



CONTESTACIÓN A CONSULTAS DE LA LICITACIÓN 6012000207 – SERVICIO DE CALIBRACIÓN DE EQUIPOS DE MEDIDA DEL ÁREA DE INGENIERÍA DE METRO DE MADRID

Consulta 1:

En relación a un equipo incluido en la licitación del asunto, concretamente al nº de inventario REG_10 (VBOX_3i_100 Hz), nos gustaría que nos aclarasen que magnitudes se han de calibrar ya que, según las especificaciones, pueden conectarse a él diferentes sensores. Si pudieran aportar algún certificado anterior nos sería de gran ayuda.

Respuesta 1:

En relación a su consulta, informarles de que a continuación le facilitamos la siguiente información adicional, la cual, da respuesta a la consulta planteada.

Calibration Procedure

The unit under test was subjected to the standard calibration test procedure. This procedure covers measured velocity by the VBOX over a simulated test course. Simulation data is provided via a UKAS calibrated LabSat GPS simulator. Analogue output voltage and digital output frequency (where applicable) are checked for calibration against simulated speed. Voltage output range (where applicable) is configured to 5 volts at 100km/h. Frequency output (where applicable) is configured to 25Hz per Km/h. VBOX indicated values are taken from the serial output of the VBOX. Distance is calculated by integration of the Speed signal, calibrated using the GPS simulator, ensuring the distance accuracy satisfies the specification of 0.05% and less than 50cm per Km. Mean and standard deviation values are measured over 30 samples.

Equipment used

	Equipment	Serial number	CAL Cert No.	CAL due
Simulation of GPS	LabSat	011432	2350623	31/08/2019
Analogue Voltage	LabSat	011432	2350623	31/08/2019
Frequency	LabSat	011432	2350623	31/08/2019

Results

Accuracy of analogue and digital output signals

Applied Speed	Analogue Output 1			Analogue Output 2		
	Expected	As returned	Std deviation	Expected	As returned	Std deviation
30 Km/h	1.500 V +/- 5.0mV	1.5009 V	0.0011 V	1.500 V +/- 5.0mV	1.5011 V	0.0012 V
60 Km/h	3.000 V +/- 5.0mV	3.0023 V	0.0008 V	3.000 V +/- 5.0mV	3.0027 V	0.0009 V
100 Km/h	5.000 V +/- 5.0mV	5.0019 V	0.0006 V	5.000 V +/- 5.0mV	5.0026 V	0.0010 V

Applied Speed	Frequency Output 1		
	Expected	As returned	Std deviation
30 Km/h	750 Hz +/-2.5Hz	749.70 Hz	000.89 Hz
60 Km/h	1500 Hz +/-2.5Hz	1499.39 Hz	0000.64 Hz
100 Km/h	2500 Hz +/-2.5Hz	2499.74 Hz	0000.49 Hz

Simulation of constant speed by LabSat

Applied simulated value	VBOX indicated speed		
	Criteria	As returned	Std deviation
30 Km/h	+/-0.1 Km/h	29.99 Km/h	00.02 Km/h
60 Km/h	+/-0.1 Km/h	59.99 Km/h	00.04 Km/h
100 Km/h	+/-0.1 Km/h	99.99 Km/h	00.03 Km/h
400 Km/h	+/-0.1 Km/h	400.00 Km/h	00.05 Km/h

Simulation of constant heading by LabSat

Applied simulated value	VBOX indicated heading		
	Criteria	As returned	Std deviation
0 deg	+/-0.1deg	0.00deg	0.00deg
90 deg	+/-0.1deg	89.98deg	0.09deg
180 deg	+/-0.1deg	180.03deg	0.05deg
270 deg	+/-0.1deg	269.98deg	0.09deg

Summary

The unit 045668 passed all standard production tests and was found to be fully compliant with the product specification. Racelogic certifies the above instrument meets or exceeds published specifications and has been calibrated using instruments and standards of known accuracies, which are traceable to ISO/IEC:17025 Standard.

En Madrid, a 15 de julio de 2020.