



**MANUAL & AUTOMATED
STEP TRANSFORMER
INA 6501 / INA 6502
USER MANUAL 601-262C**

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1 MANUAL STEP TRANSFORMER INA 6501



The manual step transformer type INA 6501 is a standard accessory for the Teseq NSG 3000 instrumentation series. It provides a convenient means for reducing the incoming supply voltage by pre-set amounts. It is required for power quality testing (PQT) and is fully compliant with the latest revision of IEC 61000-4-11.

It is fitted with carrying handles as part of its overall excellent ergonomic design, which allows easy handling. Further, the unit may be used in any of three operating positions; laying or standing on a workbench. For more permanent applications, it can be even wall-mounted.

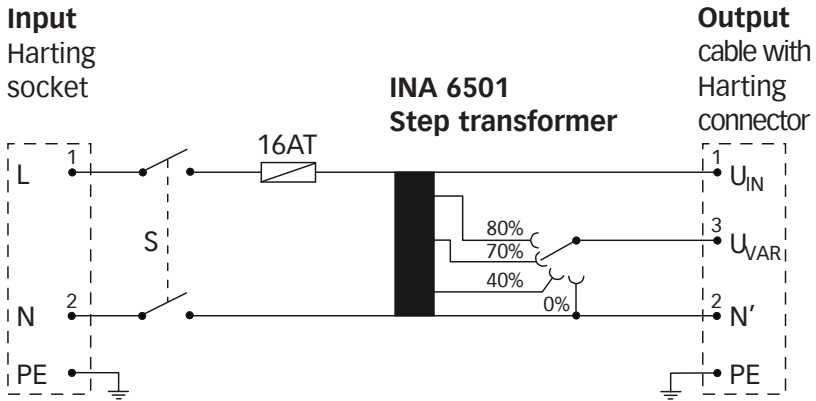


Care has to be taken in case of use in standing position, as the stability is limited. The cabling connecting INA 6501 to mains and NSG presents a risk of being unvoluntarily caught by the users which could cause the INA 6501 to fall down.

The few control elements are readily accessible on the front panel. An EUT power on/off switch with a power on indicator and a well-proportioned rotary switch to select the required voltage ensure easy and intuitive operation. The unit has been designed for use in rugged industrial environments. Professional quality connectors ensure user safety, additional system protection is provided by a 16 A fuse located in the front panel.

Thanks to the provision of an 80% voltage position and to the large overcurrent capabilities the step transformer is fully compliant with the latest requirements called for in IEC 61000-4-11 standard.

1.1 Circuit diagram INA 6501



1.2 Technical specifications INA 6501

Input voltage U_{IN}	Up to 250 VAC, 50/60 Hz (not suited for DC voltages)
Output voltage U_{VAR}	4 steps: 0 - 40% - 70 - 80% of U_{IN}
Accuracy	$\pm 5\%$
Voltage change with load:	
100% output; 0 to 16 A	less than 5%
80% output; 0 to 20 A	less than 5%
70% output; 0 to 23 A	less than 5%
40% output; 0 to 40 A	less than 5%
Output current capability at 230 V input voltage	16 Arms at 100% output 20 Arms at 80% output, for 5 s 23 Arms at 70% output, for 3 s 40 Arms at 40% output, for 3 s
Voltage selection	Front panel rotary switch
EUT power on/off function	Front panel switch with on indicator
Fuse	16 A, slow blow
Connectors	Harting type HAN3A, compatible with NSG 3000 safe linking concept

Dimensions L x W x H	360 x 180 x 150 mm (14.2 x 7.1 x 5.9")
Weight	12 kg (26.5 lbs) approx.
Cable length to NSG	2 m (79")
Input cable	NSG 3000 standard cable to be used

1.2.1 Parts description

Part designation	Function
EUT power in switch	Switches on/off the EUT power supply
16 AT fuse	Protects the EUT power supply line
EUT power in plug	This is where the EUT power needs to be applied – use NSG 3000 supplied cable and connect it to power source (mains)
EUT power out cable	Connect this cable to the EUT supply input port of NSG 3000
Red selector	To switch variable voltage to 0 or 40% or 70 or 80% of U_{in}

1.3 Installation



The equipment should be switched off during installation and interconnection.

- Connect INA 6501 - EUT power out to NSG - EUT power input.
- Connect INA 6501 - EUT power in to mains using EUT power in cable (delivered with NSG).



Because of the capacitors in the internal coupler of the CDN, earth leakage currents of up to 4 A can occur in the EUT power supply network. The test system must therefore be correctly earthed and be powered from a supply that is not protected by a residual current detector (RCD).

- Turn on the EUT power in switch of your INA 6501 (red switch) when power for the EUT is required.
- Turn on the NSG 3000 generator.
- Select the required variable voltage using the rotary switch on the INA 6501.

2 AUTOMATED STEP TRANSFORMER INA 6502



The automated step transformer type INA 6502 is a standard accessory for the Teseq NSG 3000 instrumentation series. It provides a convenient means of reducing the incoming supply voltage by pre-set amounts. It is required for power quality testing (PQT) and is fully compliant with the latest revision of IEC 61000-4-11.

Its control is fully automatic, driven from the NSG 3000 master controller, using the touch screen interface or the WIN 3000 remote control software. Once detected, the functions offered by the INA 6502 are available in the interface or software. So the settings 0 - 40% - 70 - 80% will appear, as well as the possibility to switch the EUT power ON/OFF.

The INA 6502 is fitted with carrying handles as part of its overall excellent ergonomic design, which allows easy handling. Further, the unit may be used in any of three operating positions; laying or standing on a workbench. For more permanent applications, it can be even wall-mounted.

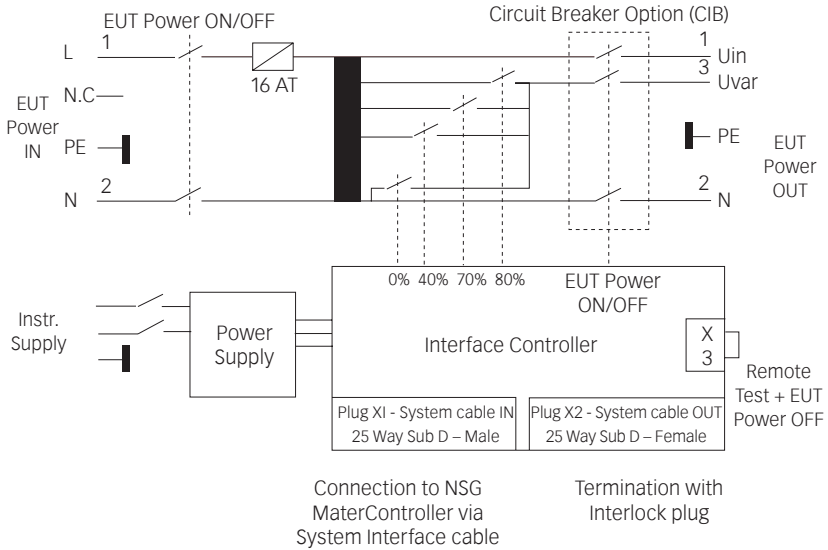
The unit has been designed for use in rugged industrial environments. High quality connectors ensure user safety, additional system protection is provided by a 16 A fuse located in the top panel.

Thanks to the provision of an 80% voltage position and to the large over current capabilities the step transformer is fully compliant with the latest requirements called for in IEC 61000-4-11 standard.



For proper operation of the plug and play detection mechanisms it is strongly recommended to power on first the INA 6502 accessory and then the NSG main frame.

2.1 Circuit diagram INA 6502



2.2 Technical specifications INA 6502

Input voltage	0 to 250 VAC (not suited for DC voltages)
Output voltage	4 steps: 0 - 40% - 70 - 80%
Accuracy	± 5%
Voltage change with load:	
100% output; 0 to 16 A	less than 5%
80% output; 0 to 20 A	less than 5%
70% output; 0 to 23 A	less than 5%
40% output; 0 to 40 A	less than 5%
Output current capability at 230 V input voltage:	16 Arms at 100% output 20 Arms at 80% output, for 5 s 23 Arms at 70% output, for 3 s 40 Arms at 40% output, for 3 s
Voltage selection	User interface or WIN 3000 software

EUT power ON/OFF function	Front panel switch with ON indicator
Fuse	16 A, slow blow
Connectors	Harting type HAN3A compatible with NSG 3000 safe linking concept
Possible extensions	Interlock connection to door switch
Own supply	Selectable 100-110 V; 220-240 V 15 VA
Dimensions:	L x W x H 460 x 200 x 160 mm (18.1 x 7.9 x 6.3")
Weight	15 kg (33 lbs) approx.
Cable length to NSG 3000	2 m (79")
Input cable	NSG 3000 standard cable to be used
Control cable	2 m - 25 way sub D – twisted pair - shielded (included in delivery)

2.2.1 Parts description

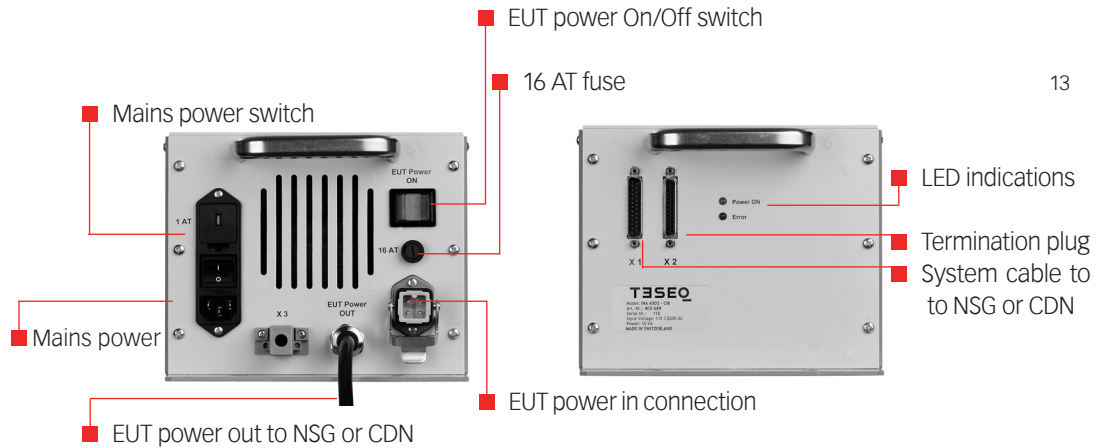
Part designation	Function
Mains supply in socket	For instrument supply, includes plug, voltage selector (110 V – 230 VAC), on/off switch and fuse
EUT power in switch	Switches the EUT power supply on/off
16 AT fuse	Protects the EUT power supply line
EUT power in plug	For feeding of the EUT power – use NSG supplied cable and connect it to power source (mains)
EUT power out cable	Connect this cable to the EUT supply input port of the NSG

Part designation	Function
Plug X3	Remote TEST and EUT power off: with shorting plug. Allows to connect external door switch or equivalent.
	Interrupts the 24 V supply of the circuit breaker contactor which switches EUT supply on/off.
	The information will be transmitted to NSG 3000 master controller which will stop the test.
Plug X2	NSG 3000 system interface out – to be terminated by interlock plug or linked to another accessory, to X1 plug
Plug X1	NSG 3000 system interface in – to be connected to master controller or to another accessory, to X2 plug
Power LED (green)	Shows if instrument is powered up
ERROR LED off	No problem - accessory is ready to run
ERROR LED blinking	Problem which may be solved by user intervention. Expl: Interlock is activated
ERROR LED on	Problem which needs module repair please contact your nearest Teseq customer support center or sales representative

2.3 Installation



The equipment should be switched off during installation and interconnection.



- Verify the setting of input voltage selector and adjust it to the right mains voltage value if required
- Connect instrument power from the mains
- Remove 25 way Sub D plug at rear of NSG or CDN
- Connect this connector to X2 of INA 6502
- Connect master controller 25 way output to INA 6502 X1 plug, using system interface cable delivered with INA 6502
- Connect INA 6502 - EUT power out to EUT power input
- Connect INA 6502 - EUT power in to mains using EUT power in cable delivered with NSG or CDN



Because of the capacitors in the internal coupler of CDN, earth leakage currents of up to 4 A can occur in the EUT power supply network. The test system must therefore be correctly earthed and be powered from a supply that is not protected by a residual current detector (RCD).

- Switch on INA 6502 first
- Switch on NSG/CDN mainframe
- Switch on EUT power (red switch) when power for the EUT is required

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