Complete 1-channel system interface unit for ultra-stable, high precision fluxgate technology current transducers

Features

- 1 channel through D-sub-connector
- ±15 V, 1.2 A DC supply output
- Universal mains input
- Voltage read out through BNC connector
- Power and status LEDs on front

Description

Low noise power supply and interface unit with industry standard D-sub-9 connector for interfacing a range of DC current transducers (DCCTs).

The built in voltage output module (VOM) accurately converts the measurement current to a easy to use voltage reading on the BNC connector. With 1 V and 10 V output options available, it makes precision current measurement easy and convenient.

Housed in a compact metal case and powered by universal mains, the DSSIU-1 is a reliable and complete solution for implementation of fluxgate current sensing technology.

Applications

- Fluxgate DCCTs
- Hall effect DCCTs
- Power measurement
- Electric vehicle (EV) test bench
- Power measurement and power analysis
- Particle accelerators
- Current calibration purposes
- Precision current sensing

Electrical specifications at 23 °C, V_S = ± 15 V supply voltage

Parameter		Symbol	Unit	Min	Typ.	Max	Comment
AC Input Voltage		V_{AC}	V_{RMS}	100		250	
AC Input Current	115 V	I_{AC}	A_{RMS}		0.2		At rated output current
AC Input Current	230 V	I_{AC}	A_{RMS}		0.1		At rated output current
AC Input Frequency		f	Hz	50		60	
DC Input Voltage		V_{DC}	V	120		250	
Output Voltage		U_{cc}	V_{DC}	±14.5		±15.5	
Output Current		I_{cc}	A			1.2	
Output Voltage Ripple			mV_{RMS}		2.5		No load
Full Operating temperature range		T_a	°C	-20		40	To full rated output current
Limited Operating temperature range		T_a	°C	-20		50	Up to 800 mA output current
Storage temperature range			°C	-20		85	
Relative humidity			%	20		80	Non-condensing
Altitude			m			2000	
Usage							Designed for indoor use
Pollution degree						2	
Ingress protection rating						IP20	
Mass			kg		0.5		
Dimensions			mm		130 x 116 x 56		
EMC standard							EN 61326-1:2013-2021
Safety standard							IEC 61010-1:2010/A1:2019

Voltage Output Module Parameters

Voltage output module (VOM) selection table with nominal values:

VOM	Ratio [V/A]	Input impedance [Ω]	Output impedance [Ω]	DC current [A]	DC voltage [V]	AC current [A RMS]	AC voltage [V RMS]	Partnumber
VOM0100-10	100.000	11.111	<1	0.100	10.000	0.067	6.667	2514200038
VOM0300-10	33.333	3.704	<1	0.300	10.000	0.200	6.667	2514200042
VOM0400-10	25.000	2.778	<1	0.400	10.000	0.267	6.667	2514200036
VOM0667-10	15.000	1.667	<1	0.667	10.000	0.444	6.667	2514200069
VOM0800-10	12.500	1.389	<1	0.800	10.000	0.533	6.667	2514200071
VOM0100-1	10.000	10.000	50	0.150	1.500	0.100	1.000	2514200037
VOM0300-1	3.333	3.333	50	0.450	1.500	0.300	1.000	2514200068
VOM0400-1	2.500	2.500	50	0.600	1.500	0.400	1.000	2514200035
VOM0667-1	1.500	1.500	50	1.000	1.500	0.667	1.000	2514200073
VOM0800-1	1.250	1.250	50	1.200	1.500	0.800	1.000	2514200070

Ratio: Output/input transfer ratio.

DC current: Rated continuous DC current rating of the VOM.

DC voltage: Resulting output voltage when the input current is equal to the nominal dc current.

AC current: Rated RMS current.

AC voltage: Resulting RMS voltage output when the input current is equal to the nominal AC current.

Voltage output module (VOM) electrical performance specifications at 23 °C:

VOM	Ratio error	Ratio Temp. Coef.	Ratio stability	Linearity	Offset	Offset temp. coef.	Bandwidth	RMS noise < 100 kHz
VOM0100-10	50 ppm	3 ppm/K	5 ppm/month	5 ppm	3 µV	0.2 µV/K	500 kHz	200 µV
VOM0300-10	50 ppm	3 ppm/K	5 ppm/month	10 ppm	3 µV	0.2 µV/K	500 kHz	50 µV
VOM0400-10	50 ppm	3 ppm/K	5 ppm/month	10 ppm	3 µV	0.2 µV/K	500 kHz	50 µV
VOM0667-10	50 ppm	3 ppm/K	5 ppm/month	10 ppm	3 µV	0.2 µV/K	500 kHz	60 µV
VOM0800-10	50 ppm	3 ppm/K	5 ppm/month	10 ppm	3 µV	0.2 µV/K	500 kHz	60 µV
VOM0100-1	50 ppm	2.5 ppm/K	5 ppm/month	5 ppm	0 µV	0 µV/K	3 MHz	20 µV
VOM0300-1	50 ppm	2.5 ppm/K	5 ppm/month	10 ppm	0 µV	0 µV/K	3 MHz	20 µV
VOM0400-1	50 ppm	2.5 ppm/K	5 ppm/month	10 ppm	0 µV	0 µV/K	3 MHz	20 µV
VOM0667-1	50 ppm	2.5 ppm/K	5 ppm/month	10 ppm	0 µV	0 µV/K	2 MHz	20 µV
VOM0800-1	50 ppm	2.5 ppm/K	5 ppm/month	10 ppm	0 µV	0 µV/K	1 MHz	20 µV

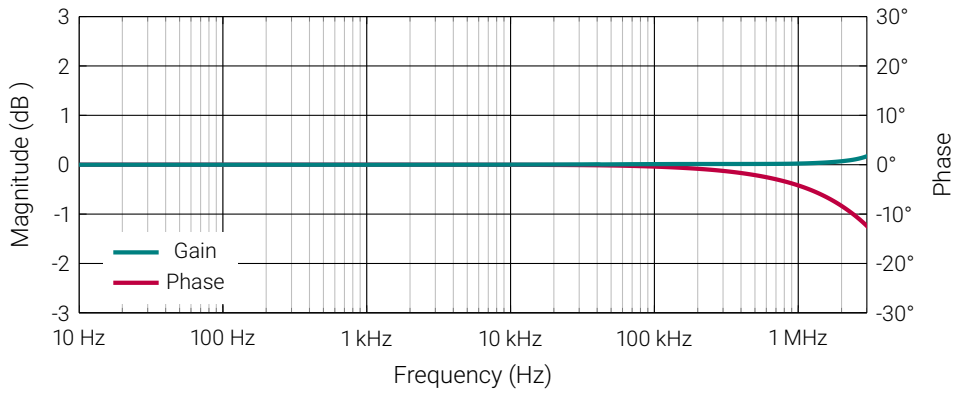

Figure 1: Frequency characteristics of VOMxxxx-1

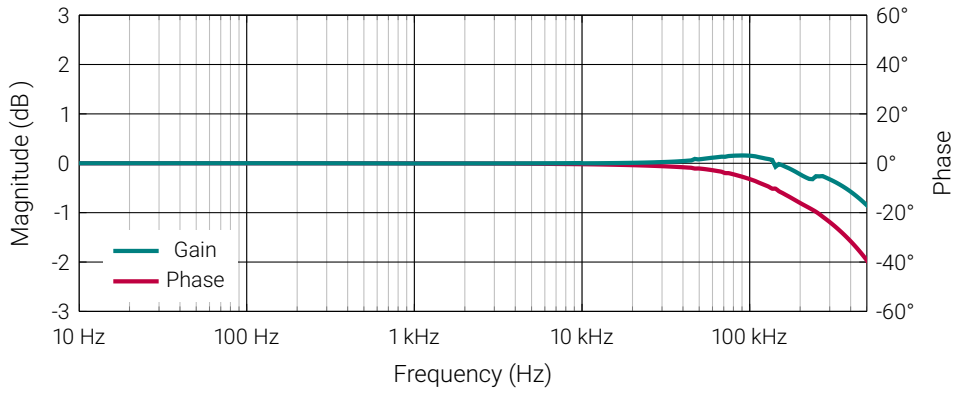

Figure 2: Frequency characteristics of VOMxxxx-10

Intended use

⚠ To ensure safety protection, only use the device as described by the manufacturer

The DSSIU-1-V is designed to power current transducers such as Danisense DT, DS, DQ, DN and DM series or similar.
Please see the product manual: https://danisense.com/user-manual.

- Cleaning only with a damp cloth
- Power/unpower the device by plugging/unplugging the mains power cord
- Always keep mains power cord accessible

Connections

- (Front) D-sub-9 connector for connecting the transducer cable with the DSSIU-1-V
- (Front) BNC connector for voltage output
- (Back) 3 pole IEC mains power connector
- (Back) 4 pin connector to read STATUS and TEDS signals fed through from the transducer

Instruction for use

1. Do not power up the device before all cables are connected.
2. Place the primary conductor through the aperture of the transducer.
3. Connect a D-sub-9 cable between the DSSIU-1-V and sensor.
4. Connect a high impedance voltmeter or power analyzer on the output (BNC connector).
5. When all connections are secured - connect mains power.
6. Apply primary current.

LEDs

The two front panel LEDs indicate 1) the DSSIU-1-V is powered. 2) the status signal (if available) from the connected transducer is OK.

Pin out description

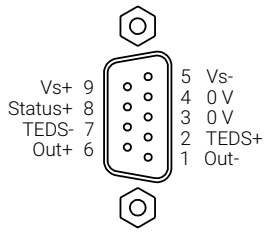

Figure 3: D-sub-9 female connection pinout

1	Out-	Measurement output negative terminal
2	TEDS+	Positive TEDS terminal
3	0 V	0 V reference voltage
4	0 V	0 V connection for supply voltage
5	V_S-	Negative supply voltage
6	Out+	Measurement output positive terminal
7	TEDS-	Negative TEDS terminal
8	Status+	Status signal positive terminal (referred to 0V)
9	V_S+	Positive supply voltage

Status signal and LED

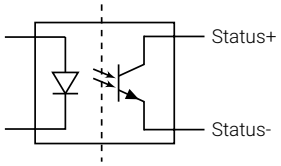

Figure 4: Status signal optocoupler

When the sensor is operating in normal condition the status pins (Status+ and Status-) are shorted by an optocoupler and the green status LED is ON, see Fig. 4. When a fault is detected, or the power is off, the status pins are opened and the green status LED is OFF. The status signal optocoupler is connected to the 4 pin connector on the back side of the DSSIU-1-V. Status signal optocoupler ratings found below:

Forward direction:	Status+ to Status- (Pin 8 to pin 3)
Maximum forward current:	10 mA
Maximum forward voltage:	60 V
Maximum reverse voltage:	5 V

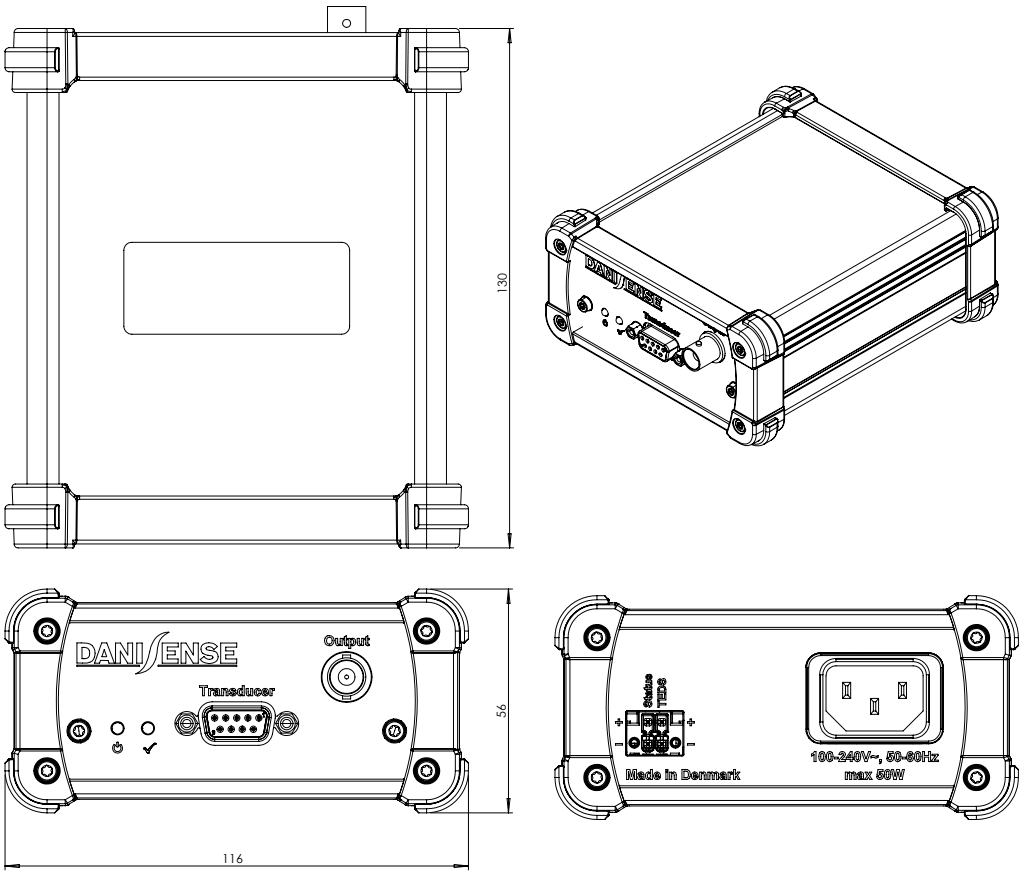

Figure 5: Box dimensions