



OTT C31 – The Original
Universal current meter for flow velocity measurement in rivers and open waterways. Rod-mounted or cable-suspended current meter.

OTT C31

Universal Current Meter

With thousands of instruments deployed in a wide variety of applications over several decades, the OTT C31 has proven quality, precision and reliability.

Depending on the accessories used, the OTT C31 universal current meter covers a large variety of applications: As a rod-mounted or cable-suspended current meter, providing a measuring range from 0.025 to 10 m/s, it is suitable for measurements in small streams as well as in large rivers with cableway systems, or for use on survey vessels.

Quantitative
Hydrology



The OTT C31 Universal Current Meter – highly regarded by hydrologists around the world

Function

Water flow causes rotation of the current meter propeller. Once per revolution, a magnet attached to the current meter propeller operates a water-tight sealed reed contact. The contact sequence is proportional to the velocity of the water at the measuring point. The sequence is captured by an attached counter and used for calculating flow velocity at the measuring point, based on the current meter equation.

The relationship between propeller revolution and flow velocity is determined by the following formula (current meter equation):

$$v = k \cdot n + \Delta$$

wherein:

k : Hydraulic pitch of the current meter propeller [m/rev] which was determined by towing tests carried out in a rating tank

n : Propeller rotation per second [rps]

Δ : Current meter constant [m/s] which was determined by towing tests carried out in a rating tank.

Since there are mechanical differences between the propellers caused by manufacturing tolerances and differences in bearing, the constants k and Δ are precisely determined individually for each current meter in the OTT rating tank (BARGO Test Certificate and BAREL Velocity Table).



Applications

Rod-mounted current meter

For measuring in small streams and shallow waters showing low flow velocities, the OTT C31 unit is used in combination with a rod (current meter wading rod with cm/dm scale).

The two common mounting options are:

- directly on the rod
- HERES relocating device

The HERES relocating device enables users to change the vertical position of the current meter without requiring the measuring equipment to be taken out of the water.

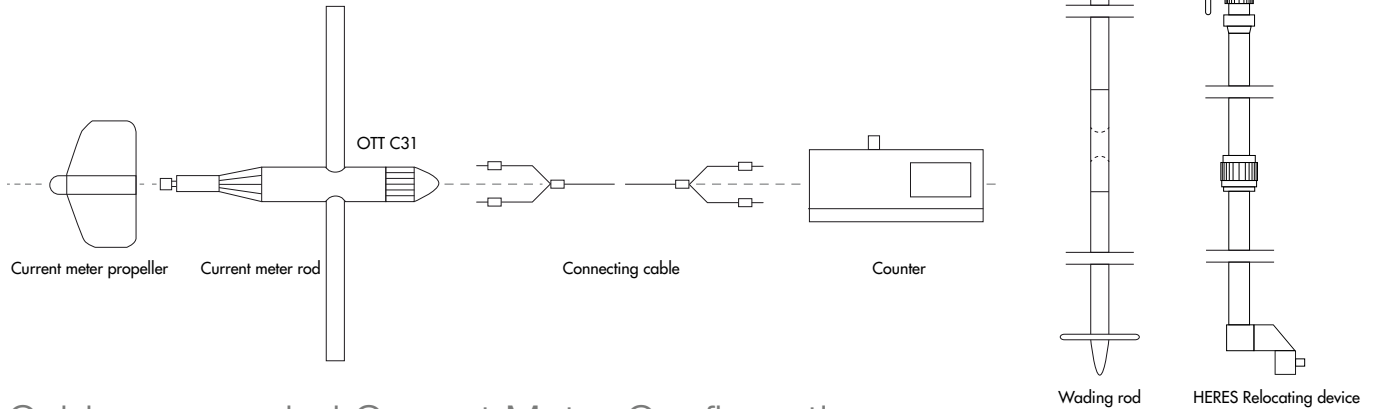
Cable-suspended current meter

For measurements in deeper waters and at higher flow velocities the OTT C31 current meter is used in conjunction with cable-suspended equipment; either in combination with a single drum winch or a cableway system.



Configuration Options

Rod-mounted Current Meter Configuration



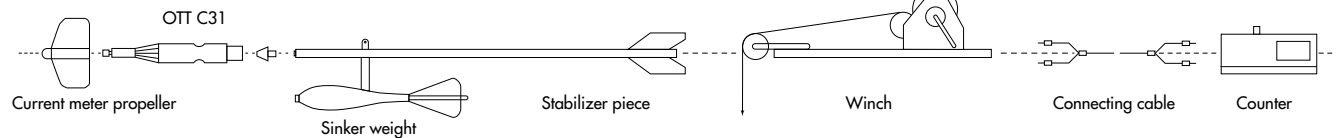
Cable-suspended Current Meter Configuration

Different cable-suspended current meter designs are available that meet different measuring requirements:

- Design with 5 or 10 kg sinker weight without ground sensor for single-drum winch
- Design with 25, 50, or 100 kg middle piece with ground sensor for single-drum winch or cable way systems with double-drum winch

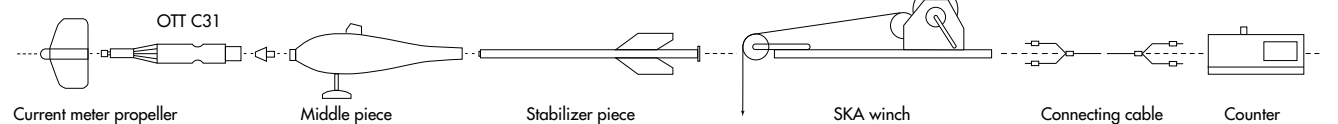
Small cable-suspended current meter 5/10 kg

Flow Velocity $v = 0.03 \text{ m/s}$ to 1 m/s



Large cable-suspended current meter 25/50/100 kg

Flow Velocity $v = 0.03 \text{ m/s}$ to $3/3.5/10 \text{ m/s}$



Measuring ranges

Depending on the pitch of the propeller chosen, the current meter can be used for different velocity measuring ranges. For angled flows, the flow component acting on the discharge may be measured within an angle range that depends on the propeller type.

Propeller No.	Dimensions	V_{max}	Starting velocity	Component Effect	Material
1	Ø 125 mm, Pitch 0.25 m	5 m/s	0.025 m/s	5°	Aluminium, anodized
1	Ø 125 mm, Pitch 0.25 m	5 m/s	0.035 m/s	5°	Plastic
2	Ø 125 mm, Pitch 0.50 m	6 m/s	0.040 m/s	5°	Aluminium, anodized
2	Ø 125 mm, Pitch 0.50 m	6 m/s	0.060 m/s	5°	Plastic
3	Ø 125 mm, Pitch 1.00 m	10 m/s	0.055 m/s	5°	Aluminium, anodized
4	Ø 80 mm, Pitch 0.125 m	3 m/s	0.040 m/s	5°	Aluminium, anodized
A	Ø 100 mm, Pitch 0.125 m	2,5 m/s	0.030 m/s	45°	Aluminium, anodized
R	Ø 100 mm, Pitch 0.25 m	5 m/s	0.035 m/s	15°	Aluminium, anodized

Z400 Counter

The OTT Z400 counter captures and evaluates the pulses from the current meter.

Available Measuring Modes:

Pulse, time, or integration mode as well as integration mode with remaining time determination.

The measurement is started when the current meter contact closes for the first time.

The time interval or the number of pulses required for determining the duration may be selected by the user, depending on the requirements.

An additional option allows the flow velocity to be directly calculated using predefined equations. The flow velocity equations are entered using a PC connected via USB.



Technical data

OTT C31 current meter

Flow velocity

from 0.025 m/s to 10 m/s
(depending on propeller type)

Current meter contact

1 contact/revolution
Service life >1 million switching cycles

Operating voltage range

max. 9 V DC

Solenoid switch

Pressure-tight up to 30 bar

Material

- Current meter body:
Stainless steel, corrosion resistant
- Current meter propellers:
Standard aluminium, anodized
Alternatively: Plastic – Hostaform C,
yellow

Dimensions

- D x L up to propeller tip:
Ø 35 x 310 mm
- Weight without propeller:
1.26 kg

OTT Z400 Counter

Measurement modes

Pulse, time, integration mode, and integration measurement with remaining time determination

Measuring times

5, 10, 15, 20, 30, 40, 50, 60, 80, 100, 120 s, and infinitely

Resolution: Time / Pulse measurement

0.1 s / 0.1 pulses

Accuracy: Time / Pulse measurement

±0.01 s / ±0.5 pulses

Display of the flow velocity

Optional

Display

LCD, 4-digit, numbers 10 mm in height

Power supply

9 V block battery (IEC 6LR61)

Allowable ambient temperature

-20°C to +60°C

Dimensions including rubber covers

128 mm x 125 mm x 65 mm (L x W x H)

Weight, complete

670 g

Class of protection

IP65

Interface

USB