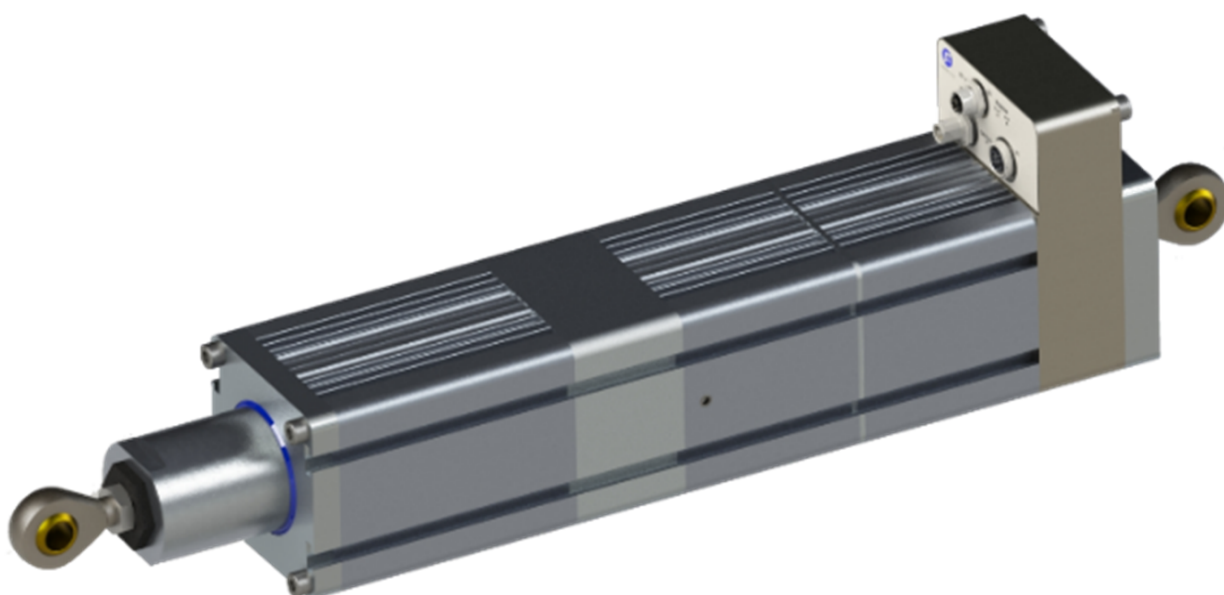




A MAXCESS BRAND

FIFE SMARTDRIVE ACTUATOR

Installation and Service Manual



INTRODUCTION	1-1
About these operating instructions	1-1
CE Marking	1-1
Product Overview	1-1
Language	1-2
Actuator Mounting and Coupling Options	1-2
SAFETY INSTRUCTIONS	2-1
Instructions for Use	2-1
Information about safety instructions	2-1
Signal words	2-1
Symbols Used	2-2
Additional markings	2-2
Basic Safety Information	2-3
Residual risks	2-5
INSTALLATION	3-1
Mechanical and Electrical Installation	3-1
Mounting the Operator Interface	3-3
System Schematics	3-7
Configuration 1 (SDA + GuideLine OI + GuideLine Sensor)	3-7
Configuration 2 (SDA + GuideLine OI + DSE Sensor)	3-9
Configuration 3 (SDA + GuideLine OI + DSE Sensor x2)	3-11
Configuration 4 (SDA + GuideLine OI + DSE Sensor)	3-13
Configuration 5 (SDA + GuideLine OI + DSE Sensor x3)	3-15
Wiring	3-17
Power Cable: 620001149-XXX	3-17
Connector Pinout	3-19
MAINTENANCE	4-1
Maintenance Safety	4-1
Service Requests and Replacement Parts	4-2
TECHNICAL DATA	5-1
General information	5-1
Inputs and outputs	5-2
Maximum Cable Lengths	5-2
SERVICE	6-1
Return Shipment Instructions	6-1
Requests for Service	6-1
Contact Details	6-1

1 INTRODUCTION

About these operating instructions

All of the information herein is the exclusive proprietary property of Maxcess International and is disclosed with the understanding that it will be retained in confidence and will be neither duplicated nor copied in whole or in part nor be used for any purpose other than for which disclosed.

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Periodically there will be updates to this manual. The latest version is available at www.maxcessintl.com or by calling your regional office. See back page for phone numbers.

These actuator devices must not be installed or used in a machine or system that does not comply with the machinery directive 2006/42/EC.

These actuator devices were designed and manufactured to be installed as Partly Completed Machinery into a machine or partly completed machine.



These instructions must be read and used by all persons who have the responsibility of installing and maintaining these actuator devices.

These instructions must be retained and incorporated in the technical documentation for the machine or partly completed machinery into which the actuator device is installed.

CE Marking

The SmartDrive Actuator complies with the 2006/42/EC Machinery directive and the 2014/30/EC Electromagnetic Compatibility directive.

Product Overview

The SmartDrive Actuator is a fully integrated controller, drive, and motor all in one device. The actuator moves loads in a translational fashion. The rotational movement of the brushless DC motor is transmitted to a ball screw which transforms the rotational movement into linear movement.

The actuator is designed for continuous use. The actuator has a sensor input, a remote operator interface, and an Ethernet port to mount into a web guiding structure and control the position of the web by monitoring the web position with sensors mounted on the web path.

The actuator is available in a variety of strokes and has coupling connection options with flanges, clevis head, adjustable trunnions, or rod end heads to easily adapt to the customer's system. Each actuator comes with an integrated positional encoder.

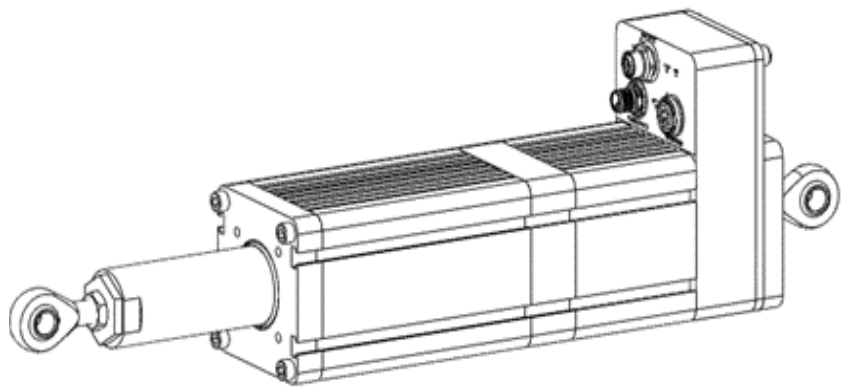
The actuator works with most Fife sensors.

Language

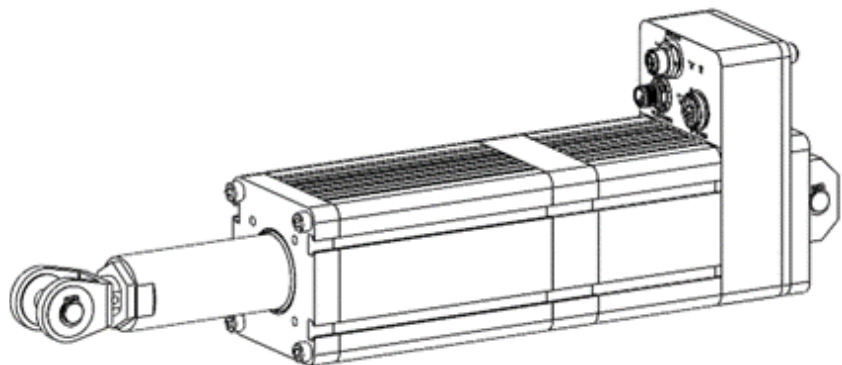
These are the original instructions, written in English.

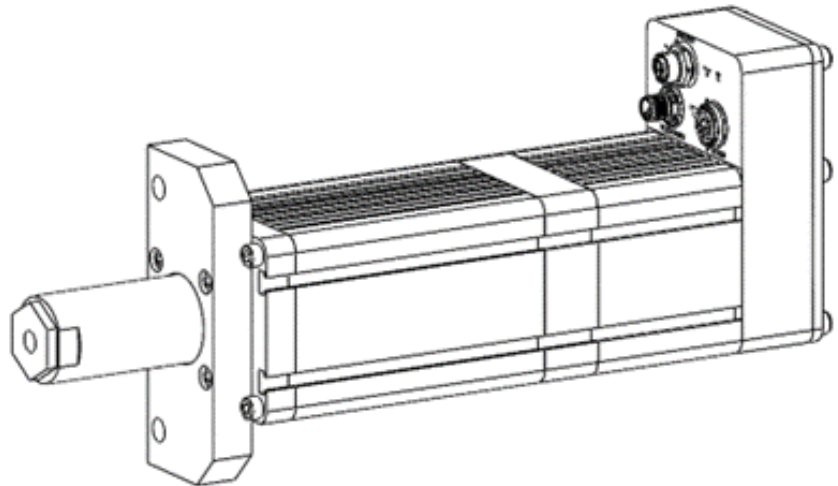
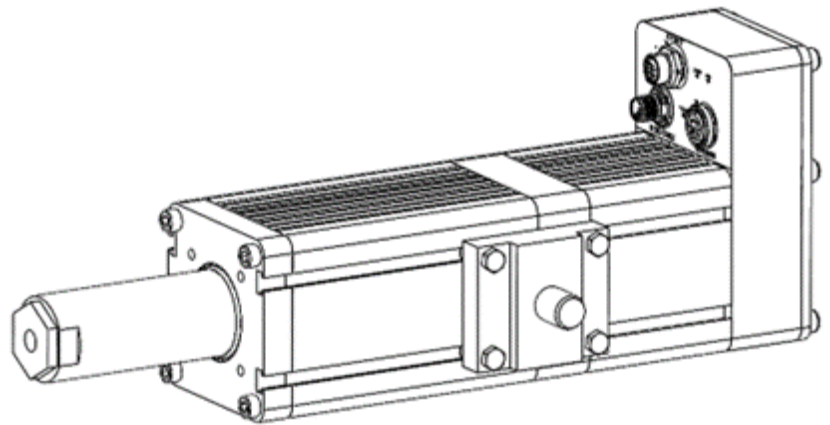
Actuator Mounting and Coupling Options

Rod end coupling connection



Clevis coupling connection



Flange coupling connection**Trunnion coupling connection**

2 SAFETY INSTRUCTIONS

Instructions for Use

To ensure safe and problem free installation of the SmartDrive Actuator, the actuator must be properly transported and stored, professionally installed and placed in operation. Proper operation and maintenance will ensure a long service life of the device. Only persons who are acquainted with the installation, commissioning, operation and maintenance of the system and who possess the necessary qualifications for their activities may work on the actuator.

NOTE: The safety information may not be comprehensive.

Please note the following:

- The content of these operating instructions
- Any safety instructions that are printed on the unit
- The requirements of the machine manufacturer
- Applicable national, state and local requirements for accident prevention and environmental protection

Information about safety instructions

The safety instructions and symbols described in this section are used in these Operating instructions. They are used to avoid possible dangers for users and to prevent material damage.



SIGNAL WORD

Source of danger and its results.

⇒ Avoiding dangers

Signal words

The signal word **DANGER** indicates an immediate danger of serious injury or death.

The signal word **WARNING** indicates a possible danger which could lead to serious injury or death.

The signal word **CAUTION** refers to a possible danger which could lead to slight to moderate injury.

The signal word **ATTENTION** refers to a possible danger which could lead to material damage.

Symbols Used

General Danger:
Reference to general hazards that may result in bodily injuries



Crushing:
Refers to danger of injury caused by crushing



Cutting:
Refers to danger of injury caused by cutting



Electric Shock:
Refers to danger of injury caused by electric shock due to voltage



Hot Surfaces:
Refers to danger of injury caused by burning

Additional markings

- Bulleted list
- Instructions
 1. Instructions which must be processed in the specified order
 2. End of the instructions
- Reference or cross-reference
- additional information



Note:
Reference to important information.

Basic Safety Information

Proper Use:

- The SmartDrive Actuator is intended to be used to provide controlling and guiding functions for:
 - Steering and offset pivot guide control
 - Positioning and slave guidance
- Other applications include the control and positioning of:
 - Unwind/Rewind Rolls
 - Blades/Cutter bars
 - Cutting tables
 - Turn bars, etc.

The SmartDrive Actuator must be used indoors. See environmental specifications in Section 6–1 of the SmartDrive Actuator Installation and service manual, Figure Sheet 1–946.

Use of the SmartDrive Actuator should not present any hazards as defined by EU Directive 2006/42/EC.



Note: The modules of the SmartDrive Actuator system must not be opened. If a module is opened, no claims under the warranty will be honored.

Customer-specific programming and different sensors make it possible to adjust the SmartDrive Actuator system to a wide variety of applications.

Improper Use:

- Do not operate the SmartDrive Actuator outside the technical specifications.
- Do not operate the SmartDrive Actuator in an Ex-area or hazardous area.
- Do not use the SmartDrive Actuator as a safety component. The actuator does not hold the position if power fails.
- Do not use the SmartDrive Actuator outdoors.
- The SmartDrive Actuator must not be used to raise and lower loads.
- Any other use than the proper use shall be deemed inappropriate.

Installation and Commissioning:

Any SmartDrive Actuator which is damaged must not be installed or put into service.

Only perform installation, maintenance, or repair tasks on the SmartDrive Actuator when the machine has been stopped and is secured from being turned on.

Only perform installation, maintenance, or repair tasks on the SmartDrive Actuator when there is no electrical power in the system.

The SmartDrive Actuator must be securely assembled into the customer application before being placed in operation.

Only replacement parts obtained from Fife may be used.

No modifications may be made to the SmartDrive Actuator.

Do not place electrical cables under mechanical strain.

The ball screw nut must not be removed from the ball screw.



WARNING – Death or injury can result from static electric shock.

Moving webs of material can produce large static voltage potentials. Protect against electric shocks by installing a conductive connection between the PE conductor of the Smart Drive Actuator and the PE circuit of the building or machine.



WARNING – Danger of injury from crushing.

The Smart Drive Actuator contains moving parts which could cause injury due to crushing. Appropriate protective guards must be installed by the user according to his use of this product.



WARNING – Death or injury can result from unexpected movement.

Protect against unexpected movement by removing electrical power from the SmartDrive Actuator and the machine into which the SmartDrive Actuator is being installed.

Operation:



WARNING – Danger of injury from crushing.

The SmartDrive Actuator contains moving parts which could cause injury due to crushing. Do not touch anything on or in the vicinity of the moving parts. Appropriate protective guards must be installed by the user according to his use of this product.

Maintenance and Repair:

WARNING – Death or injury can result from unexpected movement.

Protect against unexpected movement by removing electrical power from the SmartDrive Actuator and the machine into which the SmartDrive Actuator is being installed.



WARNING – Danger of injury from crushing.

The Smart Drive Actuator contains moving parts which could cause injury due to crushing. Appropriate protective guards must be installed by the user according to his use of this product.

Decommissioning:

The SmartDrive Actuator must be disposed of in accordance with all the applicable national, state and local regulations.

Residual risks

The SmartDrive Actuator may be remotely controlled via a net control. As with any remotely controlled device, when remote control of the device is implemented, there is the possibility of movement of the actuator and attached structure when remote commands are issued. Therefore, any time personnel are near the actuator or attached structure, it is recommended that standard safeguards be taken to prevent injury. During servicing of the equipment, to prevent injury to personnel, it is recommended that standard Lockout/Tagout procedures be used.

The Operator Interface should not be installed in a location which does not protect the operator from injury due to moving material or machinery. This can be accomplished by either surrounding the Operator Interface with a safety screen, or by mounting the Operator Interface in a safe location.

3 INSTALLATION

Mechanical and Electrical Installation

Use Table 1 to determine the installation drawing you will need for your coupling and mounting style.

Note: Table 1 does not constitute all available options.

Mounting Kit Names	Model Option	Drawing No.
ROD END CLEVIS MOUNT INCH	CL11	620001590-001
ROD END CLEVIS MOUNT METRIC	CL01	620001590-002
ROD END ROD EYE MOUNT METRIC	RE01	620001590-003
ROD END ROD EYE MOUNT INCH	RE11	620001590-004
ACTUATOR BODY ROD EYE MOUNT METRIC(LAB)	RE01	620001590-005
ACTUATOR BODY ROD EYE MOUNT INCH(LAB)	RE11	620001590-006
ACTUATOR BODY CLEVIS MOUNT METRIC	CL01	620001590-007
ACTUATOR BODY CLEVIS MOUNT INCH	CL11	620001590-008
ACTUATOR BODY FLANGE KR MOUNT	FL01	620001590-009
TRUNNION/ LAG ADAPTER	TR01	620000680-001

The linear actuator and connecting rod must be secured from rotating about the axis of the actuator to ensure precision operation. The fastening connections to the machine must be securely mounted to avoid excessive movement.

Route all cables away from moving or rotating parts.



WARNING – Death or injury can result from unexpected movement.

Protect against unexpected movement by removing electrical power from the Smart Drive Actuator and the machine into which the Smart Drive Actuator is installed.

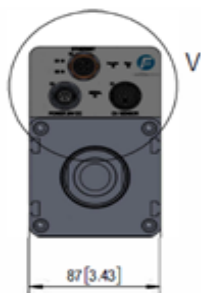
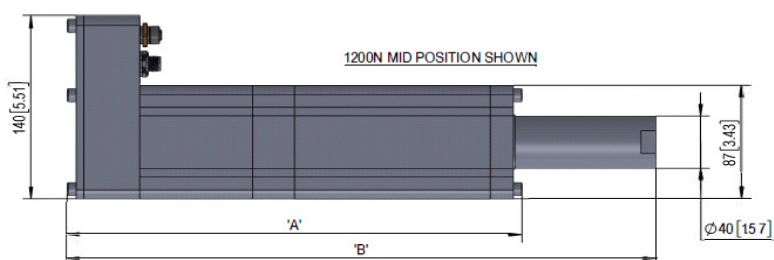


WARNING – Death or injury crushing.

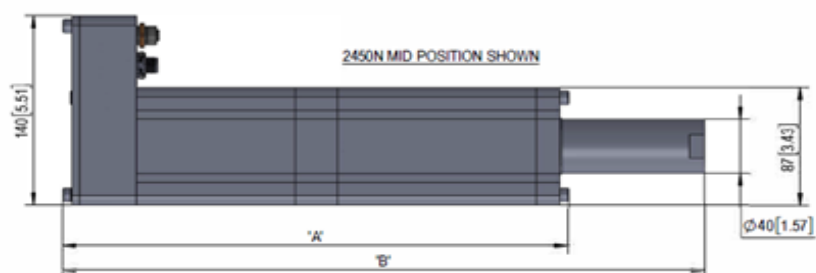
Maintenance and repair tasks on the Smart Drive Actuator must be performed only when the machine has been stopped and has been secured from being turned on again.



1200N



2450N



Thrust	Total Stroke	Body 'A'	Total Length (Mid Position) 'B'
1200N	50 [1.97]	255.6 [10.02]	320.5 [12.57]
	100 [3.94]	305.6 [11.98]	395.5 [15.51]
	125 [4.92]	330.6 [12.96]	433 [16.98]
	150 [5.91]	355.6 [13.95]	470.5 [18.45]
	200 [7.87]	405.6 [15.91]	545.5 [21.39]
	250 [9.84]	455.6 [17.87]	620.5 [24.33]
	300 [11.81]	505.6 [19.83]	695.5 [27.27]
	400 [15.75]	605.6 [23.75]	845.5 [33.16]
2450N	50 [1.97]	284.6 [11.16]	349.5 [13.71]
	100 [3.94]	334.6 [13.12]	424.5 [16.65]
	125 [4.92]	359.6 [14.1]	462 [18.12]
	150 [5.91]	384.6 [15.08]	499.5 [19.59]
	200 [7.87]	434.6 [17.04]	574.5 [22.53]
	250 [9.84]	484.6 [19]	649.5 [25.47]
	300 [11.81]	534.6 [20.96]	724.5 [28.41]
	400 [15.75]	634.6 [24.89]	874.5 [34.29]

Mounting the Operator Interface

Units are in mm [in]

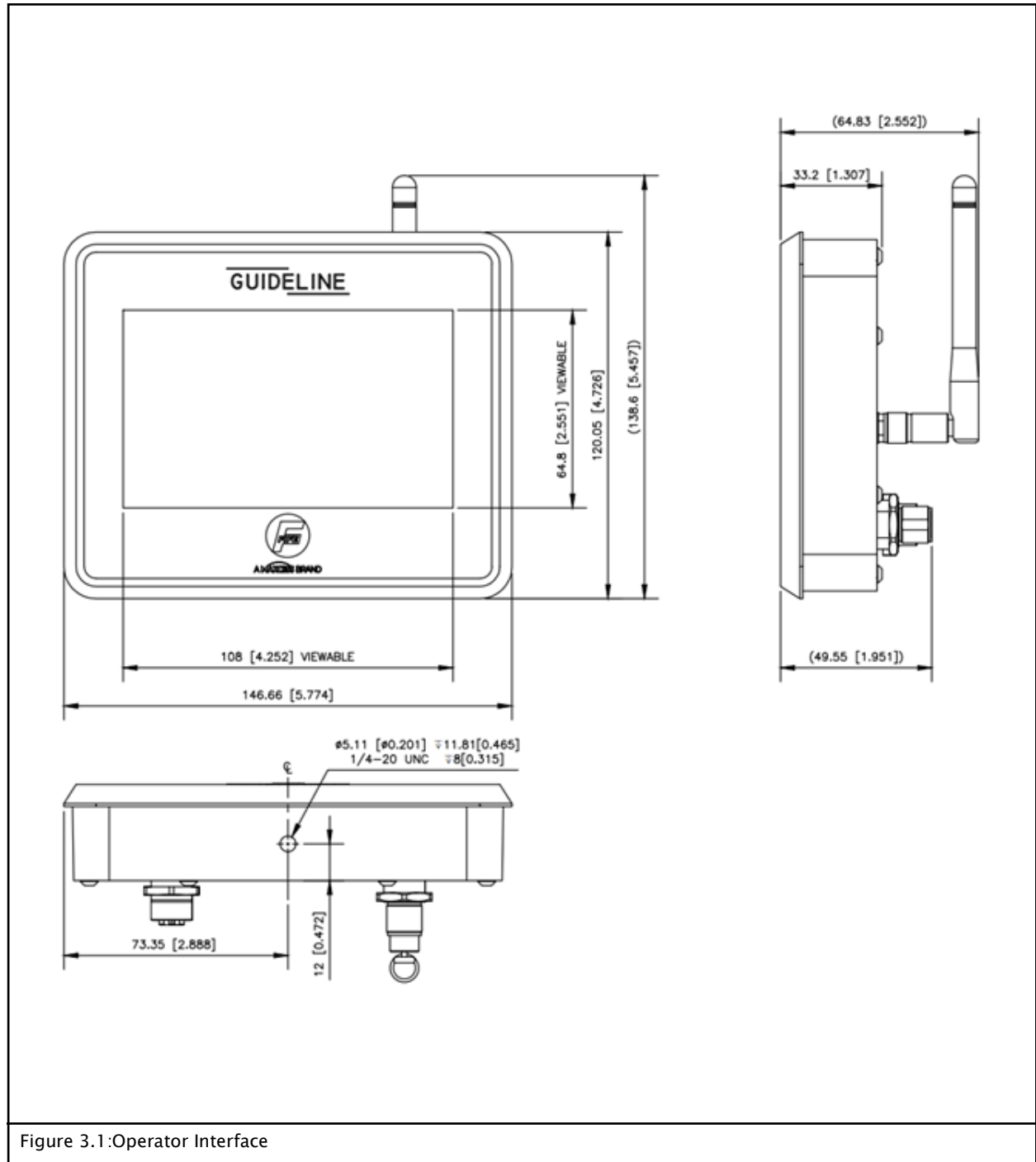
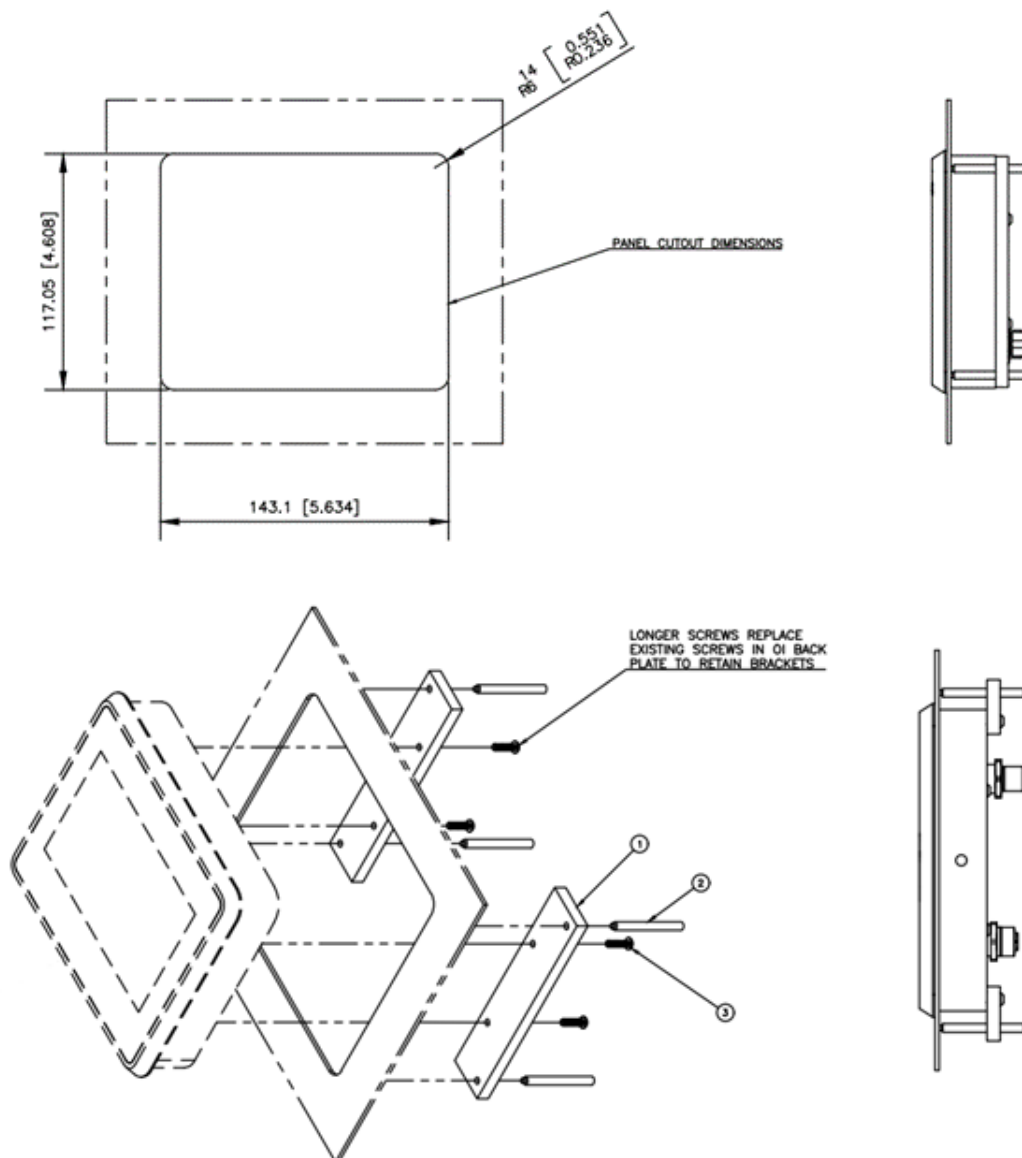


Figure 3.1:Operator Interface

SDA is designed to work with the GuideLine Operator Interface. The Interface can be either panel-mounted or mounted utilizing the threaded hole in the bottom.



1. Mounting brackets
2. Panel jack screws
3. Replacement screws

Figure 3.2: The panel mount kit part number for GuideLine OI is 290013970.

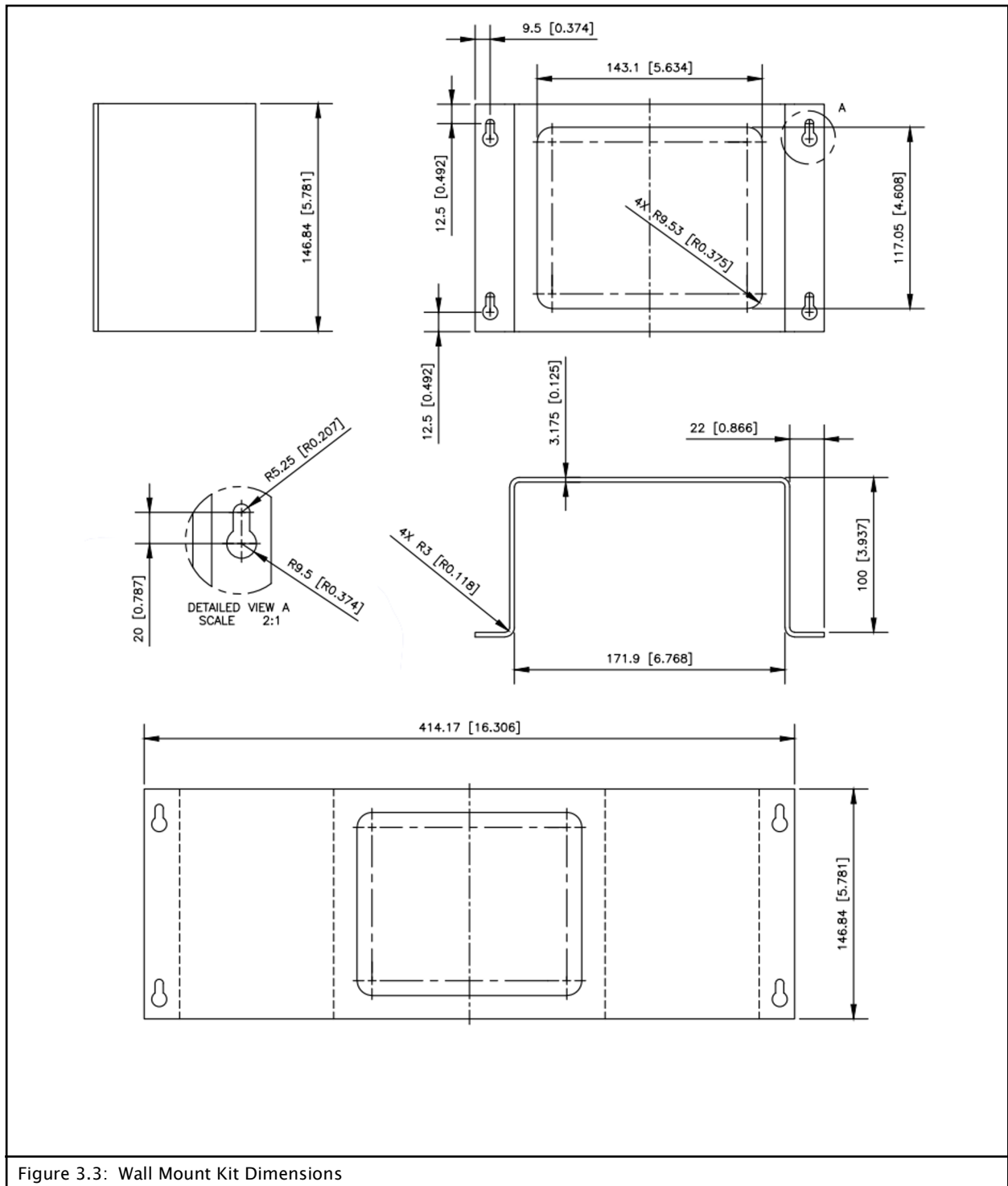
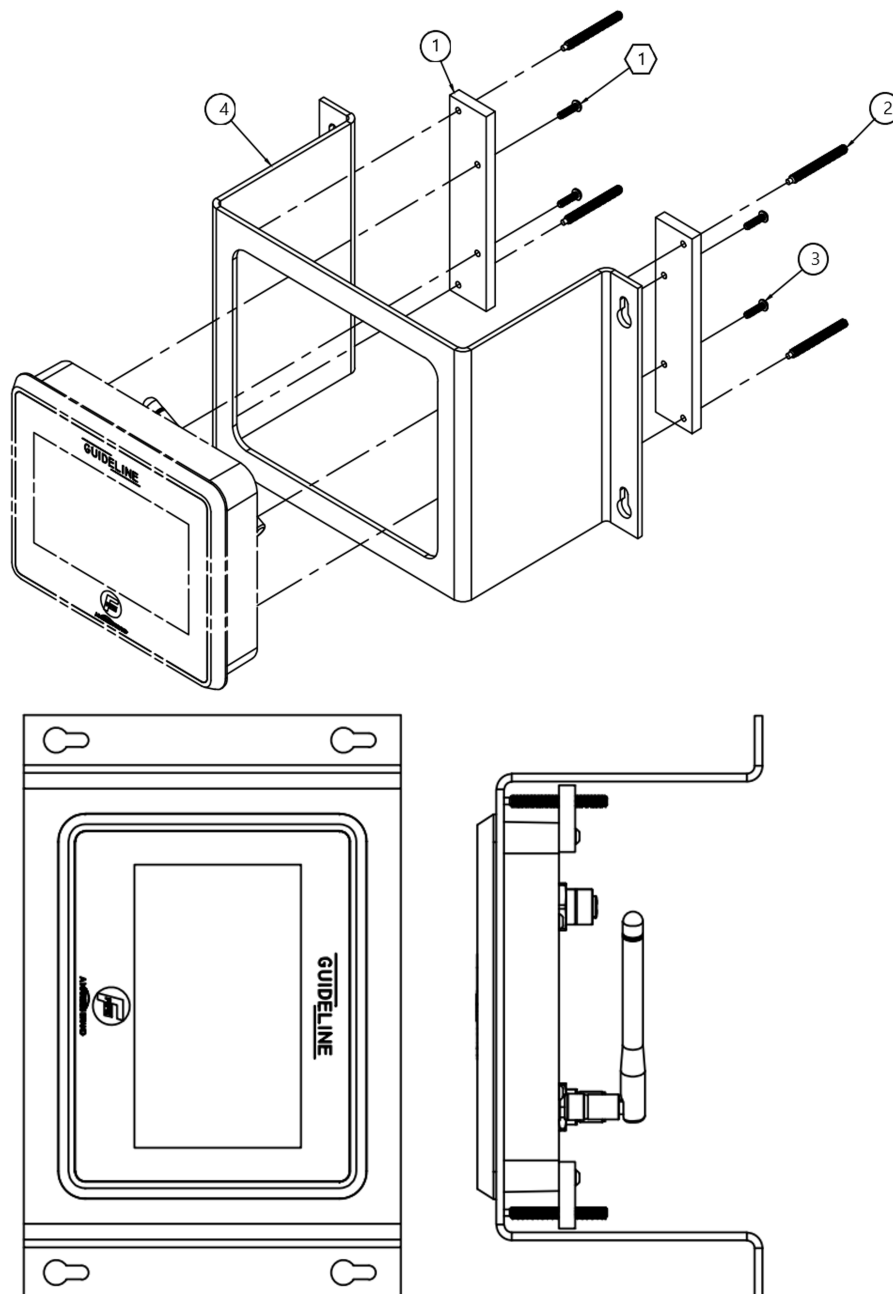


Figure 3.3: Wall Mount Kit Dimensions



1. Panel Mount brackets
2. Dog point set screw, M4x40
3. BTBD socket cap screw, M3x12
4. Wall mount frame

Figure 3.4: The wall mount kit part number for Guideline OI is 290013970.

System Schematics

Configuration 1 (SDA + GuideLine OI + GuideLine Sensor)

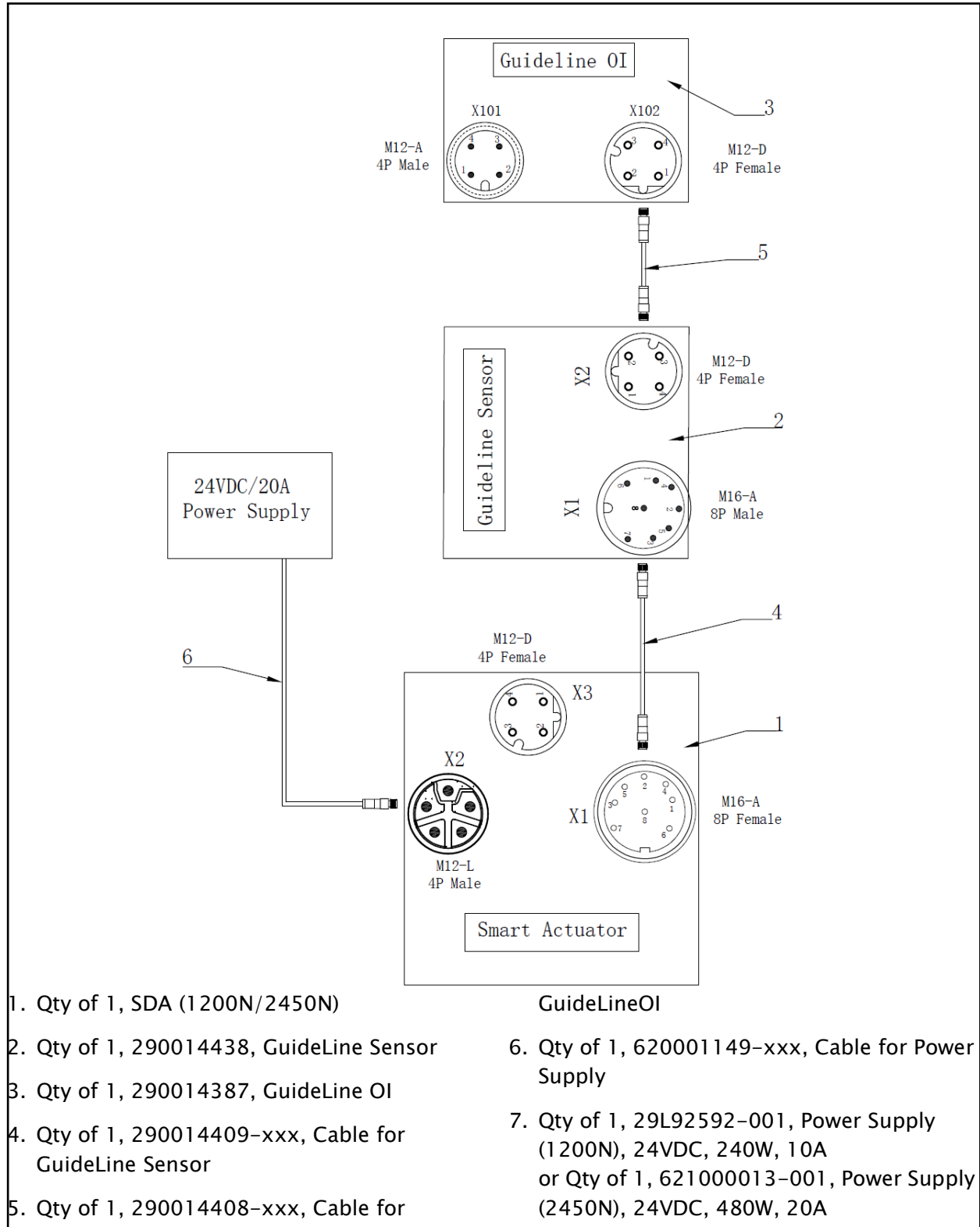


Table 3.1: Configuration-1 (SDA + Guideline OI + Guideline Sensor)

No.	P/N	QTY	Item Description	Remarks
1	/	1	SDA (1200N/2450N)	
2	290014438	1	Guideline Sensor	
3	290014387	1	Guideline OI	
4	290014409-XXX	1	Cable for Guideline Sensor	
5	290014408-XXX	1	Cable for Guideline OI	
6	620001149-XXX	1	Cable for Power Supply	
7	29L92592-001	1	Power Supply (1200N), 24VDC, 240W, 10A	Min. Req. CP10.241
	621000013-001		Power Supply (2450N), 24VDC, 480W, 20A	Min. Req. CP20.241

Note: Configuration 1 is used for Line/Center Guiding.

**Configuration 2 (SDA +
GuideLine OI + DSE Sensor)**

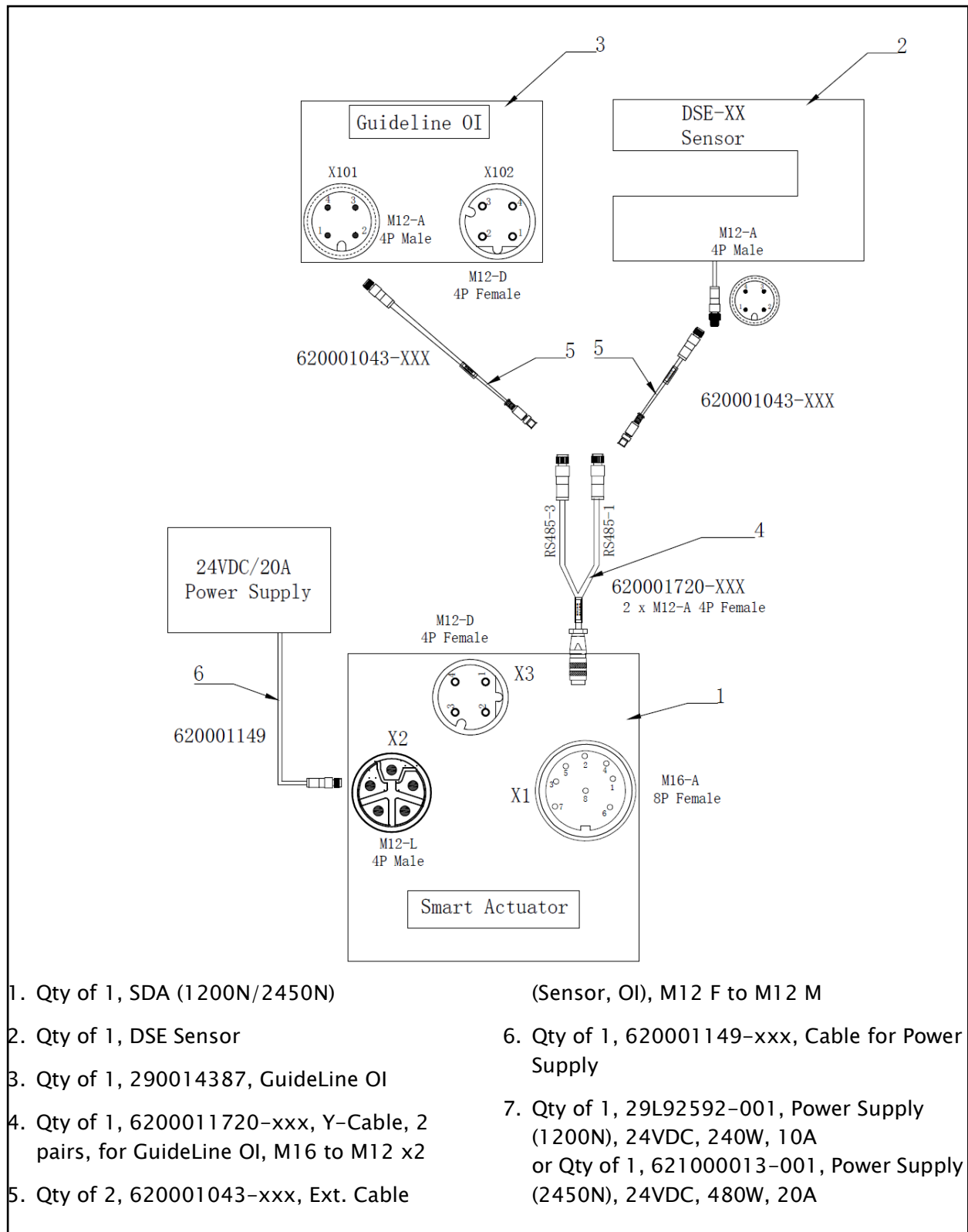


Table 3.2: Configuration-2 (SDA + Guideline OI + DSE Sensor)

No.	P/N	QTY	Item Description	Remarks
1	/	1	SDA (1200N/2450N)	
2	/	1	DSE Sensor	
3	299014387	1	Guideline OI	
4	6200011720-XXX	1	Y-Cable, 2 pairs, for Guideline OI, M16 to M12 x2	Ch 1: Sensor, Ch 3: OI
5	620001043-XXX	2	Extension Cables (Sensor, OI), M12 F to M12 M	
6	620001149-XXX	1	Cable for Power Supply	
7	29L92592-001	1	Power Supply (1200N), 24VDC, 240W, 10A	Min. Req. CP10.241
	621000013-001		Power Supply (2450N), 24VDC, 480W, 20A	Min. Req. CP20.241

Note: Configuration 2 is used for Edge Guiding.

**Configuration 3 (SDA +
GuideLine OI + DSE Sensor
x2)**

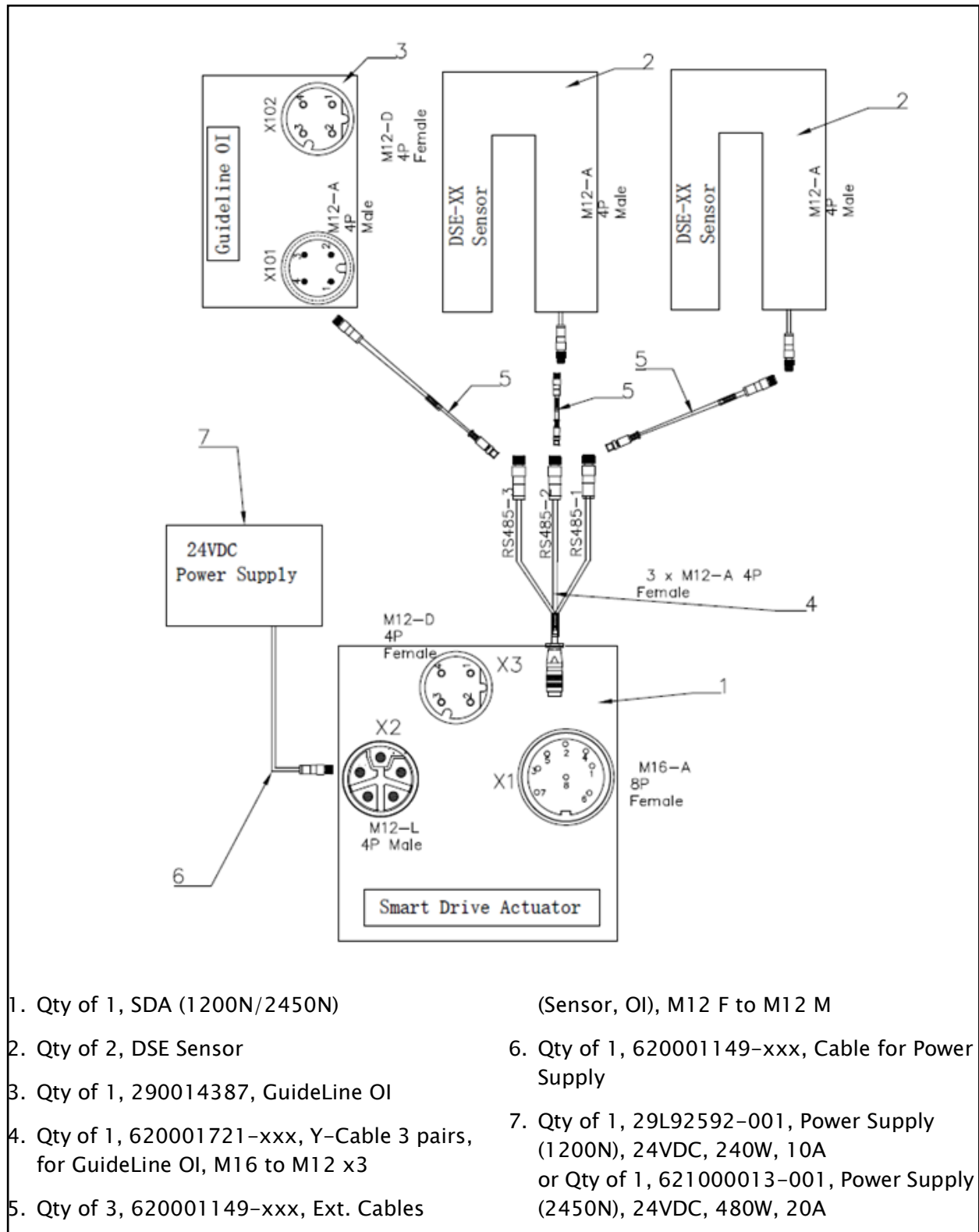


Table 3.3: Configuration-3 (SDA + Guideline OI + DSE Sensor x2)

No.	P/N	QTY	Item Description	Remarks
1	/	1	SDA (1200N/2450N)	
2	/	2	DSE Sensor	
3	299014387	1	Guideline OI	
4	620001721-XXX	1	Y-Cable, 3 pairs, for Guideline OI, M16 to M12 x3	Ch 1: Sensor, Ch 2: Sensor, Ch 3: OI
5	620001043-XXX	3	Extension Cables (Sensor, OI), M12 F to M12 M	
6	620001149-XXX	1	Cable for Power Supply	
7	29L92592-001	1	Power Supply (1200N), 24VDC, 240W, 10A	Min. Req. CP10.241
	621000013-001		Power Supply (2450N), 24VDC, 480W, 20A	Min. Req. CP20.241

Note: Configuration 3 is used for Edge Guiding.

**Configuration 4 (SDA +
GuideLine OI + DSE Sensor)**

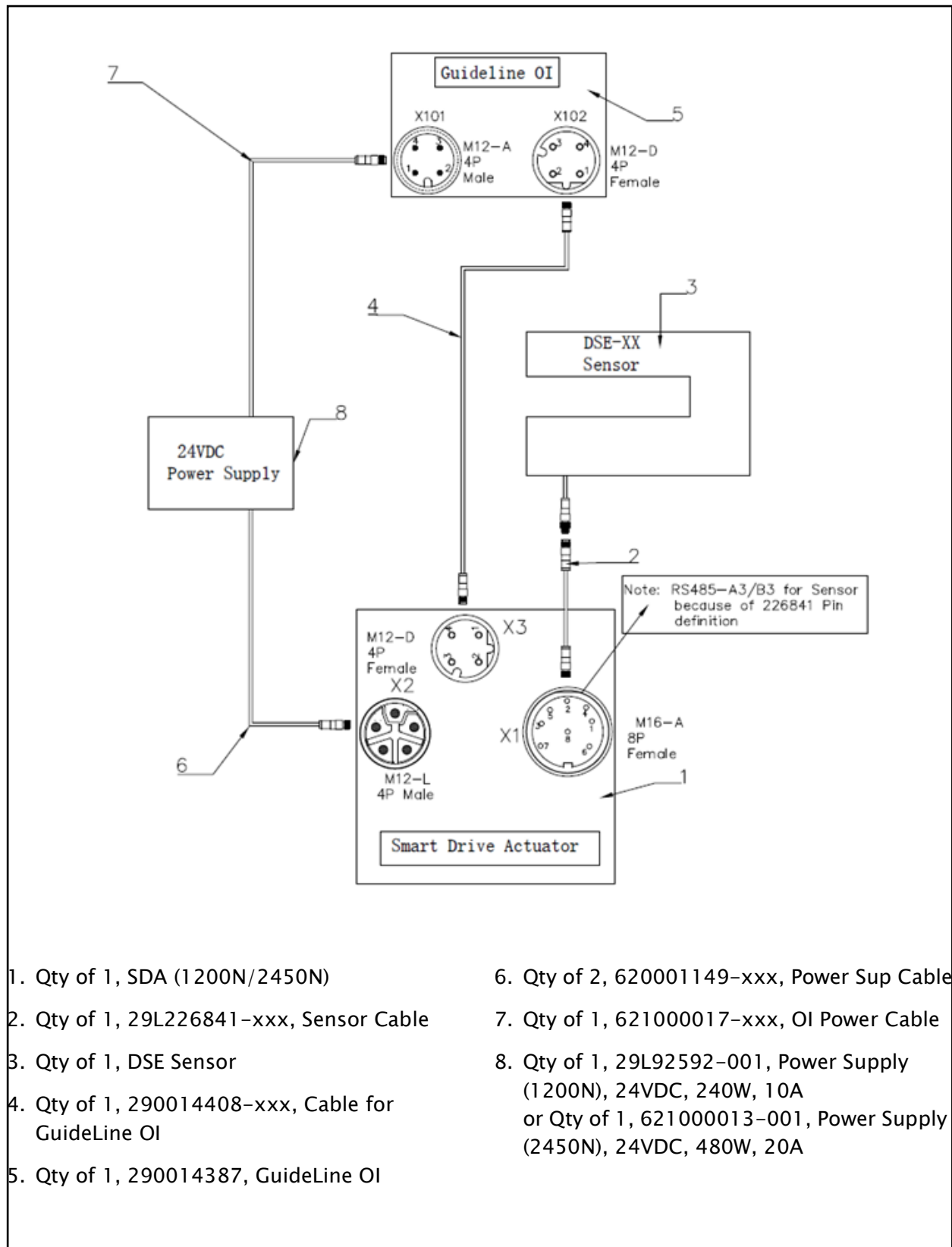


Table 3.4: Configuration-4 (SDA + Guideline OI + DSE Sensor)

No.	P/N	QTY	Item Description	Remarks
1	/	1	SDA (1200N/2450N)	
2	29L226841-XXX	1	Cable for Sensor M16 8P M – M12 4P F	
	29L227214-XXX		Cable for Sensor M16 8P M – M16 8P M	
	783550-0YYY		Cable for Sensor M16 8P M – M12 8P F	
3	/	1	DSE Sensor	
4	290014408-XXX	1	Cable for Guideline OI	
5	290014387	1	Guideline OI	
6	620001149-XXX	2	Cable for Power Supply	
7	621000017-XXX	1	Cable for OI Power	
8	29L92592-001	1	Power Supply (1200N), 24VDC, 240W, 10A	Min. Req. CP10.241
	621000013-001		Power Supply (2450N), 24VDC, 480W, 20A	Min. Req. CP20.241

Configuration 5 (SDA + GuideLine OI + DSE Sensor x3)

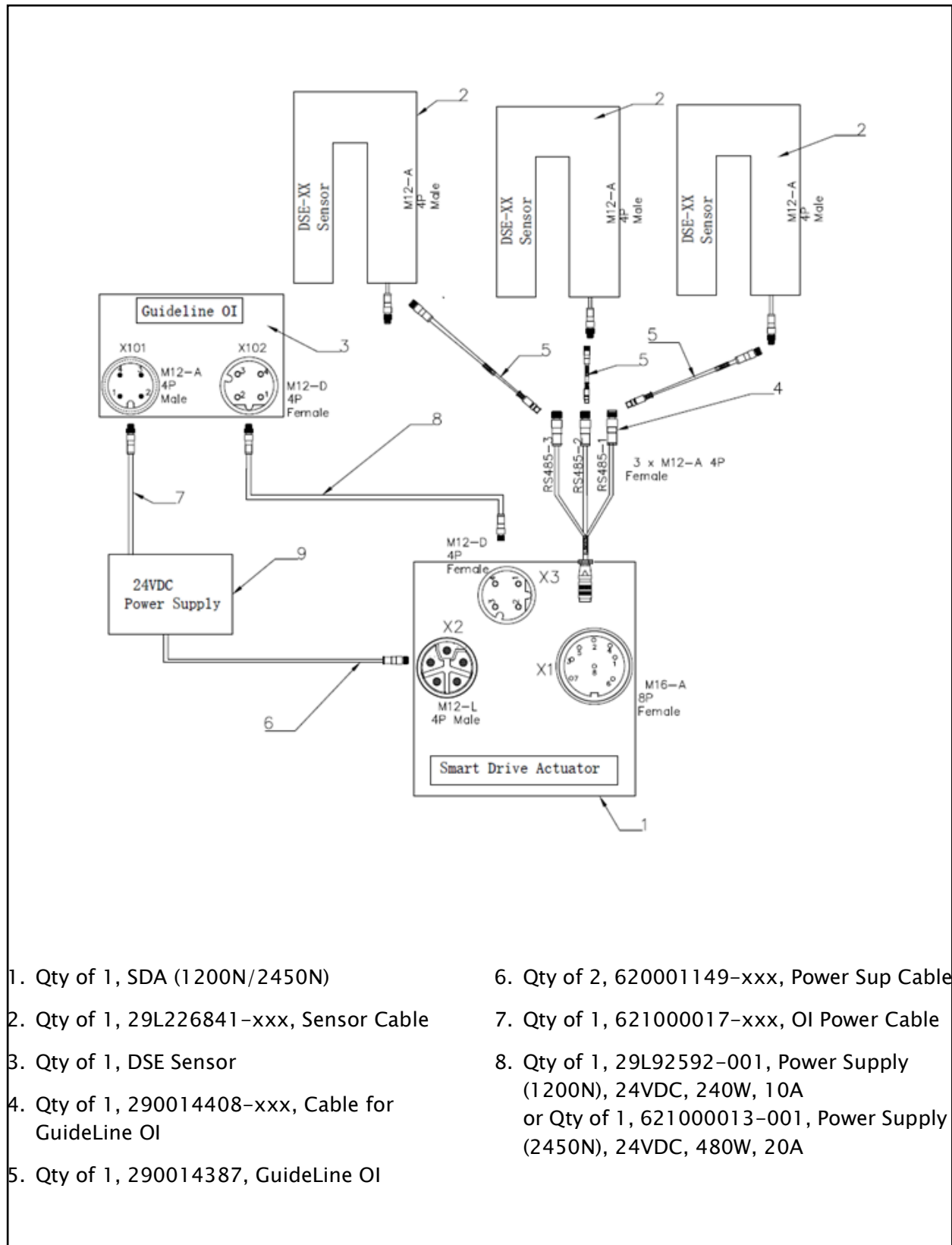


Table 3.5: Configuration-5 (SDA + Guideline OI + DSE Sensor x3)

No.	P/N	QTY	Item Description	Remarks
1	/	1	SDA (1200N/2450N)	
2	29L226841-XXX	1	Cable for Sensor M16 8P M – M12 4P F	
	29L227214-XXX		Cable for Sensor M16 8P M – M16 8P M	
	783550-0YYY		Cable for Sensor M16 8P M – M12 8P F	
3	/	1	DSE Sensor	
4	290014408-XXX	1	Cable for Guideline OI	
5	290014387	1	Guideline OI	
6	620001149-XXX	2	Cable for Power Supply	
7	621000017-XXX	1	Cable for OI Power	
8	29L92592-001	1	Power Supply (1200N), 24VDC, 240W, 10A	Min. Req. CP10.241
	621000013-001		Power Supply (2450N), 24VDC, 480W, 20A	Min. Req. CP20.241

Wiring

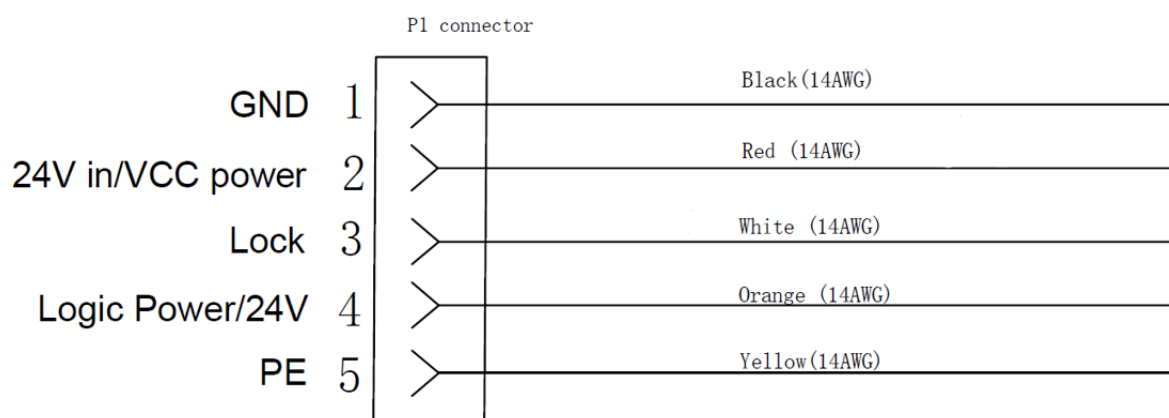
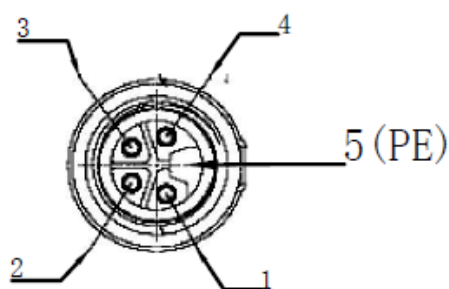
Operating voltage range and current rating are listed in Section 5-4, Specifications and shown on the label on the controller housing.

All wiring must comply with the essential requirements of the appropriate standard(s) and is the responsibility of the installer.

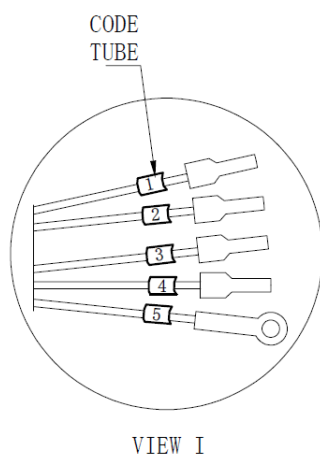
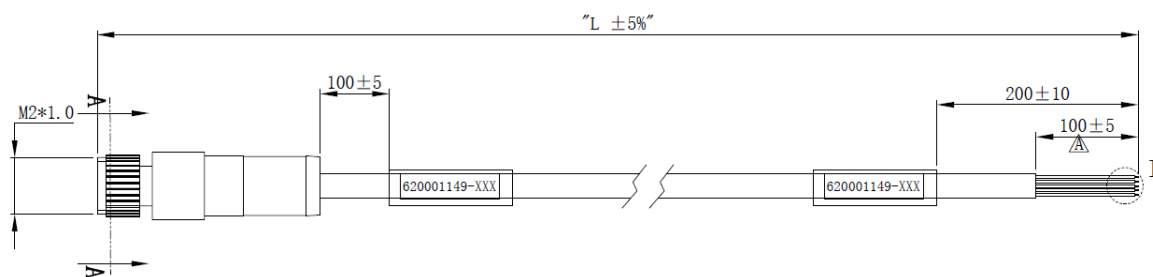
Wiring to the web guiding system must be insulated copper wire with a temperature rating of at least 85°C. The wire size should be 14 AWG.

1. Connect a 24 VDC (nominal) power supply to the power cable.
2. Connect the PE of the building or machine to the power cable Yellow wire.

Power Cable:
620001149-XXX



SCHEMATIC



MAXCESS P/N 620001149-XXX	"L" CABLE LENGTH (METERS)
620001149-030	3.0 METERS
620001149-050	5.0 METERS
620001149-100	10.0 METERS
620001149-150	15.0 METERS

Note: The negative power connection, BLACK wire, is internally connected to the PE connection, YELLOW wire. This connection is only used for EMC compliance.



WARNING

⇒ Death or injury can result from static electric shocks.

Moving webs of material can produce large static voltage potentials. Protect against electric shocks by installing a conductive connection between the power cable YELLOW wire and the PE circuit of the building or machine.



CAUTION

⇒ Never place electrical cables under mechanical strain. Always provide mechanical support of wiring with either clamps or flexible or rigid conduit.

Connector Pinout

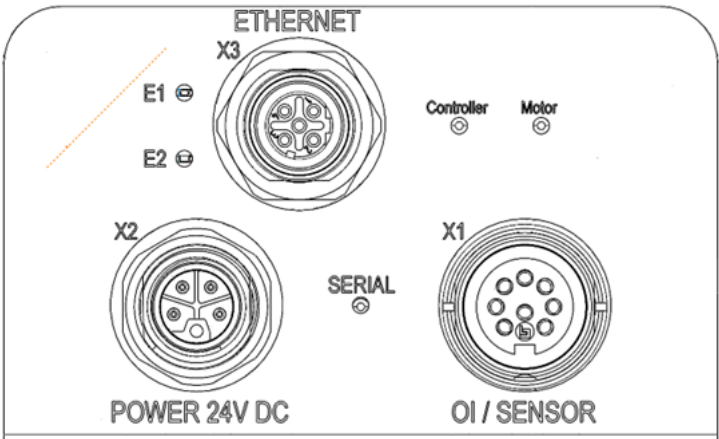


Table 3.6: Connector Pinout

X1 IO/Sensor		X2-Power		X3-Ethernet	
Pin	Use	Pin	Use	Pin	Use
1	VCC	1	GND	1	TX+
2	RS485 A2	2	VCC in	2	RX+
3	RS485 B2	3	Lock	3	TX-
4	RS485 A1	4	VCC Logic in	4	RX-
5	RS485 A3	5	PE		
6	GND				
7	RS485 B1				
8	RS485 B3				

4 MAINTENANCE

Maintenance Safety



WARNING – Death or injury can result from unexpected movement.

Protect against unexpected movement by removing electrical power from the Smart Drive Actuator and the machine into which the Smart Drive Actuator is installed.



WARNING – Danger of injury due to a crushing.

Maintenance and repair tasks on the Smart Drive Actuator must be performed only when the machine has been stopped and has been secured from being turned on again.



WARNING – To prevent death or injury, always use standard Lockout/Tagout procedures.

- Maintenance schedules are recommended intervals only. Ambient conditions can influence intervals considerably. Therefore, adjustments to the recommendations must be made accordingly.
- The Smart Drive Actuator has a protection class rating of IP 54. The “5” defines limited ingress of dust permitted, while the “4” defines protection against splashing and spraying of water from all practical directions. Adhere to protection class rating IP 54 during all maintenance procedures.
- The motor of the Smart Drive Actuator requires no maintenance
- Sensors shall be cleaned as necessary to ensure lenses, transmitters, and/or receivers have a clear path to detect the web. Cleaning shall consist of wiping down components as necessary with a clean and dry cloth. Compressed air or a shop vacuum may also be used as necessary.

Operator Interface (touchscreen) should be cleaned as necessary in order to ensure clear visibility of the menus. Cleaning shall consist of wiping down components as necessary with a clean and dry cloth. Commercial liquid cleaner may be used if necessary, but ensure that a small amount of liquid is placed on the cloth before wiping down the screen. Do not directly spray the screen. Compressed air or a shop vacuum may also be used as necessary.

Service Requests and Replacement Parts

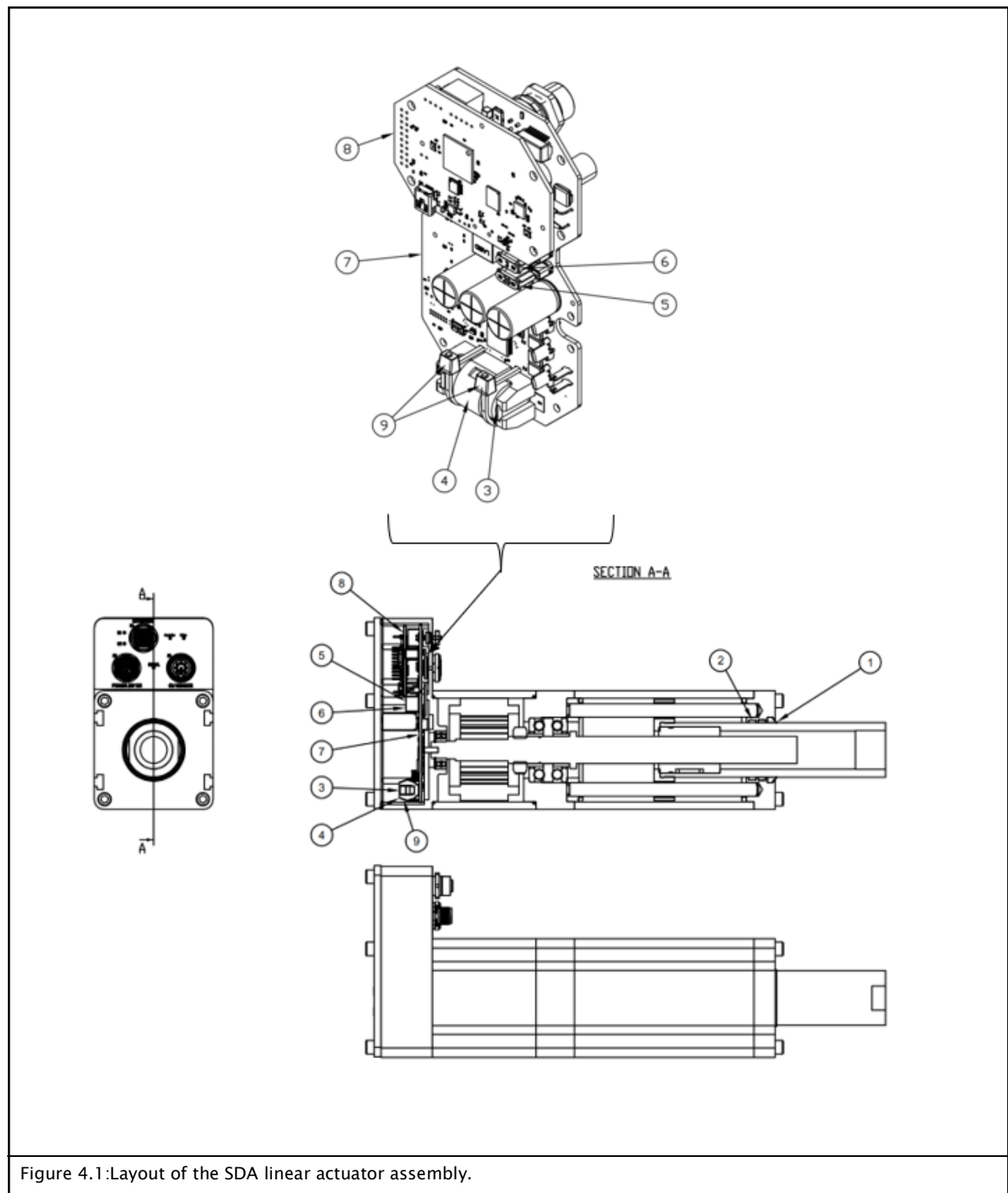


Figure 4.1: Layout of the SDA linear actuator assembly.

Table 4.1: Layout of the SDA linear actuator assembly

ITEM	Description	Part Number
1	Wiper Seal	620000669-001
2	Piston ring	620000668-001
3	Lithium Battery	52M493637
4	Battery Retainer	52M493638
5	Fuse 20A	52M493635
6	Fuse 3A	52M493636
7	Driver PCBA	52M466264
8	Controller PCBA	52M466265
9	Cable Tie	52M128746

5 TECHNICAL DATA

General information

Power supply

24VDC nominal

20VDC minimum – 30VDC maximum

Proper earth grounding is required. The ground (GND) of the power supply (pin 2) and the housing ground are interconnected.

The power supply must have an SELV output.

Recommended:

1200N:

PULS CP10.241 – Or Equivalent (DIN RAIL SUPPLY 24V 480W, 20A)

2450:

PULS CP20.241 – Or Equivalent (DIN RAIL SUPPLY 24V 240W, 10A)

Note:

It's crucial to use power supplies (PSUs) that meet the recommended specifications and guidelines provided by Maxcess to ensure the safe and reliable operation of SDA. Using a PSU that is not recommended or under the recommended specification can lead to several issues.

Current

1200N: 7 A maximum

2450N: 12 A maximum

Ambient conditions

Ambient temperature: 0°C – 60°C (32°F – 140°F)

Pollution degree: 2

Relative humidity: 10% to 80%, non-condensing

Altitude above sea level: 2000m maximum

Protection class

IP54 (applies only when all connectors are mated)

Dimensions

See Outline Dimension drawings.

Approximate weight

1200N = 5.9 kg (13 lbs)

2450N = 6.65 kg (14.7 lbs)

Motor

24VDC brushless

Product Certifications

CE

TUV Rheinland of North America
to UL61010-1 andCAN/CSA-C22.2 No.61010-1 and
CB Certificate to IEC61010-1 UKCA

Inputs and outputs**Sensor input**

RS-485 (x3) – Sensor inputs can be calibrated individually

OI input

RS-485

Maxnet

Power Supply for Accessories (Sensor / OI)+24V \pm 5%, 1000mA each sensor connection and serial
connection

**Maximum Cable
Lengths****Power cable (14 AWG)**15 m (50 ft) suggested. (Longer cables may be used if the
voltage at the SmartDrive Actuator is verified to be within the
required 20–30 VDC input range).**Sensors (except DSE-26C)**

50 m [164 ft]

Sensors DSE-26C (GuideLine Sensor)

25 m [82 ft]

Ethernet

100 m [328 ft]

Operator Interface Via RS-485

50 m [164 ft]

Operator Interface Via Maxnet

100 m [328 ft]

6 SERVICE

Return Shipment Instructions

If it is necessary to return the SmartDrive Actuator to Fife for service, care must be taken to properly package the unit to prevent damage during shipment. If possible, use the original shipping containers.

Requests for Service

When requesting service, please have a copy of the order confirmation ready with the order number.

When ordering replacement parts, please indicate, (where possible) Part Number, Drawing Number and Model description.

Please be careful to keep all documents accompanying the product in a safe place. This will allow us to help you more quickly in the event that service is required.

Contact Details

Fife-Tidland GmbH

Max-Planck-Straße 8
65779 Kelkheim
Deutschland

Siemensstraße 13-15
48683 Ahaus
Deutschland

Products / Accessories / Spare Parts / Returns

Phone: +49 – 6195 – 7002 – 0
E-mail: sales@maxcess.eu
Web: www.maxcess.com
Shop: mymaxcess.eu

For **repairs / returns**, you will receive a **return note** after consultation. Please send the products with the return note to the address indicated on it.

Technical service

Phone: +49 – 6195 – 7002 – 0
E-mail: service@maxcess.eu



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