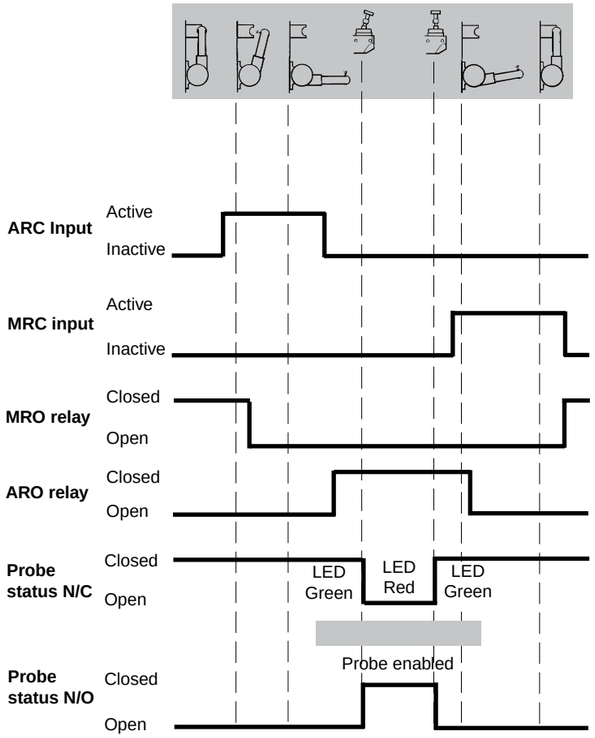
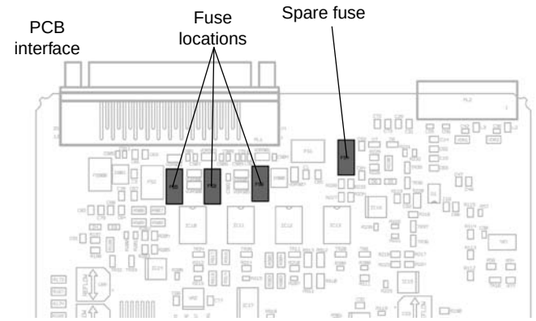
Standard wiring configuration and fuse locations

Inputs/outputs



NOTE: See the diagram below for location of the spare fuse.



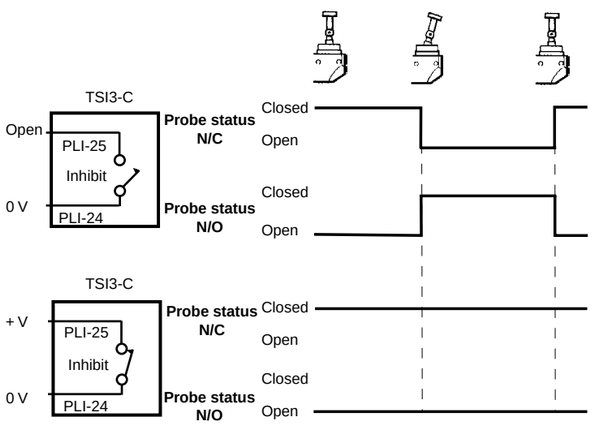
Input type:	Inputs are not polarity conscious Apply voltage of 15 Vdc to 30 Vdc across input to activate
Inputs:	ARC = Arm Ready Command MRC = Machine Ready Command
Input specification:	Input load = 12.5 mA maximum @30 V Input voltage = 30 V maximum
Output type:	Voltage free SSR
Outputs:	MRO, Probe status N/O ARO, Probe status N/C O/C leakage = 10 nA max. S/C load resistance = 100 ohms max. (excluding cable voltage drops)
Output specification:	Current = 40 mA maximum Voltage = 30 V maximum

All outputs are protected by fuses (f) 50 mA (TE5)

Wickman	3950050	Renishaw	P-FS02-0001

Inhibit input

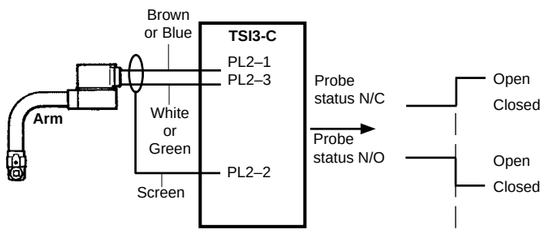
The inhibit input is not polarity conscious. Apply a voltage of 15 Vdc to 30 Vdc across PLI-24 and PLI-25 to activate. Inhibit input presents a load of 12.5 mA max.
Probe inhibit disables the probe outputs.



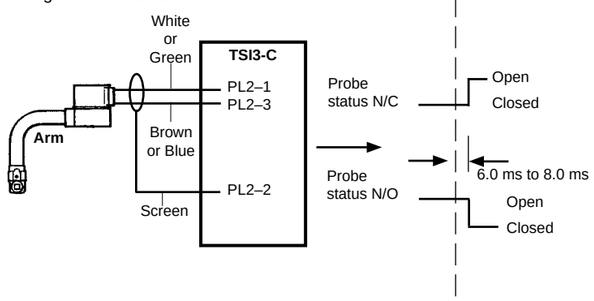
NOTE: Probe status LED will still function when inhibit is active.

Probe trigger delay

Brown/White or Blue/Green (side exit) wire configuration for DELAY OFF.
Example below shows normally closed probe status output delay.



Brown/White or Blue/Green (side exit) wire configuration for DELAY ON

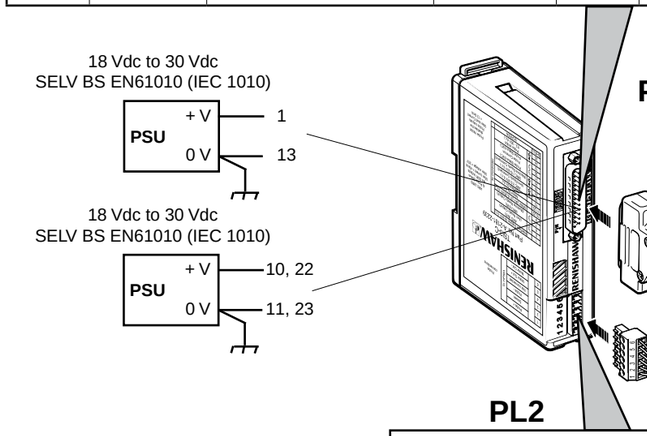


TSI3-C connections

NOTE: ARO, MRO and Probe Status outputs are SSR (solid state relay).
Maximum current = 40 mA, maximum voltage = 30 V

The TSI3-C interface unit should be installed in the CNC control cabinet. Where possible, site the unit away from potential sources of interference such as transformers and motor controllers.

Shell		Screen*	To Controller	**18**		ARC (arm ready command) (15 Vdc to 30 Vdc)	To Controller
1		Interface supply (18 Vdc to 30 Vdc)		**25**			
6		ARO (N/O) (arm ready output)		**19**		MRC (machine ready command) (15 Vdc to 30 Vdc)	
8				**25**			
7		MRO (N/O) (machine ready output)		**21**		Probe status (N/O)	
9				**20**		Probe common	
10, 22		Motor 24 Vdc (21.6 Vdc to 28.8 Vdc)		**12**		Probe status (N/C)	
11, 23		Motor 0 Vdc		**24**		Probe inhibit (15 Vdc to 30 Vdc)	
13		Interface 0 Vdc		**25**			



Connector specification:
25 way D type socket with RFI/EMI shielded shell.
Screen must be terminated to the D shell.

Cable specification:
7/0.2 mm polyurethane insulated with braided screen
Max. cable length: 3 m

* Cable screen to be connected to machine star point

→ Machine control

→ HPMA

		Rear exit version		Side exit version		
		Standard	Trigger delay	Standard	Trigger Delay	
1	Probe +	Brown	White	Blue	Green	To HPMA
2	Screen	Screen	Screen	Grey/black	Grey/black	
3	Probe –	White	Brown	Green	Blue	
4	Not connected	Blue	Blue	Not connected	Not connected	
5	Motor out +	Black	Black	Red	Red	
6	Motor out –	Grey	Grey	Yellow	Yellow	

V_{IF} = (Interface supply) 18 Vdc to 30 V dc
This supply powers the system electronics which includes the probe circuit.
I_{max} = 100 mA (not including output load currents)
V_M = 24 Vdc + 20% to – 10%
This supplies the motor drive
I_{max} = 2.5 A while motor is running (typical 2 seconds)

Input power supply protection is provided by self-resetting fuses. Reverse polarity protection is provided.

The cable screen must be terminated at the machine star point via the most direct route from the free end of the cable.
Mount the interface and route cables away from known sources of EMI.

Renishaw part no: H-2000-5246-03-A

Issued: 09 2009

CE

Changes to specification
Renishaw plc may modify or change its products or specifications without notice and without obligation.

Warranty
Equipment requiring attention under warranty must be returned to your supplier.
No claims will be considered where Renishaw equipment has been misused, or repairs or adjustments have been attempted by unauthorised persons.

Patent notice
The following patents relate to features of the products shown in this user's leaflet and related products (Other patents applied for):

EP 065926 JPw 2002-531,839 US 5,669151

FCC Declaration

FCC Section 15.19
This device complies with Part 15 of the FCC rules.
Operation is subject to the following two conditions:
1. This device may not call harmful interference.
2. This device must accept any interference received, including interference including interference that may cause undesired operation.

FCC Section 15.105
This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.
This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.
Operation of this equipment in a residential area is likely to cause harmful interference, in which case you will be required to correct the interference at your own expense.

FCC Section 15.21
The user is cautioned that any changes or modifications not expressly approved by Renishaw plc, or authorised representative could void the user's authority to operate the equipment.

FCC Section 15.27
The user is also cautioned that any peripheral device installed with this equipment such as a computer, must be connected with a high-quality shielded cable to insure compliance with FCC limits.

EC DECLARATION OF CONFORMITY

Renishaw plc declare that the product: -

Name: TSI3-C
Description: Motorised tool interface for HPMA

has been manufactured in conformity with the following standards: -

BS EN 61326:1998/ A1:1998/A2:2001 — Electrical equipment for measurement, control and laboratory use - EMC requirements.
Immunity to annex A - industrial locations.
Emissions to class A (non-domestic) limits.

and that it complies with the requirements of directives: -

89/336/EEC - Electromagnetic compatibility

The above information is summarised from the full EC Declaration of Conformity. A copy is available from Renishaw on request.

Specification

Power supplies:

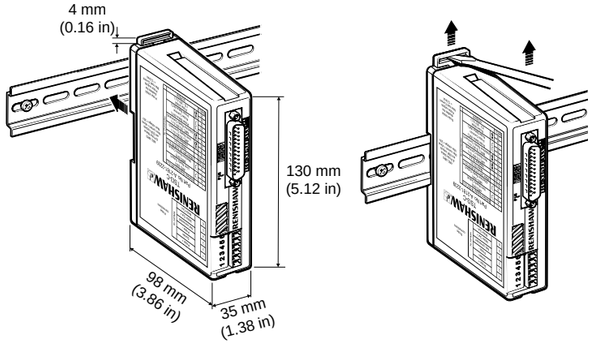
Interface supply:
V_{IF} = 18 Vdc to 30 Vdc
SELV BS EN61010 (IEC 1010)
I_{max} = 100 mA (140 mA including output load current)
Note: Reverse polarity protection provided.
Input supply protection is provided by self-resetting fuses.
Power supply 0 V **must** be connected to the machine star point.

Motor supply:
V_M = 24 Vdc + 20% to – 10%
This supplies the motor drive
I_{max} = 2.5 A while motor is running (typical 2 seconds)

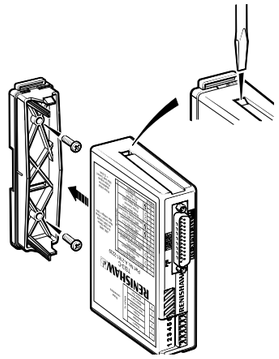
Inputs:

ARC: Max. input voltage 30 V
MRC: Max. input load 12.5 mA @ 30 V
Inhibit: Inhibit input is not polarity conscious
15 Vdc to 30 Vdc across input to activate.
Maximum load 12.5 mA
Probe inhibit disables the probe outputs.
Probe: Designed to accept probe input from HPMA.
ESD protection provided.

TSI3-C installation and dimensions



Alternative mounting



TSI3-C

User's leaflet
H-2000-5246-03-A

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Specification (continued)

Outputs - voltage free SSR:
Probe status N/C, MRO,
Probe status N/O, ARO: Max. current 40 mA
Max. voltage 30 V
Open circuit leakage max. 10 nA
Short circuit load resistance max. 100 ohms (excluding voltage drops across the cable)
Outputs are protected by (TE5) fuses -
(f) 50 mA
Wickman 3950050,
Renishaw P-FS02-0001

Screen Connect free end of cable screen to the machine's ground star point

Cable requirements:
Specification: 7/0.2 mm (0.22 mm^2) 12 core polyurethane insulated with braided screen
Length: 3 m maximum

Connector requirements: 25 way D socket with EMI/RFI shielded shell - **connector end of screen must be terminated at the D shell**

Environmental:
Operating: +5 °C to +60 °C (41 °F to 140 °F)
Storage: 0 °C to +70 °C (32 °F to 158 °F)

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