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KiTimer 2.0

Airbag ignition device

Type K3889B

The KiTimer 2.0, Type K3889B is a robust measurement and ignition device for pyrotechnic igniters; it is used in crash tests on vehicles and in crash simulations on sled test rigs.

The essential distinguishing features of the KiTimer 2.0 are:
- Ignition of pyrotechnic igniters
- Recording of ignition event, ignition current and voltage
- CrashLink 2 (CL2) interface
- Programmable ignition parameters
- Resistance measurement of the ignition squib
- Battery buffering

Description

The KiTimer 2.0 is used to trigger pyrotechnic igniters in crash tests and during crash simulations on sled test rigs. The device features 16 programmable ignition channels, allowing very precise adjustment of the ignition current and pulse duration. During a test, the ignition event together with the ignition current and ignition voltage are recorded for each channel.

To prevent inadvertent ignition of the airbags, what is known as a Block or Inhibit dongle is supplied with the device; this blocks ignition of the channels until it is removed from the KiTimer 2.0. As an alternative, the USB dongle from the KiTimer 1.0, Type K3889A can be inserted into the host computer for further use.

Application

Like all CrashLink 2 devices, the KiTimer 2.0 is installed in the vehicle or on a sled test rig, and it is supplied via a suitable cable in the combined equipment setup. Programming and activation/control during operation are handled via software (CrashDesigner).

Technical data

Operating voltage	VDC	20 … 60
Current consumption at 48 V, nominal [1]	A	0.15
Armed [2]	A	0.23
Charging of ignition capacitors [2]	A	0.45
Max. power consumption [3]	W	37
Battery type		Li-ion
Nominal energy	Wh	10.28
Operating period with battery [2]	min	>45
Charging time, typ.	min	120
Ethernet	MBit/s	100
Dimensions (LxWxH)	mm	231x64x101
Weight	kg	2.2

[1] Automatic squib measurement activated
[2] Sampling rate 100 kHz
[3] Sampling rate 100 kHz, 12 V output with 6 W load in each case, and charging of the ignition capacitors

Ambient conditions

IP degree of protection	EN60529	IP40
Shock resistance, peak [4]	g	100
Vibration resistance, random noise [5]	gRMS	5.4
Operating temperature range	°C	0 ... 40
Air humidity (non-condensing)	%RH	20 … 85

[4] Half sine for 6 ms, all axes
[5] 30 min. in all axes (10 ... 2 000 Hz)

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Ignition stage

Ignition stages	Number	16
Ignition current $I_{Ignition}$, max.	mA	2 000
Resolution	mA	10
Accuracy	mA	±(10+0.01·$I_{Ignition}$)
Duration of ignition, max. at max. 5.5 Ω	ms	5.0
Resolution	ms	0.1
Accuracy	ms	±0.05
Ignition delay time t_{delay}, max.	ms	9 999.9
Resolution	ms	0.1
Accuracy [6]	ms	±(0.1+t_{delay})·2ppm
Squib resistance measurement	2, 3 or 4-wire	
Resolution	mΩ	1
Accuracy [7]	mΩ	150 or 60
Squib measurement current, max.	mA	7.5
Squib resistance range	Ω	1 ... 10

[7] 2- or 3/4-wire measurement

Switch output

Switching duration, max.	ms	100
Resolution	ms	0.1
Accuracy	ms	±0.05
Triggering delay time, max.	ms	99 999.9
Resolution	ms	0.1
Accuracy [6]	ms	±(0.1+t_{delay})·2ppm
Differential input voltage, max.	VDC	60
Voltage against housing (GND/PE)	VDC	±36
Current-carrying capacity, max.	mA	2 400
Voltage drop, at 2.4 A	VDC	< 1

[6] For reasons of compatibility with the KiTimer 1.0 Type K3889A, the additional delay time is 0.1 ms; see the Manual, section 4.11.

Triggers

CL2 T0/SR trigger bus	Number	1 each
Configuration		RS485
T0/SR trigger input	Number	1 each
Configuration		Normally Open (NO) contact
Idle voltage	VDC	8.5 ... 10.9
Short circuit current, typ.	mA	14
Triggering threshold (trigger)	VDC	<1.6
Event trigger input	Number	2
Configuration		Normally Open (NO) contact optocoupler RS485
Series ignition input	Number	16

Data recorder

Analog measurement data resolution	Bit	16
Measurement accuracy		
Ignition current $I_{Ignition}$	mA	±(10+0.01·$I_{Ignition}$)
Ignition voltage $V_{Ignition}$	mV	±(10+0.01·$V_{Ignition}$)
Sampling rate	kHz	1 ... 100
Recording duration, 100 kHz, 16 channels	s	107
Memory type		Non-volatile

Auxiliary voltage

Auxiliary voltage at trigger input		
Output voltage, nom.	VDC	12
Output current	mA	0 ... 500
Auxiliary voltage at Event1/2, isolated		
Output voltage, nom.	VDC	12
Output current	mA	0 ... 500

Safety features

Three-level safety concept	Software USB dongle Software arming signal Hardware Inhibit plug
System status – ARMED LED	Arming status of the system
Channel-specific status	
READY LED (RDY)	Status of squib resistance
ARMED LED (ARM)	Arming status of channel

Accessories included in delivery scope

	Type/mat. no.
• Inhibit plug	55246129

Ordering key

Type K3889B □

Connector type LEMO 1B.305	**1B**
Connector type LEMO 1F.305	**1F**

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