

PRODUCT CATALOG
2009

Acoustics

ACOUSTIC RELEASE PRODUCTS LINE

Wireless Recovery of Subsea Devices

Teledyne Benthos manufactures a wide range of Acoustic Releases for shallow water and deep sea equipment recovery. All of our releases can be operated from our Deck Boxes, giving users wireless topside control over their subsea devices. With over 30 years of experience in undersea applications, Teledyne Benthos Acoustic Releases deliver exceptional performance in harsh environments.



INNOVATIVE UNDERSEA SYSTEMS TECHNOLOGY



**TELEDYNE
BENTHOS**

A Teledyne Technologies Company

Acoustic Releases

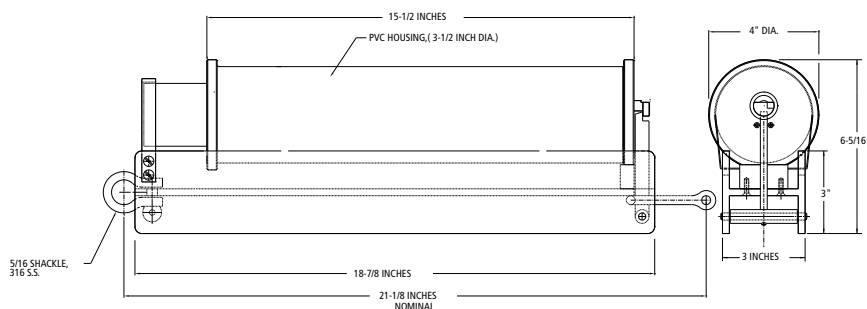
875-TD/TE

Shallow water release



SPECIFICATIONS

Depth Rating	500 m (1,640 ft.)
Release Load Rating	180 kg (0.2 tons)
Lift Load Rating	455 kg (0.5 tons)
Actuation	High torque motor
Transponder Feature	2-3 KM Slant Range
Range Accuracy	1 Meter
Release Confirmation	Yes (Acoustic)
Battery Life	Up to 1 Year (Alkaline) 875-TD Up to 5 years (Lithium) 875-TE
Battery Voltage Status	Acoustically Transmitted to Deck Box
Frequency Band	LF (9-14KHz)
Signaling Type	MFSK
Unique Addresses	Up to 255
Source Level (nominal)	167dB
Weight - In Air	4.5 kg (10 lbs)
Weight- In Water	1.4 kg (3 lbs)
DIMENSIONS:	
Length	53.4cm (21 Inches)
Width	10.2 cm (4 Inches)
Height	16.5 cm (6.5 Inches)
Construction	PVC, Fiberglass, (Stainless Steel) 875-TD (Titanium) 875-TE
Strongback for Easy Mounting	Yes
Accessories	875-SB Alkaline Battery (B-855-147) 875-LI-SB Lithium Battery (Call) 875-SL Drop Link (0220-008) Spare Magnet (B-855-152) 875-A-TR Tandem Release Mounting Kit (C-855-141) 875-A Spare Parts Kit (D-855-58-SPK)



Acoustic Releases

875-PUB

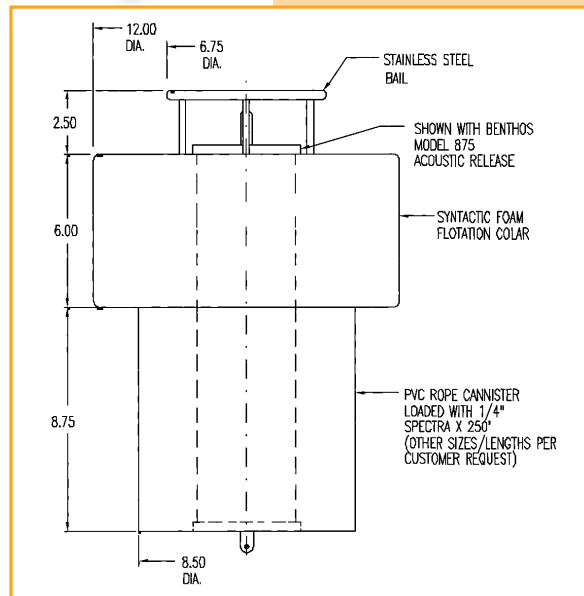
Pop up buoy



Our 875 release is configured with a syntactic flotation collar and line canister to mark and recover seabed equipment. 75 m 1/4" spectra line standard 2995 kg (6,600 lbs), other line lengths and diameters available.

SPECIFICATIONS

Depth Rating	305 m (1000 ft)
Release Load Rating	—
Lift Load Rating	—
Actuation	High torque motor
Transponder Feature	—
Release Confirmation	—
Timed Disable Feature	—
Enable Feature	—
Disable Feature	—
Tilt Indication Feature	—
Battery Life (receiver)	6 months (Alkaline), 1 year (lithium)
Battery Life (transmissions)	—
Factory Set Receiver (freq.)	7-15 kHz
Selectable Transmit (freq.)	—
Source Level (nominal)	—
Weight—In air	11.3 kg (25 lbs.)
In water	4.5 kg (13.5 lbs.) positive
Dimensions	30 cm (12 in.) diameter collar 50 cm (20 in.) length
Construction	PVC, Syntactic Foam
Accessories	875-SB Alkaline Battery (B-855-147) 875-LI-SB Lithium Battery (B-855-157) Spare Magnet (B-855-152)



Acoustic Releases

867-A

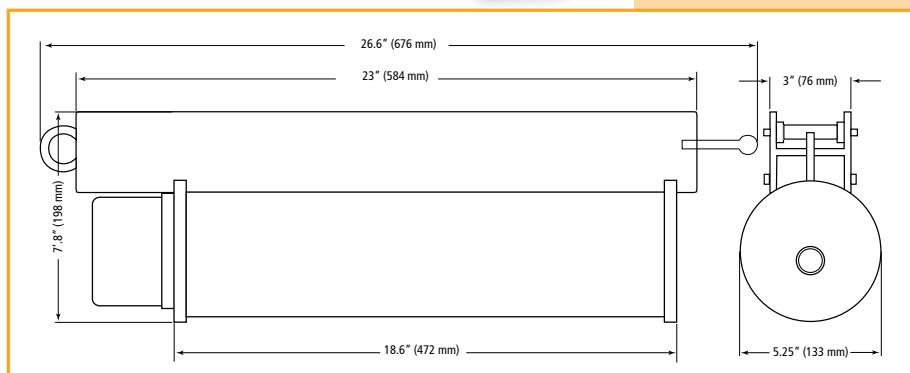
Shallow water
transponding release



The 867-A is a low cost, versatile acoustic release designed for recovery of underwater equipment in coastal and inland waters. The transponding function allows users to perform 2-way acoustic ranging to home in on the subsea unit.

SPECIFICATIONS

Depth Rating	305 m (1000 ft.)
Release Load Rating	225 kg (0.25 tons)
Lift Load Rating	455 kg (0.50 tons)
Actuation	High torque motor
Transponder Feature	5-10 km slant range
Release Confirmation	Multiple ping reply
Timed Disable Feature	2,4,8, or 16 hours
Enable Feature	Enable command
Disable Feature	Disable command
Tilt Indication Feature	Vertical or horizontal (25° std.)
Battery Life (receiver)	2 years
Battery Life (transmissions)	25,000 pings
Factory Set Receiver (freq.)	7-15 kHz
Selectable Transmit (freq.)	7-15 kHz
Source Level (nominal)	>192 dB ref μ pa @ 1m
Weight—In air	9 kg (20 lbs.)
In water	3.7 kg (8 lbs.)
Dimensions	63 cm (25 in.) length 13 cm (5 in.) dia. housing
Construction	PVC, Fiberglass Strongback
Accessories	Remote head version also available (D-867-13) ... 867-RMT 875-SB Alkaline Battery (C-867-4) 875-SL Drop Link (0220-008)



Acoustic Releases

866-A

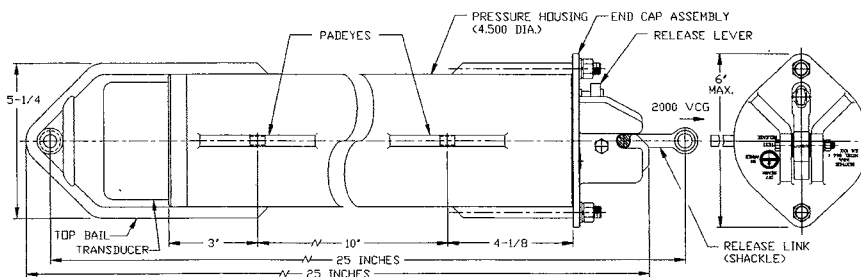
Transponding release



Teledyne Benthos has designed the 866-A for mooring recovery applications requiring a rugged stainless steel package and 2200 kg load handling.

SPECIFICATIONS

Depth Rating	2000 m (6,562 ft.)
Release Load Rating	2200 kg (2.43 tons)
Lift Load Rating	2200 kg (2.43 tons)
Actuation	High torque motor
Transponder Feature	5-10 km slant range
Release Confirmation	Multiple ping reply
Timed Disable Feature	2,4,8, or 16 hours
Enable Feature	Enable command
Disable Feature	Disable command
Tilt Indication Feature	Vertical (25° std.)
Battery Life (receiver)	2 years (4 year option available)
Battery Life (transmissions)	250,000 pings
Factory Set Receiver (freq.)	7-15 kHz
Selectable Transmit (freq.)	7-15 kHz
Source Level (nominal)	>192 dB ref μ pa @ 1m
Weight—In air	18 kg (40 lbs.)
In water	13 kg (29 lbs.)
Dimensions	66 cm (25 in.) length 15 cm (6 in.) dia. housing
Construction	Stainless Steel (ferrallium 255)
Accessories	865-SB-13 Alkaline Battery (C-855-60) 866-SL Drop Link (A-855-124) 866-BA Bar Anode (A-855-139) 866-A Tandem Release Mounting Kit (B-855-197) 866-A Spare Parts Kit (D-855-47-SPK) 866-ORING Kit (866-ORING-Kit)



Acoustic Releases

865-A

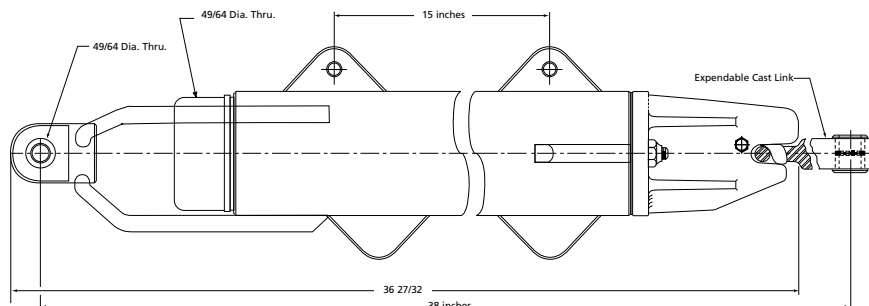
Deep sea acoustic transponding release



The 865-A is designed for full ocean depth mooring recovery applications requiring a rugged stainless steel package and 5000 kg load handling.

SPECIFICATIONS

Depth Rating	12,000 m (39,370 ft)
Release Load Rating	5000 kg (5.5 tons)
Lift Load Rating	5000 kg (5.5 tons)
Actuation	High torque motor
Transponder Feature	5-10 km slant range
Release Confirmation	Multiple ping reply
Timed Disable Feature	2,4,8, or 16 hours
Enable Feature	Enable command
Disable Feature	Disable command
Tilt Indication Feature	Vertical (25° std.)
Battery Life (receiver)	2 years (4 year option available)
Battery Life (transmissions)	250,000 pings
Factory Set Receiver (freq.)	7-15 kHz
Selectable Transmit (freq.)	7-15 kHz
Source Level (nominal)	>192 dB ref μ pa @ 1m
Weight—In air	33 kg (70 lbs.)
In water	25 kg (55 lbs.)
Dimensions	96 cm (38 in.) length 15 cm (6 in.) dia. housing
Construction	Stainless Steel (17-4 PH)
Accessories	865-SB-13 Alkaline Battery (C-855-60) 865-SL Drop Link (B-855-186) 865-SA-K1 Bar Anode (A-855-82-1) 865-A Spare Parts Kit (D-855-40-SPK) 865-ORING Kit (865-ORING-Kit)



Acoustic Releases

865-H

Load multiplier for
865-A release



Our 865-H is a secondary arm to provide a 5:1 mechanical advantage when used on the 865-A Release. This 22,600 kg rated device is used for deployment of anchors and underwater construction.

Price does not include release.

SPECIFICATIONS

Depth Rating	12,000 m (39,370 ft.)
Release Load Rating	22,600 kg (24.9 tons)
Lift Load Rating	22,600 kg (24.9 tons)
Actuation	High torque motor
Transponder Feature	5-10 km slant range
Release Confirmation	Multiple ping reply
Timed Disable Feature	2,4,8, or 16 hours
Enable Feature	Enable command
Disable Feature	Disable command
Tilt Indication Feature	Vertical (25° std.)
Battery Life (receiver)	2 years (4 year option available)
Battery Life (transmissions)	250,000 pings
Factory Set Receiver (freq.)	7-15 kHz
Selectable Transmit (freq.)	7-15 kHz
Source Level (nominal)	>192 dB ref μ pa @ 1m
Weight—In air	121 kg (268 lbs.)
In water	104 kg (230 lbs.)
Dimensions	126 cm (50 in.) length 46 cm (18 in.) width (Dim. are w/865-A attached)
Construction	High Strength Carbon Steel
Accessories	865-SL-H Drop Link 865-SB-13 Alkaline Battery (C-855-60)

Topside Units

The Teledyne Benthos Universal Deck Box has been designed to work with all Benthos acoustic releases, transponders and modems, including the SMART products.

UNIVERSAL DECK BOX

UDB-9000

The Universal Deck Box is a complete single-unit replacement for all previously offered Teledyne Benthos acoustic deck units, including the DS-7000, DS-8000, and ATM-891. The Universal Deck Box can operate standard acoustic releases, communicate and control acoustic modems, and work with the Teledyne Benthos SMART line of products.



The Universal Deck Box, (UDB), provides two RS-232 serial ports for data/command line interaction, and a large grey-scale touch screen for simple graphical user control and enhanced sunlight readability.

Size: 11.75 in. (29.8 cm) L x 17.5 in. (44.4 cm)
W x 7 in. (17.8 cm) H (each case)

Weight: Deck Box < 30 lbs (13.6 kg)
Transducer < 30 lbs (13.6 kg)

Power: Internal 24V lead acid battery
(two 12V in series)
External AC, 85-265 VAC, 47 - 63 Hz
External DC, 10-30 VDC

Frequency Band: 7-15 kHz (LF), other frequencies available upon request

Features:

- Touch screen display to send and receive commands
- RS-232 ports for direct connection to a PC or laptop
- Speaker for listening to acoustic signals
- Auxiliary jack for optional headset
- AC/DC or internal battery power
- Low frequency (LF) dunking transducer and 25 meter cable (standard)
- Up to 200 m cable available for high-reliability deep water acoustic communications
- Deck box emulation to command other vendor's products

Touch screen to easily input, receive and view information such as:

- Real time data from subsea instrument
- Tilt indication of the subsea acoustic release
- Range information from the subsea modem, transponder or acoustic release
- Release commands and release confirmation of acoustic release
- Power sense and battery level monitoring of surface and subsea equipment (when supported)
- Frequency inputs
- Variable power level (source level) selections easily changed by the user
- Variable bit rate selections to optimize data transfer speed and reliability

Topside Units

Item	Product Number	Length
UDB-9000 Transducer Deck Cable	B-270-197-1	25 Meters
UDB-9000 Transducer Deck Cable	B-270-197-2	50 Meters
UDB-9000 Transducer Deck Cable	B-270-197-3	75 Meters
UDB-9000 Transducer Deck Cable	B-270-197-4	100 Meters
UDB-9000 Transducer Deck Cable	B-270-197-5	200 Meters

UDB-9000-M (LF) Low Frequency013189

Universal Deck Box (UDB) "M". Combined modem and acoustic release deck box for operation with Benthos acoustic releases, acoustic modems and SMART products. (Comes with LF transducer and 25 m cable)

UDB-9000-M (LF) Low FrequencyD-270-47-2

Universal Deck Box (UDB) "M". Combined modem and acoustic release deck box for operation with Benthos acoustic releases, acoustic modems and SMART products. Standard unit in the 7-15 kHz (LF) band. (Transducer and Cable not included - sold separately)

UDB-9000-MR (LF) Low Frequency-Rack Mount013187

Universal Deck Box (UDB) "M". Combined modem and acoustic release deck box for operation with Benthos acoustic releases, acoustic modems and SMART products. Standard unit in the 7-15 kHz (LF) band. (Transducer and Cable not included – sold separately)

UDB-9000-E (LF) Low Frequency013641

Universal Deck Box (UDB) "E". Combined modem and acoustic release deck box for operation with Benthos acoustic releases, acoustic modems and SMART products. Same as Standard LF unit, but limits multiple transpond receive function to satisfy export classification restrictions. Call for details. (Comes with LF transducer and 25 m cable)

UDB-9000-E (LF) Low FrequencyD-270-47-3

Universal Deck Box (UDB) "E". Combined modem and acoustic release deck box for operation with Benthos acoustic releases, acoustic modems and SMART products. Same as Standard LF unit, but limits multiple transpond receive function to satisfy export classification restrictions. Call for details. (Transducer and Cable not included – sold separately)

UDB-9000 Transducer (LF) Low FrequencyC-270-167-1

Transducer operating in the 7-15 kHz (LF) band. For use with all UDB-9000 (LF) deck boxes.

UDB-9000-MR Rack Mount



Topside Units



DS-8750

Acoustic Deck Set

The DS-8750 Acoustic Deck Set is a low cost companion to the Benthos Acoustic Release Model 875 and 875-PUB. It is ideally suited for basic release operations requiring only command capability.

Features:

- Operates in the 7-15 kHz range, in 500 Hz increments
- Capable of sending all Benthos FSK commands
- Lightweight and portable, splash proof case
- Internal, rechargeable battery operation
- Includes transducer with 10 meters (30 feet) of cable
- Speaker for pre deployment testing provided

TU-1000

Hand Held Acoustic Tester

TU-1000 Hand Held Acoustic Tester is a full function "in air" predeployment acoustic tester for Benthos' full line of acoustic transponders and releases. This battery operated, lightweight unit is capable of generating all Benthos FSK commands and interrogation frequencies. Constructed of rugged, black molded plastic, this device is designed to withstand years of exposure to marine environments.



Programmable Sonar Altimeters

PSA-916

Low Cost Programmable Sonar Altimeter - P/N 007601

The PSA-916 is a low cost, lightweight altimeter designed for diverse applications in the marine environment. It provides the user with high resolution altitude/range data while simultaneously outputting data through a digital serial port. A wide beam angle provides for reliable and accurate range measurements under the most severe operational conditions.

Features:

- Compact size and weight allows for integration with the smallest ROVs or marine sensors
- Simultaneous analog and digital outputs provide altitude/range data
- Electronically isolated to eliminate any potential signal interference with host instrument sensors
- 6000 meter depth
- Low cost

Applications:

- ROV/instruments altitude measurement
- Bridge scour studies
- Obstacle avoidance
- Sediment transfer studies
- Docking assistance for ships



SPECIFICATIONS

Operating frequency	200 kHz (nominal)
Beam width	14° conical typical
Pulse length	250 ms standard
Repetition rates	5 pps or external
Range	100 meters full scale
Resolution	RS-232: 1 cm Analog: 2.5 cm
Range output	Analog: 0-5 VDC Digital: RS-232
Operating depth	6000 meters
Power required	7 to 24 VDC
Power consumption	60 ma @ 15 VDC
Size	2.25 in. diameter X 9.75 in. long
Weight	1.4 lbs in air; 0.8 lbs in water

High Powered Acoustic Pingers & Beacons

BFP-312

Bottom Finding Pinger
P/N 001855

A bottom finding pinger, used in conjunction with a standard 12 kHz shipboard bathymetric recorder can be used to monitor the height off bottom of instruments or sampling equipment being lowered through the water column. The instrument can be used effectively for positioning of CTD instrumentation, fishing nets, coring tools, water bottles or other items where accurate vertical positioning relative to the bottom is required.

Precision pingers and positioning beacons require high power, long life and a high level of frequency and repetition rate stability to allow asynchronous operation with shipboard recording and processing instrumentation.

Features:

- Monitor instrument height off bottom
- Acoustic data telemetry
- Sea floor positioning beacons



SPECIFICATIONS

Operating Frequency	12 kHz
Carrier Frequency Stability	±50 Hz
Source Level	195 dB re 1 µPA @ 1 meter
Repetition Rate	1 second or 0.5 second when activated by mercury tilt switch
Repetition Rate Stability	±50 µsec
Pulse Length	Internally selectable 0.5, 2, 5, 10 msec
Battery Type	20 replaceable "C" cells
Operating Life:	
Alkaline Expendable Batteries	250 hrs @ 1PPS, 0.5 msec pulse width
Rechargeable Battery Charging Time Using Model BC-31 Battery Charger	16 hours maximum
Pressure Housing	Aluminum anodized
Operating Depth	10,000 meters
End Cap Closure	Single bolt closure
Transducer Beam Pattern	50° conical
Optional Reversing Cable Clamp	
Operating Temperature	-5° to +50°C
Storage Temperature	-20° to +81° C
Dimensions	5 in. O.D. X 26 in. long Transducer end 7 in. O.D
Weight	
In Air	42 lbs
In Water	23 lbs

Acoustic Releases

BFP-312HP

High Power
Bottom Finding Pinger
P/N A-260-26

Model BFP-312HP High Power Bottom Finding Pinger

- 210 dB source level
- 100 hour operating life
- Data telemetry option
- External connector for battery charging and control to/from auxiliary instrumentation
- Missed ping option allows periodic skipping of a transmit burst for checking absolute depth of pinger
- Internally selectable repetition rate
- Single bolt end cap closure



SPECIFICATIONS

Operating Frequency	12 kHz
Carrier Frequency Stability	±50 Hz
Source Level	210 dB re 1 µPA @ 1 meter
Repetition Rate	1 second or 0.5 second when activated by mercury tilt switch
Repetition Rate Stability	±50 µsec
Pulse Length	Internally selectable 0.5, 2, 5, 10 msec
Battery Type	20 replaceable "C" cells
Operating Life:	
Alkaline Expendable Batteries	100 hours @ 1 PPS, 0.5 msec pulse width
Rechargeable Battery Charging Time Using Model BC-31 Battery Charger	16 hours maximum
Pressure Housing	Aluminum anodized
Operating Depth	10,000 meters
End Cap Closure	Single bolt closure
Transducer Beam Pattern	50° conical
Optional Reversing Cable Clamp	
Operating Temperature	-5° to +50°C
Storage Temperature	-20° to +81° C
Dimensions	5 in. O.D. X 32 in. long Transducer end 7 in. O.D
Weight	
In Air	70 lbs
In Water	33 lbs

Miscellaneous

Terms & Conditions for Sale

Revision August 1, 2008

1. DEFINITIONS

"Seller" means Teledyne Benthos, Inc. "Buyer" means the legal entity purchasing Goods from Seller. "Goods" means the products offered by Seller and/or purchased by Buyer. "Offer" means any quote, proposal, or offer to sell Goods provided by Seller to Buyer. "Order" means any purchase order or similar instrument issued by Buyer to Seller to purchase Goods. Seller and Buyer are sometimes referred to herein individually as a "Party" and collectively as the "Parties".

2. ACCEPTANCE

The terms and conditions included in this "Terms and Conditions of Sale" document (hereinafter, this "Agreement") apply to all Offers made by Seller to Buyer and all Buyer's Orders accepted by Seller. Acceptance of Buyer's Order, and any changes or amendments thereto, is expressly conditioned upon Buyer's assent to these terms and conditions. Unless specifically agreed to in writing by a duly authorized representative of Seller, Seller objects to, and is not bound by, any terms or conditions that differ from or add to the terms and conditions specified herein. Seller's failure to object to any terms and conditions or any other provisions contained in any communication from Buyer, including, but not limited to, Buyer's Orders, does not waive any of the terms and conditions specified herein. Seller's acceptance of any resulting Order or Buyer's receipt of Goods, whichever occurs first, will conclusively evidence Buyer's unconditional acceptance of these terms and conditions. An Order minimum of \$100.00 USD applies.

3. PRICES

Unless stated otherwise in writing by Seller, all prices are stated in U.S. Dollars and the prices offered are valid for a period of thirty (30) days from the date of Seller's Offer. The prices offered apply only to the specific quantities, specifications, and delivery schedules set forth in Seller's Offer. Any variation in quantity, specifications, or delivery schedules may necessitate a price and/or delivery schedule adjustment. Unless stated otherwise, all prices for domestic deliveries are F.O.B. Seller's place of shipment, as defined in the Uniform Commercial Code (UCC), and all prices for international deliveries are Ex-Works, as defined by INCOTERMS 2000.

4. CREDIT APPROVAL AND PAYMENT

Standard payment terms are net thirty (30) days from date of Seller's invoice, subject to credit approval of Buyer by Seller. Credit terms, shipments, and performance of work are at all times subject to the approval of Seller's Credit Department. Each shipment is a separate and independent transaction and payment must be made by Buyer accordingly.

If, prior to shipment of Buyer's Order, Buyer fails to fulfill the terms of payment of any prior invoice submitted by Seller, or if, in the opinion of Seller, Buyer's financial condition becomes impaired or unsatisfactory, Seller reserves the right to change, without notice, the terms of payment and/or delay or discontinue further shipments, without prejudice to any other available legal remedies, until past due obligations have been paid and Seller has received acceptable assurance regarding Buyer's prompt payment of future obligations. All amounts due to Seller but not paid by Buyer on the due date bear interest payable by Buyer to Seller in U.S. Dollars at a rate that is equal to the lesser of (i) one and one-half percent (1.5%) per month, or (ii) the maximum interest rate permitted under applicable law. Interest accrues on the balance of unpaid amounts as of the date on which portions of those amounts become due until the date payment is received by Seller. Buyer will also be liable to Seller for any expenses incidental to collection of past due amounts, including reasonable attorney's fees and court costs. In the event of Buyer's bankruptcy or insolvency, Seller is entitled to terminate any Order then outstanding and to receive reimbursement for termination costs and expenses as provided under Article 13, Termination for Default.

5. TAXES

The amount of any present or future sales, use, excise, import duty, or other tax applicable to the manufacture, sale, or lease of Goods will be added to the invoice and must be paid by Buyer, unless the Buyer provides Seller with a tax exemption certificate acceptable to the applicable taxing authority.

6. SHIPPING TERMS AND RISK OF LOSS

All domestic shipments by Seller are F.O.B. Seller's place of shipment, as defined in the Uniform Commercial Code. All international shipments by Seller are Ex-Works, as defined by INCOTERMS 2000. Risk of loss for Goods will transfer to Buyer upon Seller presenting Goods to carrier. If Seller prepays shipping, insurance, or other related costs, Buyer agrees to reimburse Seller promptly for the actual costs incurred by Seller plus ten percent (10%).

7. TOOLING

Unless otherwise provided by special written agreement signed by Seller and Buyer, all tooling, fixtures, equipment, tools, software, and designs produced, acquired, or used by Seller for the purposes of filling Buyer's Order remain the property of the Seller.

8. PACKING AND PACKAGING

Seller's prices for Goods include Seller's standard commercial packing and packaging. Any non-standard or special packing or packaging requirements requested by Buyer will be provided by Seller at additional cost to Buyer.

9. INSPECTION AND TESTS

All Goods manufactured by Seller are subject to Seller's standard inspection processes and, if applicable, acceptance testing at Seller's facility. Any additional requirements, including, without limitation, Buyer's source inspection or additional testing, are at Buyer's sole expense. If Seller and Buyer agree that Buyer is to inspect or provide for inspection at the place of manufacture, such inspection may not interfere unreasonably with Seller's operations and the Buyer's approval or rejection of Goods based on such source inspection and/or testing must be made prior to shipment of the Goods.

10. EXPORT COMPLIANCE; FOREIGN CORRUPT PRACTICES ACT

For any resale, export, or re-export of the Goods, Buyer must comply with all applicable export regulations, export licensing requirements, and the United States Foreign Corrupt Practices Act (FCPA), 15 U.S.C. §§ 78dd1 through 78dd3, as amended.

11. DELIVERY SCHEDULES AND FORCE MAJEURE

Shipping dates are approximate and require prompt receipt of all necessary Buyer-furnished information and material if applicable.

Seller is not liable for any damages, re-procurement costs, or penalties related to late deliveries. Without limiting the generality of the foregoing, Seller is not liable for delays due to force majeure, including, but not limited to, weather conditions, acts of God, acts of civil or military authorities, fires, strikes, job actions, floods, earthquakes, epidemics, quarantine restriction, war, terrorism, riot, supplier or vendor delays, or any other causes beyond the reasonable control of Seller. In the event of such delay, Seller will promptly notify Buyer and the date(s) of delivery will be deferred for a period commensurate with the time lost due to the delay. If the excusable delay under force majeure continues for more than ninety (90) days, Seller and Buyer will each have the option of terminating the affected Order(s) under Article 12, Termination for Convenience. If Seller's production is curtailed for any of the above reasons so that Seller is unable to deliver the full quantity of Goods scheduled for delivery to Buyer, Seller may allocate deliveries of available Goods among its various customers then under order for similar Goods. The allocation will be made in a commercially fair and reasonable manner. When such allocation has been made, Buyer will be notified of the estimated quota made available.

12. TERMINATION FOR CONVENIENCE

Buyer may request to terminate Buyer's Order for convenience in whole or in part and Seller agrees to cooperate with Buyer in attempting to make such arrangements conditioned on Buyer paying Seller for all deliveries made and for all work in process, including all applicable direct and indirect costs, settlements with suppliers, and related administrative, accounting, and legal costs, plus a normal profit. To the extent possible, Seller will use reasonable commercial efforts to divert materials and work in process from Buyer's Order to other customers' orders in order to minimize Buyer's termination costs.

Miscellaneous

13. TERMINATION FOR DEFAULT

Either Party may terminate the Order if the other Party breaches a material provision of this Agreement or of the Order. In the event that a Party (the "Defaulting Party") is in breach of a material provision of this Agreement or the Order, the other Party (the "Non-Defaulting Party") will submit a written cure notice to the Defaulting Party advising of such breach. The Defaulting Party will have five (5) days to cure the breach. If the Defaulting Party does not cure the breach within the five (5) day period, the Non-Defaulting Party may terminate the Order.

14. CHANGES ORDERS AND AMENDMENTS

All change order requests must be submitted by the Buyer to the Seller in writing and will not be effective unless and until Seller consents in writing to the change. Seller will advise Buyer in writing of the price and/or delivery schedule impact, if any, of the change request. Seller's acceptance of changes will be subject to Buyer's agreement to any price and/or delivery schedule adjustments.

15. LIMITED WARRANTY

Seller warrants that the Goods delivered under Buyer's Order will be free from defects in material and workmanship for a period of twelve (12) months from the date of original shipment, except for components and consumables that have shorter third party manufacturer's warranty periods. Components and consumables manufactured by third parties bear the warranty of their manufacturer.

The specific warranty for a given product is the one in effect on the date of shipment. In the event that Buyer identifies any defects in material or workmanship, Buyer will promptly notify Seller of the defective Goods and the specific nature of the defect in accordance with Article 16, Return Authorizations.

Seller, at its sole discretion, will either repair or replace any such Goods found by Seller to be defective. Seller's warranty does not apply to any Goods that have been subjected to improper installation, misuse, alteration, repair, neglect, accident, inundation, fire, or the like.

THESE EXPRESS WARRANTIES, INCLUDING REMEDIES, ARE EXCLUSIVE AND ARE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS OR IMPLIED. NO WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IS INTENDED OR GIVEN. IN THE CASE OF GOODS OTHER THAN THOSE OF SELLER'S OWN MANUFACTURE, SELLER MAKES NO WARRANTIES, EXPRESS, STATUTORY, OR IMPLIED.

16. RETURN AUTHORIZATIONS

Buyer will promptly notify Seller of any nonconformance(s) in the Goods and afford Seller a reasonable opportunity to inspect the Goods. No Goods may be returned without Seller's prior authorization, as evidenced by a return authorization. Once a return authorization number is obtained, Buyer will return defective Goods transportation and insurance prepaid in accordance with instructions issued by Seller. Failure to follow Seller's return procedures may result in lost Goods, delays, additional service, restocking charges, warranty denial, or refusal of a shipment. The return authorization number must appear on the shipping label along with all paperwork associated with the return. Seller has the right to reject Goods returned without the correct return authorization number clearly marked on the outside of the shipping container. Granting a return authorization number does not necessarily mean that a credit will be approved or that the evaluation or repair will take place without a fee.

17. INDEMNIFICATION

Each Party (the "Indemnifying Party") will hold harmless and indemnify the other Party (the "Indemnitee") against all claims, judgments, costs, and fees, including attorney fees, relating to infringement of U.S. patents, designs, copyrights, or trademarks to the extent that the infringing Goods are manufactured, sold, or used in whole or in part to the Indemnifying Party's specifications, designs, drawings, or other technical data.

To the extent that one Party's employees or agents enter on the property owned or controlled by the other Party, the first Party will indemnify and hold harmless the other Party, its officers, directors, and employees for any property damage or bodily injury or death caused by the first Party's employees or agents.

18. LIMITATION OF LIABILITY

NOTWITHSTANDING ANY OTHER PROVISIONS OF THIS AGREEMENT, UNDER NO CIRCUMSTANCES IS EITHER PARTY LIABLE FOR ANY CONSEQUENTIAL, SPECIAL, INCIDENTAL, INDIRECT, MULTIPLE, ADMINISTRATIVE, OR PUNITIVE DAMAGES, OR ANY DAMAGE OF AN INDIRECT OR CONSEQUENTIAL NATURE ARISING OUT OF OR RELATED TO ITS PERFORMANCE UNDER THIS AGREEMENT, WHETHER BASED UPON BREACH OF THIS AGREEMENT, WARRANTY, OR NEGLIGENCE AND WHETHER GROUNDED IN TORT, CONTRACT, CIVIL LAW, OR OTHER THEORIES OF LIABILITY, INCLUDING STRICT LIABILITY, EVEN IF ADVISED IN ADVANCE OF THE POSSIBILITY OF SUCH DAMAGES. SELLER'S TOTAL LIABILITY INCLUDING, BUT NOT LIMITED TO, LIABILITY FOR INDEMNITY, DEFENSE, AND HOLD HARMLESS OBLIGATIONS IS LIMITED TO NO MORE THAN THE AMOUNT PAID TO SELLER UNDER BUYER'S ORDER AND BUYER AGREES TO INDEMNIFY SELLER FOR ANY EXCESS AMOUNTS. TO THE EXTENT THAT THIS LIMITATION OF LIABILITY CONFLICTS WITH ANY OTHER PROVISION(S) OF THIS AGREEMENT, SUCH PROVISION(S) WILL BE REGARDED AS AMENDED TO WHATEVER EXTENT REQUIRED TO MAKE SUCH PROVISION(S) CONSISTENT WITH THIS PROVISION.

19. Arbitration And Law

Disputes that arise under this Agreement or Buyer's Order that cannot be settled amicably by the Parties will be settled by arbitration in Boston, Massachusetts in the United States of America under the prevailing rules of the commercial conciliation and arbitration rules of the American Arbitration Association. Judgment upon the arbitration award or decision may be entered in any court of competent jurisdiction. Arbitration awards and decisions are subject to Article

The laws of the State of Massachusetts, excluding its conflicts of laws provisions and excluding the United Nations Convention on the International Sale of Goods ("CISG"), govern the interpretation and enforcement of this Agreement and Buyer's Order.

20. ASSIGNMENT

Buyer may not assign or transfer this Agreement or any Order, in whole or in part, without the prior written approval of Seller.

21. ETHICS AND VALUES

Seller is committed to uncompromising ethical standards, strict adherence to law, and customer satisfaction. Buyer is encouraged to communicate any concerns or questions regarding the ethics and value to the Teledyne Corporate Ethics Help Line, "Take the Right Action", at 1-877-666-6968.

22. UNENFORCEABLE PROVISIONS

In the event that one or more provisions of this Agreement document is held to be unenforceable, the remaining provisions apply in full and the invalid or unenforceable provision will be replaced by a provision that lawfully enforces the Parties' intention underlying the invalid or unenforceable provision.

23. SURVIVAL

The following Article will survive the termination or expiration of this Agreement or any Order: 1: Definitions; 4: Credit Approval and Payment; 5: Taxes; 6: Shipping Terms and Risk of Loss; 7: Tooling; 9: Inspection and Tests; 10: Export Compliance; Foreign Corrupt Practices Act; 11: Delivery Schedules and Force Majeure; 12: Termination for Convenience; 13: Termination for Default; 15: Limited Warranty; 17: Indemnification; 18: Limitation of Liability; 19: Arbitration and Law; 20: Assignment; 22: Unenforceable Provisions; and 23: Survival.

24. WHOLE AGREEMENT; AMENDMENT

This document is the entire understanding between the Parties, and it supersedes all previous or additional agreements, arrangements, and drafts. This document may be amended or modified only by written agreement of duly authorized representatives of both Parties.



**TELEDYNE
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