

TITAN 4 Manipulator

Schilling Robotics



Thousands of Schilling Robotics' manipulator systems are in use worldwide every day. TITAN manipulators are the highest quality system on the market for the dexterity and strength needed to withstand the industry's harsh and repetitive needs day after day

The TITAN 4 is widely regarded as the world's premier servo-hydraulic remote manipulator system. Since 1987, these systems have been the industry standard for dexterous manipulator systems used in subsea applications, and are extensively used on ultra-heavy work class ROVs.

This arm has the dexterity and accuracy necessary to perform the fine movements needed for complex tasks. When this ability is combined with the manipulator's reach (1,922mm), payload capacity (122kg at full extension), and large operating envelope, the TITAN 4 offers unequalled performance in a wide range of subsea applications.

Specifications

Product	TITAN 4 Manipulator
Country of origin	French/ American
Manufacturer	Technip FMC

Acute Precision Control

The manipulator's accuracy is limited only by the pilot's eye. The master controller includes a sixdegree of freedom replica master arm that ensures comfortable, intuitive manipulator operation. Its movements are just as sharp whether it's moving a 5lb. object or moving a 250lb object.

The controller also contains function keys for selecting menu options and a display for viewing diagnostic and status information. The controller's advanced operational features are individual joint freeze, position scaling (altering the ratio of master arm movement to manipulator arm movement), password security, programmable stow/deploy routines, individual joint movement limits, incremental gripper movement, individual joint diagnostics, and automatic error checking.

Construction

The arm is constructed primarily of titanium for structural strength, light weight, corrosion resistance, and extraordinary resistance to damage from collisions. TITAN manipulators have a proven track record of reliability in the world's most demanding subsea environments.

Operating Envelope

It is engineered to give its operators the largest range of motion in its class. This significant flexibility only enhances the arm's precision dexterity for exploration and recovery missions.

Manipulator Compatibility

To create the best manipulators on the market, we took the most field proven manipulator technologies and used them repetitively throughout the system. The result is a simple, reliable system with high component commonality that minimizes spare part requirements. Many parts are interchangeable throughout the entire manipulator line: TITAN 4, ATLAS, RigMaster, CONAN, and ORION.

Options and accessories

- Extended Depth Rating to 7,000msw
- Spares Kit
- Dual-Manipulator Configuration includes two manipulator arms and a single master controller with two replica master arms.
- Seal Installation Tool Kit
- Technician’s Tool Kit
- Radiation Hardening (up to 1x10⁷ rad gamma)
- Titanium Wrist-Mounted Camera

System Reliability

Robust Power/Signal Connection

A SeaNet cable connects the arm to electrical power and telemetry, providing a robust, reliable attachment. The small diameter cable (8.9mm) is actively pressure balanced and oil filled. The connector head has spring-loaded contacts, and a positive locking feature eliminates accidental cable disconnection.

Reliable In-Arm Electronics

All downside arm electronics are located inside the manipulator forearm. This configuration greatly reduces the number of electrical connections, simplifying service operations and increasing the system’s ability to withstand shock.

Quick, Easy Diagnostics

The SeaNet cable connector head contains bright LED status indicator lights that allow first-level diagnostics to be performed solely by visual inspection. The lights show that electrical power is being delivered to the arm, that the controller is transmitting to the arm, and that the arm is responding. This information lets the operator quickly determine where to begin troubleshooting, without removing connectors, applying a voltmeter, or opening sealed enclosures. The system also detects missing or reduced arm position sensor signals, and diagnostic lights on the in-arm electronics module indicate system health.

Specifications

Reach	1.922 mm
Type	Positioned Controlled
Functions	7
Materials	Primarily Titanium,

Arm specifications

Standard depth	4,000 msw
Extended depth	7,000 msw
Lift at full extension	6-35rpm
Maximum lift, nominal	454kg
Standard gripper opening	99mm
Grip force, nominal	4,092N
Wrist torque, nominal	170Nm
Wrist rotate, continuous	Anodized Aluminum, Titanium, Stainless Steel
Weight in air / water	100kg 78kg

Master controller specifications

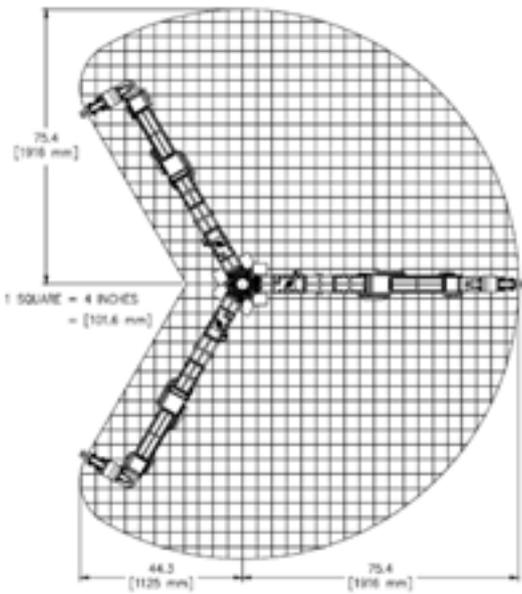
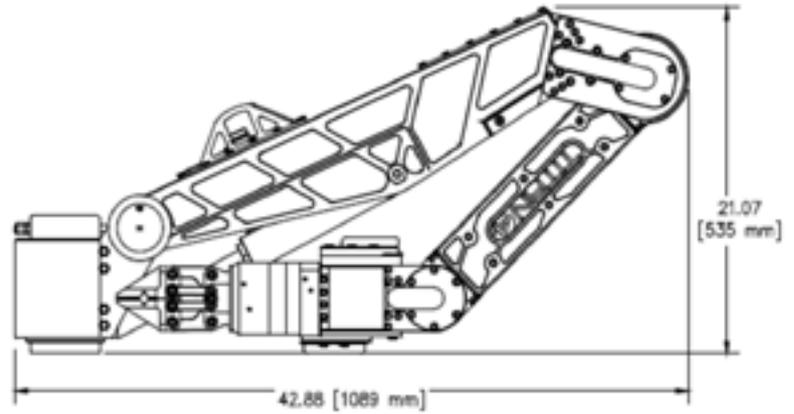
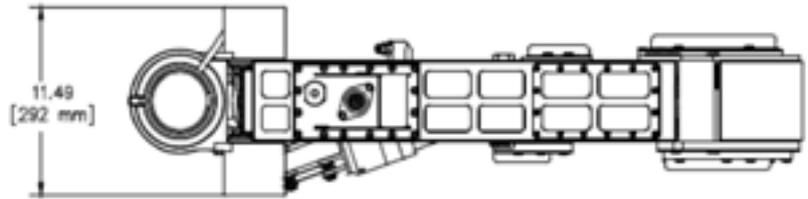
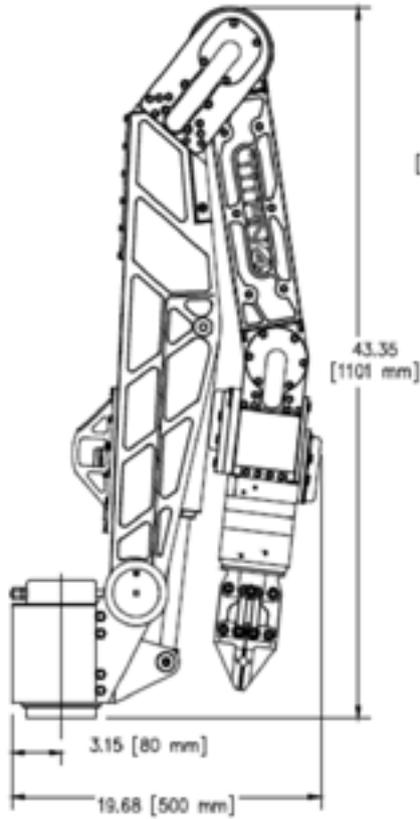
Length	470mm
Width	177mm
Height	67mm
Weight	3.7kg

Electrical and telemetry

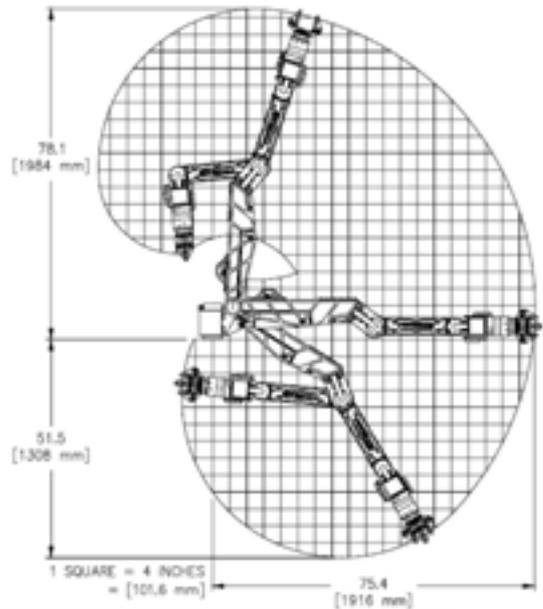
Input power, controller:	90-260VAC
Input power, arm	24 VDC
Power, controller	6W start, 3W run
Power, arm	6W start, 45W run
Telemetry	RS-232 or RS-422/485

Hydraulic requirements

Fluid	Mineral, Glycol, or Synthetic
Viscosity	10-200 cSt
Available flow	5.7 - 19 lpm
Max. pressure	3,000 psi
Max. fluid temperature	54°C
Fluid cleanliness	ISO 4406 14/11



Range of Motion, Top View



Range of Motion, Top View