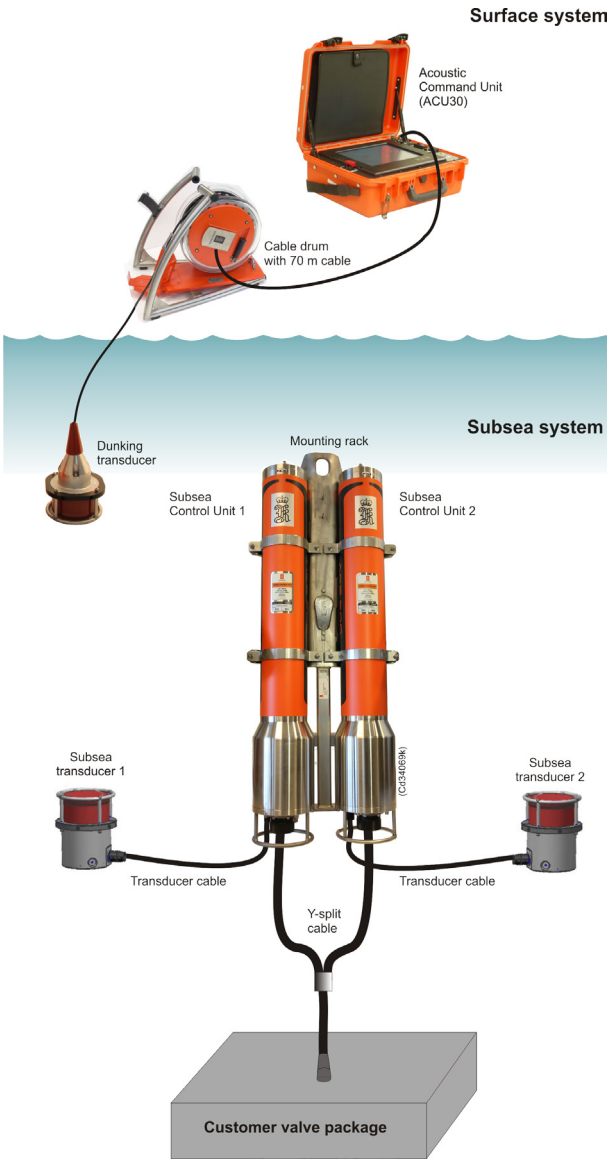
ACS500
Acoustic Control System

KONGSBERG

Description
The ACS500 system is the new generation of the Kongsberg Martime Acoustic Control System. It is developed to increase the operational depths and is rated to 4000 metres.

The ACS500 system is divided into two units:
Surface system (portable)
Subsea system

The ACS may also be operated from the HiPAP® system.



Applications
- Emergency BOP backup control system
- Pipeline Valve Control
- Workover system
- Offshore loading
- Other subsea control systems

The surface system consists of:
One Acoustic Command Unit w/charger cable
The ACU is the main and certified interface for the Acoustic Control System. The unit is a part of the safety equipment on board an drilling rig or drillship. It is delivered in a splash-proof portable case, with carrying handle and carrying strap. It has an internal rechargeable battery and a fully charged battery will provide more than 10 hours of operation.
It is operated via the computer (touch screen/trackball).

One Dunking Transducer Unit
The dunking transducer unit is a cable drum with a 70 m cable and a dunking transducer. The dunking transducer unit can be carried by one person.

The following dunking transducers are available:

TDD 303 MF
- a 50 degree dunking transducer suitable for use in water depths down to 1500 m operations.

TDD 30V MF
- a 30 degree dunking transducer suitable for use in water depths down to 4000 m operations.

TDD 180 MF
- a 180 degree dunking transducer suitable for use in water depths down to 500 m operations.

The SCUs are mounted on the valve package and receive acoustic command signals from the ACU. The SCUs translate the signals into operational commands, then act on those commands sending control signals to solenoids which in turn opens or closes the hydraulic control valves on the valve package. A signal is then transmitted by the SCU to the ACU as a confirmation that the command has been executed. The control system can also read the status of the SCU, including various hydraulic control valves and sensor read backs.

The subsea system consists of:

Two subsea control units

- Now available with interseal test ports for seal testing.

Two subsea communication transducers

- With cables and subsea connectors.

Three possible interfaces with the valve package:

Two interface cables (non-testport system)

One cable from each SCU to the valve package.

Two interface jumper cables (non-testport system)

One cable from each SCU to a junction box with one interface cable to the valve package.

One y-split cable (testport systems)

Connecting both SCU's to the valve package.

Technical specifications

Environmental

- Operation temp:-5 to +55°C*
- Storage temp: -30 to +70°C

* Operational specification for on deck testing purposes: -20 to +55°C. ACU 30 must be in standby/power ON mode before exposed to temperatures below -5°C.

Operating frequencies

- PSK: 23600 - 27600 Hz
- FSK: 25000 - 26500 Hz in steps of 250 Hz

Surface system

ACU

- Weight: Approximately 19.5 kg
- Degree of protection: IP54

Electronic details

- Input voltage: 100 to 240 VAC (47 - 63 Hz)

Battery

- Type: 7 Lead/acid cells, connected in series
- Transmission power (max): 300 W
- Continuous use: Approx.10 hrs

Dunking Transducer Unit

- Length of cable: 70m

Beam width

- TDD303 MF: approx. 50° at -3dB
- TDD30V MF: approx. 30° at -3dB
- TDD180 MF: approx. 180° at -3dB

Subsea system

SCU

- Operating depth (max): 4000 m
- Material: Super Duplex Steel

Electronic details

- Operating voltage: 10 to18 VDC
- Communication principle: Phase Shift Keying and Frequency Shift Keying

Wake-up

- PSK: M53/M54
- FSK: Channel 76: 24 and 23.5 Hz
  Channel 86: 24.5 and 23.5 Hz

Transmission power

- Max: 300 W

Battery

- Weight: 5.9 kg
- Number of batteries: 1
- Cells per battery: 48
- Type of cells: Non-rechargeable, lithium
- Battery output:14 VDC, single voltage
- Total battery energy content, 14 V: 128 Ah
- Battery life time: Calculations on request

Remote Subsea Transducers

Material

- Super Duplex Steel

Operating frequency

- 21-31 kHz

Weight in air

- 20 kg

Weight in water

- 17 kg

Beam width

- TDR40V MF: approx. 50° at -3dB
- TDR30V MF: approx. 30° at -3dB
- TDR180 MF: approx. 180° at -3dB

Operating depth

- TDR40V MF: 1500 m
- TDR30V MF: 4000 m
- TDR180 MF: 500 m

Mounting bracket

- Material: AISI 316L Stainless Steel
- Weight: 22 kg
- Mounting holes: Compatible with ACS 400

SCU Junction box (option)

- Weight: 8.6 kg

Material:

- Unit: Bronze
- Connectors: Titanium/Bronze

Standards and Certificates

- DNV-OS-E101
- API 16D
- Type Approval by Det Norske Veritas when used with ACU30 as topside unit.

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Kongsberg Maritime AS
Strandpromenaden 50
P.O.Box 111
N-3191 Horten,
Norway

Telephone: +47 33 02 38 00
Telefax: +47 33 04 47 53
www.kongsberg.com
subsea@kongsberg.com

KONGSBERG