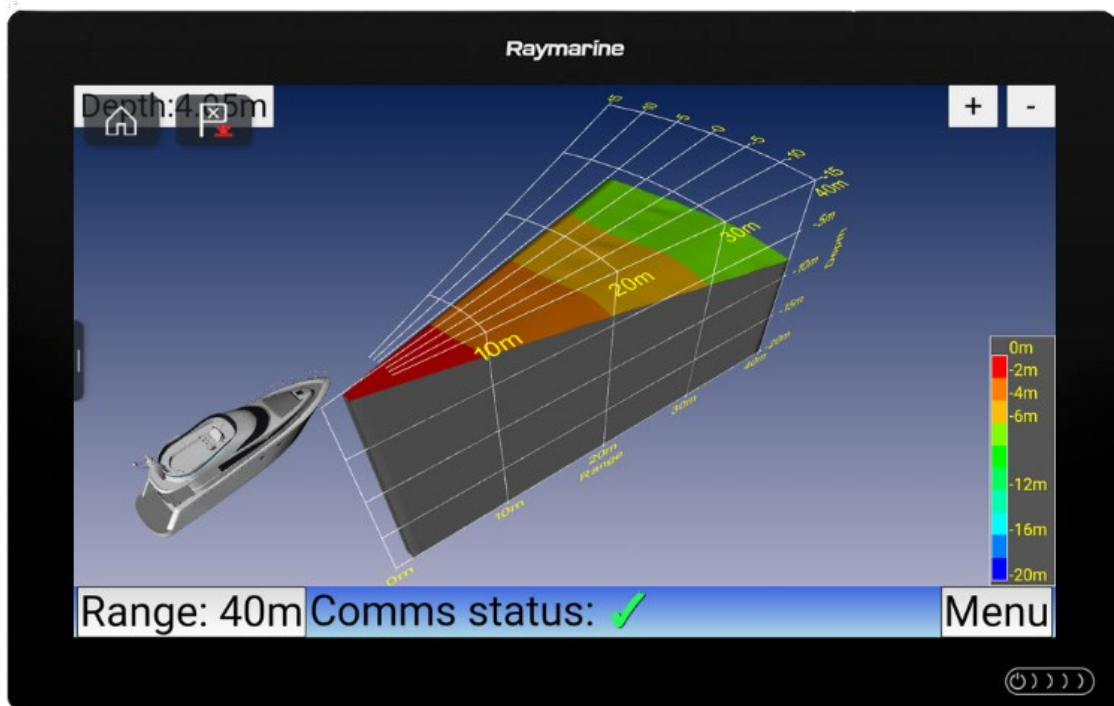


Introducing the new FLS 3D – 30 Degrees

ECHOPLOT



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1. Introduction

We are proud to introduce our newest development within Forward Looking Sonar, The FLS 3D – 30 Degrees.

Building on the success of FLS 3D, the FLS 3D – 30 Degrees delivers the same market leading performance in a streamlined, single-transducer design. Delivering a 30-degree forward view of the seabed ahead, the single-transducer sonar allows for precise navigation and advanced depth visibility, providing a reassuring level of detail in uncharted or poorly charted waters.

New technology has been developed to now give the sailor a digital depth reading of the area they are sailing towards. We call it Average Forward Depth (AFD). AFD uses all the data received from the seabed ahead to calculate the average depth of the seabed that the sailor is sailing towards. Giving the sailor an additional vital navigational tool when sailing in poorly or uncharted waters. It is a breakthrough and an industry first in Forward Looking Sonar Technology, overcoming traditional depth sounders that only measure depth directly beneath the boat, to offer enhanced situational awareness for safer, reliable navigation.

2. Direct Integration With Raymarine Axiom Displays

The FLS 3D – 30 Degrees 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 to a Raymarine Network Switch Box. Once connected, the EchoPilot app will appear on the Axiom Display allowing users to use forward looking sonar on their display in real-time. With the integration you will be able to split screen any Raymarine App with forward looking sonar at the same time. For example using Charts and Forward Looking Sonar in split screen directly on your Axiom. When the FLS 3D – 30 Degrees 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.

3. FLS 3D Market

The FLS 3D – 30 Degrees is designed in response to customer feedback and market developments, to provide Forward Looking Sonar technology at a more accessible price point and make high-quality navigational tools available to a broader audience of boat owners and captains. The FLS 3D – 30 Degrees combines reliable, high-performance commercial-grade sonar technology with an accessible value-driven design.

Based on our market research our FLS 3D – 30 Degree Forward Looking Sonar will be well suited for all boat types between 29 to 60 feet. With the new affordable FLS 3D, smaller boat owners now have the opportunity to get a commercial grade Forward Looking Sonar for their boat.

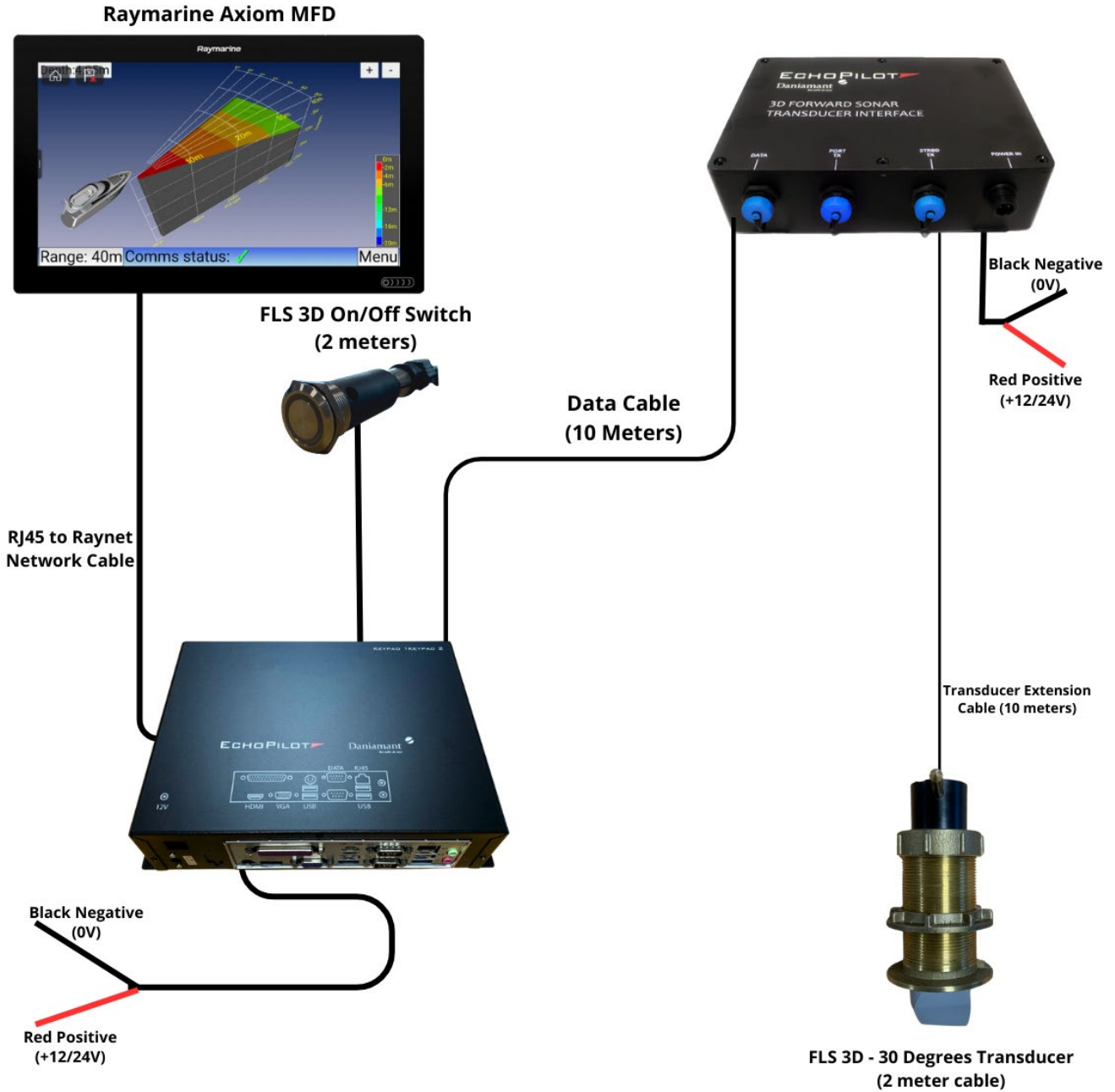
4. Specs List

	EchoPilot FLS 3D – 30 Degrees
Operational Speed	Up to 10 knots
3D Forward Looking Display	30 degree, Full 3D Display
Bottom Mapping Range	20x Water Depth
Maximum Depth Detection	100m
Maximum Forward Range	200m
Operating Frequency	200 kHz
Power Requirements	12/24V, ~20W
Maximum Output Power	28W
Angular Accuracy	~1,5 degree
Roll/Pitch Stabilization	N/A
Operating System	Windows
Image Update Rate	1-1½ second
Video Output	HDMI and VGA
Raymarine Axiom Direct Integration	Yes, via RJ45 Network Cable
Power Consumption – Standby Mode	400mA
Power Consumption – Active Mode	1200mA

5. Competitor Spec Comparison

	EchoPilot FLS 3D – 30 Degrees	Garmin Panoptix	Simrad Forward Scan
Operational Speed	Up to 10 knots	Up to 8 knots	~5 knots
Horizontal Beam	30 Degrees	20 Degrees	20 Degrees
Vertical Beam	90 Degrees	90 Degrees	90 Degrees
Bottom Mapping Range	20x Water Depth	~8x Water Depth	~5x Water Depth
Maximum Depth Detection	100m	90m	90m
Maximum Forward Range	200m	90m	90m
Operating Frequency	200 kHz	417 kHz	180 kHz
Video Output	HDMI and VGA	N/A	N/A
Raymarine Axiom Direct Integration	Yes, via RJ45 Network Cable	No	No

6. Complete System Overview





7. Transducer



The FLS 3D – 30 Degree system consist of only one transducer which is mounted in the hull via a 2” B.S.P thru-hull skin fittings.

The transducer scans a 30 degree view of the seabed and gives a 3-dimensional forward view of the seabed ahead.

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

The transducer is equipped with a pointer pin for easy installation. The pointer indicates which direction the transducer should be turned when installed into the skin fitting. The pointer should point straight ahead toward the vessel’s sailing direction.

The transducer is also equipped with O-Rings for extra seal inside the thru hull skin fitting.

The transducer is connected to the Transducer Interface, which we will cover later, and is connected with a Blue Bulgin 8 pin connector. The transducer cable length is 2 meters. When buying the complete system a 10 meter extension cable is included giving a 12 meter transducer cable length. It is possible to purchase an additional 10 meter transducer extension cable to achieve the maximum transducer cable length of 22 meters.

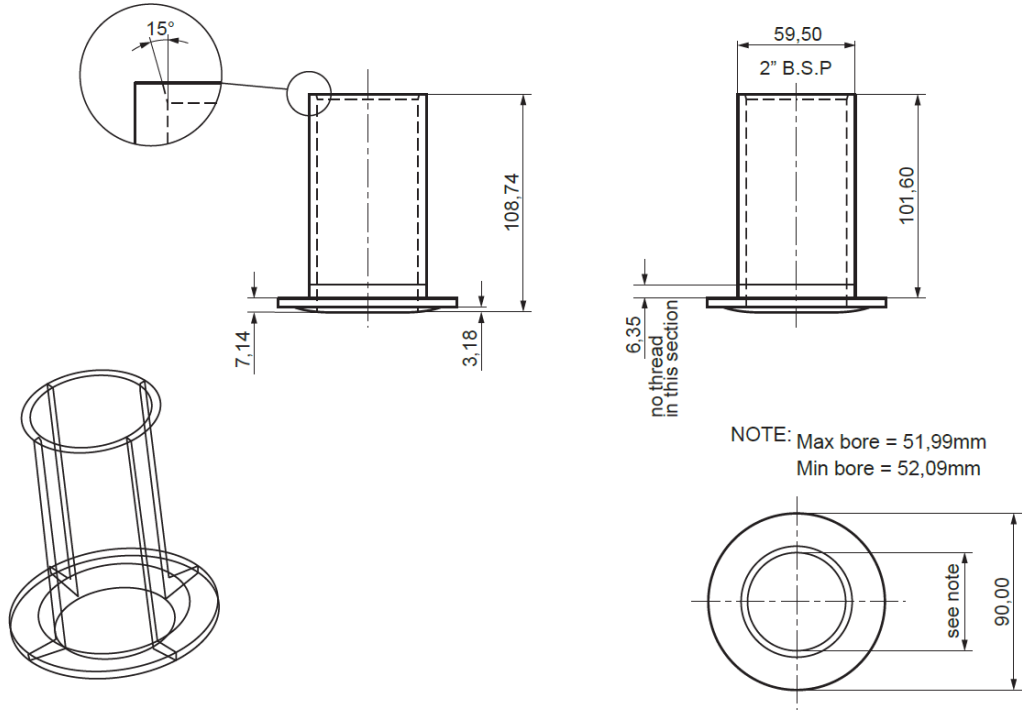
When installing the transducers it is vital that they are installed 100% vertical in the hull.

8. Skin Fittings

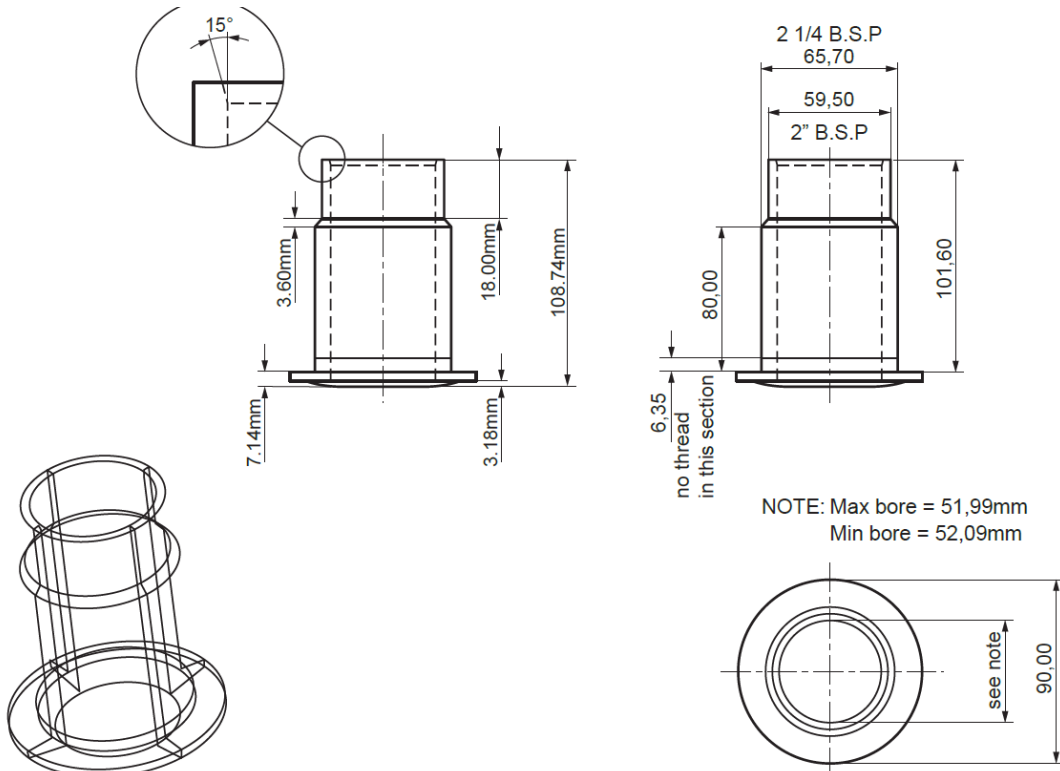
A 2” B.S.P thru hull skin fitting is included when purchasing the complete FLS 3D – 30 degree system. The Skin fitting is offered in Bronze as standard, but you can also buy options like: Steel or Aluminum Thru Hull Skin Fitting to accompany any hull type.

Technical Drawings of Skin Fitting:

Bronze Thru Hull Skin Fitting:



Steel and Aluminium Skin Fitting:



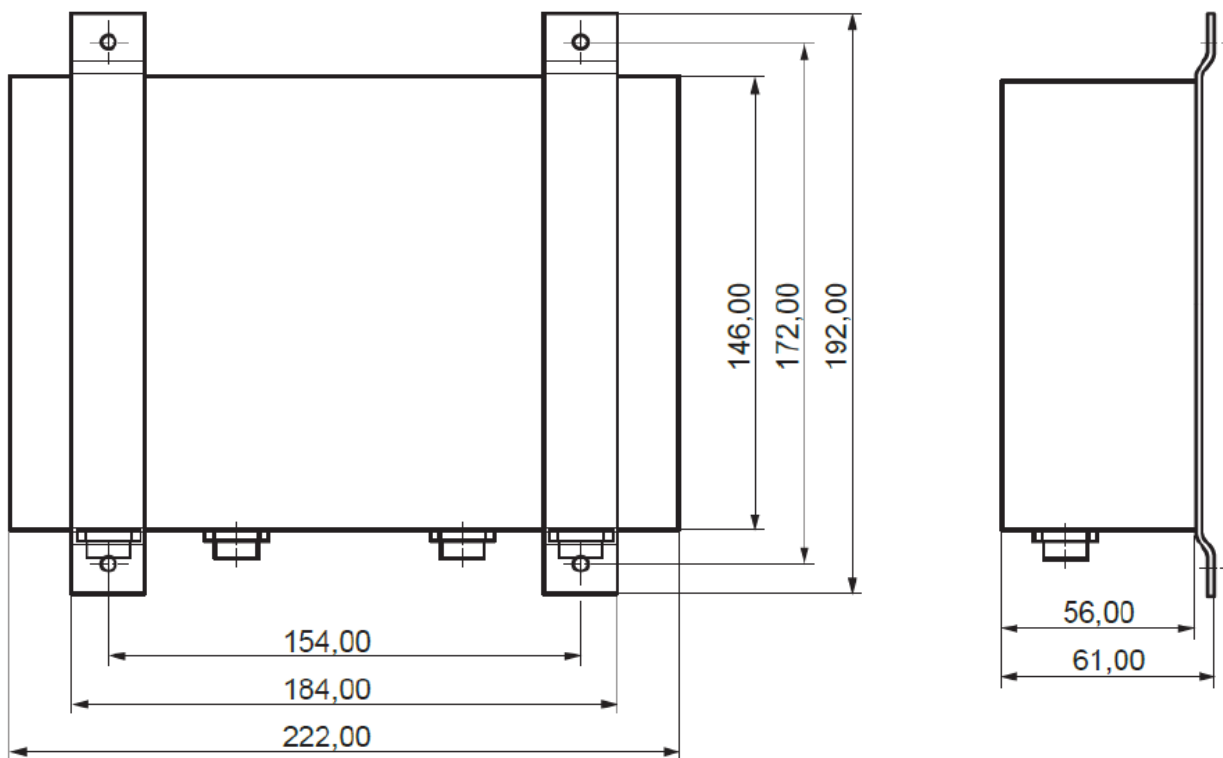
9. Transducer Interface Box

The transducer is connected to the transducer interface. 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



10. Visual Processor

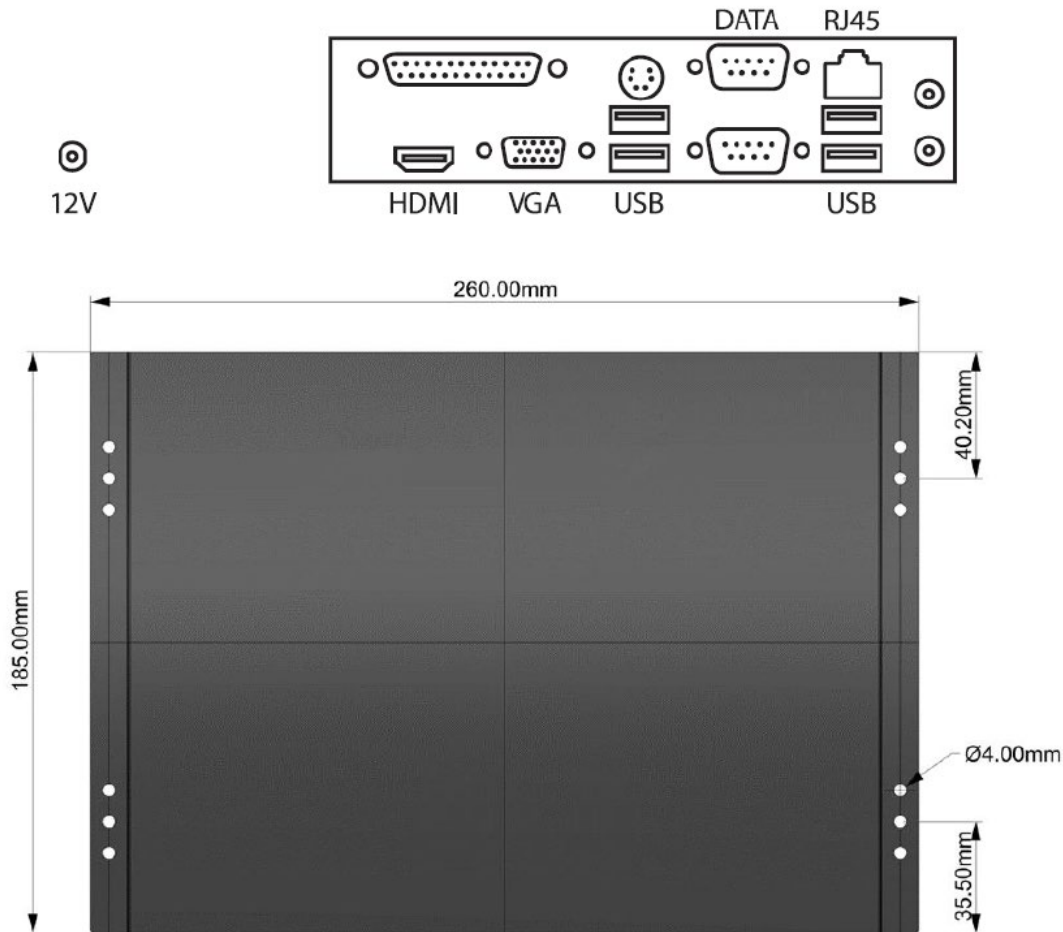
The Visual processor is the computer that renders the data from the Transducer Interface into the 3D image rendered on the Raymarine Axiom Display or in a 3rd party display.

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



11. Keypad and On/Off Button

The FLS 3D – 30 Degree system can be purchased in two versions:

1. Raymarine version to be used on Axiom Displays
2. Standard version to be used on 3rd party display via video input

No matter which version you choose the system and software is the same. There is no difference in performance etc. The only difference between the two versions are:

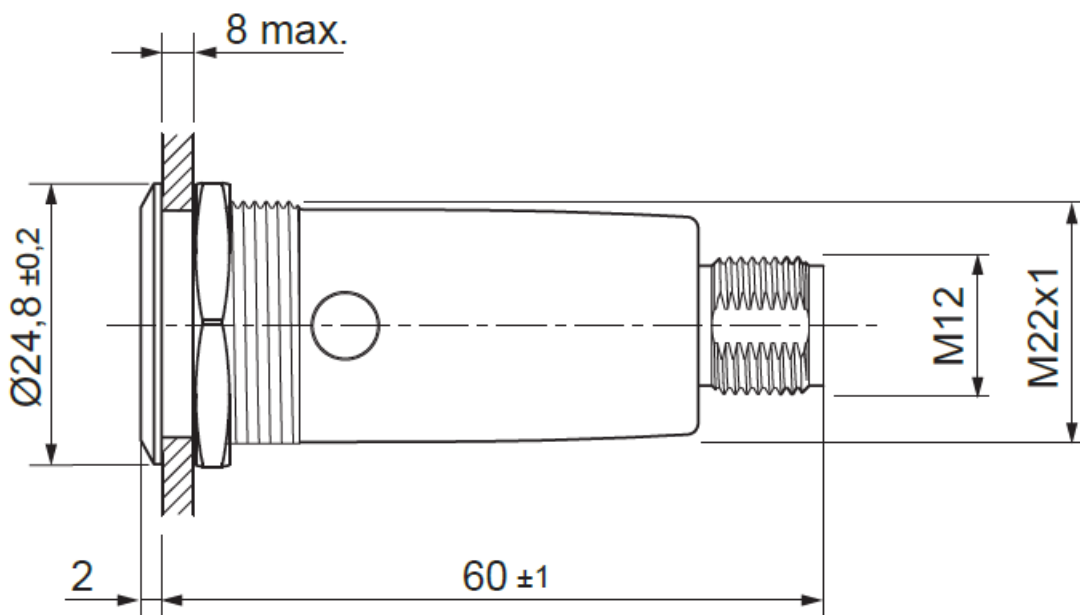
- If you buy the Raymarine Version the system will be supplied with an On/Off Button as everything else is controlled directly on the Raymarine Axiom
- If you buy the standard version the system will be supplied with a keypad. This is needed for the user to be able to change range, enter menu and change settings.

FLS 3D On/Off Button

The on/off button is used to power up or turn off the FLS 3D – 30 Degrees system.

The on/off button is connected to the visual processor via an 8 pin mini-din connector. The different cable lengths for the button are: 2 meters, 12 meters, 22 meters.

You can have two buttons connected to the visual processor simultaneously. This will allow you to power up or power down the FLS 3D – 30 Degrees in two different locations on your vessel.

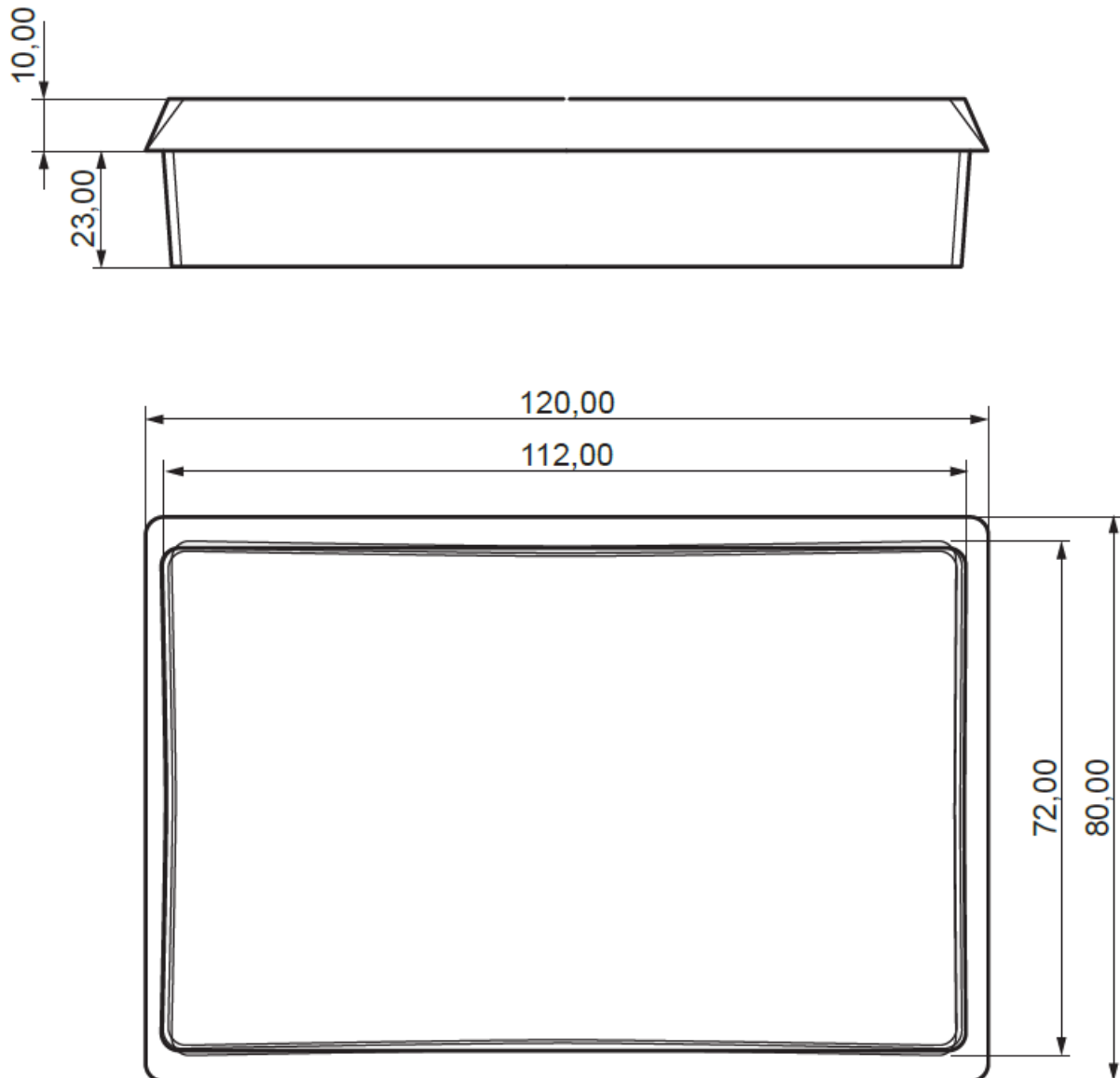


FLS 3D Keypad

The Keypad is used to Power up the FLS 3D – 30 Degree 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 – 30 Degree system from two different locations on your vessel.





12. Included in the FLS 3D – 30 Degree Standard Kit

- 1 x Visual Processor
- 1 x Transducer Interface
- 1 x Transducers with 2 meter cable
- 1 x Transducer Extension Cable, 10 meters
- 1 x 2” B.S.P Bronze Thru Hull Skin Fitting
- Keypad or Power Button
- Data Cable, 10 meters
- 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.

If you have any questions regarding the new system please do not hesitate to contact Frederik Graves at fg@daniamant.com