

IMPxxx Series

Impedance Networks

USER GUIDE

Version v2.0

IMP16x/32x/753

IEC61000-3-3 Compliant Impedance Networks.

Description

The N4L Impedance Networks offer IEC61000-3-3, and IEC61000-3-11 compliant Flicker measurements when combined with a PPA55x1 power analyzer and a compliant AC source. Available in both Single and 3 Phase variants, the IMP range from N4L can be configured to meet your specific needs.

Declaration of Conformity



Manufacturer: Newtons4th Ltd.
Address: 1 Bede Island Road
Leicester
LE2 7EA

We declare that the product:

Description: Impedance Network
Model: IMPxxx Series

Conforms to the EEC Directives:

2014/30/EU relating to electromagnetic compatibility:
EN 61326-1:2013
EN 55022 class A
EN 61000-3-2:2014
EN 61000-3-3:2013

2014/35/EU relating to Low Voltage Directive:
EN 61010-2-030:2010
EN 61010-1:2010

January 2021

Jigar Patel
(Senior Engineer Newtons4th Ltd.)

WARRANTY

This product is guaranteed to be free from defects in materials and workmanship for a period of 36 months from the date of purchase.

In the unlikely event of any problem within this guarantee period, first contact Newtons4th Ltd. or your local representative, to give a description of the problem. Please have as much relevant information to hand as possible – particularly the serial number.

If the problem cannot be resolved directly then you will need to request an RMA number from the support section of our website. <https://resources.newtons4th.com/> and return the unit. The unit will be repaired or replaced at the sole discretion of Newtons4th Ltd.

This guarantee is limited to the cost of the IMPxxx itself and does not extend to any consequential damage or losses whatsoever including, but not limited to, any loss of earnings arising from a failure of the product or software.

In the event of any problem with the instrument outside of the guarantee period, Newtons4th Ltd. offers a full repair and re-calibration service. It is recommended that IMPxxx is re-calibrated annually.

Please contact your local Distributor or the N4L office for further details of N4L’s instrument repair and re-calibration service.

THE IMPEDANCE NETWORK RANGE

IMP161	Single Phase 16Arms
IMP163	Three Phase 16Arms
IMP323	Three Phase 32Arms
IMP753	Three Phase 75Arms ¹

These specifications are quoted in good faith but Newtons4th Ltd reserves the right to amend any specification at any time without notice.

¹ The IMP753 is fitted with a thermal cutout and solenoid operated contactor.

IMPORTANT SAFETY INSTRUCTIONS

**This product is connected to lethal voltages.
Observe all safety instructions.**

This equipment is designed to comply with BSEN 61010-1 (Safety requirements for electrical equipment for measurement, control, and laboratory use) – observe the following precautions:

- Ensure that the supply voltage agrees with the rating of the equipment printed on the back panel **before** connecting the mains cord to the supply.
- This appliance **must** be earthed. Ensure that the instrument is powered from a properly grounded supply outlet.
- Keep the ventilation holes on the instrument free from obstruction.
- Do not operate or store under conditions where condensation may occur or where conducting debris may enter the case.
- There are no user serviceable parts inside the instrument – **do not attempt to open the instrument**, refer service to the manufacturer or his appointed agent.
- In the event of a failure, switch off the power source and ensure that the output current has fallen to zero before connecting or disconnecting any phase inputs.
- Use the Mode switch on the front panel to change between IEC61000-3-2 Harmonics & IEC61000-3-3 Flicker testing.
- Ensure that the source is turned off before changing mode.
- **DO NOT** change mode switch under load

Note: Newtons4th Ltd. shall not be liable for any consequential damages, losses, costs, or expenses arising from the use or misuse of this product however caused.

Current Ratings			
Model	Current Rating	Peak Current Rating	Short term Rated Current
	Arms	Arms	Arms (1 minute)
IMP161	16	64	24
IMP163	16	64	24
IMP323	32	128	48
IMP753	75	225	100

Voltage Ratings			
Model	Voltage Rating	Peak Voltage Rating	Short term Rated Voltage
	Vrms	Vrms	Vrms (1 minute)
IMP161	250	396	280
IMP163	430	679	480
IMP323	430	679	480
IMP753	430	679	480

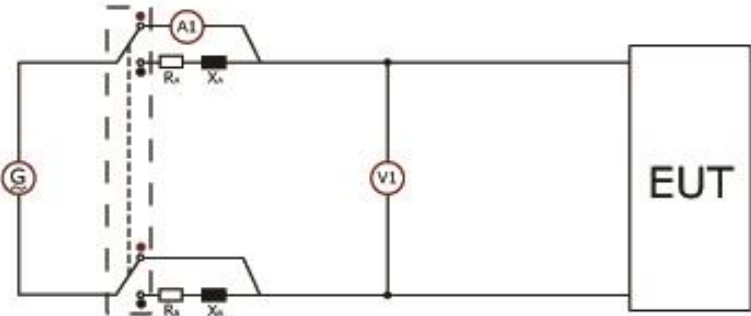
Specifications

Type	IMP161/3	IMP323	IMP753
Current Rating	16Arms	32Arms	75Arms
Impedances			
Phase Conductors (L1, L2, L3)	R:240mΩ X: 150mΩ @50Hz X:180mΩ @ 60Hz		
Neutral Conductor	R:160mΩ X: 100mΩ @50Hz X:120mΩ @ 60Hz		
Phase to Neutral Impedance	R:400mΩ X: 250mΩ @50Hz X:300mΩ @ 60Hz		
Cooling	Air Cooled		
Dimensions	W450mm x D 500mm		
Height	4u	6u	8u

Example Circuit Diagrams

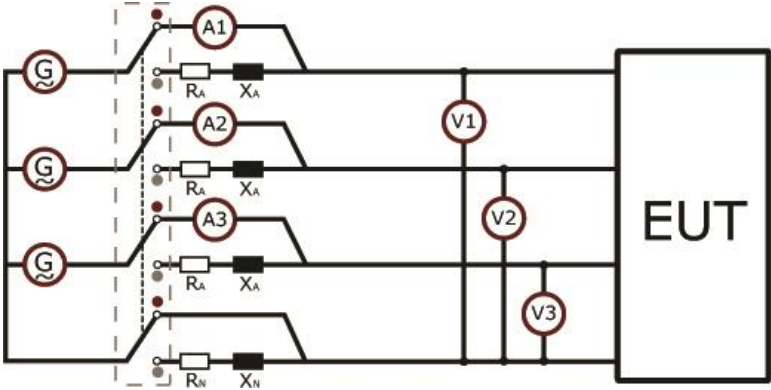
In accordance with IEC 61000-3-11:2017
& IEC 61000-3-3:2013/AMD2:2021

$R_A=240\text{m}\Omega$
 $X_a=150\text{m}\Omega$ - @50
 $X_a= (180\text{m}\Omega)$ - @60Hz



Single Phase IMP 161

Three Phase IMP 163/323/753



Connections for a single-phase Impedance Network

The diagram on the following page illustrates the connections required to connect the AC Source, IMP161 Impedance Network, and PPA5511 Power Analyzer.

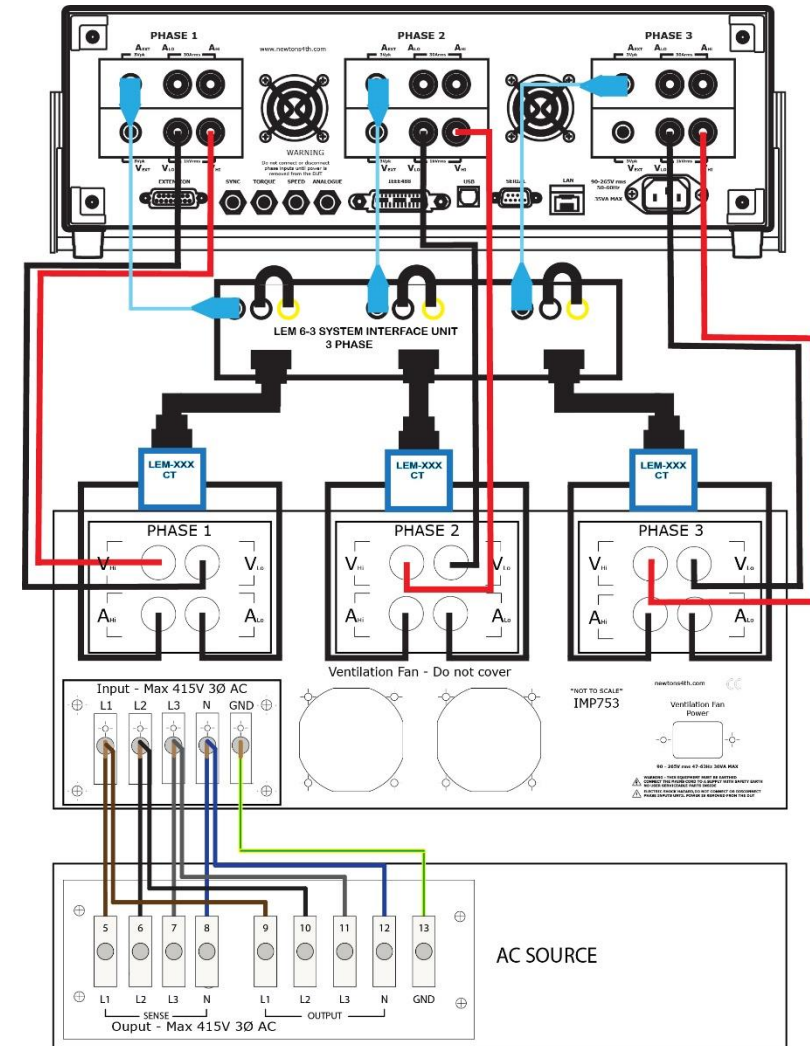
Make connections as shown:

Source			Impedance Network
Output	Sense		Input
L	L	→	L
N	N	→	N
GND		→	GND

Impedance Network – PPA5511 Power Analyzer

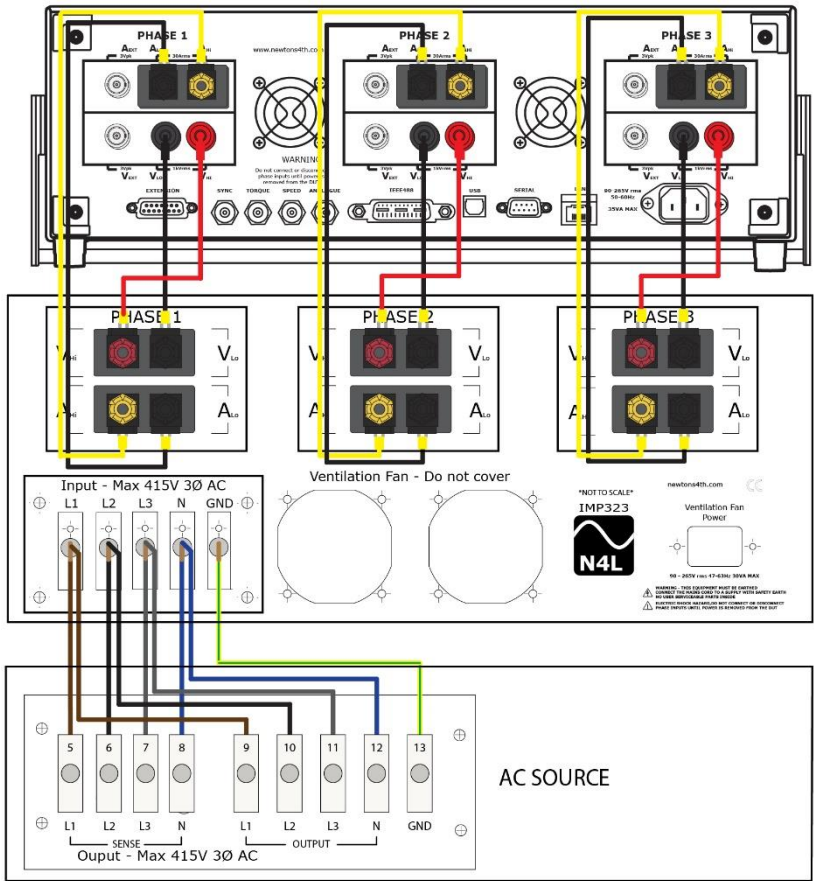
4mm Yellow Lead – A Hi – A Hi
 4mm Black Lead – A Lo – A Lo
 4mm Red Lead – V Hi – V Hi
 4mm Black Lead – V Lo – V Lo

IMP 753 Connection diagram



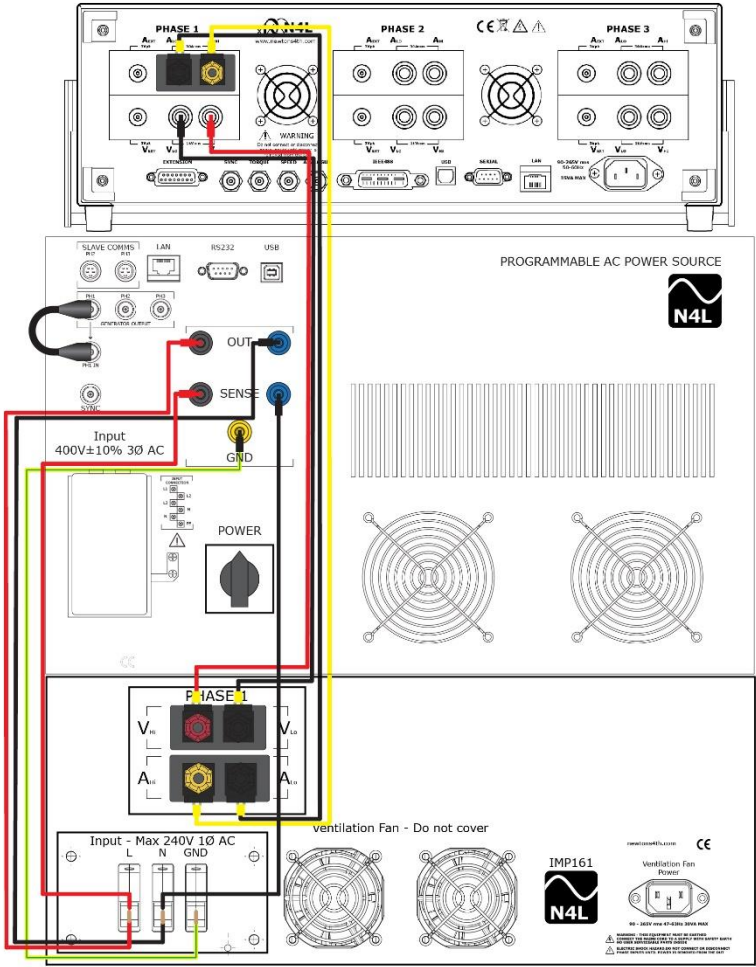
PPA - IMP753 Connections - Voltage leads supplied are 36A rated 4mm shrouded / stackable test leads 1.5mtrs.
 Current Leads are 25mm tri-rated Black 2mtrs supplied with bare ends for termination. N4L Part Number 517-017
 IMP - AC Source Connections - 25mm tri-rated, 3 Phase + N + E (To be supplied by end user)

IMP 323 Connection diagram



PPA - IMP323 Connections - Voltage leads supplied are 36A rated 4mm shrouded / stackable test leads 1.5mtrs.
Current Leads are 25mm tri-rated Black 2mtrs supplied with bare ends for termination. N4L Part Number 517-017
IMP - AC Source Connections - 25mm tri-rated, 3 Phase + N + E (To be supplied by end user)

IMP161 Connection Diagram



PPA - IMP161 Connections - All leads supplied are 36A rated 4mm shrouded / stackable test leads 1.5mtrs. N4L Part Number: 517-009
AC Source - IMP161 Connections - Single Phase 4mm test leads, Red (L), Black (N) & Green / Yellow (GND). N4L Part Number 517-010

Connection for 3 phase Impedance Network

The diagram on the following page illustrates the connections required to connect the AC Source, IMP163 Impedance Network, and PPA5531 Power Analyzer.

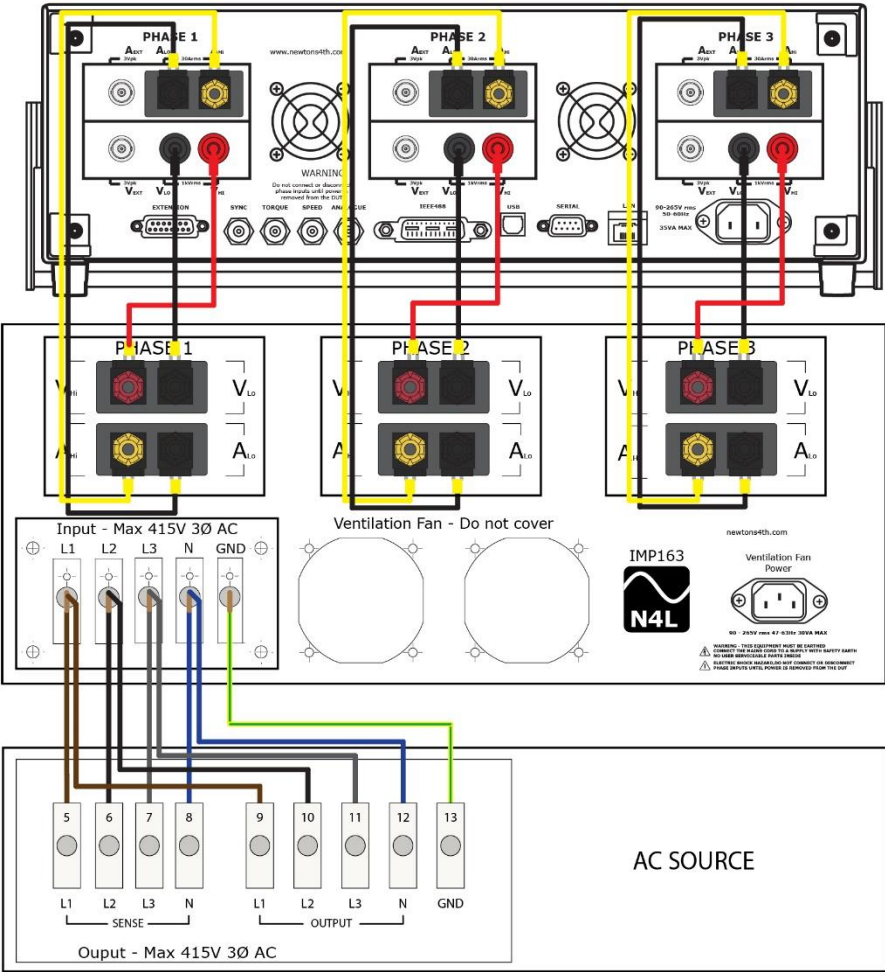
Make connections as shown:

Source			Impedance Network
Output	Sense		Input
L1	L1	→	L1
L2	L2	→	L2
L3	L3	→	L3
N	N	→	N
GND	GND	→	GND

Impedance Network – PPA5531 Power Analyzer

- 4mm Yellow Lead – A Hi – A Hi x3
- 4mm Black Lead – A Lo – A Lo x3
- 4mm Red Lead – V Hi – V Hi x3
- 4mm Black Lead – V Lo – V Lo x3

IMP163 Connection Diagram



PPA - IMP163 Connections - All leads supplied are 36A rated 4mm shrouded / stackable test leads 1.5mtrs. N4L Part Number 517-009
IMP - AC Source Connections - 25mm tri-rated, 3 Phase + N + E (To be supplied by end user)