User's Manual

IST-300
2 channel portable function generator

This manual is applicable for all calibrators with model number:
IST300-A02-001

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1 Introduction

1.1 Purpose

In a number of situations determining the loop accuracy in the field is required. A simple battery powered DC voltage simulator allows only static signals to be simulated e.g. axial displacement and/or bias voltage. For dynamic acceleration, velocity and/or radial vibration signals a function generator is needed. The standard available function generators, specific portable versions, do not allow a sufficient DC span in combination with AC superimposed signals. The IST-300 vibration calibrator solves these issues. The compact two channel battery powered vibration calibrator has been build based on the input from field service engineers and for its purpose is truly one of the most easy to use and complete field service instruments in the field

Following models are available:

- 2-channel portable: IST-300 Type A02 (Battery operated)
- 4-channel lab instrument: IST-300 Type A04 (Not part of this manual)

Figure 1 IST-300-A02Two channel calibrator with charge adapter.

1.2 Quick Operation:

Way of operation is for both models the same.

Per channel a toggle switch is used to select the appropriate display;

1. Frequency
2. Amplitude
3. Offset

Pk-Pk or RMS output is selected by means of a second toggle switch.

The channel is set by means in an incremental dial. Depending of the speed of dialling the output value is adjusted either in increments of 1 or 50.
A Led indicates when the output has reached its maximum (+ or - 16.000 mVolt).
All value's are continuous visible in their assigned display.

The outputs are available by means of a 50 Ohm BNC output connector at the top of the vibration calibrator. Also next to the output a signal reverse switch is available for fast DC reverse selection

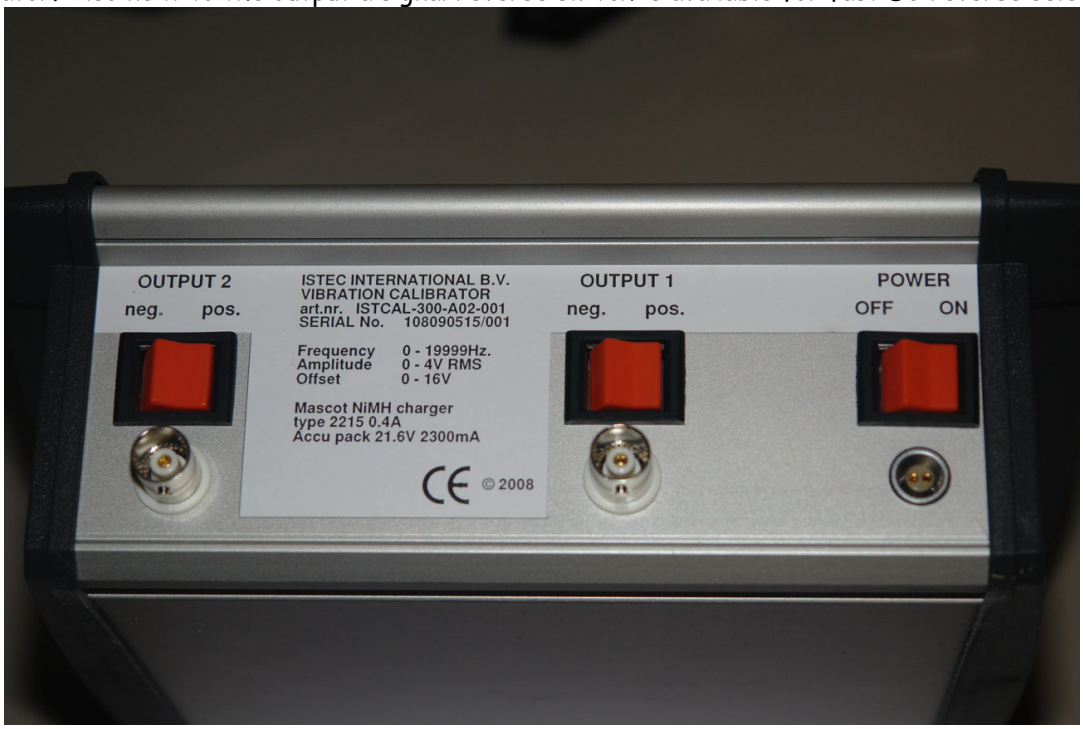

Figure 2 IST-300-A02 Top view.

1.3 Specification:

Digital Amplitude 14 bit:	0 - 4.000 mV Pk-Pk / RMS selectable
Accuracy:	100 mV + / - 3%
	200 mV – 4000 mV better than + / - 1%
Digital Offset 14 bit:	0 - 16.000 mV + / - selectable
Accuracy:	Full range + / - 1%
Temperature drift:	30 µV/°C Typical
Maximum output current:	20 mAmp
Frequency Range:	0 – 19.999 Hz
Tolerance:	@ 19.999 Hz < 0.001 % (+ / - 1 Hz)
Operating temperature range:	5 °C - 55 °C
Storage @95% Humidity:	-10 - +80 °C with batteries removed.
Battery operation:	Up to 8 hour continuously.
	NI-MH fast charge type.

1.4 Models

IST-300-AXX

AXX (Number of channels)
01-Not Applicable
02-2 channel portable unit
03- Not Applicable
04-4 channel lab unit
Other combinations are not applicable

2 Operation

2.1 Front panel

Figure 3 IST-300-A02 Two channel calibrator Front View.

The front panel consists of two parallel simulator units.
Each unit consists of:

- LCD display 1 (Frequency)
- LCD Display 2 (AC Amplitude)
- LCD Display 3 (DC offset)
- Switch Display 1.2.3. (Operation mode selector).
- Switch Output (Output mode RMS or PEAK)
- Dial (Incremental Dial)
- Peak output LED (lights up when the max output has been reached)

2.2 Top Panel

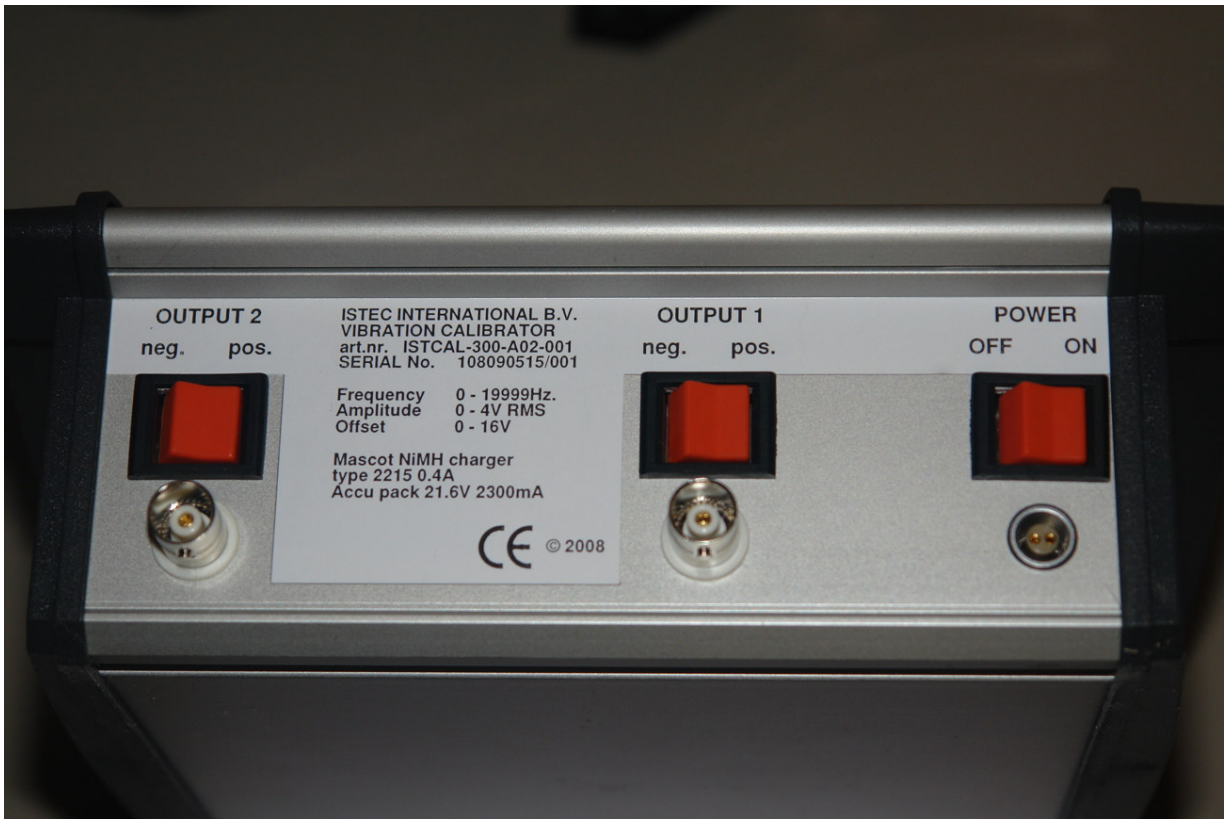

Figure 4 IST-300-A02 Two channel calibrator Top View.

The top panel consists of:

- Two BNC outputs (output one and output 2)
- Two polarity change switches.
- On-off switch
- Power input socket.
- Product label (containing product number, serial number, charger make and model, CE label)

2.3 Setting up

To operate the unit either the batteries need to be charged or the unit needs to be connected to the power adapter
Note: Make and model are registered on the label on top of the IST-300 unit

Operation is very simple and for each simulator identical. Below the operation is described for one simulator. For other simulators these steps need to be reproduced.

2.3.1 Connection:

Connect the BNC output to the device to be tested.
Note, power output signals needs either to be disconnected or switched off.
For ICP loops the power mode on the device to be tested needs to be switched to off or to external

2.3.2 DC offset

To select the DC display, switch the Display selector to Display 3.
Note: In the top left corner of the LCD display a indicator is shown indicating which display is selected

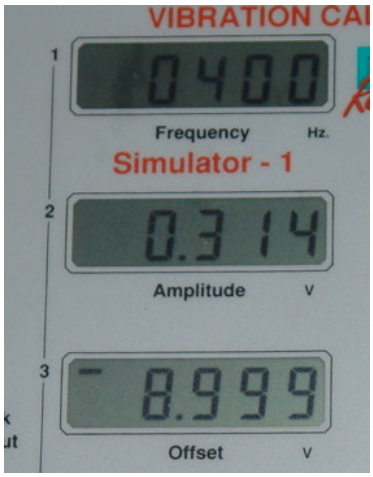

Figure 5 IST-300-A02 Two channel calibrator Display.

The Dial is used to change the value.

When the output switch on the top is set to negative the output is negative voltage.
E.g. required for Eddy Current Probe loops using -24 volt power.
When the output switch on the top is set to positive the output is positive voltage.
E.g. required for ICP sensors loops using 4 mAmp Power supply and 12 Volt Bias Voltage

Using the dial any value between 0 and 16.000 m Volt may be entered.
Depending on the polarity switch the output is either 0- 16.000 mVolt or 0- -16.000 mVolt.

2.3.3 Amplitude:

Once the DC value is set, the display switch may be changed to Amplitude

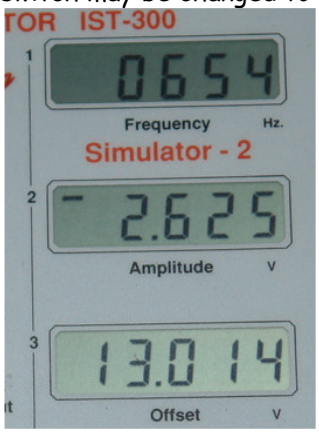

Figure 6 IST-300-A02 Two channel calibrator Display.

The indicator now moves to the amplitude display. Using the dial any value between 0 and 4.000 m Volt may be entered. The entered value will be super imposed on the previously entered value
When the DC output and the amplitude output together exceed 16.000 mVolt the Peak led will turn red.

Figure 7 IST-300-A02 Two channel calibrator Peak Output.

2.3.4 Frequency:

Once the Amplitude is set, the display switch may be changed to Frequency. The indicator now moves to the frequency display. Using the dial, any value between 0 and 19.999 Hz may be entered.

2.3.5 Combined output

The 3 different settings are combined into one output:
DC value + AC value are defining the voltage output. Either in RMS or PEAK depending on the RMS/PEAK switch

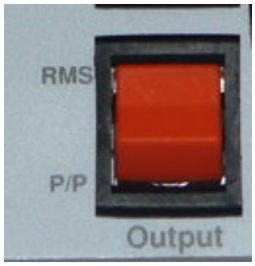

Figure 8 IST-300-A02 Two channel calibrator RMS/Pk-Pk Switch

The output polarity may any time be changed from positive to negative polarity ore vice versa

Figure 10 IST-300-A02 Two channel calibrator Polarity Switch

Each value may be changed at any time by selecting the applicable display and changing the value by using the incremental dial.

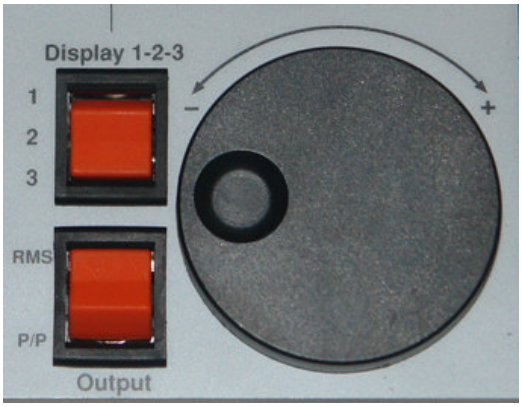

Figure 11 IST-300-A02 Two channel calibrator Incremental Dial

Limitations are either the range values of each property or in case of the AC and DC selection the sum of both peak values.
When these reach a maximum of 16.000 mVolt peak the out put will be limited to this value and the Peak indicator LED will turn red.

Figure 12 IST-300-A02 Two channel calibrator Peak Output Function

In the example above the DC value + the RMS AC value exceed the 16.000 mVolt.
13.014 mV DC + (2.624 mV RMS * 1,414) = 16.724 m Volt
Note. The factor 1,414 is the square root of two. Which is the difference between the RMS and PEAK value for pure sinus shaped signals.

3 Declaration of conformity

Declaration of Conformity

Istec International B.V.
Meer en Duin 8, 2163 HA Lisse

Declare under our sole responsibility that the product range

ISTCAL-300-AXX-XXX
Field Calibrators
Note: AXX-XXX indicates all models which are covered by any number variation of the X's

To which this declaration relates is in conformity with the following standard(s)

EN-55022, EN-61000-4-2, ENV50140, EN61000-4-4, ENV50141

Following provisions of the Electromagnetic Compatibility (89/336/EEC) Directive

Lisse , Netherlands 30-09-2008

D. Verschuren
Managing Director

Declaration of Conformity ISTCAL-300-AXX-XXX 30 September 2008
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