SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

The SIS-1625 Seafloor Imaging System has quickly become the industry standard for shallow water (<2000M) seafloor survey operations. This field proven, highly versatile survey tool offers a fully digital platform capable of collecting high resolution chirp side scan/sub-bottom data. The high resolution, extended range chirp data and multiple data sensor capability provide the surveyor with a significant savings in instrument cost and survey time. This system also offers 12 and 24VDC with a total of 50 watts available instrument power and (4) RS-232 lines of communications for customer selected sensors.

Applications

- *Cable / Pipeline Route Surveys*

- *Habitat Studies & Sea Floor Classification*

- *Engineering & Scientific Studies*

- *Object Detection*

- *Channel Clearance*

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

The TTV-290 series of tow vehicles is designed for hydrodynamic stability in most sidescan towing applications. The sidescan transducer bays are designed to offer 0, 10, 20, and 30 degrees downward looking positions for optimum performance in a variety of different applications. The stainless steel midplate construction provides users a rigid and stable platform to mount additional sensors. The high visibility yellow polyethylene covers are designed to handle years of use. These new and improved shells are more resistant to impact than earlier models, and are easy and cost effective to modify or replace.

TTV-295 Tow Vehicle

SUBSEA UNIT

TTV-295	Tow Vehicle
	The TTV-295 offers dual frequency (100/400 kHz) Side Scan Transducers, a 2x2 (2-7 kHz) sub-bottom profiler array (AT-471) with Chirp and Continuous Wave (CW) tone burst transmission, which is software selectable, and a dual hydrophone array for optimum receive performance. The subsea unit has a basic built in heading, pitch and roll sensor, and depth sensor. This package offers (4) RS-232 communication lines in addition to 12 and 24 VDC with a total of 50 watts available for instrument power.

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

SURFACE UNITS

Transceiver

CL-163	ADSL Transceiver
	Includes a 270 volt power supply for the tow vehicle, Communications Link (ADSL, 5Mbit/sec) for long cable operations up to 10,000 meters (with SIS-1625) using a single a co-axial cable. This unit interfaces the topside data acquisition computer (DAC) with the tow vehicle.

CL-163 ADSL Transceiver

Digital Acquisition Computer (DAC)

This Industrial Rackmount Computer comes in a rugged case that is designed for optimum acquisition performance and durability. It comes with a high end Intel processor. The hard drive offers ample room for data storage and is minimally 500GB in size. This computer also offers a Gigabyte Ethernet connection. In addition, DACs come with a high resolution 20″ flat screen monitor, a full function keyboard and a mouse.

DAC-210	1625 Rackmount Computer with **Triton® SS-Logger** Software
DAC-220	1625 Rackmount Computer with **Chesapeake® SonarWiz.Map** Software

See pages 51 - 52 for software package descriptions.

Digital Acquisition Computer w/ Monitor

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

CABLES (KEVLAR DECK ONLY - NOT FOR TOWING)

The SIS-1625 Sonar system is delivered with a standard 75 meter Kevlar Deck Cable of 0.35" diameter, single coax, reinforced with abrasion resistant urethane jacket. The cable includes the dry side RF style connector to the CL-163 Transceiver and a Kevlar cable termination assembly for the wet side consisting of a Kellems grip and a molded female 4-pin micro, Subconn connector (MCIL-4F) with a locking sleeve.

| 011060 | **Kevlar Deck Only** coax cable w/termination - 75M |
| ES LENGTH | Additional meter of **Kevlar Deck Only Cable** - per meter |

Example: A 100 meter cable would be priced as a 75 meter cable with 25 meters of extra cable @ $10/meter ($3,550 + $250 = $3,800)

Kevlar Deck Only Cable

CABLES (ARMORED TOW CABLE)

013295	TWC-290 **Armored** Tow coax cable 0.45" dia. w/termination - 200M
ES LENGTH	Additional meter of **Armored** coax cable 0.45" dia. - per meter *Not to exceed 5000 meters based on 5Mbits/sec data rate* ***Recommend Rochester A301241 for application up to 5000 meters*
C-250-218	TWC-290 **Armored** cable termination assembly for 0.45" cable

OPTIONS FOR SIS-1625 SERIES

| B298-0528 | Y molded cable for mulitple ancillary sensors (3 or 4 sensors) |

SHIPPING CASES

| 012692 | Wood crate for TTV-290 series Tow Vehicle + Cable + Transceiver + DAC |
| 013499 | Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual |

SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

INTEGRATED PACKAGES FOR SIS-1625

1625-1	SIS-1625 Combined Side Scan Sonar/Sub-bottom Profiling System	
	TTV-295	Tow Vehicle
	CL-163	ADSL Transceiver
	DAC-210	Rackmount Computer with **Triton® SS-Logger**
	011060	Kevlar Deck Only coax cable - 75m
	012692	Wood crate for TTV-290 series Tow Vehicle + Cable + Transceiver+ DAC
1625-2	SIS-1625 Combined Side Scan Sonar/Sub-bottom Profiling System	
	TTV-295	Tow Vehicle
	CL-163	ADSL Transceiver
	DAC-220	Rackmount Computer with **Chesapeake® SonarWiz.Map**
	011060	Kevlar Deck Only coax cable - 75m
	012692	Wood crate for TTV-290 series Tow Vehicle + Cable +Transceiver + DAC

See pages 51 - 52 for software package descriptions.
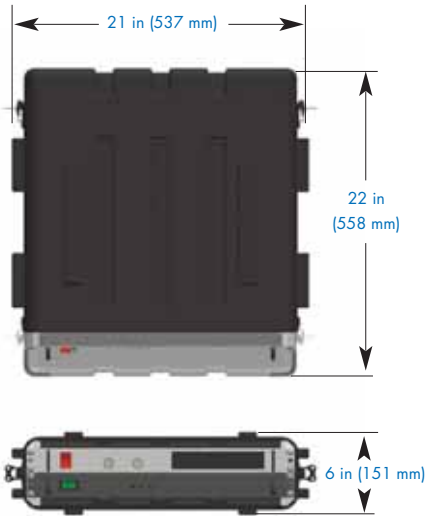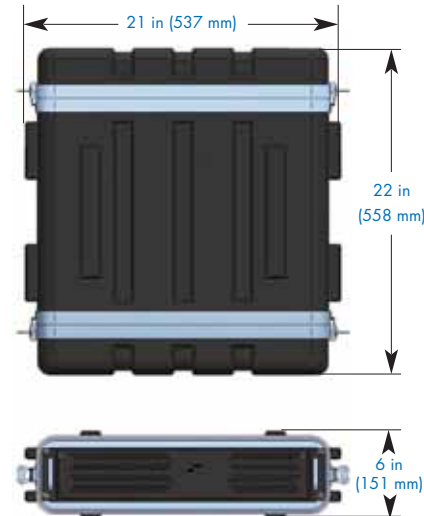
SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

DIMENSIONAL DRAWINGS

CL-163 Transceiver

21 in (537 mm)

22 in (558 mm)

6 in (151 mm)

DAC Rackmount (without computer)

21 in (537 mm)

22 in (558 mm)

6 in (151 mm)

TTV-290 Series Tow Vehicle

821 in (2087 mm)

42.8 in (1088 mm)

21.0 in (533 mm)

29.2 in (741 mm)

18.5 in (470 mm)

16.0 in (406 mm)
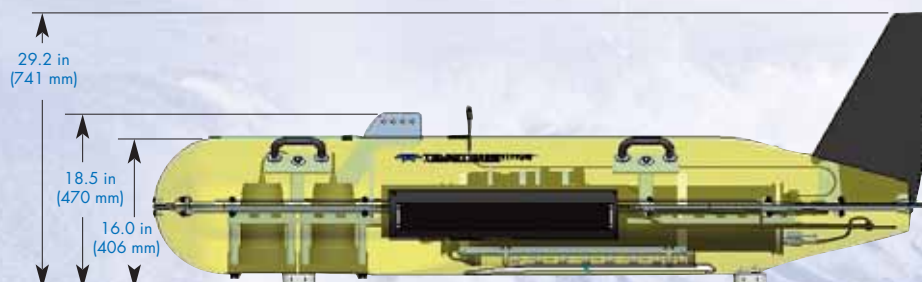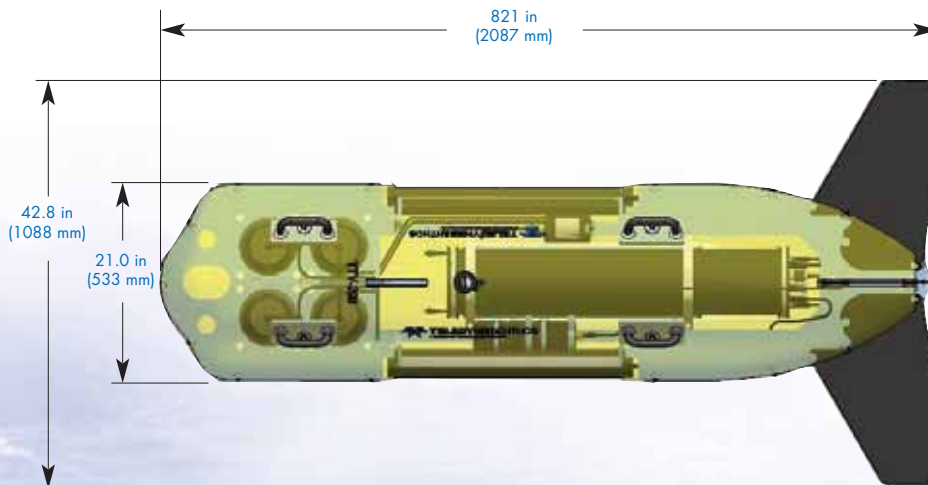
SIS-1625 Dual Frequency Side Scan and Chirp Sub-bottom Profiler

SYSTEM SPECIFICATIONS

SYSTEM

Sonar Frequency	100/400kHz
Maximum Operating Depth	2000 meters

Side Scan Sonar

Acoustic Source Level	+225 dB re 1uPa@ 1 meter
Range	25 to 500 meters each channel
Chirp Frequency Range	Simultaneous sweeps in the 110 kHz to 130 kHz and 370 kHz to 390 kHz bands
CW Frequencies	Simultaneous 123 kHz and 383 kHz
Transducers	Multi-element array, dual channel 100/400 kHz, 0.5 degree horizontal beam; 60 degree vertical beam.

Sub-bottom

Transducer	Transmit projector array; dual hydrophone array; 30 degree conical radiation pattern
Frequency	2 kHz to 7kHz swept FM (4 KW output), synchronous with side scan
Resolution	5 cm
Processing	Calibrated transmit waveform stored in ROM; matched filter FFT digital signal processing.
Scale Selection	25 meters to 500 meters full scale.

Sensors

Standard Sensors:	Depth (FSI EOPM2)
	Heading / Pitch / Roll (TCM2.5)
Optional Sensors:	Altimeter (optional)
(sold separately)	Magnetometer (optional)
	Motion Reference Unit (optional)

TOW VEHICLE

Construction:	Stainless steel, polyethelene
Length:	208.7 cm (82 in)
Front Cross Section:	38.4 cm x 53.3 cm (15 1/8 in x 21 in)
Weight (in air):	158 kg (350 lbs)
Weight (in water):	45.3 kg (100 lbs)

TOPSIDE DATA ACQUISITION COMPUTER (DAC)

Operating System:	Windows XP
Storage:	Large capacity hard drive, writable CD/DVD
Network Interface:	100/1000 base T Ethernet (compatible with ADSL communication interface)
Serial:	RS232 x 4
Display Monitor:	20" Flat Panel

TOPSIDE TRANSCEIVER

Power Supply:	Input 120/240 VAC auto-sensing, output 300VDC maximum
Network interface:	Ethernet
Dimensions:	2U Rack mount 48.3 cm (19 inches)

SOFTWARE

CAATI:	C3D Controller (proprietary)
Acquisition:	Triton, Chesapeake, OIC
Post-Processing (optional):	Triton, Chesapeake, OIC
Data Format:	XTF

CABLES

Call for specific cable requirements

Kevlar Deck Only Cable:	75 meter coax (default)
Armored Tow Cable:	Co-axial cable

SIS-1624 Dual Frequency Side Scan

SIS-1624 Dual Frequency Side Scan

The Teledyne Benthos SIS-1624 Series Side Scan Sonar is a fully integrated system that uses advanced Chirp and Continuous Wave (CW) technologies, dual frequency and an advanced high-speed communication link to acquire high resolution side scan sonar data.

Applications

- Harbor & Channel Clearing

- Coastal Studies

- Engineering & Scientific Studies

- Habitat & Sediment Mapping

- Cable/Pipeline Route Surveys

- Dredge & Disposal Site Surveys

- Geological Studies

SIS-1624 Dual Frequency Side Scan

SIS-1624 Dual Frequency Side Scan

The Teledyne Benthos SIS-1624 is a professional grade side scan sonar survey system that includes a topside acquisition computer and software, a 75-meter tow cable, the CL-160 Transceiver and the TTV-196D Tow Vehicle, which acquires long range, high resolution Chirp side scan sonar data in two frequency bands (100 kHz and 400 kHz) simultaneously. In addition to the Chirp side scan sonar, which provides long range data sets, the tow vehicle provides CW side scan sonar which can be used to acquire high resolution data over short ranges.

SIS-1624 Dual Frequency Side Scan Sonar

SUBSEA UNIT

TTV-196D	The TTV-196D tow vehicle operates in two frequency bands (100 kHz and 400kHz) simultaneously and provides a choice of Chirp or Continuous Wave (CW) operations. The tow vehicle contains pitch, roll and heading sensors and a high-speed communication link that transmits the information to the topside CL-160 Transceiver over a single coaxial cable at speeds up to 5Mbits/second. The TTV-196D is a hydrodynamically stable tow vehicle made of stainless steel, with a safety leash breakaway system, operable to a maximum depth of 1,750 meters. The vehicle includes a standard accessory kit that is composed of: fuses, shear pins, tail fins and a short power cable.
TTV-196D-PTR	The TTV-196D tow vehicle operates in two frequency bands (100 kHz and 400kHz) simultaneously and provides a choice of Chirp or Continuous Wave (CW) operations. The tow vehicle contains pitch, roll and heading sensors and a high-speed communication link. The processed data is then transmitted to the CL-160 Transceiver over a single coaxial cable at speeds up to 5Mbits/second. The TTV-196D is a hydrodynamically stable tow vehicle made of stainless steel, with a safety leash breakaway system that operates to a maximum depth of 1,750 meters. The vehicle includes a standard accessory kit that is composed of: fuses, shear pins, tail fins and a short power cable. This vehicle has the added benefit of pressure, temperature, and responder options. (See PTR Option for more details)

SIS-1624 Dual Frequency Side Scan

SURFACE UNITS
Transceiver

CL-160	CL-160 Transceiver
	This surface component provides 150VDC power for the tow vehicle and serves as the high-speed communications link between the tow vehicle and the topside computer. ADSL communication allows for data transfer over as much as 10,000 meters of cable (with SIS-1624) . The CL-160 can be sold as a stand alone unit or can be intergrated with a Digital Acquisition Computer (DAC).

CL-160 Transceiver

Digital Acquisition Computer (DAC)

This Industrial Rackmount Computer comes in a rugged case that is designed for optimum acquisition performance and durability. It comes with a high end Intel processor. The hard drive offers ample room for data storage and is minimally 500GB in size. This computer also offers a Gigabyte Ethernet connection. In addition, DACs come with a high resolution 20" flat screen monitor, a full function keyboard and a mouse.

DAC-410	Rackmount Computer with **Triton® SS-Logger** Software
DAC-420	Rackmount Computer with **Chesapeake® SonarWiz.Map** Software
DAC-450	Rackmount Computer with **Hypack® Survey** Software

**Digital Acquisition Computer
w/ Monitor**

SIS-1624 Dual Frequency Side Scan

CABLES (KEVLAR DECK/TOW CABLE)

The SIS-1624 sonar system is delivered with a 75 meter kevlar deck/tow cable of 0.35" diameter, single coaxial cable reinforced with an abrasion resistant urethane jacket. This cable can be used as a tow cable with the TTV-196D tow vehicle. The cable includes the dry side RF style connector to the CL-160 Transceiver and a Kevlar cable termination assembly for the wet side consisting of a Kellems grip and a molded female 4-pin micro, Subconn connector (MCIL-4F) with a locking sleeve.

011060	Kevlar Deck and Tow coax cable w/termination - 75M
ES LENGTH	Additional meter of Kevlar Cable - per meter

Example: A 100 meter cable would be priced as a 75 meter cable with 25 meters of extra cable @ $10/meter ($3,550 + $250 = $3,800)

Kevlar Deck/Tow Cable

CABLES (ARMORED TOW CABLE)

For towing length exceeding 200 meters, it is recommended to use the Armored Tow Cable, a single coaxial armored cable of 0.45" diameter. The cable includes an Armored Cable Termination Assembly 0.45" for the wet side with a tow point attachment and a molded female 4 pin micro, Subconn connector (MCIL-4F). For the dry end, the cable is left unterminated to ease integration with customer supplied terminations.

013478	**Armored** Tow coax cable 0.45" dia. w/termination - 200M
ES LENGTH	Additional meter of **Armored** coax cable 0.45" dia. - per meter
008359	**Armored** termination for 0.45" cable for TT-196D *Termination includes all mechanical parts to terminate a 0.45" dia. cable in the field*
C-250-44-2	**Armored** termination for 0.45" cable for TTV-196D with magnetometer • Termination includes all mechanical parts to terminate a 0.45" dia. cable in the field • Magnetometer to Tow vehicle and Power Y-cable.

SIS-1624 Dual Frequency Side Scan

OPTIONS FOR SIS-1624

PTR-OPT	PTR option for TTV-196D
	Upgrade Option to Add PTR
	Pressure, Temperature, Responder
	▪ Temperature sensor – Range -2°C to 38°C, ± 0.5°
	▪ Pressure (depth) sensor – 1,500PSI ± 0.5% of range
	▪ Responder unit – 27KHz, ORE Trackpoint II compatible

SHIPPING CASES

013501	Wood crate for TTV-196D + Cable + Transceiver
007880	Hardigg Transit Case for TTV-196D + Cable + Transceiver
013503	Corrugated box for Transceiver (only)
013504	Corrugated box for Transceiver and CPU shipments
013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual

SIS-1624 Shown in Optional Hardigg Case

SIS-1624 Dual Frequency Side Scan

INTEGRATED PACKAGES FOR SIS-1624

HYPACK® SURVEY PACKAGES

1624-5	TTV-196D	Tow Vehicle
	DAS-550	CL-160 Transceiver (integrated with the DAC-450 with **Hypack® Survey**)
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D Tow vehicle, Transceiver and Cable
	013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual
1624-6	TTV-196D-PTR	Tow Vehicle **with PTR**
	DAS-550	CL-160 Transceiver (integrated with the DAC-450 with **Hypack® Survey**)
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D Tow vehicle, Transceiver and Cable
	013499	v

TRITON® SS-LOGGER PACKAGES

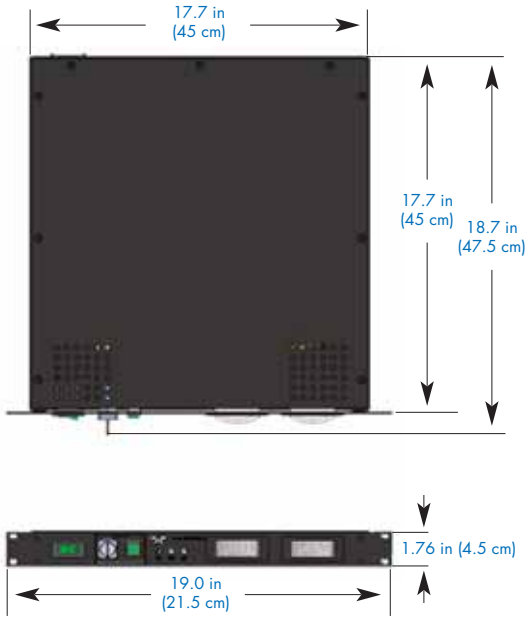| 1624-1	TTV-196D	Tow Vehicle
	DAS-510	CL-160 Transceiver (integrated with the DAC-410 with **Triton® SS-Logger)**
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D Tow vehicle, Transceiver and Cable
	013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual
1624-3	TTV-196D-PTR	Tow Vehicle **with PTR**
	DAS-510	CL-160 Transceiver (integrated with the DAC-410 with **Triton® SS-Logger)**
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D Tow vehicle, Transceiver and Cable
	013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual

CHESAPEAKE® SONARWIZ.MAP PACKAGES

1624-2	TTV-196D	Tow Vehicle
	DAS-520	CL-160 Transceiver (integrated with DAC-420 w/ **Chesapeake® SonarWiz.Map)**
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D for Tow vehicle, Transceiver and Cable
	013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual
1624-4	TTV-196D-PTR	Tow Vehicle **with PTR**
	DAS-520	CL-160 Transceiver (integrated with DAC-420 w/ **Chesapeake® Sonar Wiz.Map)**
	011060	Kevlar Deck and Tow coax cable - 75m
	013501	Wood crate for TTV-196D Tow vehicle, Transceiver and Cable
	013499	Corrugated box for DAC: Computer, Monitor, Keyboard, and Manual

SIS-1624 Dual Frequency Side Scan

DIMENSIONAL DRAWINGS

CL-160 Transceiver

17.7 in
(45 cm)

17.7 in
(45 cm)

18.7 in
(47.5 cm)

1.76 in (4.5 cm)

19.0 in
(21.5 cm)

DAC Rackmount (shown without monitor)

21 in (537 mm)

22 in
(558 mm)

6 in
(151 mm)

TTV-196D Tow Vehicle

17.4 in
(44.2 cm)

17.8 in
(45.2 cm)

6.4 in
(16.3 cm)

5.7 in
(14.5 cm)

4.5in
(11.4 cm)

71.0 in
(180.3 cm)
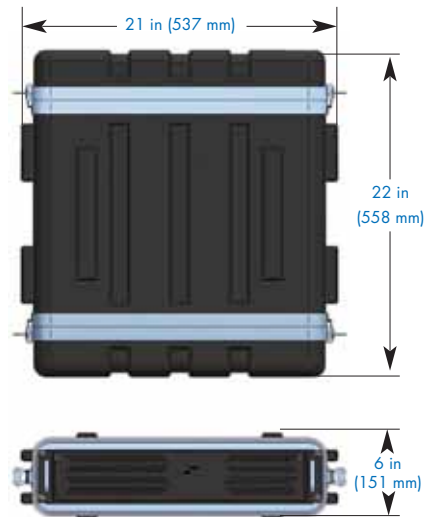
SIS-1624 Dual Frequency Side Scan

SYSTEM SPECIFICATIONS

TTV-196D TOW VEHICLE

Physical Characteristics

Construction	316 stainless steel
Dimensions	11.4 cm (4.5 in.) outside diameter by 177.8 cm (70 in.) long
Weight in Air	34 Kg (75 pounds)
Weight in Water	25 Kg (55 pounds) approx.
Operating Depth	1,750 meters
Towing Speed	1 to 8 knots operational
Input Power	144 VDC, 32 watts nominal

Side Scan Sonar

Acoustic Source Level	+225 dB re 1uPa@ 1 meter
Range	25 to 500 meters each channel
Chirp Frequency Range	Simultaneous sweeps in the 110 kHz to 130 kHz and 370 kHz to 390 kHz bands
CW Frequencies	Simultaneous 123 kHz and 383 kHz
Transducer Radiation	0.5 degrees horizontal, 55 degrees vertical (110 kHz to 130 kHz band), 0.5 degrees horizontal, 35 degrees vertical (370 kHz to 390 kHz band)
Receiver Gain	User adjustable from 0 to 21 dB in 3 dB increments

Standard Sensors	Heading / Pitch / Roll (TCM2.5)

Optional Sensors

Water Temperature	Range, -2 to 38 degrees C; Accuracy, ± 0.5 degrees C
Pressure (Depth)	Range, 0 to 1,500 PSI; Accuracy, ± 0.5% of total range (other pressure sensors available)
Responder	27 kHz standard configuration, compatible with ORE Trackpoint II
Magnetometer	Geometrics G880 Cesium, Magnetometer or Marine Magnetics SeaSpy

CL-160 TRANSCEIVER

Physical Characteristics

Case Size	4.4 cm (1.75 in.) high by 48.3 cm (19.0 in.) wide by 44.4 cm (17.5 in.) deep
Case Type	19 inch standard rack mount
Case Weight	7.0 kg (15.5 pounds)

Input/Output

Tow Vehicle	Uplink sonar data input, Uplink vehicle status information input, Uplink sensor data input, Downlink commands output
External	Responder key input, Sonar key input, Ethernet 10BaseT, ADSL serial (factory use only)

Power Requirements

Power Input	100-125 VAC or 220-240 VAC auto-sensing, 50-60 Hz, 900 watts
Power Output	144 VDC, 300 watts nominal, 600 watts maximum
Electrical power:	51 watts at 300 VDC

TOPSIDE DATA ACQUISITION COMPUTER (DAC)

Operating System:	Windows XP
Storage:	Large capacity hard drive, writable
CD/DVD	
Network Interface:	100/1000 base T Ethernet (compatible with ADSL communication interface)
Serial:	RS232 x 4
Display Monitor:	20" Flat Panel (built into processor)

SOFTWARE

Acquisition:	Triton, Hypack, Chesapeake
Post-Processing (optional):	Triton, Hypack, Chesapeake
Data Format:	XTF

CABLES

Call for specific cable requirements

Kevlar Deck Cable:	75 meter coax (default)
Double Armored Tow Cable:	Co-axial cable