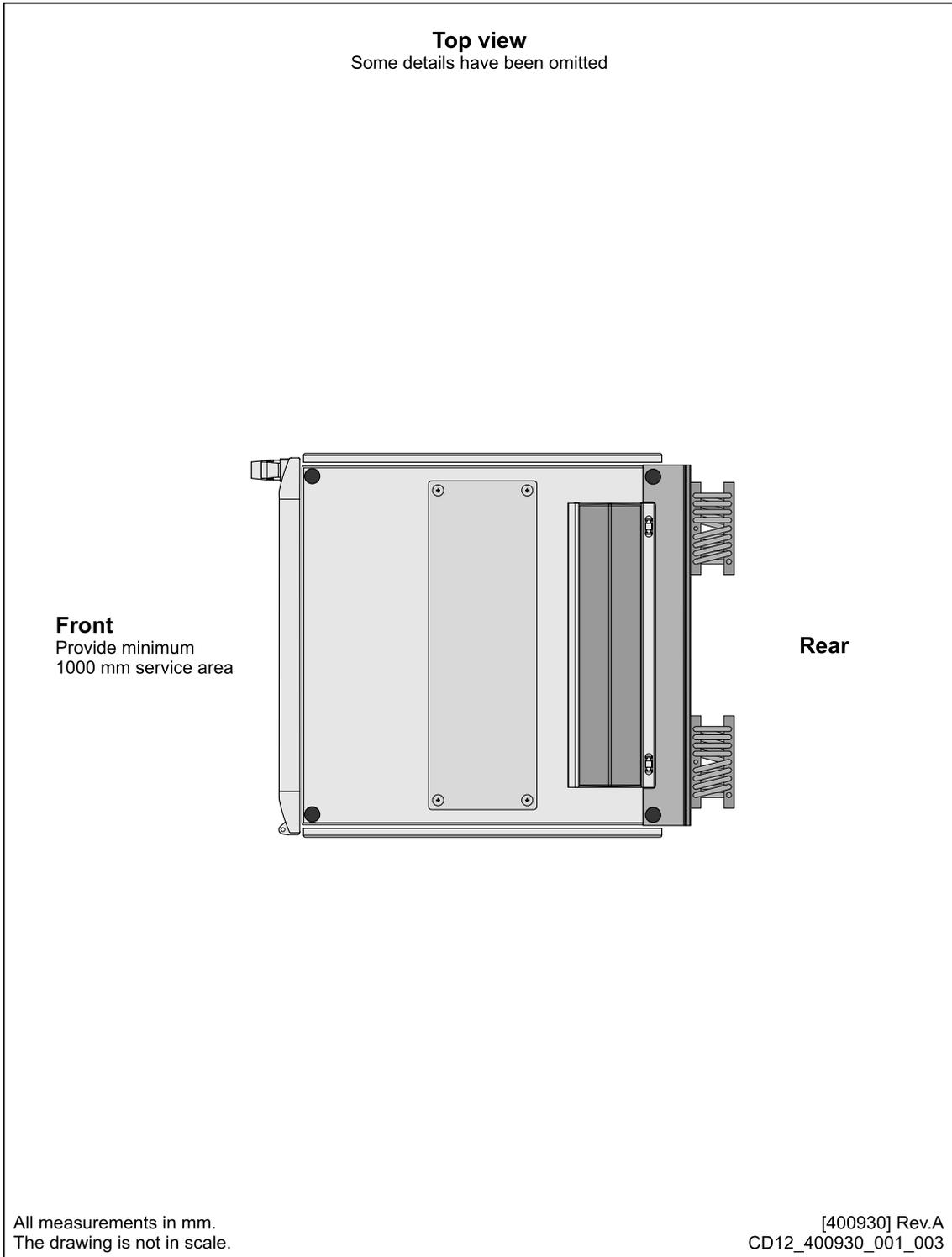


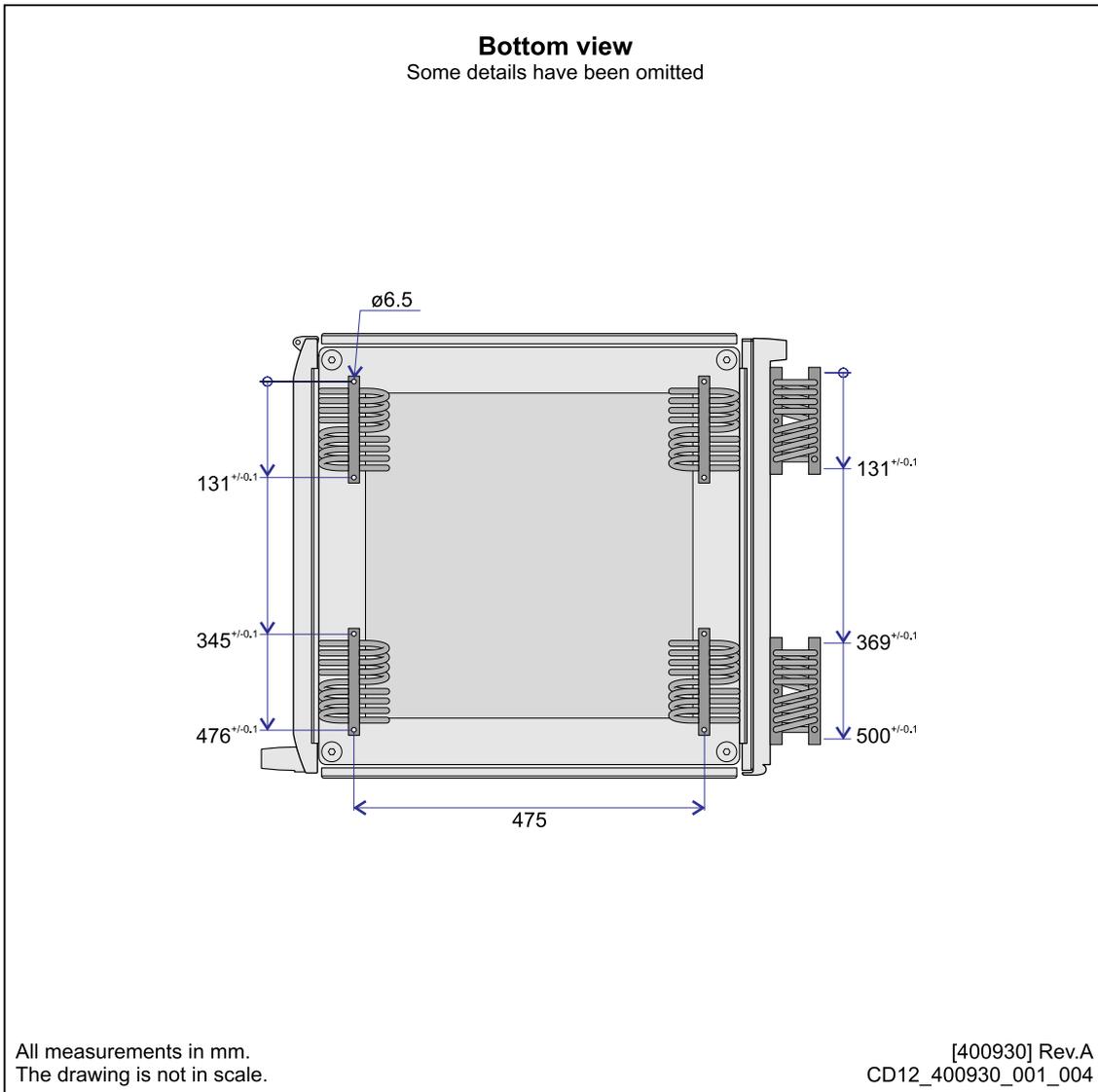


400930 WBT Cabinet outline dimensions









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