

# 3691

## Programmable Electronic Current Burden

*Datasheet*



# HAEFELY

Current and voltage – our passion

Designed by



# General Description

The programmable electronic current burden, type 3691 is designed for efficient testing of current instrument transformers. It replaces traditional burdens which are built with passive resistances and inductances.

The wide range of programmable impedances enables the emulation of prevalent national and international standard burden values as well as customer-specific values..

The electronic current burden constantly monitors the applied burden accuracy and indicates any burden parameter deviation that may occur when testing an instrument transformer for accuracy, thereby connection and handling errors in the complete accuracy test system are minimized.

The instrument is protected against user setting errors, overcurrents, overvoltage and overheating. The error messages are indicated on the dot matrix display installed on the front panel of the device.

In conjunction with the type 2767 automatic instrument transformer test set, the burden can be integrated into a computer-controlled test system.

For applications requiring apparent powers higher than 75 VA, the remotely controlled additional external passive current burden type **3692** expands the power range of the programmable electronic voltage burden type 3691 to 200 VA

Features	Advantages
<ul style="list-style-type: none"> <li>▪ Standard current ratings are covered</li> <li>▪ Freely adjustable power steps up to 75 VA</li> <li>▪ Power factor <math>\cos \beta = 0.5</math> to 1</li> <li>▪ Test frequencies: 50 and 60 Hz</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>High versatility</b> – 3691 is a universal and standardized current burden offering a wide burden spectrum. The built-in test frequency detection and auto-selection eliminates the disadvantage of having one instrument per power frequency value.</li> </ul>
<ul style="list-style-type: none"> <li>▪ High accuracy of 1% - even with additional external passive burden type 3692 connected</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Accuracy at best level</b> – 3691 + 3692 units are prepared for accuracy testing of current instrument transformers with most stringent accuracy requirement – These units are qualified for use in metrology institutes.</li> </ul>
<ul style="list-style-type: none"> <li>▪ The power range can be expanded to 200 VA with an additional passive current burden type 3692</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Configuration flexibility</b> – Unit replacement is not necessary when power expansion is required, quick and easy unit extension is available with type 3692.</li> </ul>
<ul style="list-style-type: none"> <li>▪ The load generation principle used in the 3691 unit is electronic, not based on classical passive burdens</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Optimized investment</b> – Many classical passive burdens can be replaced by a single electronic current burden type 3691.</li> </ul>
<ul style="list-style-type: none"> <li>▪ The internal instrument transformer test set resistance, input cable and contact resistances are automatically compensated by four-conductor measurement</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Compatibility</b> – Unit can be integrated with a variety of instrument transformer test sets, such as types 2767/63, 2761, 2711/22, or other makes.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Remote control possibility via IEEE 488 or RS 232C interfaces</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Upgradeable to an automatic test system</b> – By combination with a device type 2767 or 2763.</li> </ul>
<ul style="list-style-type: none"> <li>▪ Burden values can be retrieved from stored tables based on IEC 61869-2, ANSI C57.13 and VDE 0414 Part 2</li> <li>▪ Nine individual burden settings (<math>S_N</math>, <math>I_N</math>, <math>\cos \beta</math>) can be stored and retrieved as needed</li> </ul>	<ul style="list-style-type: none"> <li>☑ <b>Optimized setting time</b> – Unit can be quickly and easily configured for a new test using pre-defined burden values from applicable standards or user defined set of values.</li> </ul>

# Applications

- Current instrument transformers (LV/MV/HV)
- On-site testing of high voltage instrument transformers
- Metrology institutes
- Research and development

# Scope of Supply

- 1 3691 Programmable electronic current burden
- 1 Mains cable 2P+E
- 1 Set of accessories inc. RS232 adapters
- 1 Test Certificate
- 1 Operating Manual
- 1 Year warranty

# Accessories

- **3692** Remotely controlled additional passive current burden. Expands the power range of the 3691 to max. 200 VA
- **3691 /1** Interface (IEEE 488 GPIB) for remote control by external computer, incl. data cable. Disables standard RS – 232 interface.



# Technical Data

Burden settings	
Rated power range $S_N$ In increments of	0; 1 to 75 VA 0.01 VA
Power factor $\cos \beta$ In increments of	0.5 to 1 inductive 0.01
Rated current $I_N$ All values with factors of	1 / 2 / 5 A x1; x1/ $\sqrt{3}$ for $I_N = 1/\sqrt{3}$ A: $S_N = \max. 40 \text{ VA (at } 200 \% I_N)$
Operating current range	1 to 200 % $U_N$ up to max. burden voltage $U_{k-l} = 150 \text{ V}$
Maximum burden current	12 A
Frequency range	48 to 62 Hz

Accuracy Specification			
Device type	<b>3691</b>		
Test current frequency	50 or 60 Hz		
Accuracy	under reference conditions <sup>(1)</sup>	under rated operating conditions <sup>(1)</sup>	at setting $S_N = 0 \text{ VA}$
Resistance $\Delta R /  Z $	$\pm 1 \%^{(2)}$	$\pm 3 \%^{(2)}$	S < 0.05 VA
Reactance $\Delta X /  Z $	$\pm 1 \%^{(2)}$	$\pm 3 \%^{(2)}$	

The stated accuracy also apply when the additional external passive voltage burden type **3692** is connected.

<sup>(1)</sup> Reference and rated operating conditions according to IEC 359 and operating instructions.

<sup>(2)</sup> Related to the corresponding impedance  $Z = R + i X$ ,  $|Z| = S_N / I_N^2$ . Excitation < 2%  $I_N$ : General error limit  $\pm 5 \%$

3692 Additional passive burden	
Device type	<b>3692</b>
Rated power range $S_N$	75 to 200 VA
Rated voltages $I_N$	1 / 5 A
All values with factors of	x1; x1/ $\sqrt{3}$
Power factor $\cos \beta$	0.5 to 1
Test current frequency	50 and 60 Hz

Environmental, Mechanical and Power Supply		
Device Type	<b>3691</b>	<b>3692</b>
Operating temperature	+5 °C ... +40 °C	
Storage temperature	-20 ° ... +70 °C	
Humidity	20 ... 80 % r.h., non-condensing	
Dimensions (W x D x H)	500 x 470 x 320 mm (19 x 18.5 x 12.6 in.)	500 x 440 x 320 mm (19 x 17.3 x 12.6 in.)
Weight	installation into laboratory housing: approx. 52 kg (110 lb.) as 19" rack: approx 41 kg	: approx. 45 kg (100 lb.) : approx. 35 kg (78 lb.)
Power supply Spec.	115/230 V, 50/60 Hz, approx. 620 VA	115/230 V, 50/60 Hz, 200 VA

Applicable Standards	
General	IEC, VDE, ANSI
CE conformity	EMC Directive 2014/30/EU and RoHS Directive 2011/65/EU

## Global Presence

### Europe

HAEFELY AG  
Birsstrasse 300  
4052 Basel  
Switzerland

☎ + 41 61 373 4111  
✉ [sales@haefely.com](mailto:sales@haefely.com)

### China

HAEFELY AG Representative Office  
8-1-602, Fortune Street, No. 67  
Chaoyang Road, Beijing 100025  
China

☎ + 86 10 8578 8099  
✉ [sales@haefely.com.cn](mailto:sales@haefely.com.cn)

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Current and voltage – our passion



HIGH VOLTAGE



INSTRUMENTS



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