

# FLS 3D Forward Looking Sonar Gen 4

# ECHAPILOT



## INTRO

Daniamant specialises in the development and manufacturing of safety equipment for the commercial and leisure marine industry. Safety at sea is the core mission for Daniamant and it strives to produce and develop products that will save lives at sea.

Daniamant is one of the markets leading manufacturers and developers of Forward Looking Sonars and offers the leisure market the highest performing Forward Looking Sonars. Forward Looking Sonars are aimed to enhance the vessel's safety in uncharted waters and remote areas by scanning and displaying the seabed in front of the vessel in real time.

The new FLS 3D Gen 4 was released in November 2022 by Daniamant. It is a revolutionary collision avoidance device designed specifically for the leisure and commercial market. It has two different computers that process all the rendering of data. The first has a transducers interface, which in combination with a complicated algorithm, maps out how the sea bed looks ahead of the vessel. This filtered data is then sent through to a visual processor, which takes the data and puts it into a 3D image.

It is a very complex technology however, in simpler terms, the transducers scan in a 60-degree forward view. They send out a ping at a 200kHz frequency. When the sound is received back, depending on the time it takes to send the sound back, you can identify its distance. The EchoPilot 3D FLS has a 100m depth range and a forward distance range of 200m. The EchoPilot 3D FLS displays a 3-dimensional representation of the underwater scene ahead of the boat. The seabed terrain and potential hazards are shown, for the first time, with unparalleled realism. The importance of forward-looking sonar technology is the depth to range ratio. EchoPilot has a staggering 20 x depth ratio! This means that you can see 100 meters ahead with only 5 meters of water underneath your boat. This is the highest ratio in Forward Looking Sonar technology!




## Direct Integration With Raymarine Axiom Displays

The FLS 3D has direct integration to all Raymarine Axiom Displays and is easily connected to the raynet via an RJ45 to Raynet cable. The RJ45 is connected directly to the ethernet port on the FLS 3D visual processor and the Raynet connector is connected directly to the Axiom display or directly to the raynet. Once connected, the EchoPilot app will appear on the Axiom Display allowing users to use forward looking sonar on their display in real-time. Offering dual viewing of sea charts and forward looking sonar at the same time, the display can also be used in split screen for the ultimate in convenience. In full, three-dimensional, coloured display, when the FLS 3D is connected to the Axiom display, users will benefit from full 360 degree rotation of the 3D image via touch, as well as the zoom function. The customer can easily rotate the image and go from a 3D image to a sideview image of the seabed. This will give a closer view of how the seabed terrain looks ahead and potential hazards are shown in real-time.

You can read more about the integration in the manual or brochure found on our product page on our website: <https://echopilot.com/products/3d-forward-looking-sonar/>

The cables needed to connect the visual processor to the axiom display:

### RayNet Adaptor Cables

			
	<b>RAYNET ADAPTOR CABLES</b>		
Part Number	A62360	A80151	A80159
Product	RayNet (F) to RJ45 (M) Port		
Product Description	<a href="#">More Info</a>	<a href="#">More Info</a>	<a href="#">More Info</a>
Data	Ethernet		
Length	1m	3m	10m

The Axiom Displays that are compatible with the integration:

Axiom 7

Axiom 9

Axiom 12

Axiom Pro 9

Axiom Pro 12

Axiom Pro 16

Axiom+ 7

Axiom + 9

Axiom+ 12

Axiom XL 16

Axiom XL 19

Axiom XL 22

Axiom XL 24

## The Transducers and Skin Fittings

### 1. Transducer

The FLS 3D system consist of two Transducers which are mounted in the hull via two thru-hull skin fittings.

The transducer consists of a starboard and a port-side transducer. Each transducer scans a 30 degree view of the seabed to create the total 60 degree forward view.



The Transducers work on a 200khz frequency to be able to give them a maximum range of 200 meters ahead and 100 meters depth.

Both Transducers are equipped with a pointer pin for easy installation. The pointer indicates which direction the transducer should be turned. The pointer should point straight ahead toward the vessel's direction.

Both transducers are marked with port-side and starboard-side markers for easy indication of which side of the vessel the transducer is to be installed.

Both Transducer are also equipped with O-Rings for extra seal inside the thru hull skin fitting.

The transducers are offered in two different length to accompany any hull thickness. The transducers are available in 5" and 10".

The transducers are connected to the Transducer Interface, which we will cover later, and is connected with a Blue Bulgin 8 pin connector. The different options in cable lengths are: **2 meters, 12 meters and 22 meters.**

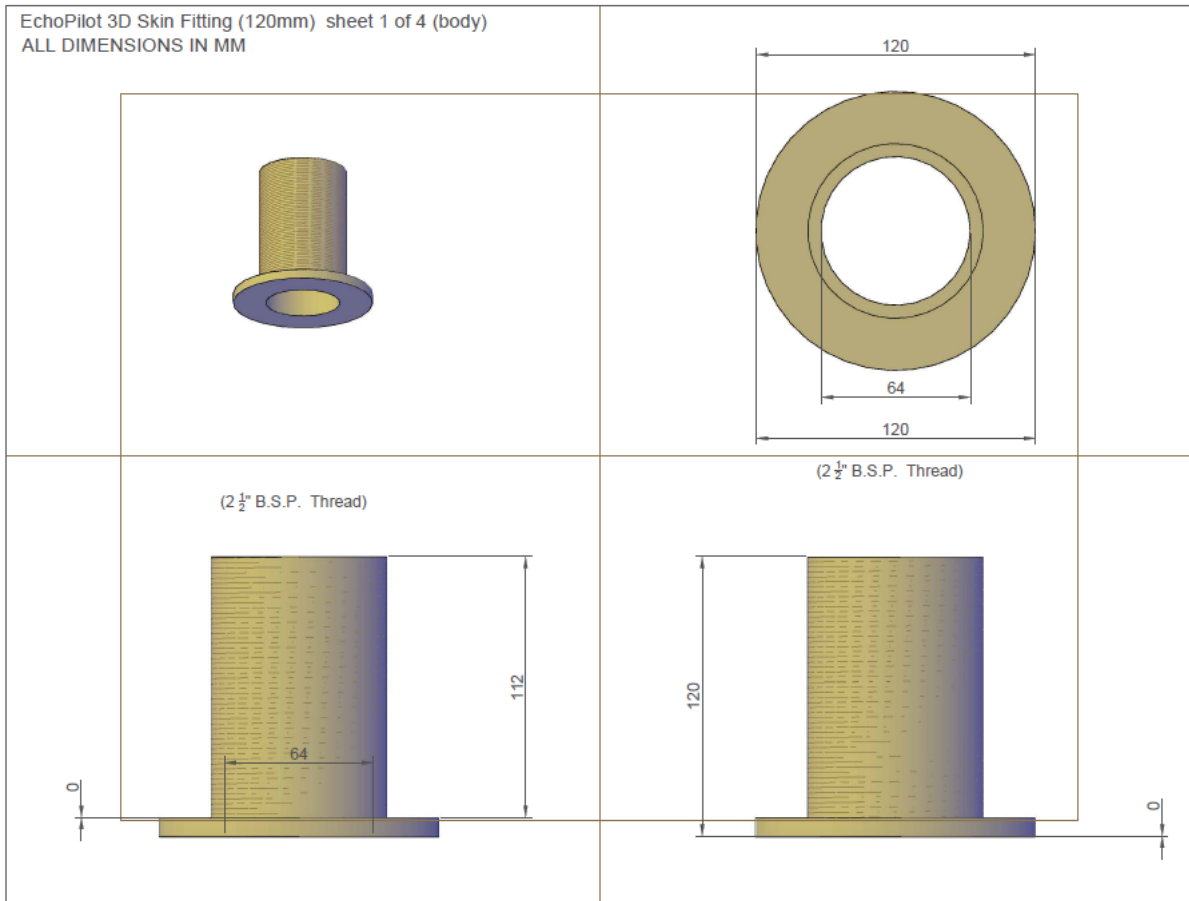
When installing the transducers it is vital that they are installed 100% vertical. Placement of the transducers is also of the outmost importance. Read more about installation in the manual: [https://daniamant.com/wp-content/uploads/2017/09/Manual-FLS-3D\\_11112022-FG.pdf](https://daniamant.com/wp-content/uploads/2017/09/Manual-FLS-3D_11112022-FG.pdf) or contact our support team at [info@echopilot.com](mailto:info@echopilot.com)

## 2. Skin Fittings

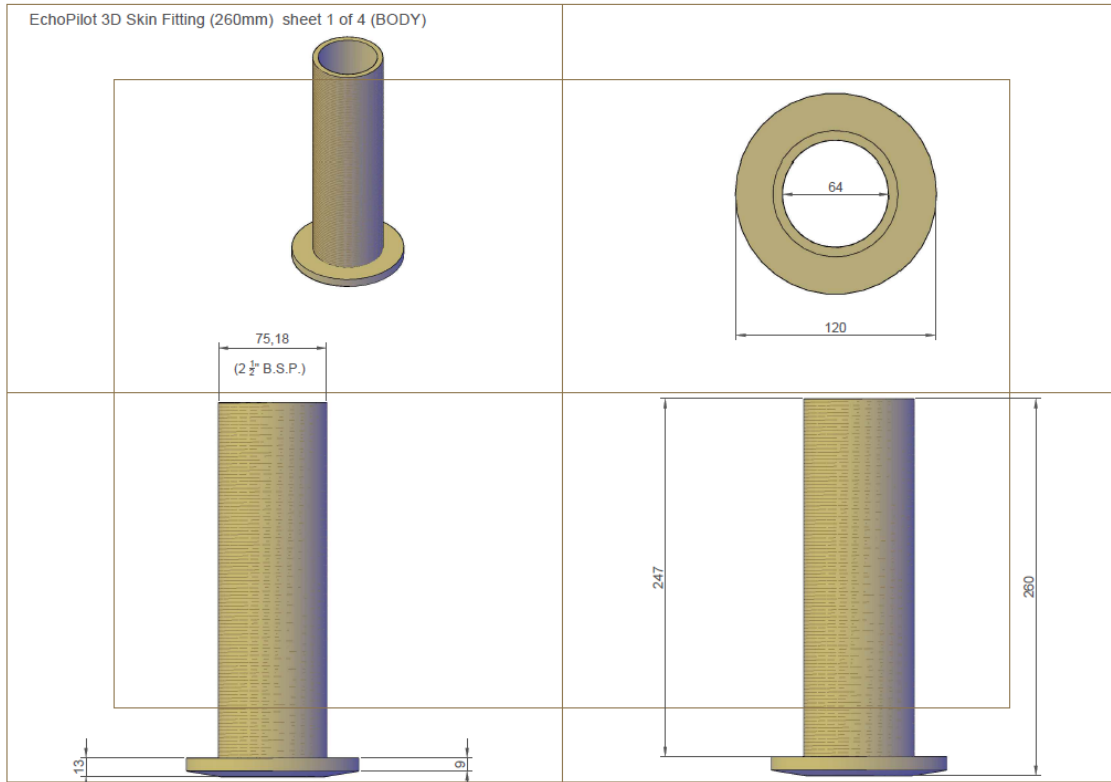
With the two transducers, two Thru Hull Skin Fittings are included in the system. The skin fittings are offered in three different material depending on your hull type: **Bronze, Steel and Aluminum.**

The Thru Hull Skin Fittings are also offered in two different sizes to accommodate any hull thickness. The Thru Hull Skin Fittings are available in 5" and 10". Below is the technical drawings for all available skin fittings:

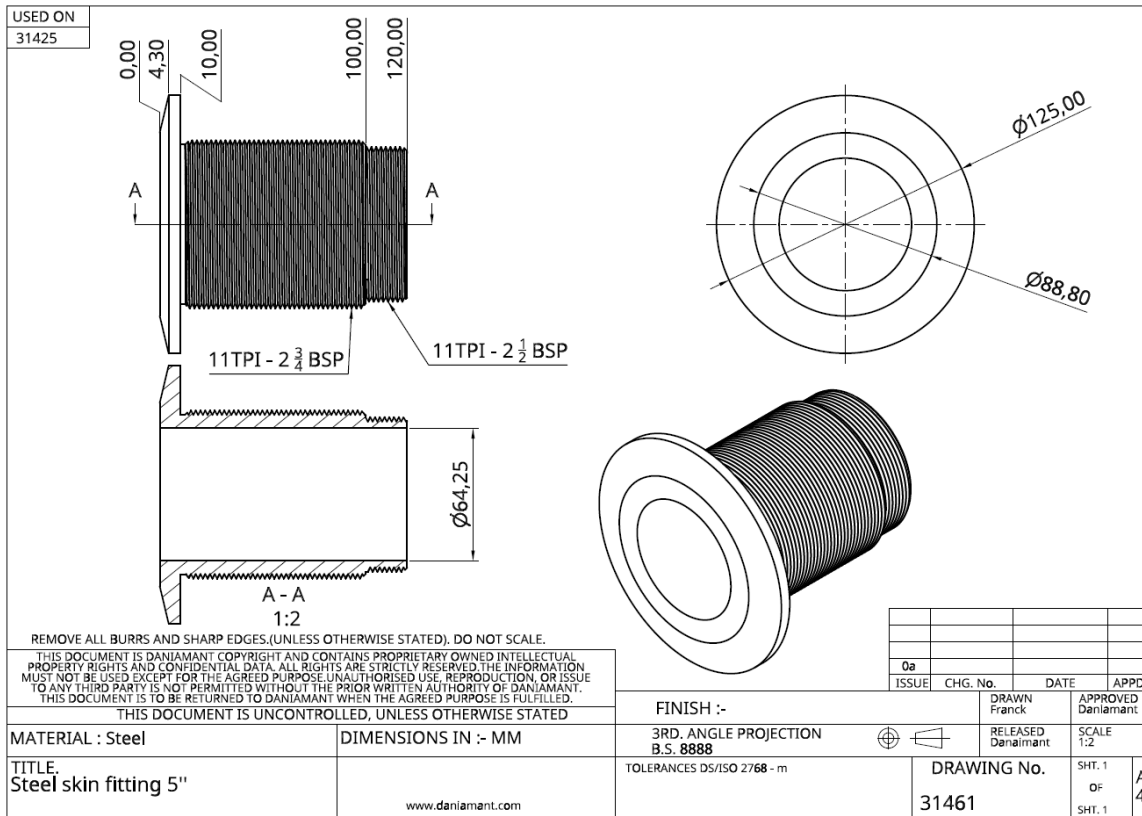
### 5" Bronze Skin Fitting



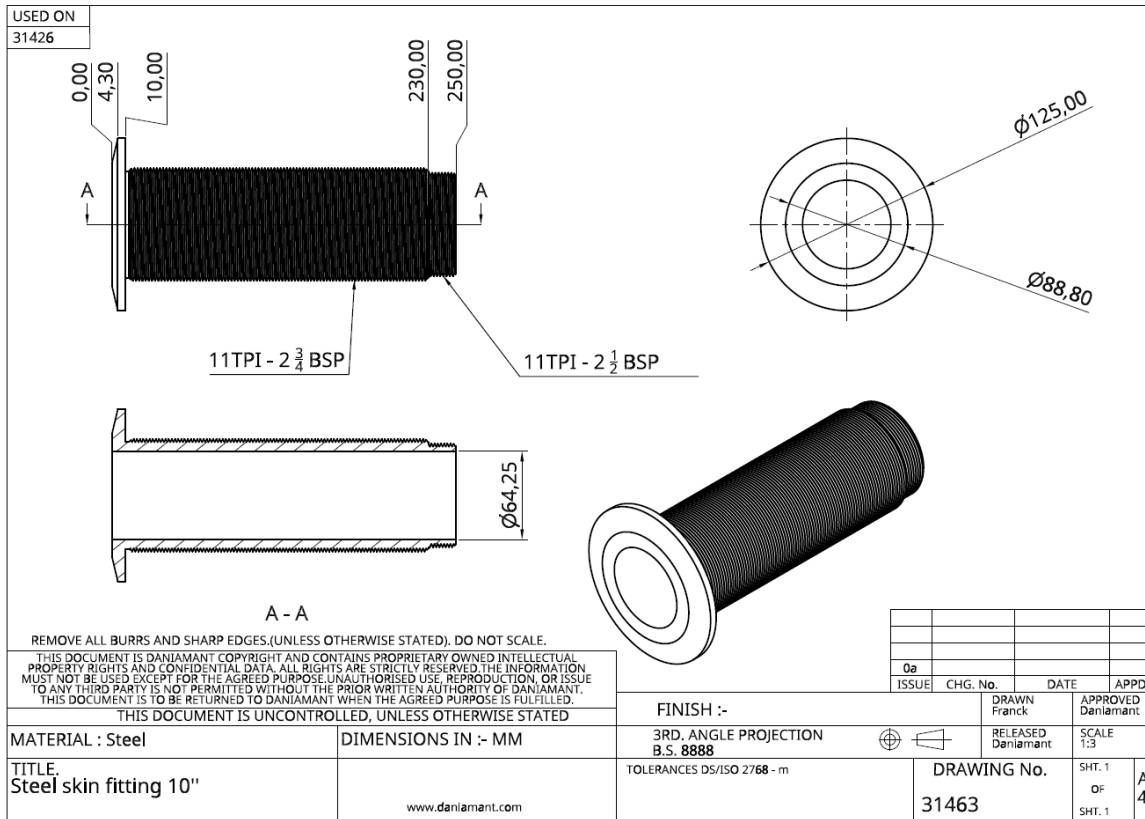
### 10" Bronze Skin Fitting



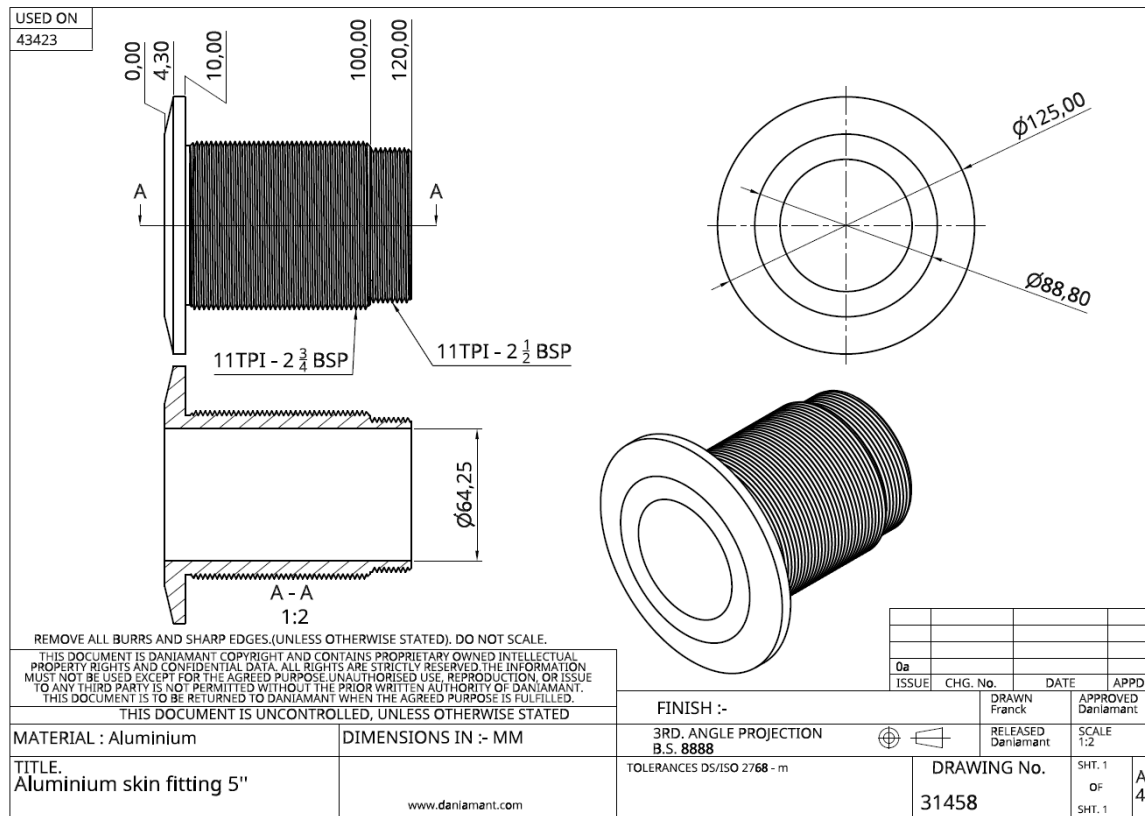
### 5" Steel Skin Fitting:



### 10" Steel Skin Fitting



### 5" Aluminum Skin Fitting



# 10" Aluminum Thru Hull Skin Fitting

USED ON 31424											
<p style="text-align: center;">A - A</p> <p style="text-align: center;">REMOVE ALL BURRS AND SHARP EDGES,(UNLESS OTHERWISE STATED). DO NOT SCALE.</p> <p style="text-align: center;">THIS DOCUMENT IS DANIAMANT COPYRIGHT AND CONTAINS PROPRIETARY OWNED INTELLECTUAL PROPERTY RIGHTS AND CONFIDENTIAL DATA. ALL RIGHTS ARE STRICTLY RESERVED THE INFORMATION MUST NOT BE USED EXCEPT FOR THE AGREED PURPOSE.UNAUTHORISED USE, REPRODUCTION, OR ISSUE TO ANY THIRD PARTY IS NOT PERMITTED WITHOUT THE PRIOR WRITTEN AUTHORITY OF DANIAMANT. THIS DOCUMENT IS TO BE RETURNED TO DANIAMANT WHEN THE AGREED PURPOSE IS FULFILLED.</p> <p style="text-align: center;">THIS DOCUMENT IS UNCONTROLLED, UNLESS OTHERWISE STATED</p>											
<p>MATERIAL : Aluminium</p> <p>TITLE. Aluminium skin fitting 10"</p>		<p>DIMENSIONS IN :- MM</p> <p style="text-align: center;"><a href="http://www.daniamant.com">www.daniamant.com</a></p>									
<p>FINISH :-</p> <p>3RD. ANGLE PROJECTION B.S. 8888</p> <p>TOLERANCES DS/ISO 2768 - m</p>		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 25%; text-align: center;">0a</td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> <td style="width: 25%;"></td> </tr> <tr> <td style="text-align: center;">ISSUE</td> <td style="text-align: center;">CHG. No.</td> <td style="text-align: center;">DATE</td> <td style="text-align: center;">APPD</td> </tr> </table> <p style="text-align: center;">DRAWN Franck</p> <p style="text-align: center;">RELEASED Daniamant</p> <p style="text-align: center;">APPROVED Daniamant</p> <p style="text-align: center;">SCALE 1:3</p> <p style="text-align: center;">DRAWING No. 31460</p> <p style="text-align: center;">SHT. 1 OF SHT. 1</p> <p style="text-align: center;">A 4</p>		0a				ISSUE	CHG. No.	DATE	APPD
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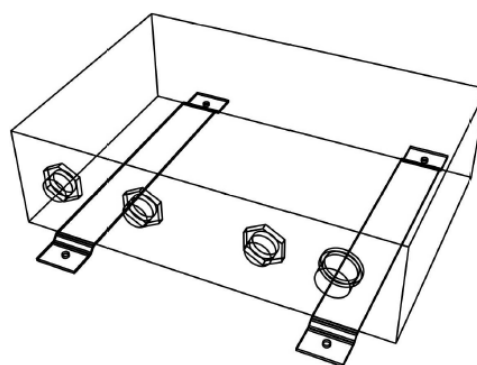
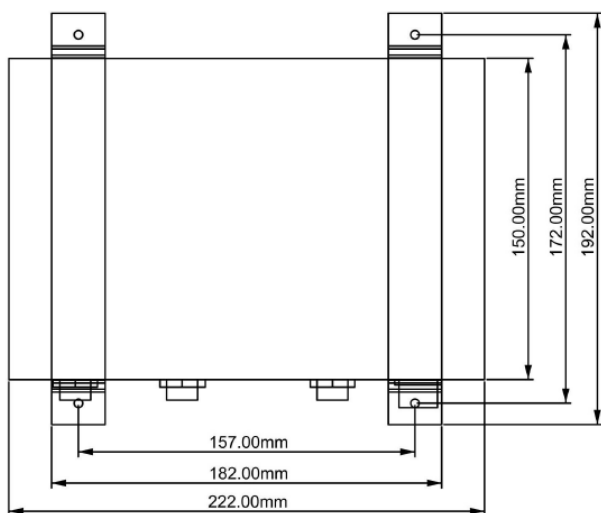
## Transducer Interface

The two transducers are connected to the transducer interface. Starboard transducer is connected to the starboard connector and the port side transducer is connected to the port side connector. The transducer interface collects all the data from the transducers and renders the data through an algorithm. The data is then sent to the visual processor via a data cable.

The data cable has a standard length of 10 meters but can be custom made all the way up to 100 meters.

The transducer interface can be placed up to 22 meters from the two-transducer location if a total of 22 meters of transducer cables is purchased.

The transducer interface box is powered via 12/24V



Echopilot FLS 3D Trans. Interface	Versions Nr.: 1
Tegning Nr.: UK10024	Tegner: JC
Daniamant Electronics A/S Industrivej 24C 3550 Slangerup	Størrelsesforhold:
	Vare Nr.: 31429
	Dato: 03/11-2017

## Visual Processor

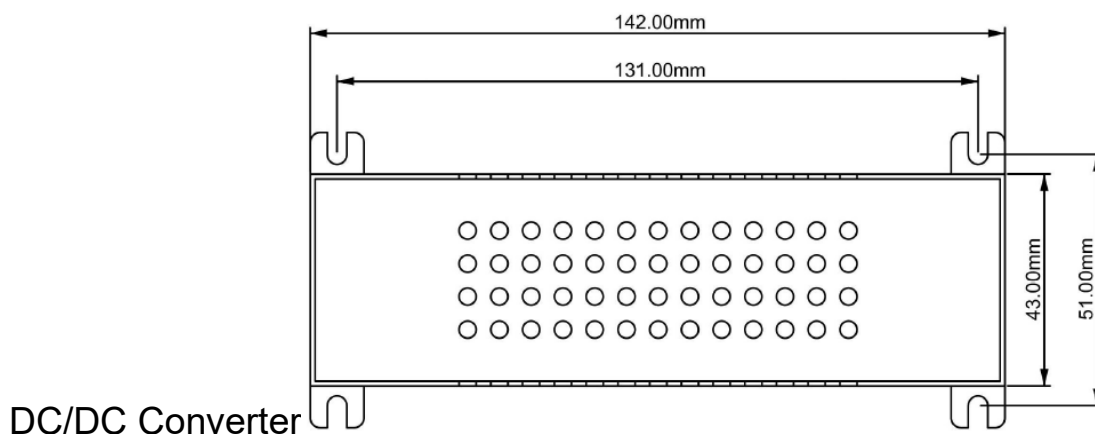
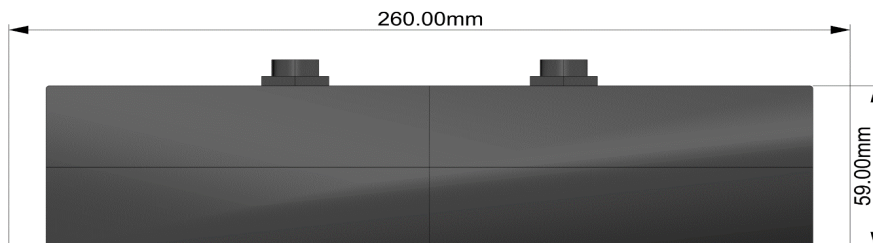
The Visual processor is the computer that renders the data from the Transducer Interface into the 3D image rendered on the Raymarine Axiom Display or in a 3<sup>rd</sup> party display.

The Visual processor can integrate directly to all Raymarine Axiom Displays and/or display to any third-party display or Multi-Function Display with a video input. The Visual Processor has HDMI and VGA video output. If your current display does not have HDMI or VGA video input, then a converter can easily convert the signal to the video signal your display supports. By using a video splitter, you will be able to display the FLS 3D image on multiple displays. This will allow you to have the image displayed on the bridge and in the control room for example.

The Visual Processor can easily be connected to your Raymarine Axiom Display via a RJ45 to Raynet cable. The visual processor can be connected either directly to the display or to the Raynet.

The Visual Processor is connected to the Transducer Interface. They are connected via a Data Cable, which is available in the following lengths: **10 meters, 20 meters, 30 meters, 40 meters, 50 meters, 60 meters, 70 meters, 80 meters, 90 meters, 100 meters.**

The Visual Processor is powered with 12v or 24v via a DC/DC converter

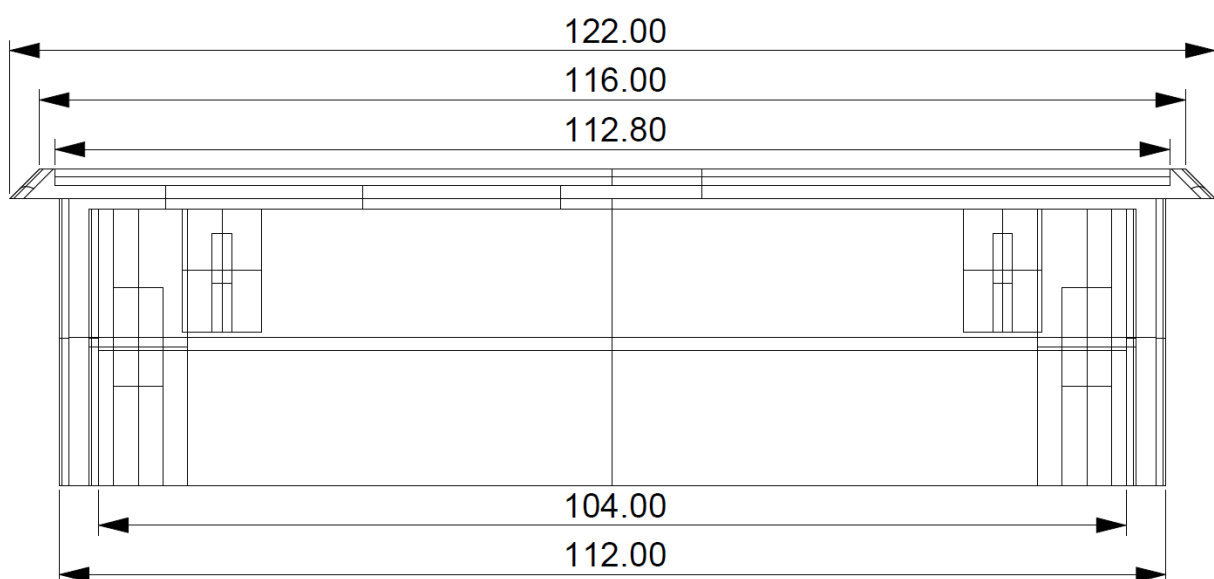


## Keypad

The Keypad is used to Power up the FLS 3D system, adjust range settings, change system settings etc.

The Keypad is connected to the visual processor via an 8 pin mini-din connector. The different cable lengths for the keypad are: **2 meters, 12 meters, 22 meters.**

You can have two keypads connected to the visual processor simultaneously. This will allow you to control the FLS 3D system from two different locations on your vessel.



## Included in the FLS 3D Kit

- 1 x Visual Processor
- 1 x Transducer Interface
- 2 x Transducers with 2 meter cable
- 2 x Transducer Extension Cable, 10 meters
- 2 x Thru Hull Skin Fitting
- Keypad or Power Button
- Data Cable, 10 meters
- DC/DC Converter and power cable for Visual Processor
- Power cable for transducer interface
- HDMI cable

The cable on the transducer is 2 meters. An additional extension cable of 10 meters is included to give a total length of 12 meters. It is possible to buy an additional transducer extension cable to achieve a total length of 22 meters.

The included data cable is 10 meters. It is possible for us to custom make this cable in any length up to 100 meters.

The keypad is needed if you are planning to use the visual processor via its video output.

The power button is needed if you are planning to use direct integration with Raymarine Axiom Display.

## Specs

	EchoPilot FLS 3D
Operational Speed	Up to 10 knots
3D Forward Looking Display	60 degree, full 3D display
Bottom Mapping Range	20x water depth
Maximum Depth Detection	100m
Maximum Forward Range	200m
Operating Frequency	200 kHz
Power Requirements	12/24 V, ~20W
Maximum Output Power	28W
Angular Accuracy	~1.5 degree
Roll/Pitch Stabilization	N/A
Operating System	Windows
Update Rate	1 – 1½ second
Video Output	HDMI and VGA
Raymarine Axiom Display Direct Integration	Yes, via RJ45 network cable
Power Consumption – Standby Mode	400mA
Power Consumption – Active Mode	1200mA