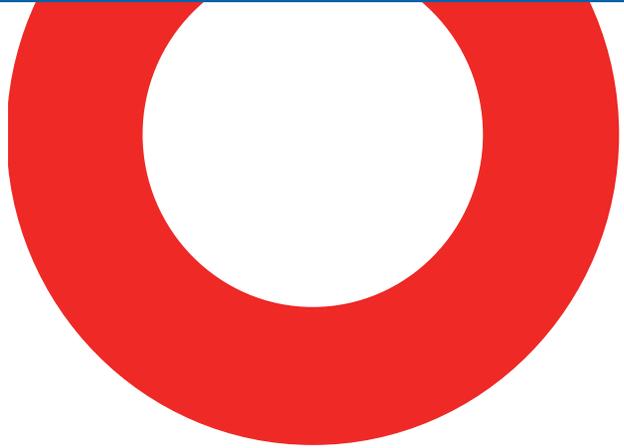




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# **CAS 3025 BURST PULSE VERIFICATION SET**

## **USER MANUAL**

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VERIFICATION SET  
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# 1 SAFETY TERMS AND SYMBOLS



**WARNING:** Warning identify conditions or practices that could result in injury or be lethal.

**CAUTION:** Cautions identify conditions or practices that could result in damage to this product or other property.

## 1.1 General safety summary

Read the following safety precautions to avoid injury and prevent damage to this device or any products that are connected to it.



**CAUTION:** Must be exercised while measuring the pulses. The safety measures stated in the operating instructions for the Burst/EFT generator apply during pulse measurements and must be strictly observed.

**Must be earthed:** This device is earthed to the shell of BNC connector and subsequently through the earth conductor in the power cable of the measurement instrument.

**Do not operate without covers:** To avoid electric shock or fire hazard, do not operate this device with covers removed.

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**Do not operate in an explosive atmosphere:** To avoid injury or fire hazard, do not operate this device in an explosive atmosphere.

**Do not operate with suspected faults:** If you suspect there is any damage on this device, have it inspected by qualified service personnel before using it again.



**IMPORTANT - The calibration set is designed to be connected to the pulse output of a burst/EFT generator. It can also be used in conjunction with an appropriate adapter to take measurements at the output of a coupling network, however, care must be taken to ensure that no mains voltage is present at the output of the coupling network. The attenuators will otherwise inevitably be destroyed!**

## 2 UNPACKING, STORAGE AND TRANSPORT



### 2.1 General

- Throw nothing away!

Packaging either:      Keep for dispatching the instrument for a calibration service.  
   Return to the relevant sales outlet.  
   Dispose of in an environmentally friendly manner.

Packaging materials: Carton:	Cardboard
Padding:	CFC-free polystyrene foam
Plastic bags:	Polyethylene

- Avoid the risk of condensation occurring!

If a large temperature difference has been experienced, allow time for the temperature to stabilize. This may take several hours.

### 2.2 Storage and transport

- Do not stack, either packaged or out of the packing
- Do not up-end, arrows on the packaging must always point upwards
- Protect from dampness, heat, cold and rain
- Do not throw
- Do not sit or stand on the instrument and packaging

### 2.3 Unpacking

- Is the packaging damaged?                      If **YES**                      ⇒ call transportation company.
- Are all the packages present and correct?                      If **NO**                      ⇒ call transportation company.
- Are the instrument or accessories damaged?                      If **YES**                      ⇒ call transportation company.
- Are the contents of the package complete?                      If **NO**                      ⇒ call sales outlet.
- Keep the instruction manual with the instrument.

### 2.4 Scope of delivery

- INA 265B, 60 dB attenuation, 50 Ohms
- INA 266A, 66 dB attenuation, 1000 Ohms
- RG58 cable with BNC connectors
- Operation instructions
- Suitcase
- Measuring report

### Optional

- LE 230    Adaptor cable for the connection NSG 1025 or NSG 625 with CAS 3025 Fischer / SHV male, length 10 cm

### 3 DESCRIPTION



The calibration set CAS 3025 consists of two attenuators, INA 265B and INA 266A, plus an RG58 BNC cable which have been specially designed for periodic verification of the specifications of burst/EFT generators in accordance with IEN/EC 61000-4-4:2004. These attenuators are rated for up to 8.0 kV burst/EFT pulses and so can be used to verify almost all brands of burst/EFT generators.

The standard specifies the measurement of burst/EFT pulses with load impedances of 50 ohms and 1000 ohms. INA 265B is the 50 ohms load impedance with an attenuation of 60 dB. INA 266A has an input impedance of 1000 ohms and an attenuation of 66 dB. Both attenuators have been designed so that they can be connected directly to the pulse output of the burst/EFT generator. The voltage ratio has been set in such a way that most types of oscilloscope available on the market can be connected directly to the output of the attenuators.

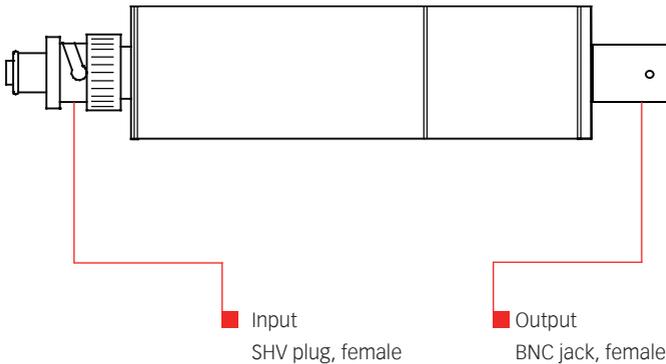


Figure 1: Side view: INA 265B and INA 266A respectively

### 3.1 Measurement test setup

For verification purposes the CAS 3025 attenuators can be connected directly to the burst/EFT generator on one side and the oscilloscope on the other side. No special test setup is required to achieve satisfactory results.

For calibration purposes, in order to minimise measurement uncertainties and to achieve good reproducibility, care must be taken with the measurement set-up. Measurements must be taken in a 50 ohm system.

Measuring equipment required:

- Calibration set CAS 3025
- Oscilloscope ( $Z_i = 50 \Omega$ ) with  $\geq 400$  MHz bandwidth

Both the generator and the oscilloscope must be properly connected to the earth reference plane to equalize the ground potential. Teseq recommends placing the oscilloscope behind a vertical metal plate with an auxiliary through-earth connection. This is to prevent screen currents from occurring. Screen currents can be recognised on the oscilloscope as negative pre-swings and/or as additional over-swings on the trailing edge of the pulse.

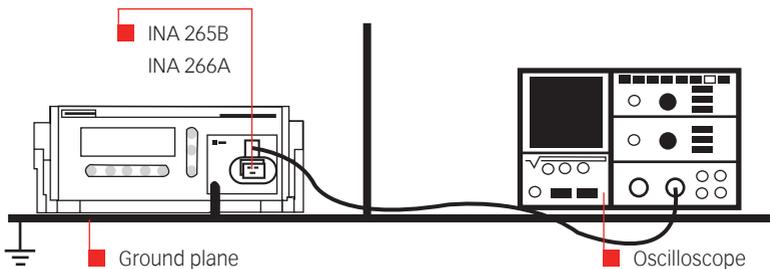


Figure 2: Measurement test setup

### 3.2 Voltage calculation

Since attenuators rarely have exact values of voltage ratio (e.g.: 1000:1 or 2000:1) and since this affects the accuracy of the measurements, it is recommended to use the real attenuation values.

The effective pulse voltage is calculated as follows:

**Measured value x r = effective pulse voltage**

Where **r** is the voltage ratio according to the test certificate and as found written on the INA 26x label.

## 4 TECHNICAL SPECIFICATIONS



### 4.1 Electrical specifications

Specifications	INA 265B	INA 266A
Max. power rating	3 Wrms	4 Wrms
Max. peak voltage (burst/EFT pulses as specified in EN/IEC 61000-4-4:2004)	8.0 kV	8.0 kV
Max. operating time @ 8.0 kV	305 s (5 kHz, 300 ms/15 ms)	300 s (5 kHz, 300 ms/15 ms)
Nominal attenuation (terminated by 50 $\Omega$ )	-60 dB	-66 dB
Nominal voltage ratio (See exact value on labels)	1000:1	2000:1
Input impedance	50 $\Omega \pm 2\%$	1000 $\Omega \pm 2\% // \leq 6$ pF
Output impedance	50 $\Omega \pm 1\%$	50 $\Omega \pm 1\%$
Bandwidth (3 dB)	>400 MHz	>400 MHz
Connectors		
Input	SHV connector, female	SHV connector, female
Output	BNC jack, female	BNC jack, female

## 4.2 Mechanical specifications

Size (B x H x D) 145 x 25 x 25 mm<sup>3</sup> (INA 265B / INA 266A)  
275 x 230 x 80 mm<sup>3</sup> (suitcase)

Weight 135 g (INA 265B / INA 266A)  
810 g (with suitcase)

## 4.3 Environmental conditions

Operating temperature +5° ... +40° C

Storage temperature -20° ... +70° C

Relative humidity 20 ... 80%

## 5 MAINTENANCE AND WARRANTY



Maintenance is limited to the removal of any foreign particles or objects from the contact surfaces since other measures could adversely affect the test parameters.

Use a soft cloth to clean off any dirt.

- Avoid immersing the attenuator in water
- Avoid using abrasive cleansers

Avoid using chemicals containing benzene or similar solvents.

## 6 DISPOSAL



The unit is so constructed that it can be dismantles right down to the component level.

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