

AlphaPilot MFS-V

Autopilot



- Intuitive smart design
- 5-inch touchscreen display
- Adaptive control
- Automatic permanent helm



Category

All vessel types



Deepsea



Workboats



Fishing



Yachting

Features |

This competitive AlphaPilot MFS-V is a speed adaptive, Type Approved and Wheel marked autopilot system, and is applicable to a wide variety of commercial or leisure vessel types. This adaptive autopilot easy to install onboard any vessel with a single rudder, linked rudders, independent rudders, or azimuth Z-drives configuration. The smart AlphaPilot MFS-V features an extremely compact display size, which can even be built into an armrest of a chair.



Display |

The AlphaPilot MFS-V is easy to operate via an intuitive 5-inch color touchscreen display which will give the operator a clear presentation of information. The user-friendly menu and parameters can be accessed and changed by using the touch screen.

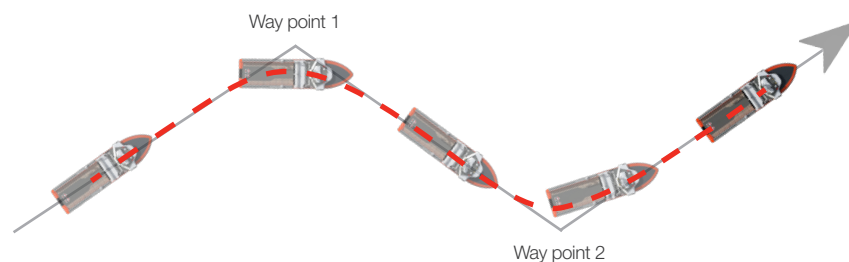


Modes |

The AlphaPilot MFS-V can be set as adaptive auto pilot when it uses information of speed or draft of the vessel and can be used in several modes.

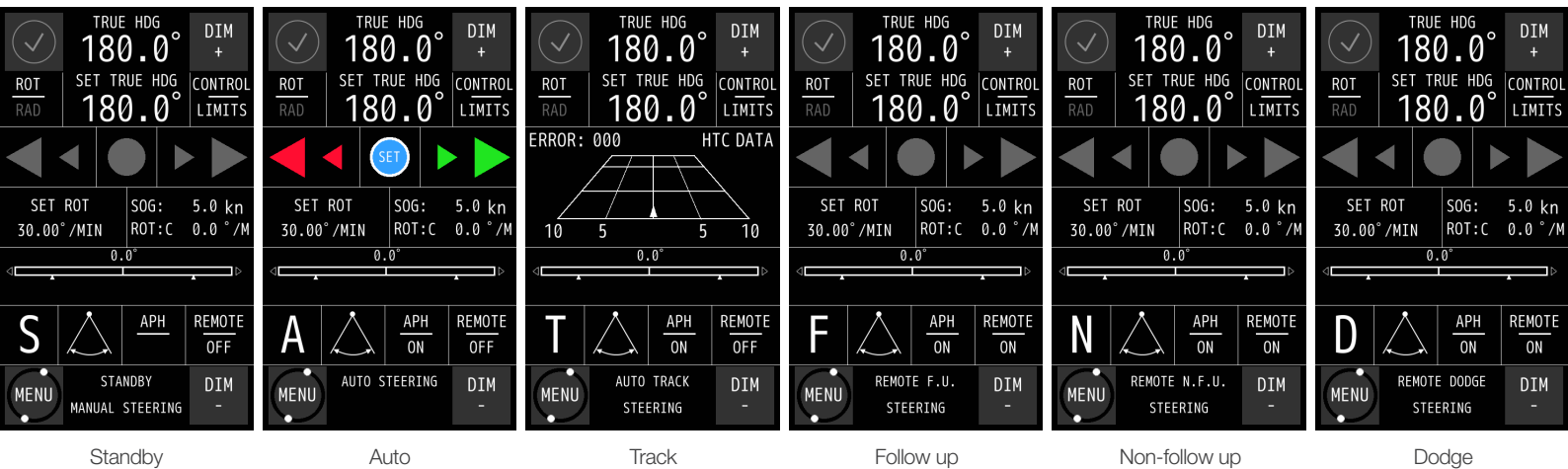
	Mode	Explanation
S	Standby	AlphaPilot is in stand-by or manual mode and does not control steering or rudders as control is overridden
A	Auto	Auto mode or automatic heading control activates the autopilot and steers the vessel to the reference course. When wind/current will push the vessel off course, the AlphaPilot will counteract.
D	Dodge	The dodge mode is a short-term switchover from auto mode to the manual rudder control.
N	Non-Follow Up	Operating in the Non-Follow Up (NFU) mode, the vessel can be hand steered by using a NFU tiller.
F	Follow Up	Operating in the Follow Up (FU) mode, the vessel can be hand steered by using the FU Tiller or Steering wheel. Hand steering is typically used when the vessel is manoeuvring, and navigating in restricted waters, channels, and areas with high traffic density.
T	Track	Track Control mode (also referred to as "Track steering"), combines an ECDIS with the Autopilot. The navigator can program a voyage plan into the ECDIS that contains one or more tracks.

The AlphaPilot MFS-V can be used for multiple leg track control with assisted turns between legs. However, the AlphaPilot MFS-V is not certified as a type approved track control system (TCS). If a type approved Track Control System is required, we strongly recommend to use the AlphaPilot MFM.



Adaptive control |

The Autopilot system can be operated as a conventional PID (Non-Adaptive) system, which typically involves manual adjustment of the Autopilot controls to achieve optimum steering performance. Alternatively, the AlphaPilot MFS-V can function as an Adaptive Autopilot where the control parameters are automatically adjusted as a function of Speed and Draft input data which, requires little or no manual adjustments.



Automatic permanent helm |

The AlphaPilot MFS-V features the Automatic Permanent Helm function. When this function is engaged in the autopilot mode, the AlphaPilot MFS-V continuously monitors any long-term differences between the heading set and the main course steered, and automatically adjusted by the Autotrim (APH) function applying the appropriate amount of permanent helm.



Vessel types |

The AlphaPilot MFS-V is applicable for all vessels up to 70 knot, including HSC craft compliant with ISO16329. The AlphaPilot MFS-V can be used for new build and retrofit projects for vessels up to 3000 GT. For larger vessels or more complex configurations, with tillers and/or multiple command positions, we advise to use the AlphaPilot MFM.

Accessories |

Rudder feedback units

The rudder feedback units consist of aluminum housing and are available as medium or heavy-duty versions. A rudder feedback unit can be mechanically coupled to the rudder post by a chain or a transmission link. Both models contain one dual potentiometer which is proportional to the rudder angle. The output of the RFU must be connected to the input of the distribution box. This continuously transmitted accurate rudder angle data, will be presented by the control unit.



Magnetic Compass Sensor Coil

Takes the magnetic heading, by mounting a compass coil at the bottom of the compass. The HSC can be directly connected, with or without, junction box onto the distribution box.



Analog interface

Digital interface for reading analog signals. Supported signals include 0..20mA, +/- 10V, and potentiometer signal for using with dimmers or rudder feedback units.



The Rudder Feedback units can also be connected to the Analog Interface Mk.2 which will convert the analog signal to a digital MODBUS and IEC61162-1 signal. This output signal can be transmitted to any AlphaLine MF Repeater display which is capable to display graphical rudder information.

Distribution box

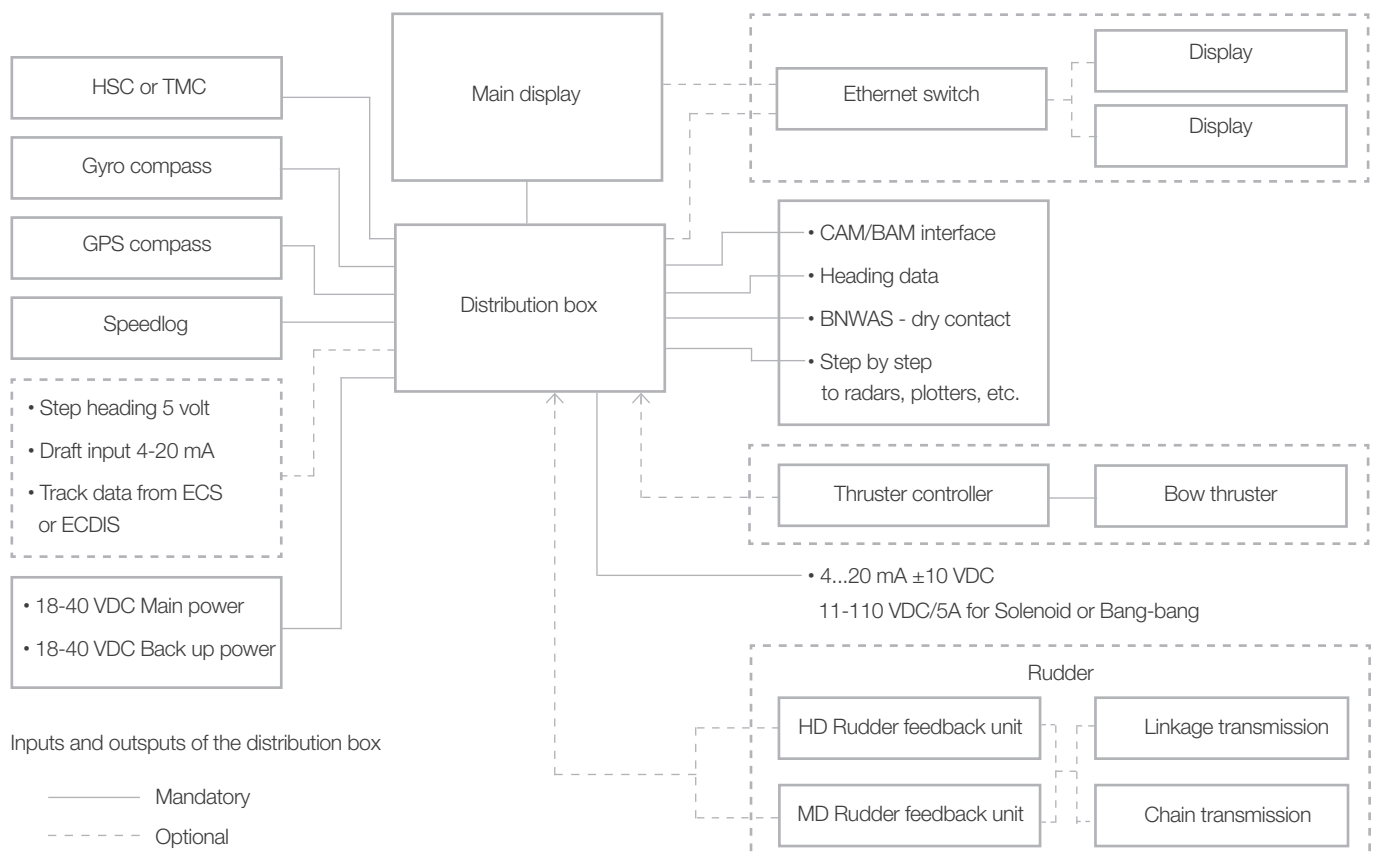
The complete AlphaPilot MFS-V system consists of a 5-inch touchscreen display MFS-VR with rotary knob and a separated distribution box to interface to all necessary data communication signals.

Next to this, the Distribution box is provided with multiple terminals to connect different steering system interfaces.

- Proportional valves, thruster, and waterjet control – (3x): 4...20mA or +/-10VDC
- Solenoid valves (bang-bang) – (2x): 11-110VDC



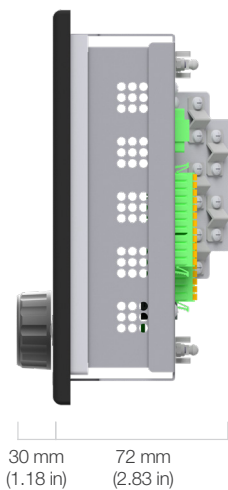
System diagram



Tech Specs |

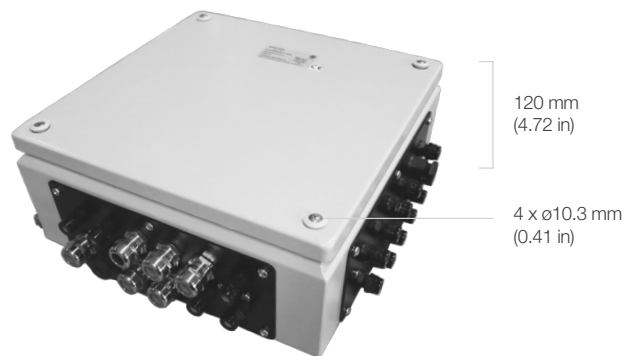
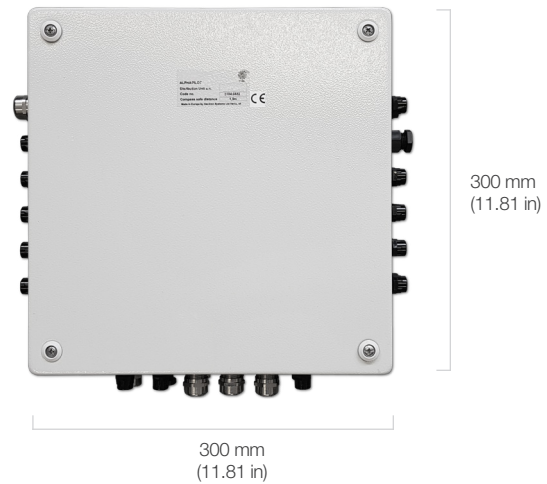
Control panel display

G-008288 Weight 0.768 kg (1.69 lbs)



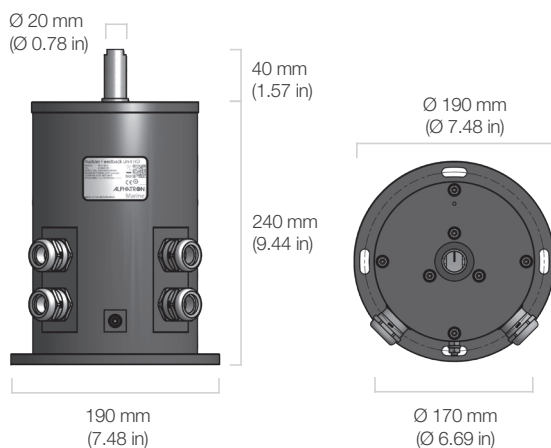
Distribution box Mk2

G-008287 Weight 6 kg (13.23 lbs)



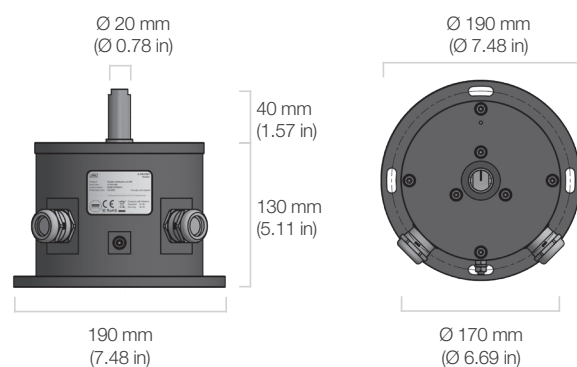
RFU HD RoHS

G-002344 Weight 6 kg (13.23 lbs)



RFU MD RoHS

G-002345 Weight 4.2 kg (9.25 lbs)



In the box |

Model

- AlphaPilot MFS VR Complete set G-008290
 - Display 5-inch touch screen with rotary knob
 - Distribution box Mk2

Displays and control boxes

- AlphaPilot MFS-VR display only G-008288
 - Display 5-inch touch screen and rotary knob - black
- AlphaPilot MFS-V distribution box Mk2 G-008287

Accessories

- Rudder feedback unit HD (with limit switches) G-002344
- Rudder feedback unit MD G-002345
- Linkage Transmission for Rudder Feedback Unit G-002346
- Chain Transmission for Rudder Feedback Unit G-002347
- IP56 kit for MFS V display, tillers and modes switches G-002628
- Analog Interface Mk.2 programmed for rudder feedback 2 volt sea version G-002343
- Pick up coil HSC 2 G-002266

Specifications |

Control panel: Mechanical

Specifications	
Operating	-25°C ~ +55°C
Storage	-60°C ~ +70°C
Humidity	>95% relative humidity, non-condensing
Water resistance	Front: IP56 Rear : IP22
Regulations	IEC60945 Ed.4 DNVGL – CG-0339 IEC 61162 series IEC 62288 (2014) ISO 11674:2006

Control panel: Electrical

Power supply	
Redundant source	24VDC input
Rated power consumption	>75°/sec
Settling time	12 Watt (24VDC@500mA)
Protection	Reverse polarity
Display	
Screen resolution	480 x 800 pixels
Brightness	450 cd/m2
Touch screen	4-wire resistive touch screen, single touch, glove operation

Data ports	
NMEA signals	3 x IEC61162-1 (rated at typical 4800 baud)
NMEA 2000 signals	2 x IEC61162-3 (proprietary CAN-Bus)
Network port for Ethernet	IEC61162-450 (10/100 Mbps)
Additional connections	
USB port	IEC61162-1:2016 (4800 bps) or IEC61162-2:2016 (38400 bps)
MicroSD Card Reader	For software update and maintenance
Relay contact	With Normally open and Normally closed contacts

Rudder Feedback units

Rudder Feedback unit - MD	
Operating	-25°C ~ +55°C
Storage	-25°C ~ +70°C
Humidity	>95% (rated at 40°C)
Water resistance	IP56
Rudder Feedback unit - HD	
Operating	-25°C ~ +55°C
Storage	-25°C ~ +70°C
Humidity	>95% (rated at 40°C)
Water resistance	IP56

Specifications |

Distribution box: Mechanical

Specifications	
Operating	-20°C ~ +60°C
Compass Safe Distance	1 meter
Supply Voltage Range	18-40 VDC
Power Consumption	10 W

Inputs

Mag Heading Input Port		
Heading Sensor Coil (HSC)	HSC 1 or HSC 2 or AlphaBinnacle Mk2 TMC	
Resolution	0.25°	
Gyro / Mag Heading Input Port		
Channel 1 / 2	Mag	Gyro
IEC 61162-1 or -2 (Gyro / Mag and 4800 / 38400 baud Selectable)	\$XXHDM \$XXHDG \$XXHCC \$XXTHS \$XXHDT \$XXROT	\$XXTHS \$XXHDT \$XXHDM \$XXHDG \$XXHCC \$XXROT
Heading Input Resolution	0.1	
Step by Step ('S' Type) Heading Input Port		
Voltage	5VDC only	
Steps / Degree	3, 6, 12 or 24	
Max Consumption	2mA / Line	
Follow Up rate (Minimum)		
All Heading Input Types	30° / Sec	
IEC 61162-1 or -2 Speed or Pulse Input data		
Speed Over Ground (SOG)	\$XX VBW \$XX VTG	
Speed Through Water (STW)	\$XX VBW \$XX VHW	
200/400 ppNm	5-24V p/p STW in only	
Draft Input Data		
Analogue	4 – 20mA	
Track Steer Data Input Port		
IEC 61162-1 or -2 Track Data from track Control System (Priority as shown)	\$XX HTC \$XX APB \$XX HSC	

Outputs

IEC 61162-1 or -2 Heading Data (Isolated RS422)			
Update Rate	Selectable at 1Hz, 10Hz, 20Hz, 40Hz or 50Hz		
Sentence Types (Mag/Gyro versus Update Rate)	Hz	Mag	Gyro
	1	\$HCHDM \$HCHDG \$APHDM \$APHDG	\$HEHDT \$AGHDT \$HETHS \$AGTHS
	10	\$HCHDM (5Hz) \$HCHDG	\$HEHDT \$HETHS
	20	\$HCHDM	\$HEHDT
	40	\$HCHDG	\$HEHDT
	50	\$HCHDG	\$HETHS
Resolution	0.1°		
Autopilot Status Data	1	\$APRSA \$APHTD	\$AGRSA \$AGHTD
Step by Step heading Data			
Steps per degree	Selectable @ 3, 6, 12 or 24		
Signal Amplitude	5VDC		
Maximum Rate	Selectable 8, 16 or 24°/Sec		
Z out	470R		
Analogue Steering Machine / Thruster Outputs			
Triple ±10VDC Analogue	Z out 200R		
Triple 4-20mA	Max Voltage / Load Res 20VDC / 1KΩ		
Twin Solid-State Solenoid Switching (Rudder A / B)			
Polarity	Comm., +ve / -ve Selectable		
Max Rating	5A @ 11-110VDC		
System Alarms			
Main Power Fail	Watch Alarm Timeout		
Back Up Power Fail	OHA Limit		
Heading Data Fail	CCA Limit		
Track Data Fail	Course Change		
Steering Fail	Track Heading Change		
Distribution Unit Fail	Remote Control Engaged		
Limit Switch Status	Rudder Ref Unit Fail		
CCA Data Fail	Control Unit Fail		
Main Power Fail	Watch Alarm Timeout		
IEC 61162-1 or -2 CAM / BAM Interface			
Sentence Received	\$xxACN		
Sentences Transmitted	Mag	Gyro	
	\$APALC	\$APALC	
	\$APALF	\$APALF	
	\$APHBT	\$APHBT	
	\$APEVE	\$APEVE	
	\$APARC	\$APARC	



ALPHATRON
Marine



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