

Single Phase Power Test Simulator MKR51

For testing of generator guards and protection units



INTRODUCTION

MKR51 is a portable single-phase current simulator in the Megacon range of transportable test equipment. It is a handy tool for general testing of Megacon's or other brands range of protective guards and controllers (current, current differential, overcurrent and short circuit, active (kW) and reactive (VAr) power etc).

Inputs

MKR51 has multiple input supply voltage range from 100VAC and up to 690VAC and 2 current outputs, 0-3A & 0-15A with a cos phi factor of 0,71.

Variable Current Output

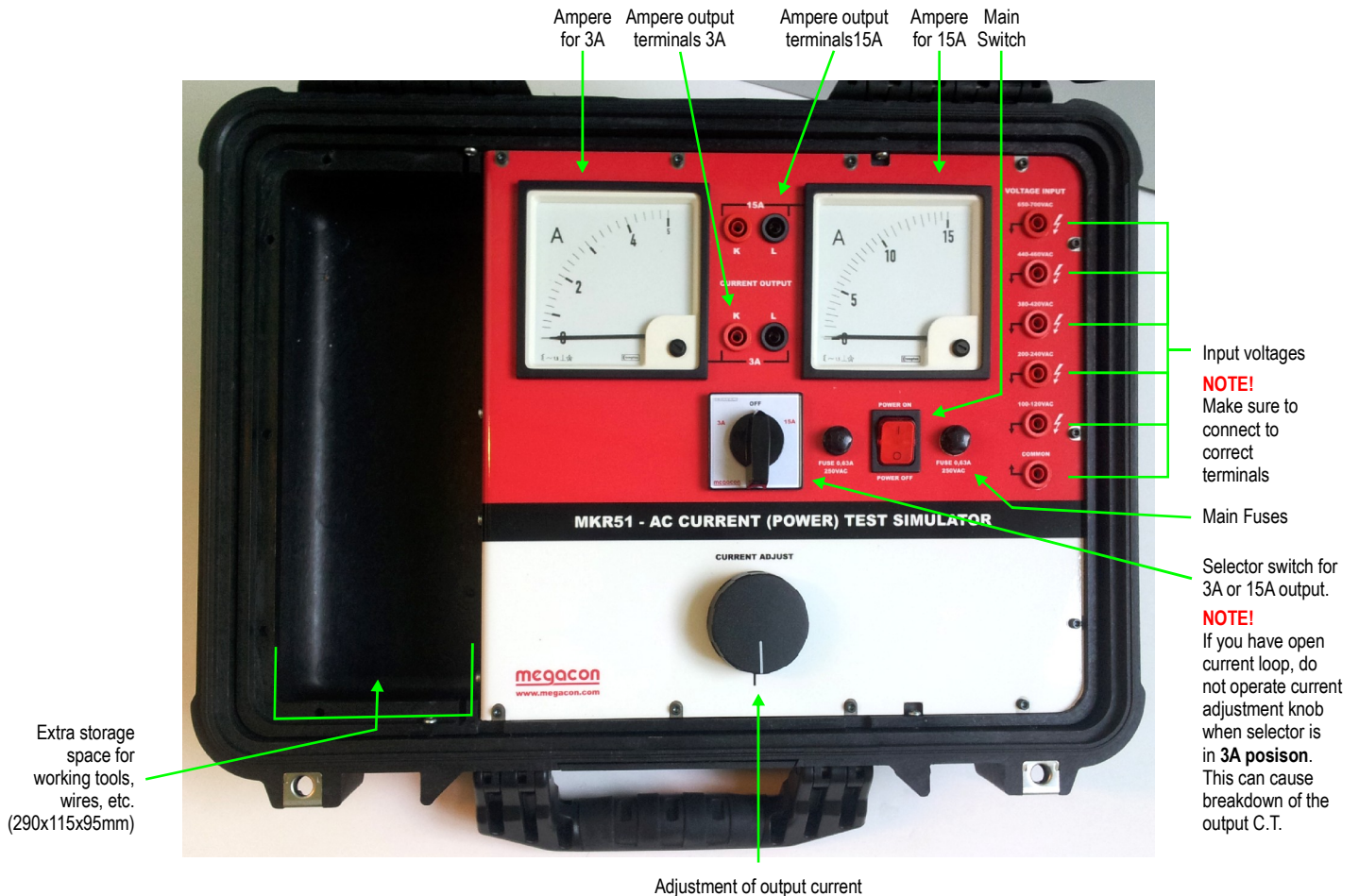
The maximum current to be drawn from any of the current outputs largely depends on the ohmic resistance of the external current loop. The current terminals are rated 20A, and 4mm plugs may be flipped into the center of the terminal. Use large size wires for high current levels to reduce ohmic losses. (Recommended wire is minimum 2.5mm²)

Fuses

Ceramic fuses on unit front protect the internal voltage transformers.

Transit / Storage Container

MKR51 is built into a solid Pelicase suitcase 1500 for easy carriage and safe transport handling.



The MEGACON policy is one of continuous improvement, consequently equipment supplied may vary in detail from this publication.



GENERAL

Basically **MKR51** is an adjustable single phase current source, but objects can also be tested and calibrated by supplying single phase supply voltage with correct phase sequence and defined relative phase reference (R/S/T) three-phase to **MKR51**.

MKR51 has a mains switch. A red signal lamp is lit when mains input is on. It is protected by 2 fuses, accessible from front.

The current output is galvanically isolated from mains input, and can be connected to any network for system voltage up to 690VAC.

Simulation of Current

- Terminals of **MKR51**'s mains plug are marked **VOLTAGE INPUT** and **COMMON**
- Connect the current loop to terminals **CURRENT OUTPUT**
- Turn knob **CURRENT ADJUST** to adjust the output current level
- The ampere meter reads the loop current

The maximum current obtainable will depend on the ohmic resistance of the external loop. It is therefore important at high current levels that losses (ohmic resistance) in the external wiring are kept to a minimum.

The wire-ends should preferably be connected under tight pressure to give additional torque when clamping the wires. At low current levels standard 4mm dia plugs can be used.

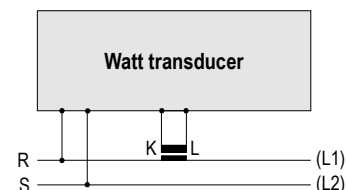
Simulation of Active Power (Watt)

- Connect supply voltage to **MKR51** as shown in column **MKR51**
- Connect supply voltage to watt-transducer as shown in column **Transducer**
- Inject current output (terminals **K/L**) in the phase shown in column **Current loop**
- For correct test or calibration, the watt-transducer **must** be connected with correct phase sequence
- The circuit configurations below shows how these terminals are connected to supply line voltages for measurement of the different active power (W) configurations.

Configuration for 1 element, single phase, 2 wire (1W2):

For test and calibration of a 1-element watt-transducer (1W2) for single-phase system.

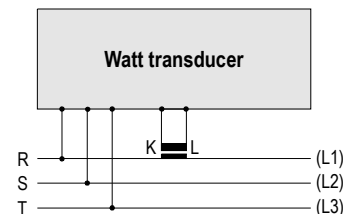
Transducer	MKR51	Current loop
R	Phase	R
S	Common	



Configuration for 1 element, three phase, 3 wire (1W3):

For test and calibration of a 1-element watt-transducer (1W3) for 3-wire supply in a **balanced load system**, the current output must be injected in phase "R" only.

Transducer	MKR51	Current loop
R	Phase	R
S	Common	
T		



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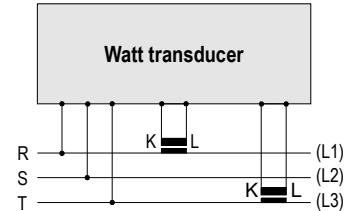


GENERAL

Configuration for 2 element, three phase, 3 wire (2W3):

Test and calibration of 3-wire three phase transducers for active (W) or reactive (VAR) power in a **unbalanced load system** must be carried out in two steps. The results of all measurements must finally be added to determine the total power level.

	Transducer	MKR 51	Current loop
Step 1	R	Phase	R
	S	Common	
	T		
	Transducer	MKR 51	Current loop
Step 2	R		
	S	Common	
	T	Phase	T

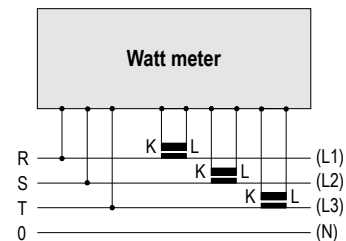


Note that direction of current flow in the current loop must be as shown. Interchange connections to input terminals to simulate flow of **reverse power**.

Configuration for 3 element, three-phase, 4 wire (3W4):

Test and calibration of 4-wire three phase transducers for active (W) or reactive (VAR) power in **unbalanced load system** must be carried out in three steps. The results of all measurements must finally be added to determine the total power level.

	Transducer	MKR 51	Current loop
Step 1	R	Phase	R
	S	Common	
	T		
	Transducer	MKR 51	Current loop
Step 2	R		
	S	Phase	S
	T	Common	
	Transducer	MKR 51	Current loop
Step3	R	Common	
	S		
	T	Phase	T



Note that direction of current flow in the current loop must be as shown. Interchange connections to input terminals to simulate flow of **reverse power**.

Technical specifications

Input AC voltage	: 100-120V, 200-240V, 380-420V, 440-480V or 660-690V, 30-70Hz
Output AC current	: 0-3A, 7,5VA or 0-15A, 80VA
Power factor	: App. : 0.7
Fuses	: 2 of 5x20mm, 0.63A, 250VAC
Weight	: App. 10kg
Dimension (mm)	: H: 155 - W: 432 - D: 290

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