Mako Offshore



The TITAN 4 is a high-performance servo-hydraulic manipulator developed by Schilling Robotics (TechnipFMC). Known for its precision, durability, and strength, it is widely used in subsea operations on ultra-heavy work class ROVs. Designed with a titanium body and advanced control systems, the TITAN 4 delivers accurate manipulation in the harshest underwater environments.

Key Features

- Acute precision control
- High lift-to-weight ratio
- Reach: 1.922 m
- Depth rating: up to 7,000 msw
- Titanium construction
- Intuitive 6-DOF master controller
- Advanced onboard diagnostics
- Reliable in extreme subsea conditions

Technical Specifications

Manipulator Arm

Specification	Value
Reach	1,922 mm
Depth Rating (Standard)	4,000 msw
Depth Rating (Extended)	7,000 msw
Weight in Air	100 kg
Weight in Water	78 kg
Lift at Full Extension	122 kg
Max Lift (Nominal)	454 kg
Gripper Opening	99 mm
Grip Force	4,092 N
Wrist Torque	170 Nm
Wrist Rotation (Continuous)	6-35 rpm
Material	Titanium
Functions	7

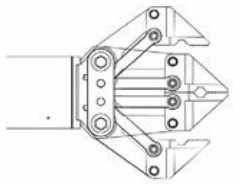
Master Controller

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

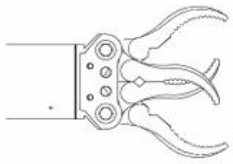
Advanced Features

- Position scaling
- Individual joint freeze & diagnostics
- Programmable stow/deploy
- Security/password options
- Incremental gripper control

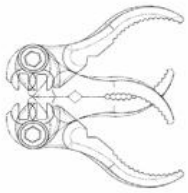
Gripper Options



6-in Parallel



7.5-in Four Finger Intermeshing



7.8-in Four Finger Intermeshing



Dual TITAN manipulator configuration

Connections and Interfaces

Electrical and Telemetry

Specification	Value
Controller Power Input	90-260 VAC
Arm Power Input	24 VDC
Controller Power Use	6W start, 3W run
Arm Power Use	6W start, 45W run
Telemetry	RS-232 / RS-422/485

Hydraulic Requirements

Specification	Value
Fluid Type	Mineral/Glycol/Synthetic
Viscosity	10-200 cSt
Flow Range	5.7 – 19 LPM
Max Pressure	3,000 psi
Max Fluid Temp	54°C
Fluid Cleanliness	ISO 4406 14/11

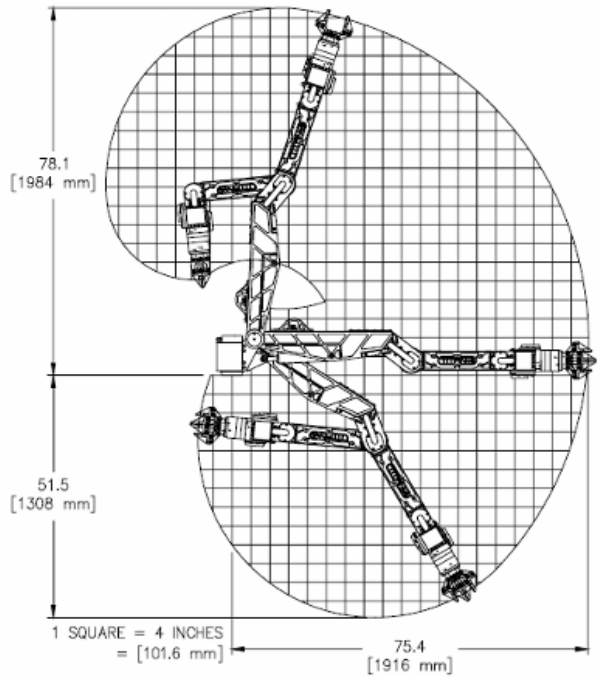
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Cabling & Diagnostics

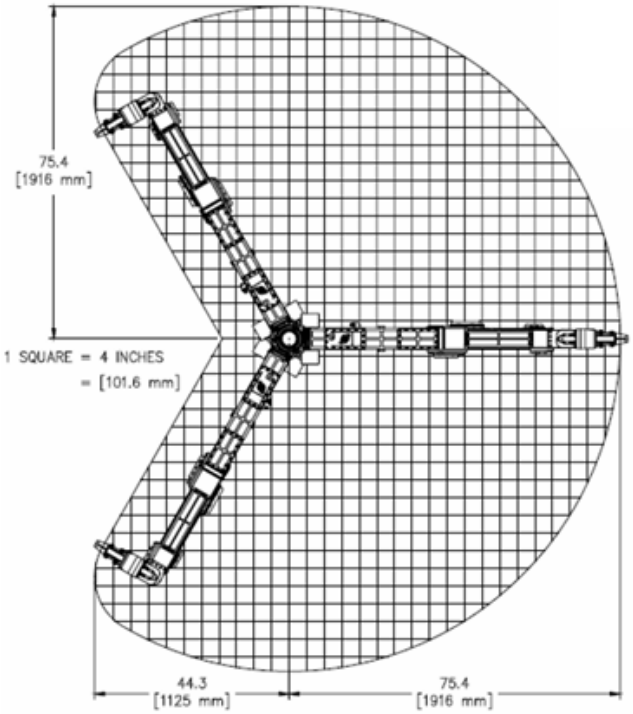
- SeaNet oil-filled cable (8.9 mm)
- Spring-loaded, pressure-balanced connector
- LED indicators for:
  - Power Delivery
  - Controller Transmission
  - Arm Responsiveness

Dimensions

Manipulator Reach: 1,922 mm
Arm (Stowed): Refer to stowed arm diagram
Controller Dimensions: 470 × 177 × 67 mm

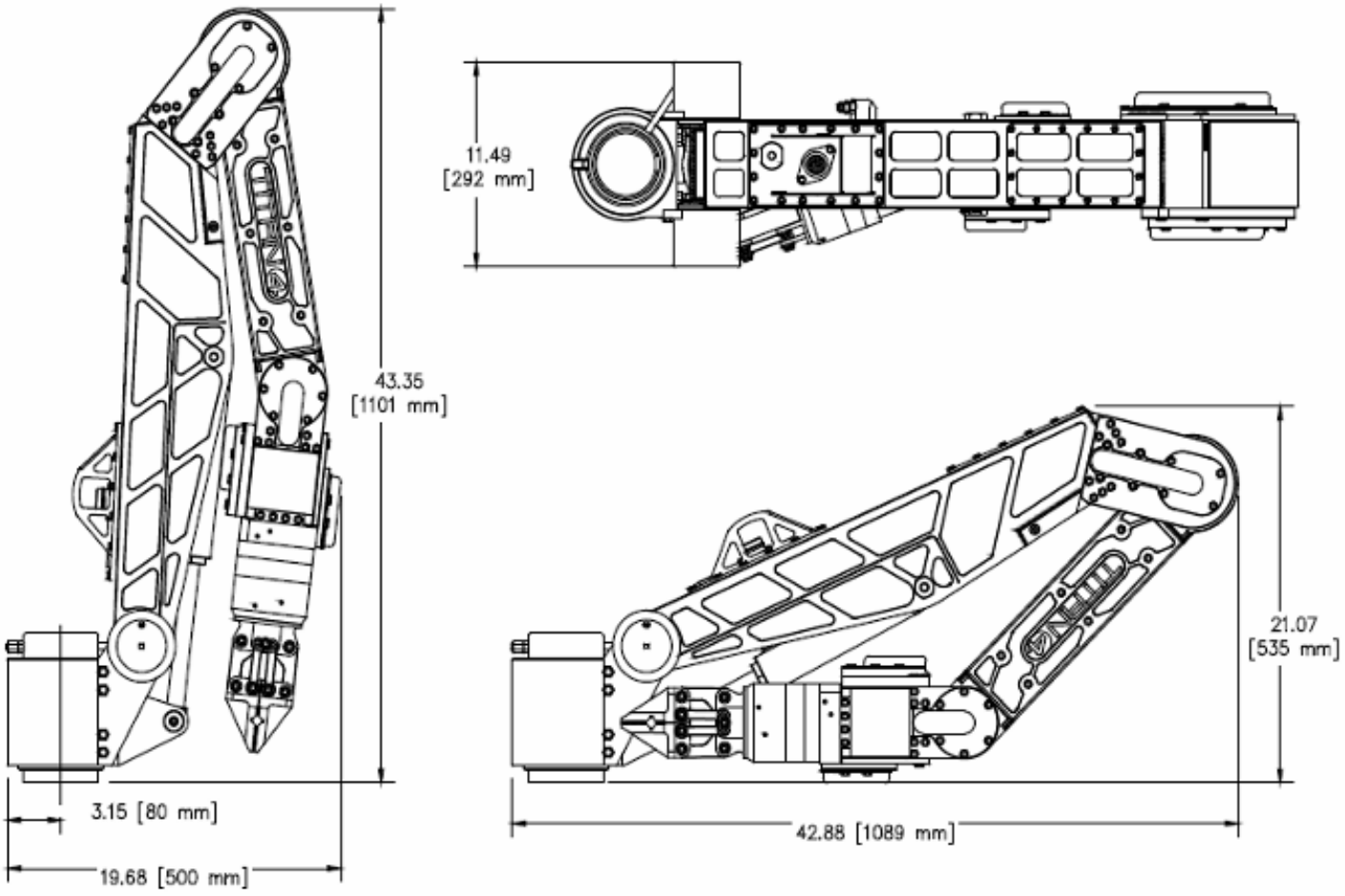


Range of Motion, Top View



Range of Motion, Top View

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Dimensions with Arm Stowed