

# 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



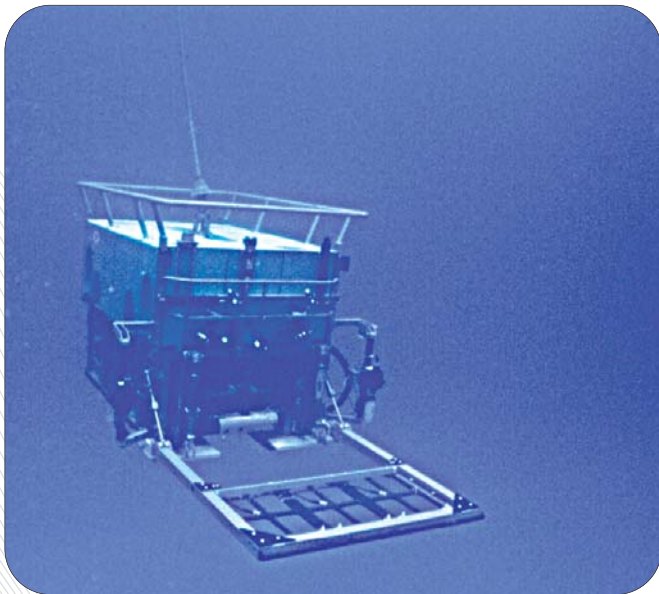
**TELEDYNE TSS**  
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# 440

## 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

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## 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 induction 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)	<b>RMS</b> 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	<b>RMS</b> 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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