Manual Revision

Revision Date	Revision Level	Description
Nov.2024	1	ADCP User Manual A1 Version

Hydro Flow 600/1200

User Manual

Preface

Introduction
Welcome to the SatLab HydroFlow Series ADCP. This introduction describes how to use this product.
Experience Requirement
In order to help you use SatLab series' products better, we suggest you carefully read the instructions. If you are unfamiliar with the products, please refer to http://www.Satlab.com.cn/

Tips for Safe Uses

⚠️ **Notice**: The contents here are special operations and need your special attention. Please read them carefully.

🛈 **Warning**: The contents here are very important. Wrong operation may damage the machine, lose data, break the system and endanger your safety.

Exclusions
Before using the product, please read these operating instructions carefully: they will help you to use it better. SatLab Surveying Instrument Co., Ltd assumes no responsibility if you fail to operate the product according to the instructions, or operate it wrongly due to misunderstanding the instructions. SatLab is committed to constantly perfecting product functions and performance, improving service quality and we reserve the right to change these operating instructions without notice.
We have checked the contents of the instructions the software and hardware, without eliminating the possibility of error. The pictures in the operating instructions are for reference only. In case of non-conformity with products, the products shall prevail.
Technology and Service
If you have any technical issues, please call SatLab's technology department for help.
Relevant Information
You can obtain this introduction by:
1. Purchasing SatLab products: you will find this manual in the instrument container to guide you on operating the instrument.
2. Logging onto the SatLab official website, downloading the electronic version introduction at "Download center" "Partners" "Partner center".
Advice
If you have any comments and suggestions for this product, please email info@Satlab.com.se. Your feedback will help us to improve the product and service.

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Chapter 1

Product introduction

This chapter contains:

- 1.1 General

- 1.2 Hardware and Dimensions

- 1.3 Principle

- 1.4 Technical Specification

- 1.5 Interface Definition

1.1 General

The complete name of the ADCP is Acoustic Doppler Current Profiler (ADCP), which is now internationally recognized as an important instrument for measuring the velocity of water. It obtains water velocity by measuring the Doppler shift of water-scattered sound waves. ADCP functions include the measurement of velocity profiles in cross sections, short measurement times, and a wide range of velocities. It is now widely used in marine and estuarine current structure surveys as well as velocity and discharge measurements.

The HydroFlow series direct-reading Acoustic Doppler Current Profiler(ADCP) is an accurate and easy to use current profiling system, which can be deployed on flexible platform: trimaran, UVS and so on. Providing accurate measurement with 90m/40m range, the HydroFlow 600/ 1200 can be widely used for monitoring and surveying discharge of rivers, canal, offshore and other engineering projects.

Figure 1-1-1

1.2 Hardware and Dimensions
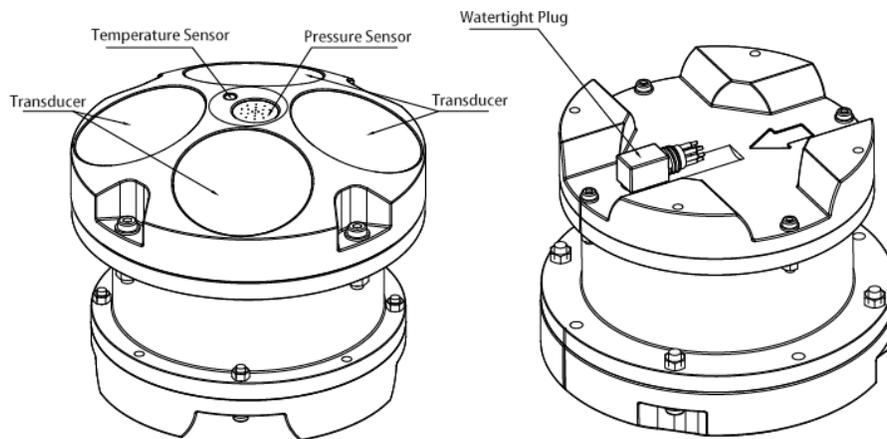
1.2.1 Hardware
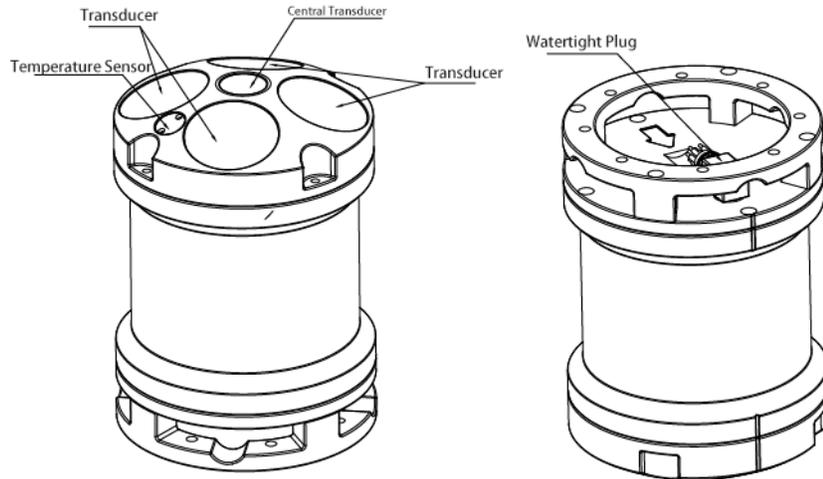

Figure 1-2-1 HydroFlow 600 Hardware
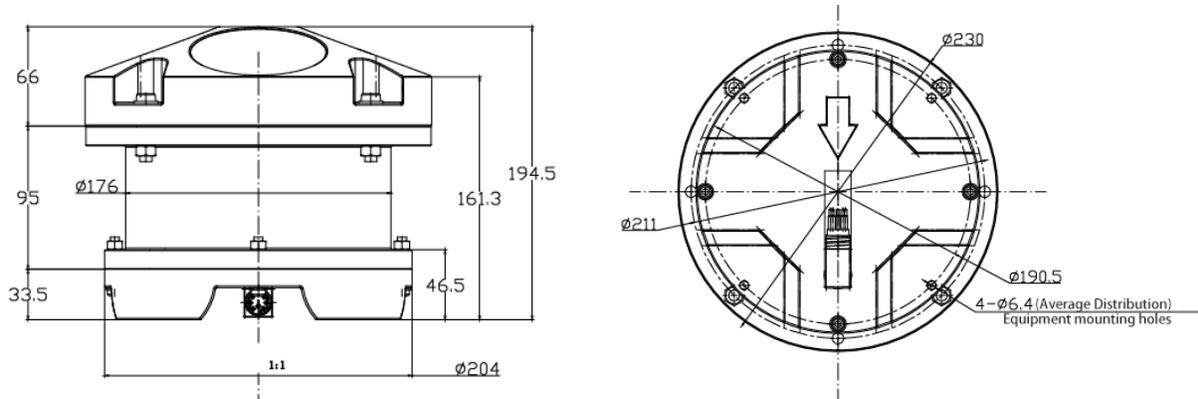
Figure 1-2-2 HydroFlow 1200 Hardware

1.2.2 Dimensions

Figure 1-2-3 HydroFlow 600 Dimension

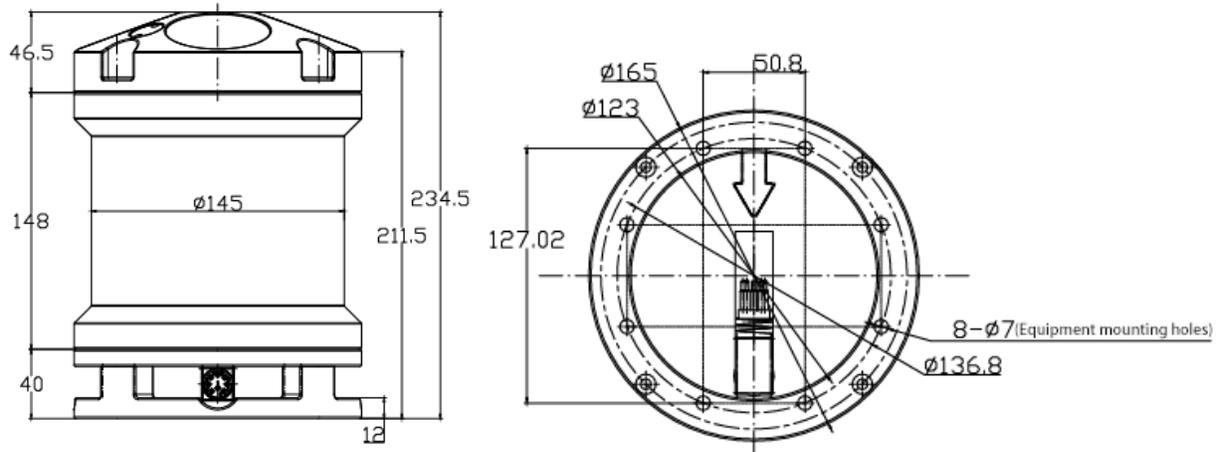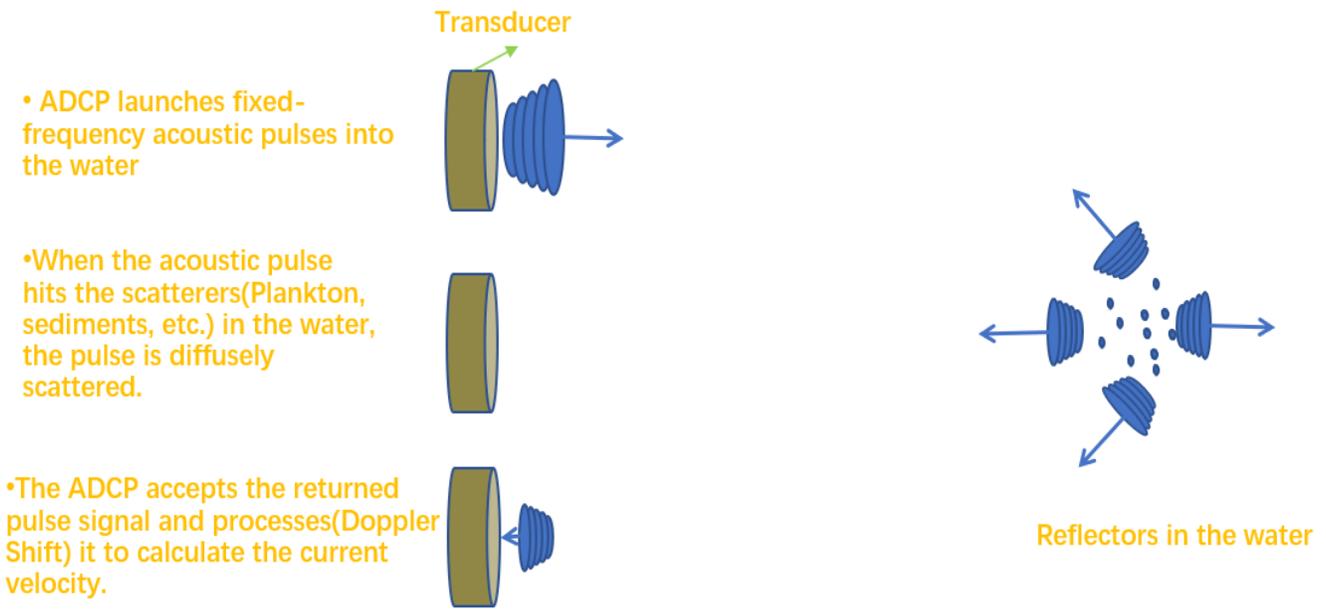Figure 1-2-4 HydroFlow 1200 Dimension

1.3 Principle

Doppler effect：The phenomenon that the frequency of the wave received by the observer is not the same as the frequency emitted by the source when there is relative motion between the source and the observer.

ADCP Working Principle ：

Transducer

• ADCP launches fixed-frequency acoustic pulses into the water

•When the acoustic pulse hits the scatterers(Plankton, sediments, etc.) in the water, the pulse is diffusely scattered.

•The ADCP accepts the returned pulse signal and processes(Doppler Shift) it to calculate the current velocity.

Reflectors in the water

1.4 Technical Specification

	Model	HydroFlow 600	HydroFlow1200
	frequency	600kHz	1200kHz
	Transducer type	piston	
Transducer and hardware	Beam	4 Beams Janus, 20°	5 Beams Janus, 20° (600 kHz central beam)
	Internal memory	16G Standard	
	Working mode	Broadband, Narrowband, Pulse Coherent	
	Updating rate	Max 20Hz	

Water Velocity Profiling	Velocity range	± 5m/s(typical), ± 20m/s (maximum)	
	Accuracy	0.25% ±0.2cm/s	
	Resolution	1 mm/s	
	Profiling range(distance)	0.3-90m	0.1-40m
Bottom tracking	Velocity range	± 5m/s typical, ± 20m/s maximum	
	Depth range	0.4-120m	0.15-50m
	Accuracy	+ 0.25% of water velocity relative to ADCP	
	Resolution	1 mm/s	
Cell	Cell depth	0.05~4m	0.02~2m
	Quantity	1-260	
Internal Sensors	Temperature（range/accuracy/resolution）	-10°C～+60°C / ±0.1°C / 0.001°C	
	Compass（range/accuracy/resolution）	0°～360° / ±0.5° / 0.001°	
	Motion（range/accuracy/resolution）	±30° / ±0.2° / 0.001°	
	Pressure sensor (optional)（range/accuracy/resolution）	0~200m / 0.5% FS / 0.01m	
Material	Engineering plastic, aluminum alloy and titanium alloy three material selectable		
Communication	Communication protocol	RS-232，RS-422(optional), WIFI(optional)	
	Baud rate	4800-115200	
Power	Input	9-18VDC	
	Power consumption	3.5W (average)	
Environment	Temperature	-5°C~+45°C(Working) -20°C~+60°C(Storage)	

1.5 Interface Definition

1.	ADCP-RX
2.	ADCP-TX
3.	Power +12V
4.	GPS-GND；ADCP-GND
5.	GPS-RX
6.	GPS-TX
7.	Power-GND
8.	Power-GND
9.	Null
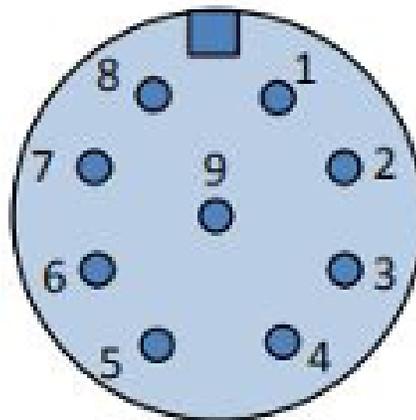
Chapter 2
Safeguard

This chapter contains:

- 2.1 Package List
- 2.2 Caveat

2.1 Package List

HydroFlow 600	
HydroFlow 600(Plastic Housing)	
Power and Data Cable	
USB to RS232 Port Cable	
Tool	
M6*120 Screw	

HydroFlow 1200	
HydroFlow 1200	
Power and Data Cable	
USB to RS232 Port Cable	
Tool	
M6*60 Screw	

2.2 Caveat

Please note the following items to extend the life of your equipment and reduce the risk of damage while maintaining its good performance.

1. Don't disassemble the equipment as it doesn't need to be disassembled for

    maintenance.

2. Handle gently: prevent damage to the sealing of the device and the internal electronic

circuit system during transportation.

3.There is a built-in compass inside the device. The compass may not work correctly when the device is in close proximity to steel structures or magnetic fields.

4. Don't fire "pings" in the air for long time, it will damage the device. Please use a bucket with water for indoor testing.

5. Keep equipment clean, oil and any chemicals. Stains may damage seals and underwater cable connectors.

6. Avoid prolonged exposure of the equipment to the sun, consider using a cover if necessary. Do not attempt to store or transport equipment in extreme temperatures. When the devices are not in use please return them to the transportation box.

7. Special attention must be paid to the surface of the transducer to avoid impact, crushing, direct sunlight, oil and any contact with chemical agents.