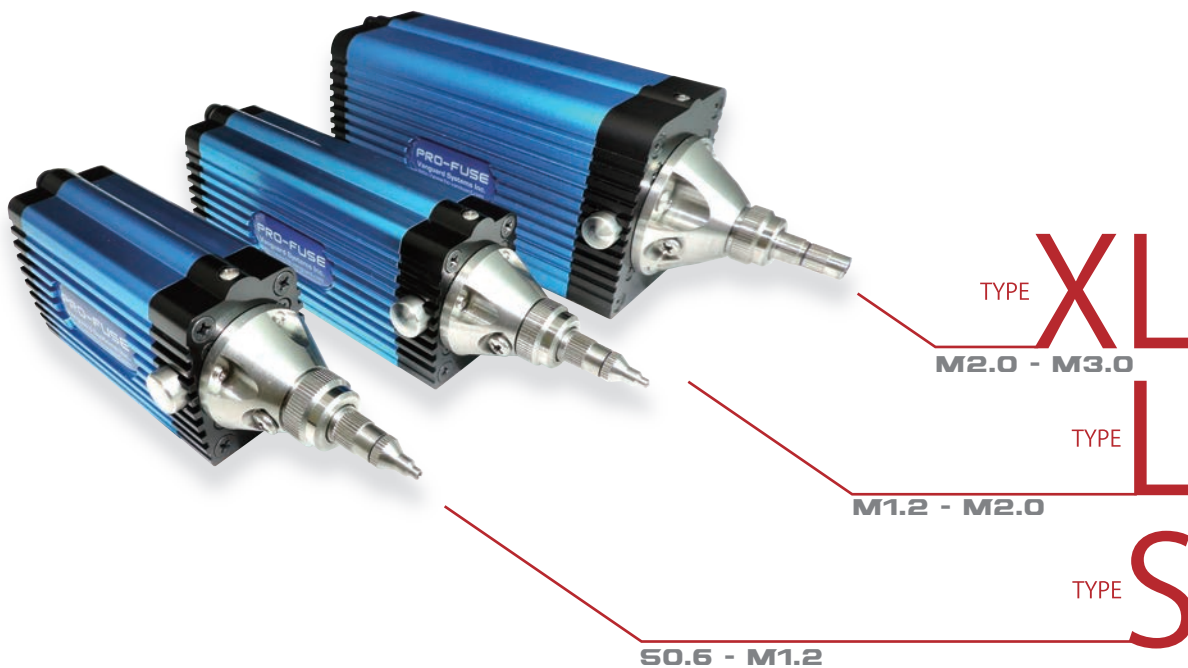


*An intellectualized tool —*

*a newly-evolved electric driver*

# PRO-FUSE®



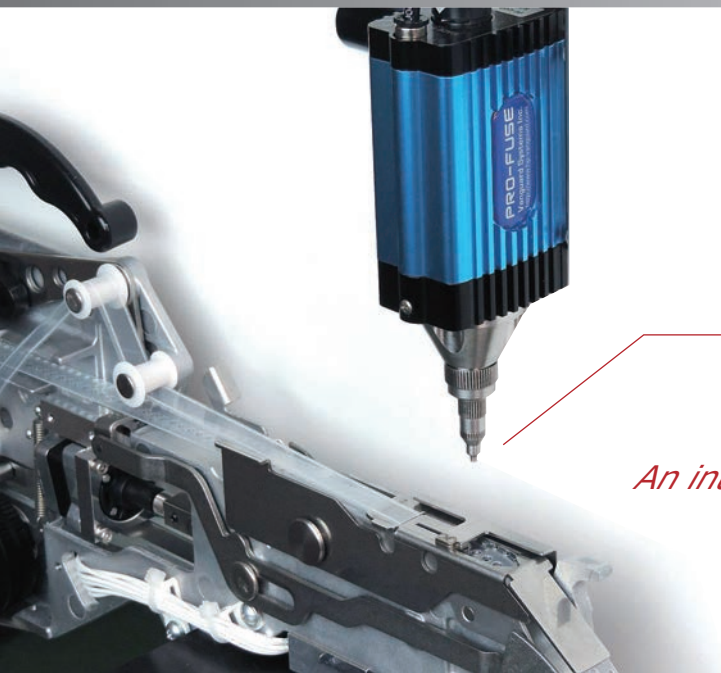
Precision Driver for

**S 0.6**

**I**

**M 3.0**

ultra-fine screws



SO.6-M3.0 ULTRA-FINE SCREWS



*An intellectualized tool* \_\_\_\_\_

*a newly-evolved electric driver*

# PRO-FUSE®

## *Precision Driver*

### ■ An ultra-fine screw can be tightened.

SO.6-M3.0 screw is available. Bit will be customized by a design of customers target screw.

### ■ One stop solution

Vanguard Systems provide a driver, controller, software, bit, mouthpiece and screw feeder as a one stop solution.

### ■ Small/lightweight

An industry-top-class small/lightweight screwdriver is achieved by our unique mechanisms design. It is easy to be mounted to X-Y robot or multi-articulated robot. Our screwdriver can contribute to an automation of screw tightening.

### ■ Torque management

Our unique control technologies enable setting and management of a tightening process torque and a result torque.

### ■ Traceability

An attached dedicated application "ProE-Expert" can trace a torque of whole screw tightening process in real-time.

### ■ Screw tightening process can be controlled from higher level equipment

You can control PRO-FUSE from a higher level equipment, such a PC or a PLC(sequencer) through Modbus/TCP communication protocol. This feature enables you easier to set up your system.

### ■ High-speed, High-torque

Maximum rating rotation speed 1,500rpm and maximum tightening torque 700mN.m is achieved by our unique software tuning.

### ■ Energy conservation

It is a very energy efficient electric driver because of using DC24V(3A) power supply.

### ■ Programmable screw tightening condition setup.

Maximum 16 groups of the optimized condition setting parameters can be registered in the controller.

### ■ Multidrop connections

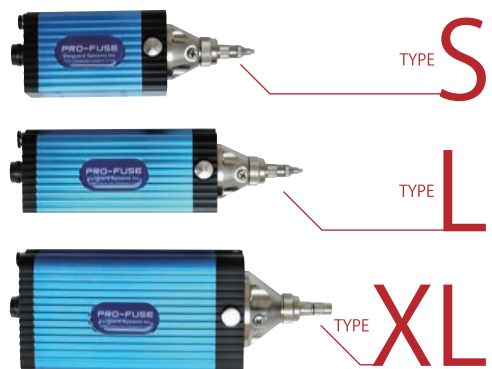
One windows PC can get a status/screw tightening result of maximum 250 PRO-FUSE units.

## Basic set

- PRO-FUSE : Electric driver (Choose from S, L or XL ; Torque range is different)
- CT-CONTS (Controller)
- Connection Cable
- ProE-Expert (Dedicated control application software)

\* Bit/mouthpiece will not contain in this product.

\* Please purchase bit/mouthpiece that fits your target screw design separately.



## One stop total solution

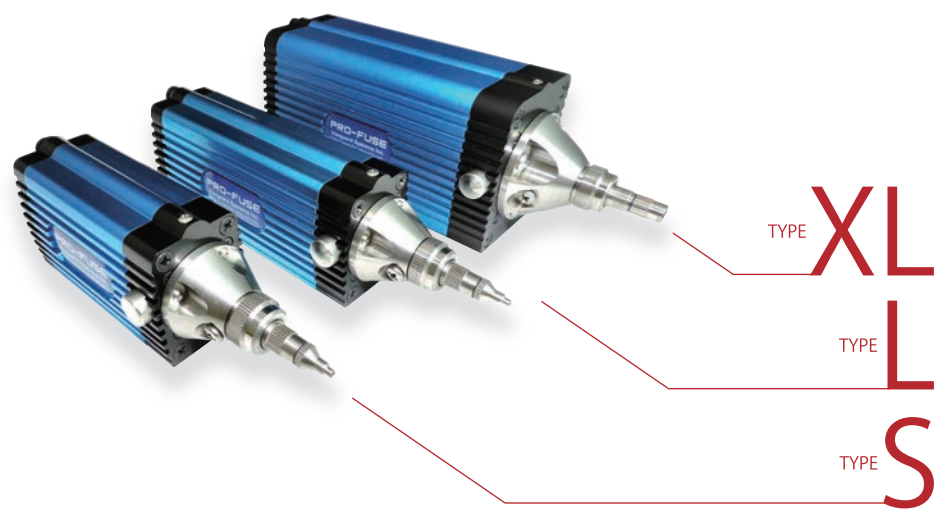


**vanguard**  
SYSTEMS INC.

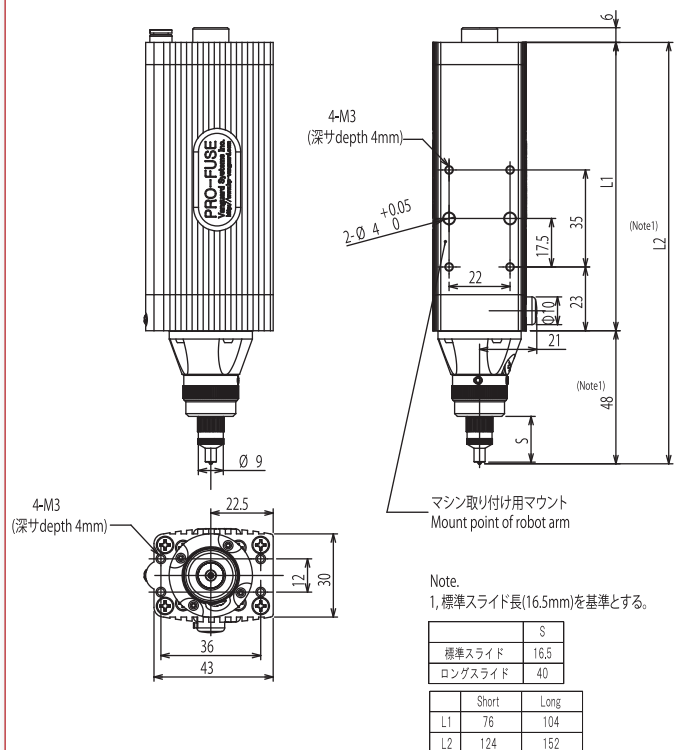
Basic specification

A set of type number <b>Model Name</b> ※1	<b>Unit</b>	PF-1-01-02-02-01-W <b>TYPE S</b>	PF-1-01-04-04-01-W <b>TYPE L</b>	PF-1-01-06-07-01-W <b>TYPE XL</b>
Screw size	mm	S0.6 - M1.2	M1.2 - M2.0	M2.0 - M3.0
Motor & Control method		Stepping Motor/Closed Loop method		
Tightening mode		3 mode (Normal, Tapping, High speed)		
Range of target torque	mNm	15.0-45.0(Normal)/10.0-45.0(Tapping,HS)	50.0-180.0(Normal)/30.0-180.0(Tapping,HS)	200.0-700.0(Normal)/200.0-700.0(Tapping,HS)
MAX RPM	RPM (min-1)	1000(Normal, Tapping) / 1500(High Speed)		1000(Normal,Tapping,HS)
Control accuracy		$3\sigma / \bar{x} \simeq 3\%$ ※2		
Weight	g	280	405	1000
Detection time of torque up	sec	0.01-1.00 ※3		
Re-tightening angle	°	-360.0-360.0		
Number of tightening operation		16 sequences		
Interface		Ethernet (MODBUS) , RS232C, I/O		
Power supply		DC24V (3A) ※4		
Controller weight	g	157		

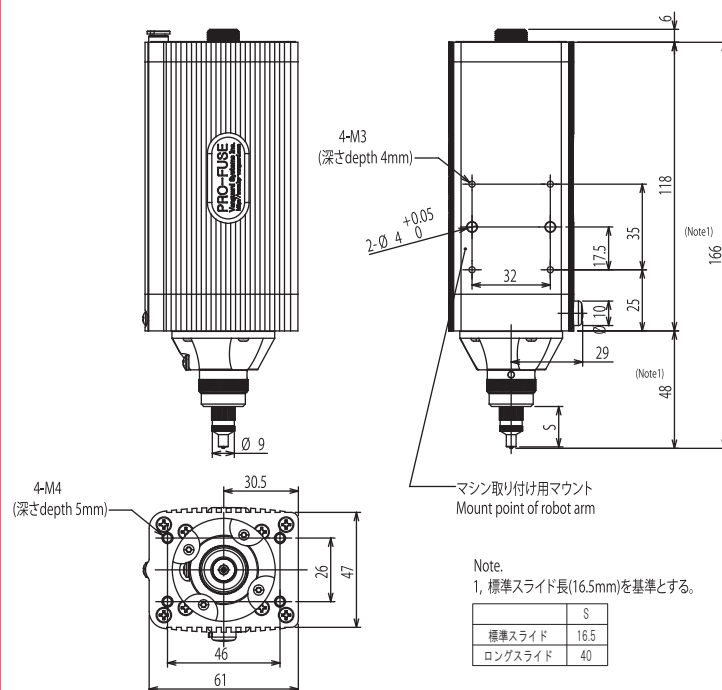
- ※1 It includes a set of the electric driver and controller (CT-CONTS)
- ※2 Tip torque accuracy is within 5% for using our standard mouthpiece and bits
- ※3 It is configurable when you set up an operation program
- ※4 Operation guaranteed within 24V ±10%



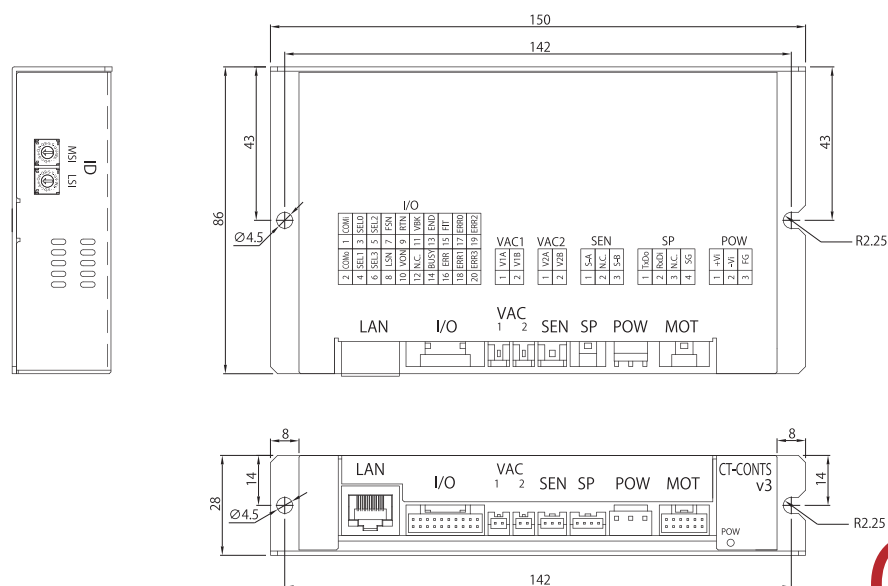
# Dimensions



TYPE **S** / TYPE **L**



TYPE **XL**



**CT-CONTS**

※ 詳細形状は、変更する場合があります

※ Detail dimensions are subject to change without prior notice

単位: Unit mm



Precision Driver  
**PRO-FUSE**®

Terminal name	Symbol	Vendor	Connector model	Cables, housing
100BASE-T LAN	<b>L A N</b>	STD	RJ45	Prepare by customer
Robot communication terminal	<b>I / O</b>	JST	S20B-PUDSS-1	Prepare by customer
Power supply connection terminal	<b>P O W</b>	JST	B3PS-VH	Prepare by customer
Reserved	<b>V A C 1,2</b>	-	-	-
Reserved	<b>S E N</b>	-	-	-
RS-232C connector	<b>S P</b>	JST	S04B-PASK-2	Prepare by customer
Controller/electric driver control signal connection terminal	<b>M O T</b>	-	Vanguard specific	Included with this set

**Dedicated application "ProE-Expert" (Attached to the basic set)**

[illegible]

- ProE-Expert will support setting up conditions of screw tightening parameters easily and visually.
- ProE-Expert can trace a torque of whole screw tightening process in almost real-time.
- Compatible with Windows 7/8/10.
- A "Window" feature will provide more detailed control method that enabling multi-step judgment during a screw tightening process. It also helps to expand possibility toward various special screws; such as adhesive-coated screw, tapping screw, plastic screw.
- It is indicated PRG No./Turn counts/Torque value/judgment result/Error code(Available CSV file output)
- A customer's communication applications (software) can be collected. log of screw tightening result by the Modbus(LAN) PRO-FUSE is also available to control from communication application of the robot system.

## Lineup of peripherals and services

\* Please contact our sales person for more detail information.

### Bit



A dedicated bit for PRO-FUSE. Bit should be customized by a design of customers target screw. Please provide target screw drawing and samples in advance. 1 set = 10 pieces of bit : bit will be sold by set.

### Mouthpiece



A dedicated mouthpiece sucks a screw by vacuum at tip of PRO-FUSE electric driver unit. Mouthpiece should be customized by a design of customers target screw. Please provide target screw drawing and samples in advance.

### Robot I/O cable



An I/O signal interface cable that connects between the basic set controller and a customers robot/PLC. An appropriate connector is attached at one end of cable so that a customer easily connect to "I/O terminal" on the controller. On the other hand, another end of cable is parallel open wire.

### Power supply cable



A power supply cable that connects between the basic set controller and a customer's DC power supply. An appropriate connector is attached at one end of cable so that a customer easily connect to "POW terminal" on the controller. On the other hand, another end of cable is parallel open wire.

### Z-Axis damper

There is no Z-axis damping mechanism inside the electric driver unit to achieve accurate torque control. This z-axis damper enables 1-2 kg impact absorption by maximum 4mm strokes of spring. Please note that an appropriate Z-axis damping mechanisms for each robots or production lines are different each others.



## PRO-CHK



A simplified torque checker that can be used in factory line to check a torque of PRO-FUSE in case of abnormality or daily check. Vanguard Systems also plan to provide a calibration service to the torque checker.



※PRO-CHK attached on 「PRO-ROBOT」



**Vanguard Systems Inc.** ME Division

**<https://www.hp-vanguard.com/>**

1-27-23 Higashi-Tokorozawa, Tokorozawa-City, Saitama,  
359-0021 JAPAN

TEL +81-4-2951-5381, FAX +81-4-2951-5383

MAIL:sales-div1@hp-vanguard.com

- PRO-FUSE® is a registered trademark of Vanguard Systems Inc.
- Colors of actual products might be different from this printing materials.
- The specifications, features, design and any other contents in this catalog are subject to change without prior notice.