

MODEL 8050-DD UUV BRUSHLESS THRUSTERS

The Model 8050-DD uses a high efficiency propeller optimized for open water performance on larger UUV's needing to reach speeds of 10 knots. The Model 8050-DD has an efficient and low noise direct drive DC brushless motor driving the propeller through a magnetic coupling.

OPEN WATER THRUST

340lbf (155kgf) @ 10 kn, 480lbf (218kgf) @ 5kn

INPUT

12.5kw input power

Voltage options between 72vdc - 330vdc

RS485 digital speed control

WEIGHT

105-145lbs (48-66kg) in air

79-119lbs (36-54kg) in water

(Depending on configuration)

DEPTH RATING

2,300ft (700m) with 1 atm housings.

Full ocean depth when oil filled

(PBOF with remote electronics)

CONSTRUCTION

Available with hard anodized 6061-T6 aluminum.

Type 316 stainless steel or 6Al4V titanium housings.



TECNADYNE[®]
THE LEADER IN SUBSEA PROPULSION

ALL SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

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MODEL 8050-DD DESCRIPTION

MAGNETIC PROPELLER COUPLING

As with all Tecnadyne thrusters, the propeller of the Model 8050-DD are magnetically coupled. With this design, a magnet array is fitted inside the hub of the propeller and is driven by a matching magnet array attached to the motor inside the sealed pressure vessel. By eliminating the rotating drive shaft and shaft seals that invariably leak over time, the Model 8050-DD achieve extremely high reliability. Additionally, the magnetic coupling will ratchet if overloaded, preventing damage caused by objects jammed in the propeller. Since the water lubricated propeller bearings are external to the pressure housing, they can be easily replaced in a matter of minutes.

DIRECT DRIVE DC BRUSHLESS MOTOR

The Model 8050-DD uses Brushless DC motors that are manufactured to the ISO 9001:2008 quality standard. These high efficiency, direct drive motors are coupled directly to the propeller and do not incorporate a gearbox. This direct drive approach produces less noise than a gearbox and is the preferred option for depths exceeding 3,000 meters.

HIGH EFFICIENCY PROPELLER

The high efficiency Type 316 stainless steel propeller of the 8050-DD is available in both right and left hand rotations and is designed for optimal efficiency at open water speeds to 10 knots .

DEPTH RATING OPTIONS

The standard configuration is rated to 700m depth and places the electronics controller within the 1-atmosphere motor housing. For greater depths, up full ocean depth rating, the electronics module is installed in a remote, one atmosphere housing (either the customer's housing or one supplied by Tecnadyne) The thruster is oil filled and pressure balanced using electrical cabling of flexible PVC tubing with a maximum tubing length of 10m.

VOLTAGES SUPPORTED

The Model 8050-DD is available for operation at specific voltages between 72 VDC and 330 VDC. DC power must be supplied by a well filtered battery bank, rectified and filtered AC or a regulated DC power supply with less than 10% voltage ripple.

RS485 OR ANALOG SPEED CONTROL

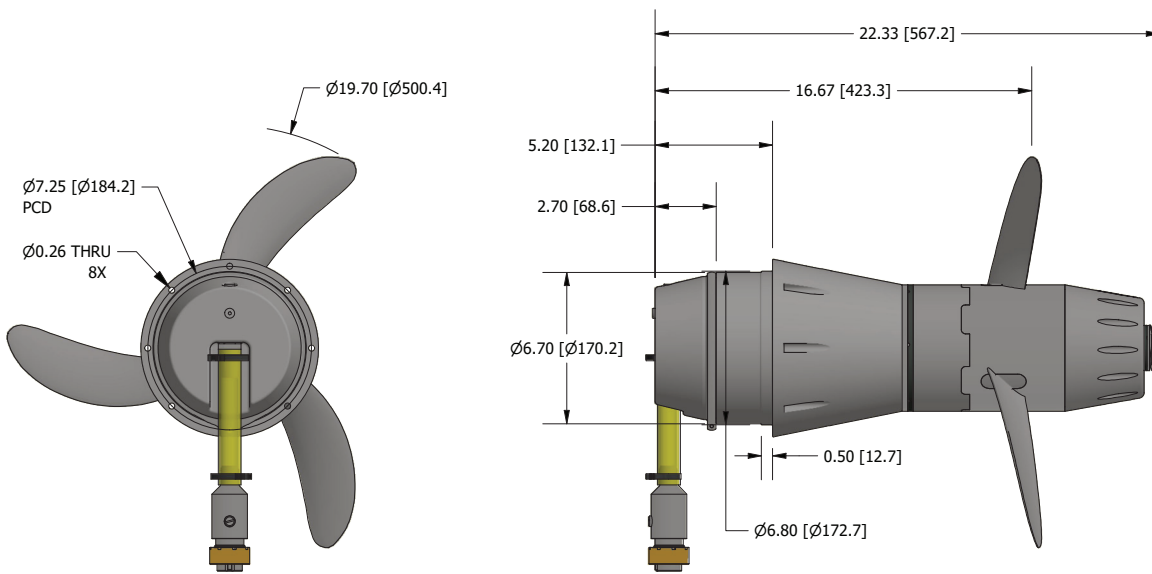
Two speed control options are available for the Model 8050-DD. The controller is jumper selectable for either closed loop multi-mode, RS485 speed control or for +/-5v analog speed and direction control. In addition, the thruster can be supplied with separate enable and water detect lines.

OTHER OPTIONS

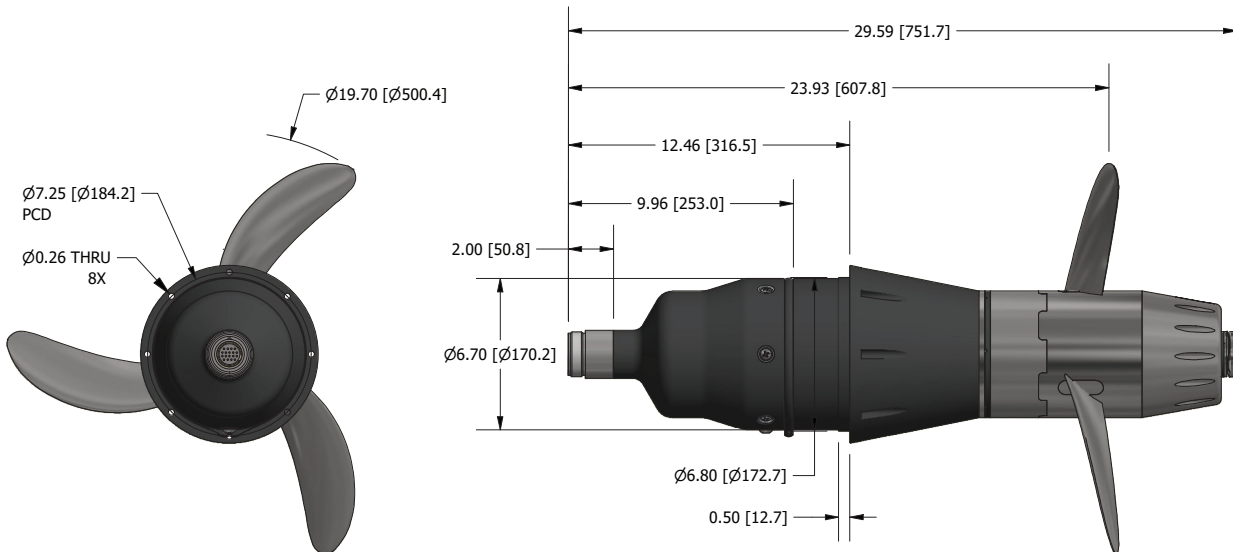
Optional configurations include: Five available bus voltage choices. Housings made from anodized aluminum (standard), Type 316 stainless steel or 6Al4V titanium; three mounting styles, including saddle mount, blade mount, and UUV mount. Several bulkhead types or cable end subsea connectors, and RH or LH rotation propellers.

MODEL 8050-DD REPRESENTATIVE CONFIGURATIONS

MODEL 8050-DD
8050DD-AAA-PLA12MOF-01-XX-CSD-SS-RP(B)LX-UM-R-RS



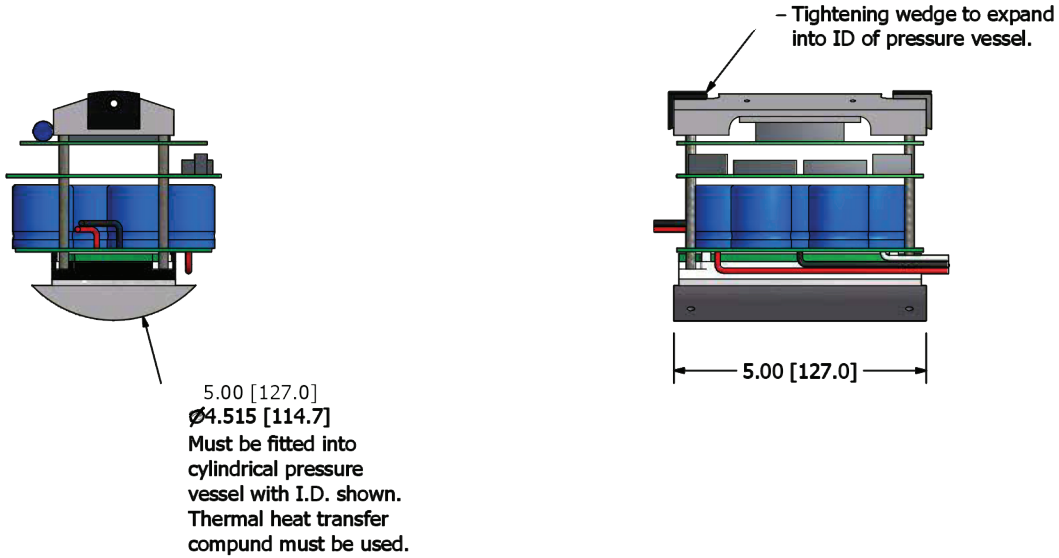
MODEL 8050
8050-AAA-PLC26MOF-01-XX-700-AL-RCP(B)LX-UM-R-RS



MODEL 8050-DD REMOTE ELECTRONICS OPTIONS

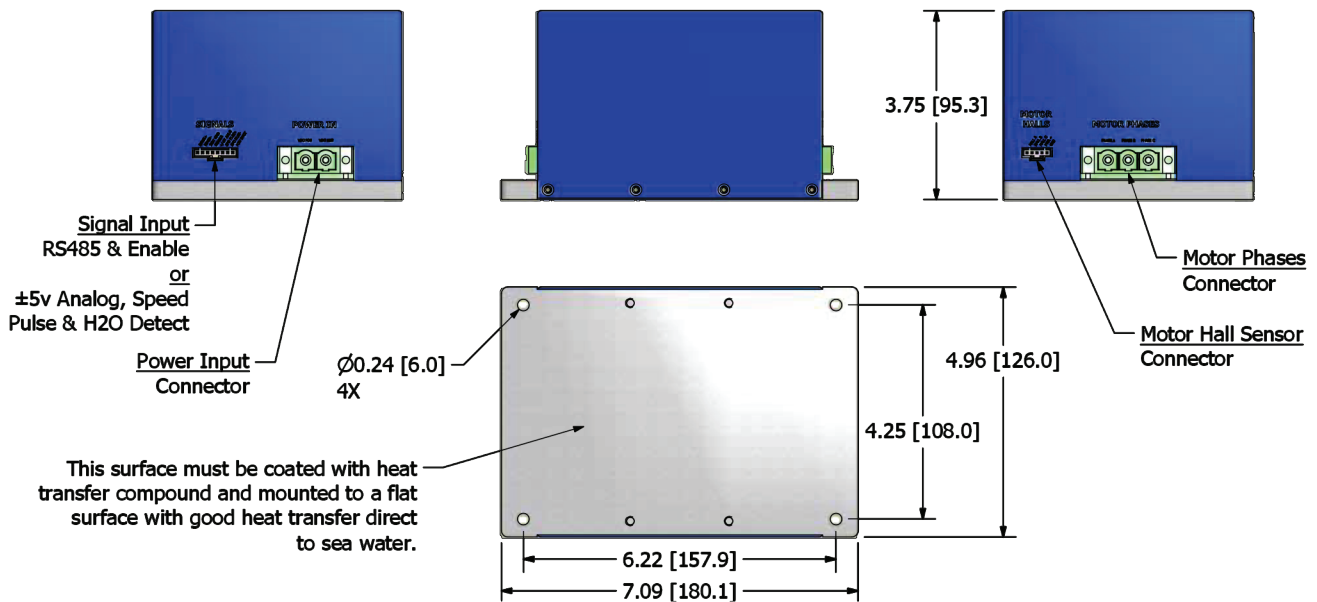
RPLX, POD ELECTRONICS CONFIGURATION

USED IN RPLX CONFIGURATION & REQUIRES INSTALLATION IN 1ATM PRESSURE VESSEL.



RBLX MODULE, BLOCK ELECTRONICS CONFIGURATION

USED IN RBLX CONFIGURATION & REQUIRES INSTALLATION IN 1ATM PRESSURE VESSEL.



MODEL 8050-DD SPECIFICATIONS

MODEL 8050-DD - PERFORMANCE AT DIFFERENT VOLTAGES

NOMINAL VOLTAGE (VDC)	72	100	200	260	330
INPUT VOLTAGE RANGE (VDC)	60-85	75-115	175-225	195-300	245-360
INPUT CURRENT (ADC)	97	68	33	25	20
MAXIMUM INPUT POWER (W) ¹	7000	6800	6600	6400	6400
THRUST @ 10 KNOTS (LBF)	300	320	330	350	350
THRUST @ 5 KNOTS (LBF)	420	440	450	480	480
PROPELLER RPM	705	725	740	760	760

ANALOG CONTROL DRIVER SPECIFICATIONS (RPLX, RBLX)

DESCRIPTION	UNITS	VALUE
ISOLATED INSTRUMENTATION POWER	VDC mA	NOT REQUIRED
CONTROL SIGNAL (2)	VDC	+/-5
SPEED OUTPUT (OPTIONAL)	-	12V AMPLITUDE PULSE
SPEED OUTPUT FREQUENCY RANGE	-	0-1200
COMMUTATION TYPE	Hz	TRAPEZOIDAL
COMMUTATION FEEDBACK SENSORS	-	HALL SENSORS
SWITCHING FREQUENCY	kHz	20
PROTECTIONS	-	PULSE BY CURRENT LIMITING

MODEL 8050-DD SPECIFICATIONS

RS-485 REMOTE DRIVER SPECIFICATIONS (SCLX, RPLX, RBLX)

DESCRIPTION	UNITS	VALUE
BAUD RATES SUPPORTED	kbps	9.6-115
ISOLATED INSTRUMENTATION POWER	VDC mA	NOT REQUIRED
CONTROL SIGNAL OPTION (2)	VDC	+/-5
SPEED OUTPUT	-	5-12VDC PULSE,
SPEED OUTPUT FREQUENCY RANGE	Hz	0-7200
CLOSED LOOP CONTROL	-	VELOCITY LOOP
COMMUTATION TYPE	-	TRAPEZOIDAL
COMMUTATION FEEDBACK SENSORS	-	HALL SENSORS
SWITCHING FREQUENCY		20
PROTECTIONS	-	MOTOR OVER-TEMPERATURE SHUTDOWN PULSE BY PULSE CURRENT LIMITING
FEEDBACKS VIA RS-485 (SEE COMMUNICATIONS MANUAL FOR DETAILS)		INPUT VOLTAGE, INPUT CURRENT, SPEED, DIRECTION ELECTRONICS TEMPERATURE, MOTOR TEMPERATURE, POWER ON TIME

NOTES:

- DC Brushless Thrusters are not constant power devices. Voltages above nominal rating will result in increased speed, thrust and power draw. Ensure maximum input power is not exceeded by reducing speed command and its voltages above nominal. If thruster is operated above maximum power rating, damage may occur. Conversely, the thruster can be operated at voltages below nominal, however will result in decreased maximum speed, thrust and power draw. Oil filled thrusters may require more input power at depth due to viscosity changes in the oil.
- Analog control signal dictates speed and direction of the unit. Typically, a voltage of +/-4.70Vdc will give maximum speed (100% PWM command.) See final test report for exact start and stop voltage. RS-485 remote drivers have the option of speed command via serial or analog control. Serial feedback is available if analog control mode is used.

MODEL 8050-DD CONFIGURATION & PART NUMBERING

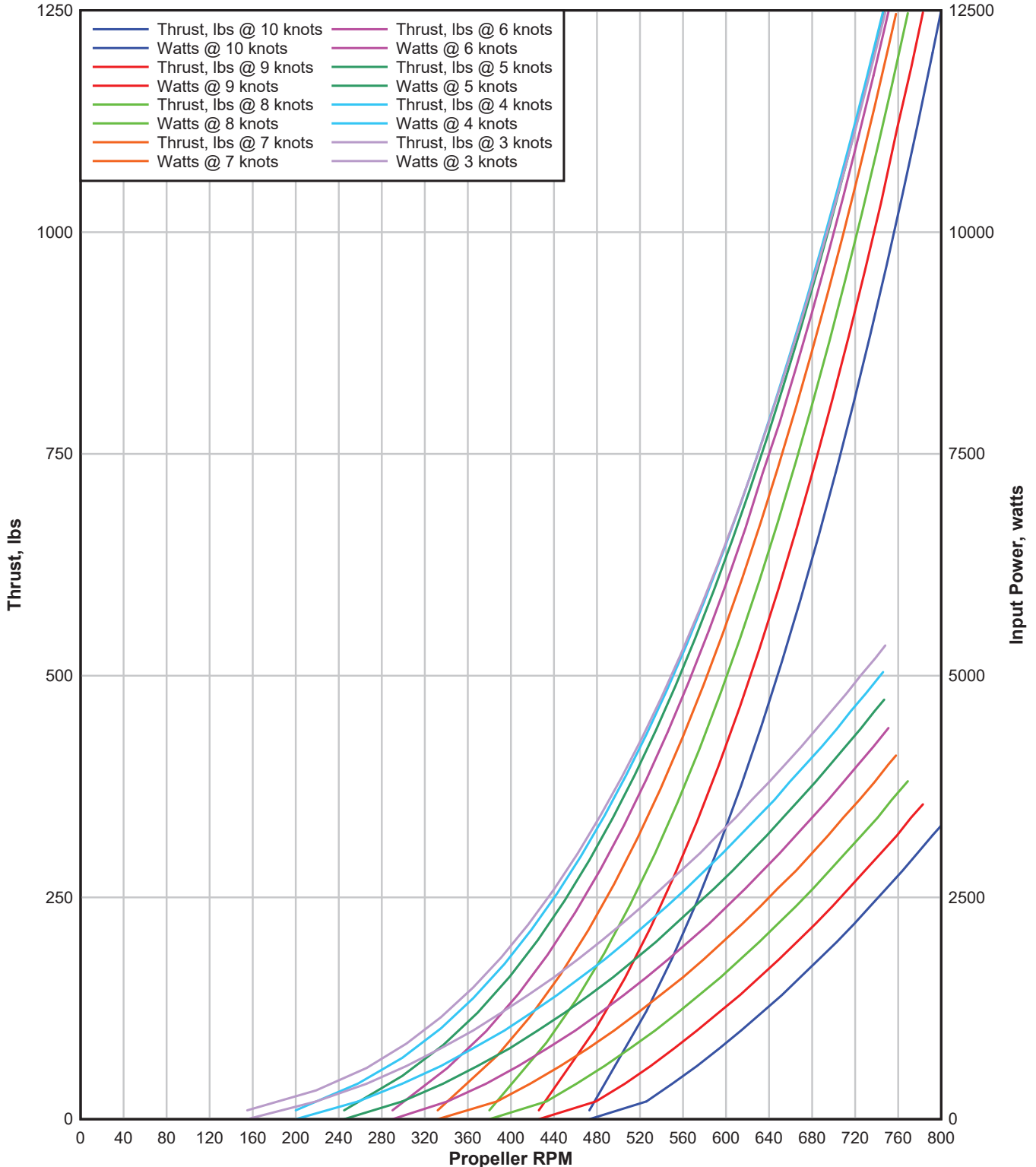
8050DD-AAA-BBBBBB-XX-CCCC-DD-EEEE-FF-G-HH-JJ

<p>AAA NOMINAL VOLTAGE OPTION (CONSULT FACTORY FOR OTHER VOLTAGES)</p>	<ul style="list-style-type: none"> • 072 - 72VDC • 100 - 100VDC • 200 - 200VDC 	<ul style="list-style-type: none"> • 260 - 260VDC • 330 - 330VDC
<p>BBBBB SUBSEA CONNECTOR OPTION (CONSULT FACTORY FOR OTHER CONNECTORS)</p>	<ul style="list-style-type: none"> • BRC08M-09 - C.R.E. BULKHEAD, SCLX ONLY, ALL VOLTAGES • PLC26MOF-01 - C.R.E. PBOF INLINE, 150-330VDC, REMOTE ELEX • PLC08MOF-01 - C.R.E. PBOF INLINE, ALL VOLTAGES, PHASE LEADS 	<ul style="list-style-type: none"> • PLA12MOF-01 - C.R.E PBOF INLINE, SENSOR LEADS • XSL6ACCP - CABLE OR OIL FILLED, SCLX ONLY, 260 & 330VDC ONLY • XSL6ABCR - BULKHEAD, SCLX ONLY, 260 & 330VDC ONLY
<p>XX CABLE LENGTH OPTION (DOES NOT APPLY TO BCR OR FCR CONNECTORS)</p>	<ul style="list-style-type: none"> • XX - CABLE LENGTH IN METERS (LEAVE AS XX IF NO CABLE INSTALLED) 	
<p>CCCC MAXIMUM OPERATING DEPTH OPTION</p>	<ul style="list-style-type: none"> • 0700 - 700 METERS (2,300FT) • CSD - CUSTOMER SPECIFIED DEPTH (REQUIRES REMOTE ELECTRONICS & OIL FILLED PRESSURE COMPENSATED OP- 	<p>TION FOR DEPTHS GREATER THAN 1,200M)</p>
<p>DD HOUSING MATERIAL OPTION</p>	<ul style="list-style-type: none"> • AL - 6061-T6 ALUMINUM, HARD ANODIZED BLACK • SS - TYPE 316 STAINLESS STEEL, PASSIVATED 	<ul style="list-style-type: none"> • TI - 6AL4V TITANIUM
<p>EEEE SELF-CONTAINED OR REMOTE ELECTRONICS OPTION</p>	<ul style="list-style-type: none"> • SCLX - SELF-CONTAINED ELECTRONICS, 1200M MAX • RPLX - REMOTE ELECTRONICS, CYLINDER MOUNT • RBLX - REMOTE ELECTRONICS, FLAT SURFACE MOUNT 	
<p>FF MOUNTING OPTION</p>	<ul style="list-style-type: none"> • SM - SADDLE MOUNT • UM - UUV MOUNT 	
<p>G CONTROL OPTION</p>	<ul style="list-style-type: none"> • A - +/-5V ANALOG CONTROL • R - RS485 CONTROL 	
<p>HH PROPELLER HANDING OPTION</p>	<ul style="list-style-type: none"> • RS - RIGHT HAND, STAINLESS STEEL PROPELLER • LS - LEFT HAND STAINLESS STEEL PROPELLER 	

MODEL 8050-DD

THRUST PERFORMANCE CURVES

8050 Thruster, 19.7in. Open Propeller
Open Water Performance Data



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