



Pipe & Cable Survey

Subsea Detection & Tracking Systems

Industry standard subsea pipe and cable detection

There are thousands of miles of pipes and cables beneath our oceans. Commercial, legal, operational and environmental consideration demand that these remain in good order. This requirement creates a constant need to verify location, condition and burial status – operations that are complicated by the ever-changing seabed topography.

TSS is the world leader in developing and supplying technologies to meet these demands. Having developed the world's first commercial pulse induction pipe and cable survey system (TSS 340) in 1991, followed by the release of the TSS 350 AC tone cable survey system, TSS has gone from strength to strength and become the industry standard.



PRODUCT FEATURES

- Suitable for pipe and cable tracking, burial and survey requirements
- Excellent detection and tracking performance
- High accuracy repeatable range data
- Pulse induction technology allows autonomous operation
- System design facilitates quick and easy mobilisation
- AC tone detection mode for measurement at increased burial depths
- Forward search mode for target location



TELEDYNE TSS
Everywhereyoulook™

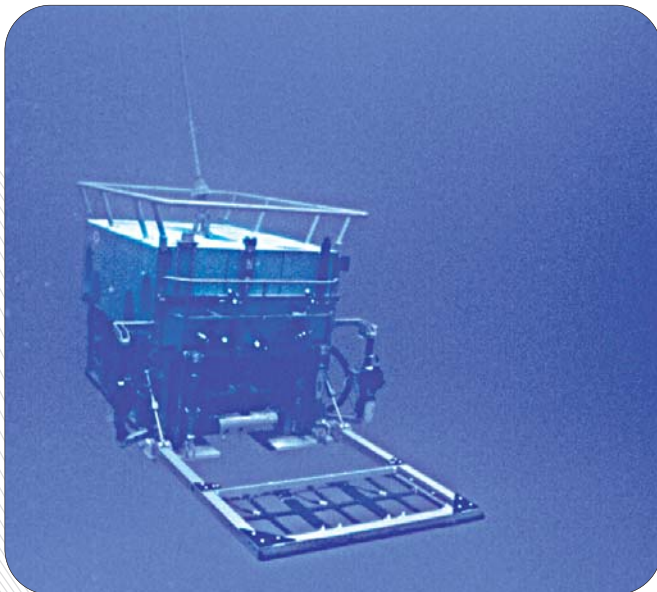


440

Subsea Pipe & Cable Tracking System

TSS technologies are proven in operation in some of the most exacting environments world-wide, and its equipment is established as the most accurate means of obtaining pipe and cable burial data.

There is a need for a system that can detect the presence of both pipes and cables, and can provide accurate and reliable survey data, which describes the position of these cables on or beneath the seabed. The system needs to be flexible in its range of uses and in the variety of vehicles on which it can be installed to complete survey work.



| | 440 | 350 | Dualtrack |
|----------------------------|-----|-----|-----------|
| Surface Display Console | • | • | • |
| 440 Subsea Electronics Pod | • | | • |
| 350 Subsea Electronics Pod | | • | • |
| Power Supply Pod | | | • |
| Deepview Software | • | • | • |
| ALT250 Altimeter | • | • | • |
| 3-Axis Coil Cable Ass | | • | • |
| Pod to ROV Cable | • | • | • |
| 350 Coil Assy x 2 | | • | • |
| Coil Mounting Frame | • | • | • |
| Spare 350 Coil | | • | • |
| 440 Coil Assy x 4 | • | | • |
| Transit Cases | • | • | • |
| System Manuals | • | • | • |
| Field Service Kit | • | • | • |

PRODUCT FEATURES AND BENEFITS

- Pulse induction technology allows accurate survey information regardless of vehicle heading
- Windows™ based display and control software
- DSP techniques give quality control information
- Long range detection of buried subsea targets
- Fully integrated system with altimeter, spares and documentation
- No time-consuming vehicle calibrations required
- Easy to operate
- Simple to install and service

350

Subsea Pipe & Cable Tracking System

With modern subsea cable systems becoming increasingly sophisticated and their deployment, recovery and repair a more exacting science, there is a need for accurate subsea cable location. The TSS 350 cable survey system has been developed to meet this requirement in a compact modular system that provides enhanced features whilst remaining easy to use.

The TSS 350 system is designed specifically for the detection and survey of tone-carrying cables. Featuring a comprehensive software display and menu structure, real-time information is presented in a clear graphical format and provided as a digital output for storage and subsequent processing.

This fully integrated system provides accurate survey data, verifying location and burial status of a cable as well as providing operators with fault location, vehicle skew angle and look-ahead information.

The TSS 350 provides today's specialist operating companies with a system that will significantly improve their subsea operations allowing cable detection at greater burial depths for a variety of applications.



PRODUCT FEATURES AND BENEFITS

- Cable location data and depth of burial data
- Cable fault location
- Vehicle skew angle data
- Look-ahead information
- Tone discrimination
- Accurate and reliable survey data with quality control envelope
- Combination of advanced DSP technology and proven tone-detection techniques
- Tone frequency discrimination



Pipe & Cable Survey

Subsea Detection & Tracking Systems

TECHNICAL SPECIFICATIONS

| | | 350 | 440 |
|-------------------------------------|---|---|--|
| System Performance | Detection Range | A C Tone Cable detected at vertical range up to 10m and within a total horizontal swath width of 20m centred on the coil array | Pulse Indication 3cm armoured cable depth and tracking at 1.2m; 1cm unarmoured cable depth and tracking at 0.6m |
| | Vertical measurement accuracy (in a low noise environment) | RMS 5cm or 5% of slant range – whichever is greater. Stated accuracy applies within the quality envelope of 4m. 3cm armoured cable depth and tracking at 1.2m; 1cm unarmoured cable depth and tracking at 0.6m | RMS 5cm or 5% of slant range – whichever is greater |
| Subsea Electronics Pod (SEP) | Dimensions | 140mm (dia) x 450mm (h) (440 – 2 pods, 350 – 1 pod) | |
| | Weight per pod | 10Kg in air; 2Kg in water | |
| | SDC communication | 2-wire 20mA digital current loop or 4-wire 20mA digital current loop RS232 via a multiplexer | |
| | Voltage input | Standard 110V AC (input range 98-135V AC); Optional 240V AC (input range 198-270V AC) | |
| | ROV connection | Via 8-way waterproof connector | |
| SDC | Hardware | 19" military grade touch screen panel PC Rear mounted comms endorse for all external interfaces | |
| | Display resolution | 1280 x 1080 | |
| | Dimensions | 599 x 480 x 345mm (including transit case) | |
| | Power consumption | 250W max | |
| | Shock resistance | Operating: better than 5g for <10ms Non-operating: better than 40g for <10ms | |
| Altimeter | Dimensions | 140mm (dia) x 290mm (h) | |
| | Frequency | 200kHz | |
| | Range | 30cm to 30m | |
| | Connection cable | 4m length (7m length optional) | |
| | Connection to | Subsea electronics pod | |
| Depth Rating | All subsea components are depth rated to 3000m (optional 6000m) | | |
| Field Support Kit | Supplied as part of the recommended system | | |
| Warranty | 12 months international warranty including parts and labour. | | |

COMPANY WITH
MANAGEMENT SYSTEMS
CERTIFIED BY DNV
= ISO 9001 =
= ISO 14001 =

Specifications subject to change without notice.
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www.teledyne-tss.com**Head Office**

1 Blackmoor Lane,
Croxley Green Business Park,
Watford, Hertfordshire
WD18 8GA, UK
Tel: +44 (0)1923 216020
Fax: +44 (0)1923 216061
Email: tssales@teledyne.com

Aberdeen

10 The Technology Centre,
Aberdeen Science & Energy Park,
Claymore Drive, Bridge of Don,
Aberdeen AB23 8GD, UK
Tel: +44 (0)1224 707081
Fax: +44 (0)1224 707085
Email: tssales@teledyne.com

Houston

7701 West Little York, Suite 300,
Houston, TX 77040, USA
Tel: +1 713 461 3030
Fax: +1 713 461 3099
Email: tssales@teledyne.com