



TEST UNIT 5048 for DCS ZPulse

A test unit designed to verify the function of the SeaGuard RCM, and Doppler Current Sensors, DCS 4420, 4520, 4830, 4930, 5800 and 5810

The Test Unit 5048 is designed to verify that vital parts of the ZPulse Doppler Current Sensor (DCS) are working correctly. The Test Unit is designed for DCS installed on the SeaGuard, RCM Blue and for stand alone DCS in the 4420, 4520, 4830, 4930, 5800 and 5810 series. For older DCS with single frequency use Test Unit 3731

The Test Unit consists of a ring with 4 test transducers suspended by mechanical springs, enabling each test transducer to be pressed against the DCS transducers.

The test transducers pick up some of the energy transmitted by the 'ping' from the DCS. This energy is used to start oscillation of the test transducers. In the receiving stage of the DCS the test transducers are still oscillating and thus transmitting a weak signal back to the DCS.

Each of the four test transducers consist of 2 oscillators corresponding to the two frequencies in each ZPulse signal.

Two of the test transducers are made of crystals with slightly higher resonance frequency than the DCS transducers, and two are made of crystals with slightly lower resonance frequency. The high frequency corresponds to the received signal when the current direction is towards the DCS, and the low frequency corresponds to a current flowing away from the DCS.

The frequency shift corresponds to a simulated current speed of about 2.20 m/s if Forward Ping is disabled. The direction of the simulated current is along the centre line between the two low frequency test transducers, marked by a slot in the Test Unit ring.

Procedure for mounting the Test Unit to the DCS:

- Moisten the surface of the transducers for optimal contact.
- Bring the test transducers to their outer position by pulling and turning the grey handles.
- Hold the Test Unit around the DCS and align the test transducers to face the DCS transducers.
- Release carefully the mechanical springs one by one so that the test transducers are in contact with the DCS transducers

Tilting the instrument/DCS corresponds to a slight increase in current speed readings:

10° tilt corresponds to 2% increase in reading.

35° tilt corresponds to 8% increase in reading.

SeaGuard using internal display

1. Mount the Test Unit to the transducer head/DCS according to procedure.
2. Start instrument and switch off Forward pinging
3. Open Menu > Administrative Tools > Sensor Monitor to read the speed and direction from sensor.
4. Align the instrument/DCS and the Test Unit so that the orientation slot is in the north direction.
5. Always disregard the first two readings. Read speed and direction
6. Dismount the Test Unit and rotate it 90° without moving the instrument/DCS. Remount the Test Unit to the instrument/DCS. Read the Current speed and direction.
7. Repeat the 90° increment until you back to the start position.
8. Check that the Direction reading is incremented with approximately 90° after each turning and the Speed reading is approximately 220cm/s.
9. To check compass keep the ring on and turn instrument/sensor in 90° steps.

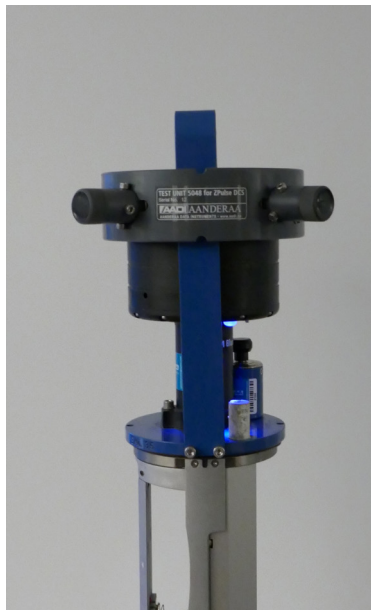
RCM Blue, SeaGuard Basic or stand-alone sensor using AADI Real-Time Collector

1. Establish contact with the sensor using Bluetooth or cable, for RCM Blue connect a wire from temperature housing under the DCS head and the battery connector to simulate in water condition. This is necessary to start the pinging on RCM Blue.
2. Start sensor and switch of Forward pinging.
3. Open Graphical tool to read speed direction, Tilt X and TiltY, see example on next page.
4. Repeat point 4. to 9. from procedure above.

Stand-alone sensor using terminal software

1. Establish contact with the sensor and switch off Forward pinging
2. Start sensor and read Speed, Direction, TiltX and Tilt Y from data string
4. Repeat point 4. to 9. from procedure above.

Example of use



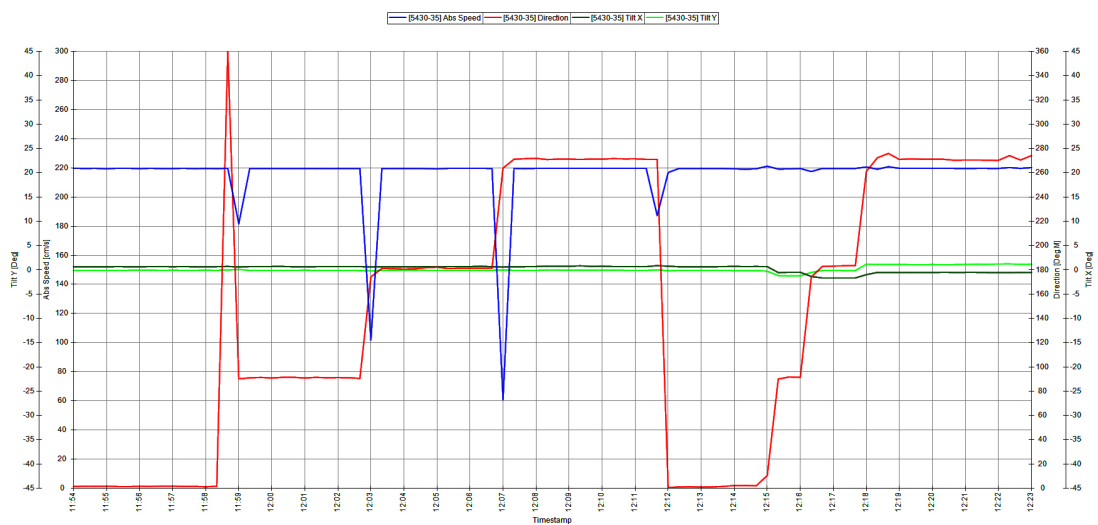
Test Unit connected to RCM Blue



Test Unit connected to In-line DCS



Test Unit connected to SeaGuard with display



Series	Last Value	Max	Min	Average	Std Dev
Abs Speed [cm/s]	220.226	221.146	60.983	215.683	2.137E+001
Direction [Deg.M]	274.170	359.775	6.635	150.496	1.114E+002
TRR X [Deg]	-0.538	0.862	-1.693	0.277	6.884E-001
TRR Y [Deg]	1.151	1.221	-1.265	0.075	5.369E-001

Example of reading from sensor using AADI Real-Time Collector
Red line is showing the direction and each step is after turning the ring 90°



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