

Keep this
manual onboard!



User Manual

*Including Installation For
External Signal Interface
ESI-1*



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Warnings and Safety

MC_0800

It is essential to follow all instructions within this document to avoid potential personal injury, death, or damage to existing products in the vessel, the vessel's hull integrity, and including this product during installation or operation. Failure to follow instructions within this document will render all warranties given by Sleipner Motor as VOID.

Warnings and situations requiring extra caution are outlined in the documentation. Take extra consideration when warnings are outlined.



WARNING
Indicate a potentially hazardous situation that, if not avoided, could result in death or severe injury.



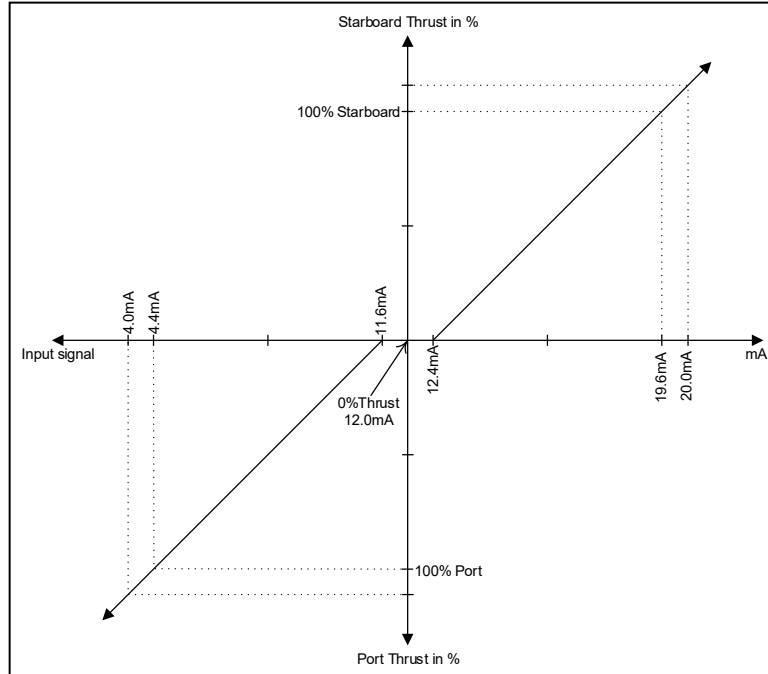
CAUTION
Indicates a potentially hazardous situation that could result in minor or moderate injury or critical damage to vessel integrity if not avoided.

MC_0020

ESI-1 is an External Signal Interface to the S-link bus. It has two 4-20mA analogue inputs that control the bow and stern thrusters proportionally. It can operate all E, SEP, SH and SAC series thrusters, including retractable thrusters and Automatic Main Switch (AMS). The ESI-1 is typically used with autopilots with 4-20mA outputs and 3rd party control systems.

Function

Digital input DI1 enables the two analogue inputs AI1 & AI2 when supplied with 12V or 24V control signal. Enabling DI1 will also activate the relay output RO1 as ESI-1 activation feedback. Analog input AI1 & AI2 (two 4-20mA inputs) determines the thruster speed and direction. AI1 determines the bow thruster speed and direction and AI2 determines the stern thruster speed and direction. 12mA is the centre signal and will stop the thruster. 4mA will give 100% thrust to the port side.

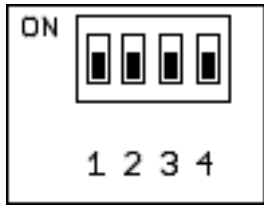


20mA will give 100% thrust to the starboard side. Relay output RO2 is the run enable feedback for hydraulic thrusters. RO2 will be activated when the hydraulic thruster can run. If there is active emergency feedback from the hydraulic controller (PHC) then RO2 will be deactivated. RO2 have only any use with hydraulic PHC controllers.

Dip-switch Settings

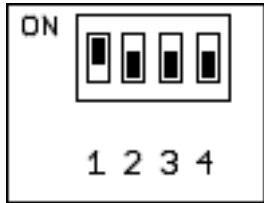
Switch 3 and 4 sets the ESI-1 Operation Mode. Switch 3 and 4 must be set to OFF. Any other setting is preserved and the ESI-1 will not work as described in this manual.

Dip-switch no1 can be used to set prioritization of the ESI-1.



Switch no1 OFF (default):

All other devices sending thrust have higher priority over ESI-1. This means that ESI-1 will send 0% thrust to bow and stern when any other devices are sending bow or stern thrust. ESI-1 will resume control over thrusters 3 seconds after the last command from other devices.



Switch no1 ON:

ESI-1 will have the same priority as all other devices. In this case, ESI-1 will always send thrust with the same priority as other devices. The thruster controller will output the highest thrust received and stop if signals have conflicting directions.

Connections

ESI-1 needs to be powered externally with 8-31V DC, and S-link connection for communication with thruster controllers. Relay outputs RO1 & RO2 is normally open (NO) relay contacts and closed when activated. Maximum relay current: 10 A. Digital input DI1 is opto-isolated from power supply ground. A signal ground connection must be provided to the GND connection on the Digital Input terminal block. Analogue input AI1 & AI2 is 4-20mA non-isolated resistive load inputs. The 4-20mA source connected to these inputs need to supply the loop power.

Digital Input 1 (DI1) Functionality

This parameter defines how the DI1 can activate the ESI-1 and enables the 4-20mA inputs AI1 & AI2.

Use S-Link Programmer to change this parameter.

*** Always ON Activation (default)**

This will keep ESI-1 activated while DI1 is supplied with 12V or 24V.

*** Pulse Activation**

A 12V or 24V pulse signal on DI1 for minimum 100ms will toggle the activation state for ESI-1.

If AI1 and AI2 are out of range or disconnected, then ESI-1 will be deactivated and activation is not possible.

ESI-1 will be deactivated when these conditions are held for 60 minutes:

1. AI1 & AI2 are in center position 12mA.
2. AI1 in center position 12mA and AI2 is out of range.
3. AI2 in center position 12mA and AI1 is out of range.

Priority Mode

This parameter defines the S-link signal priority and ESI-1 activation.

Use S-Link Programmer to change this parameter.

*** Mode 0 (default)**

ESI-1 has the same S-Link thruster signal priority as all other S-Link devices.

*** Mode 1**

When any Slepner PJC panels are active, ESI-1 will be deactivated. ESI-1 can only be activated when all PJC panels are deactivated. This requires PJC2xx panels to be upgraded with ESI-1 Priority Mode 1.

ESI-1 will have the same S-Link thruster signal priority as all other S-Link devices, other than PJC panels.

If DI1 functionality is set to Always ON Activation and DI1 is supplied with 12V or 24V, then ESI-1 will automatically be activated when all PJC panels are deactivated.

LED status

STATUS LED (GREEN):

Continuous	Flashing
Power ok and communication on S-link is present.	Power is good but no S-link communication.

Responsibility of the installer

MC_0038

General:

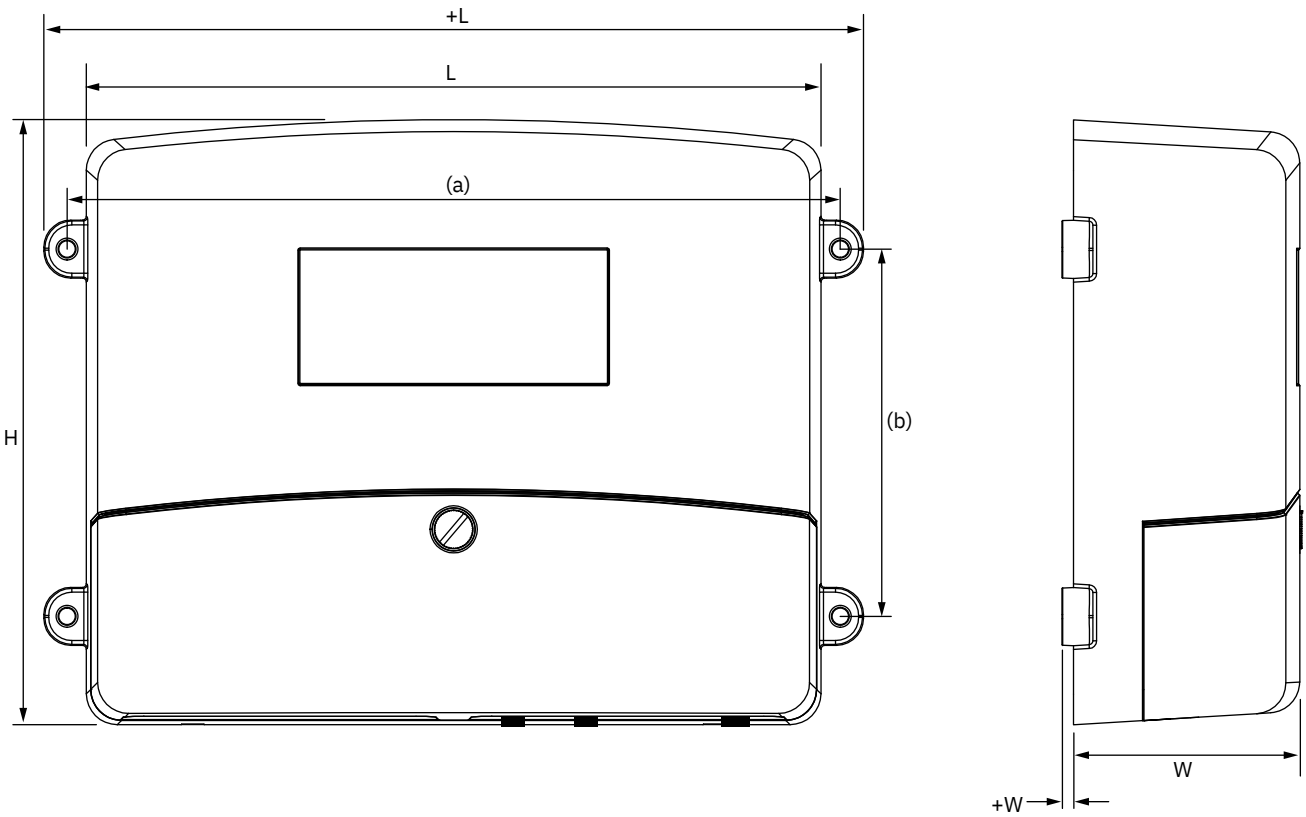
- The installer must read this document to ensure necessary familiarity with the product before installation.
- Directions outlined in this document cannot be guaranteed to comply with all international and national regulations, including but not limited to health and safety procedures. It is the installer's responsibility to adhere to all applicable international and national regulations when installing Sleipner products.
- This document contains general installation guidelines intended to support experienced installers. Contact professional installers familiar with the vessel and applicable regulations if assistance is required.
- If local regulation requires any electrical work to be performed by a licensed professional, seek a licensed professional.
- When planning the installation of Sleipner products, ensure easy access to the products for future service and inspection requirements.

For Sleipner S-Link™ systems:

MC_0105

- When installing an S-Link™ system, connect ONLY original Sleipner S-Link™ products or other authorized control equipment directly to the S-Link™ bus. When connecting non-authorized third-party equipment, it must always be connected through a Sleipner-supplied interface product.
- Any attempt to directly control or connect to the S-Link™ control system without a designated and approved interface from Sleipner will void all warranties and responsibilities of the connected Sleipner products. If you interface the S-Link™ bus by agreement with Sleipner through a designated Sleipner-supplied interface, you are still required to install at least one original Sleipner control panel to enable efficient troubleshooting if necessary.

Measurement code	Measurement description	ESI	
		mm	inch
L	ESI Length	190	7.48
+L	Additional ESI Length	212	8.35
H	ESI Height	156.5	6.16
W	ESI Width	58.5	2.3
+W	Additional ESI Width	2,8	0.11
(a)	Distance of attachment holes (width)	200	7.87
(b)	Distance of attachment holes (height)	95	3.74

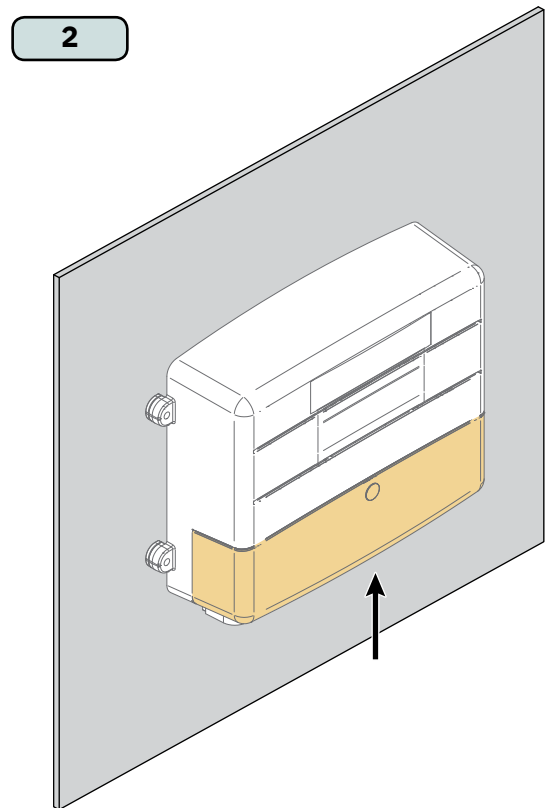
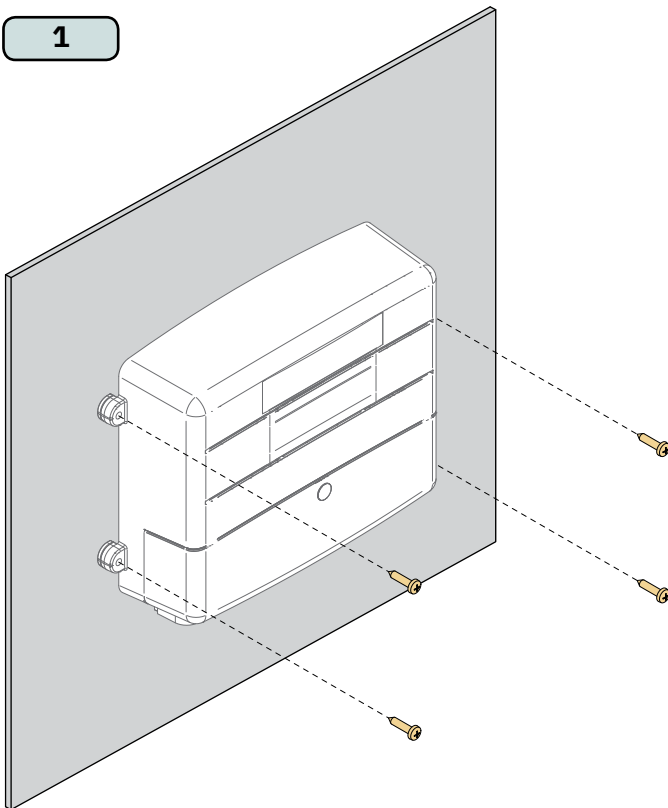


MG_0330

Description	Value
Supply	8-31 VDC/ max 7 Watts
Operating temperature	-20°C to +70°C [-4°F to +158°F]
Storage temperature	-40°C to +85°C [-40°F to +176°F]
IP Rating	IP20
Weight	500 g [1.1 lb]
Digital Input DI1 to DI7 with common 0V	Opto-isolated 8-31V
Digital Output DO1 to DO6	Max 4A. Dedicated supply input 8-31VDC
Relay contacts (NO) RO1, RO2, RO3 & RO4	Max. switching current 10A at 24VDC
Analogue input 4-20mA AI1 & AI2	Non isolated, Resistive load
Analogue output 4-20mA AO1 & AO2	Isolated. External loop power required.
Temp sensor T1 – KTY84	1K ohm @ 100°C
Temp sensor T2 – NTC	100K ohm @ 25°C
Terminal connections	0.2 to 1.5 mm ² [16 to 24 AWG] Cage clamp

ESI Installation

1. Screw the ESI unit to a solid surface on the hull.
2. Follow the wiring guide to connected cabling for the ESI.



S-Link is a CAN-based control system used for communication between Sleipner products installed on a vessel. The system uses BACKBONE Cables as a common power and communication bus with separate SPUR Cables to each connected unit. Only one S-Link POWER cable shall be connected to the BACKBONE Cable. Units with low power consumption are powered directly from the S-Link bus.

Main advantages of S-Link system:

- Compact and waterproof plugs.
- BACKBONE and SPUR Cables have different colour coding and keying to ensure correct and easy installation. BACKBONE Cables have blue connectors and SPUR Cables have green connectors.
- Different cable lengths and BACKBONE Extenders make the system scalable and flexible to install.

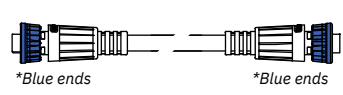
Installation of S-Link cables:

Select appropriate cables to keep the length of BACKBONE- and SPUR Cables to a minimum. In case of planned installation with total BACKBONE Cable length exceeding 100 meters please consult your local distributor. The S-Link cables should be properly fastened when installed to avoid sharp bend radius, cable chafing and undesired strain on connectors. Locking mechanism on connectors must be fully closed. To ensure long lifetime, cables, T-Connectors and Extenders should not be located so that they are permanently immersed in water or other fluids. It is also recommended to install cables such that water and condensation do not run along the cables and into the connectors.

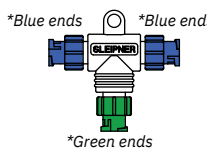
The POWER Cable should ideally be connected around the middle of the BACKBONE bus to ensure an equal voltage drop at each end of the BACKBONE Cable. The yellow and black wire in the POWER Cable shall be connected to GND and the red wire connected to +12VDC or +24VDC.

To reduce the risk of interference, avoid routing the S-Link cables close to equipment such as radio transmitters, antennas or high voltage cables. The backbone must be terminated at each end with the END Terminator.

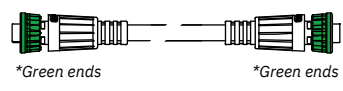
SPUR cables can be left unterminated to prepare for the installation of future additional equipment. In such cases, ensure to protect open connectors from water and moisture to avoid corrosion in the connectors.



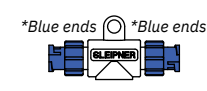
BACKBONE Cable
Forms the communication and power bus throughout a vessel. Available in different standard lengths.



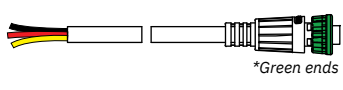
T-Connector
Used for connection of SPUR or POWER Cable to the BACKBONE Cable. One T-Connector for each connected cable.



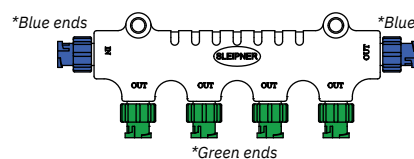
SPUR Cable
Used to connect S-Link compliant products to the backbone cable. One SPUR Cable must be used for each connected component, with no exceptions. Recommended to be as short as practically possible. Available in different standard lengths.



BACKBONE Extender
Connects two BACKBONE Cables to extend the length.

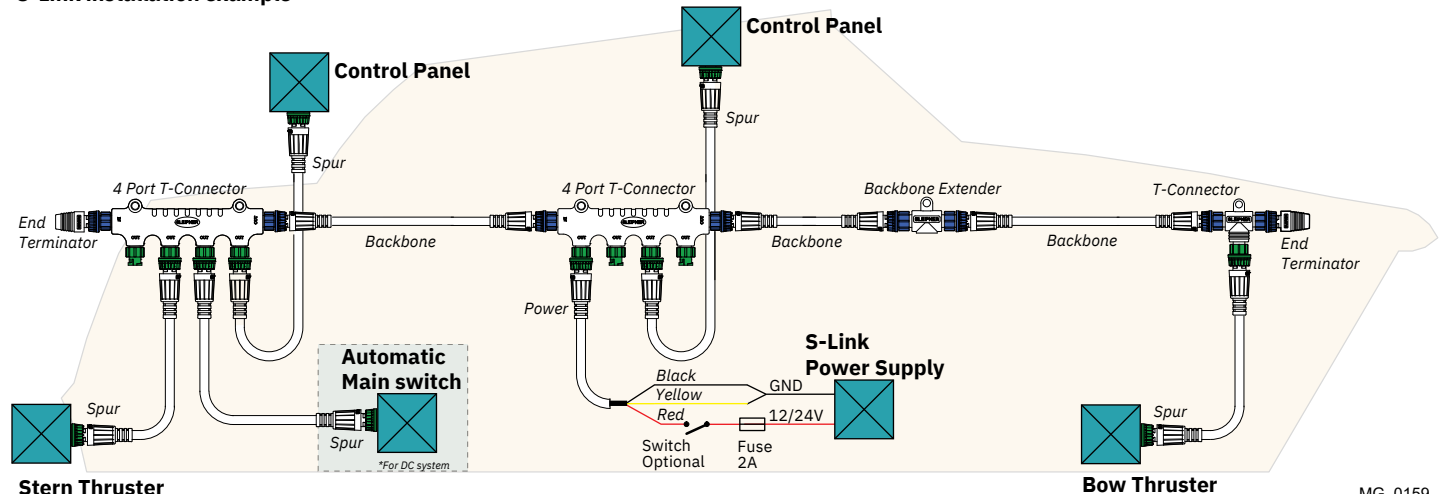


POWER Cable
Required in all installations for connection of BACKBONE Cable to a power supply and should be protected with a 2A fuse.

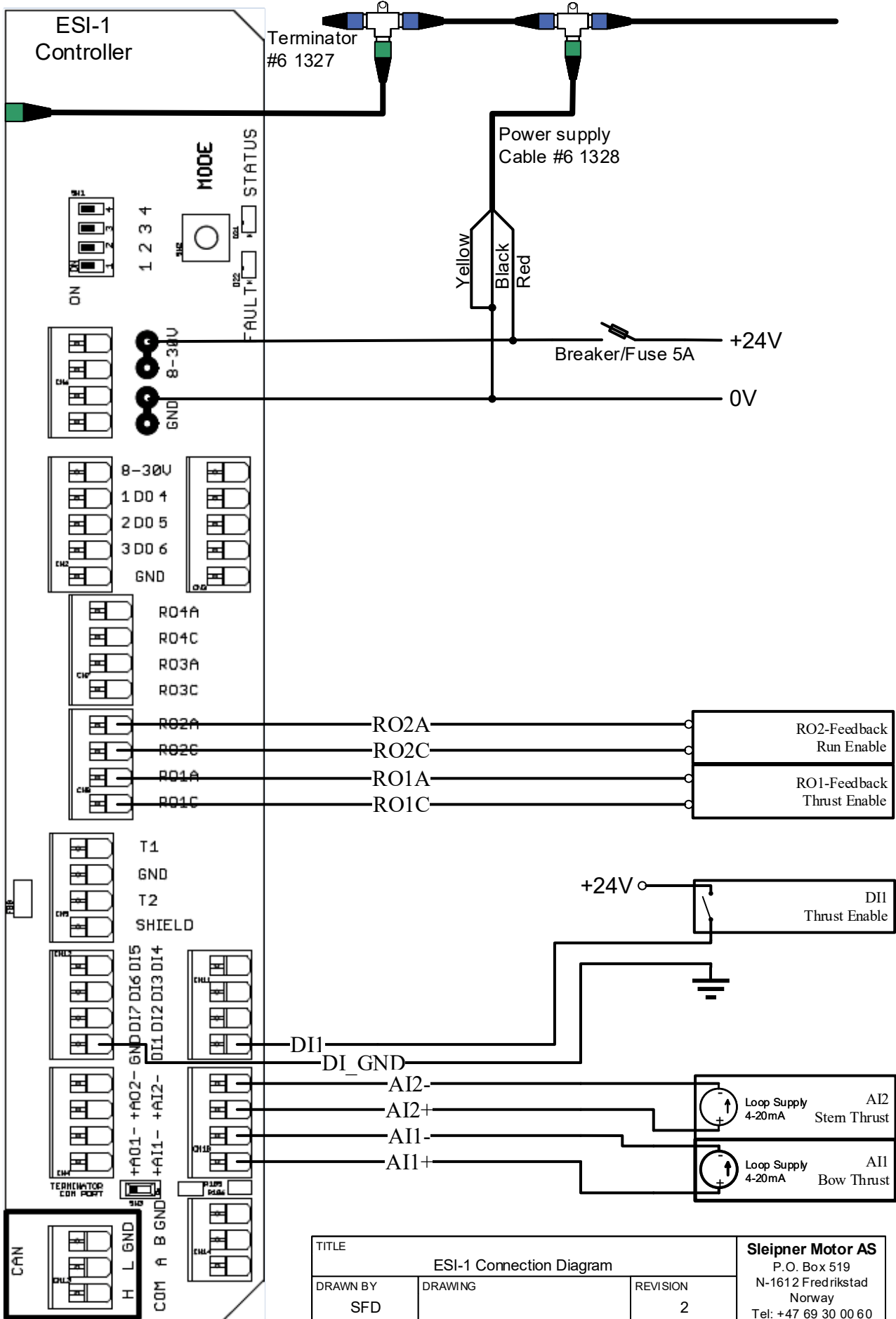


4-Port T-Connector
The 4-PORT T-connector allows multiple SPUR Cables to be connected. The 4-PORT T-connector comes with two sealing caps to protect unused ports.

S-Link installation example



Visual Wiring Diagram



TITLE				ESL-1 Connection Diagram		Sleipner Motor AS	
DRAWN BY		DRAWING		REVISION		P.O. Box 519	
SFD				2		N-1612 Fredrikstad	
DRAWN DATE		APPROVED BY		REVISED DATE		Norway	
06-Sep-18				06.09.2018		Tel: +47 69 30 00 60	
APPROVED DATE		0		PAGE		2 OF 2	

Introduction:

At Sleipner Group, we prioritize sustainability and encourage the repair and re-manufacturing of products to extend their life cycles. If disposal is necessary, please follow these guidelines to recycle and manage waste responsibly, ensuring our efforts align with environmental protection efforts.

Electric Motors and Electronics:

- Disconnect from any power sources and dismantle them carefully.
- Recycle components through certified e-waste recycling centers that can adequately handle and recover electronic materials.
- Dispose of any non-recyclable electronic parts according to local environmental regulations.

Metals:

- Collect and sort metal parts for recycling as scrap metal.
- To increase recycling efficiency, ensure that metals are clean and free from non-metal attachments.

Plastics:

- Identify recyclable plastics based on local recycling guidelines.
- Remove any non-plastic components and clean them before recycling to improve the quality of the recycled material.

Hazardous Materials:

- Correctly identify any hazardous substances within components, such as batteries or capacitors etc.
- Follow local regulations for the safe disposal of hazardous materials to prevent pollution and protect environmental health.

General Disposal Instructions:

- Consult local recycling programs to determine the acceptability of various materials.
- Use authorized disposal services to ensure compliance with environmental standards.

Safe Disposal Practices:

- Adhere to local laws and regulations for waste management to minimize environmental impact and ensure community safety.

This guide is designed to help reduce our products' environmental footprint through responsible end-of-life management. Please contact your local waste management supplier or our support team for more specific disposal information or further assistance.

Find your local professional dealer from our certified worldwide network for expert service and support. visit our website www.sleipnergrou.com/support

Product spare parts and additional resources

For additional supporting documentation, we advise you to visit our website www.sleipnergrou.com and find your Sleipner product.

Warranty statement

1. Sleipner Motor AS (The “Warrantor”) warrants that the equipment (parts, materials, and embedded software of products) manufactured by the Warrantor is free from defects in workmanship and materials for purpose for which the equipment is intended and under normal use and maintenance service (the “Warranty”).
2. This Warranty is in effect for two years (Leisure Use) or one year (Commercial and other Non-leisure Use) from the date of delivery/purchase by the end user, with the following exceptions;
 - (a) For demonstration vessels, or vessels kept on the water, the dealer is considered as the end user from 6 months after their launch of the vessel;
 - (b) The warranty period starts no later than 18 months after the first launch of the vessel.
 Please note that the boat manufacturer and dealer must pay particular attention to correct maintenance and service both by the products manuals as well as general good practice for the location the boat is kept in the period the boat is in their care. In cases where the 6 and 18 months grace periods for boat builders and dealers are passed, it is possible to obtain a full warranty upon inspection and approval of the warrantor or such representative.
3. Certain parts, classified as wearable or service parts, are not covered by the warranty. A failure to follow the required maintenance and service work as described in the product manual render all warranty on parts or components directly or indirectly affected by this void. Please also note that for some parts, time is also a factor separately from actual operational hours.
4. This Warranty is transferable and covers the equipment for the specified warranty period.
5. The warranty does not apply to defects or damages caused by faulty installation or hook-up, abuse or misuse of the equipment including exposure to excessive heat, salt or fresh water spray, or water immersion except for equipment specifically designed as waterproof.
6. In case the equipment seems to be defective, the warranty holder (the “Claimant”) must do the following to make a claim:
 - (a) Contact the dealer or service centre where the equipment was purchased and make the claim. Alternatively, the Claimant can make the claim to a dealer or service centre found at www.sleipnergrou.com. The Claimant must present a detailed written statement of the nature and circumstances of the defect, to the best of the Claimant’s knowledge, including product identification and serial nbr., the date and place of purchase and the name and address of the installer. Proof of purchase date should be included with the claim, to verify that the warranty period has not expired;
 - (b) Make the equipment available for troubleshooting and repair, with direct and workable access, including dismantling of furnishings or similar, if any, either at the premises of the Warrantor or an authorised service representative approved by the Warrantor. Equipment can only be returned to the Warrantor or an authorised service representative for repair following a pre-approval by the Warrantor’s Help Desk and if so, with the Return Authorisation Number visible postage/shipping prepaid and at the expense of the Claimant.
7. Examination and handling of the warranty claim:
 - (a) If upon the Warrantor’s or authorised service Representative’s examination, the defect is determined to result from defective material or workmanship in the warranty period, the equipment will be repaired or replaced at the Warrantor’s option without charge, and returned to the Purchaser at the Warrantor’s expense. If, on the other hand, the claim is determined to result from circumstances such as described in section 4 above or a result of wear and tear exceeding that for which the equipment is intended (e.g. commercial use of equipment intended for leisure use), the costs for the troubleshooting and repair shall be borne by the Claimant;
 - (b) No refund of the purchase price will be granted to the Claimant, unless the Warrantor is unable to remedy the defect after having a reasonable number of opportunities to do so. In the event that attempts to remedy the defect have failed, the Claimant may claim a refund of the purchase price, provided that the Claimant submits a statement in writing from a professional boating equipment supplier that the installation instructions of the Installation and Operation Manual have been complied with and that the defect remains.
8. Warranty service shall be performed only by the Warrantor, or an authorised service representative, and any attempt to remedy the defect by anyone else shall render this warranty void.
9. No other warranty is given beyond those described above, implied or otherwise, including any implied warranty of merchantability, fitness for a particular purpose other than the purpose for which the equipment is intended, and any other obligations on the part of the Warrantor or its employees and representatives.
10. There shall be no responsibility or liability whatsoever on the part of the Warrantor or its employees and representatives based on this Warranty for injury to any person or persons, or damage to property, loss of income or profit, or any other incidental, consequential or resulting damage or cost claimed to have been incurred through the use or sale of the equipment, including any possible failure or malfunction of the equipment or damages arising from collision with other vessels or objects.
11. This warranty gives you specific legal rights, and you may also have other rights which vary from country to country.

Patents

At Sleipner we continually reinvest to develop and offer the latest technology in marine advancements. To see the many unique designs we have patented visit our website www.sleipnergrou.com/patents

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Learn more about our products at
www.sleipnergroun.com



SLEIPNER MOTOR AS

P.O. Box 519

N-1612 Fredrikstad

Norway

www.sleipnergroun.com

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