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# ENERGY METER

FSN energy meter V1.0 spec

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## 2017 FSN ENERGY METER V1.0 SPECIFICATION DOCUMENT

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### Document description

According to Formula Student rule **EV 4.9 Energy Meter** A calibrated Energy meter must be inserted in the tractive system supply line. In order to measure the total energy used during the event, and to ensure a correct observation of rule **EV 2.2 Power and Voltage Limitation**.

This document describes the technical specifications and correct installation of the 2017 Formula Student Netherlands Energy meter V1.0.

### Technical specifications

Spec	Typical	Maximum	Parameter
LV supply voltage	12-30	10-36	VDC
LV power consumption	0.5	1.5	W
LV internal fusing	None		
HV max input voltage	650		V
HV Impedance	1		MΩ
HV internal fusing	10		mA
Shunt continues current		500	A
Shunt peak current		800	A
Shunt resistance	100		μΩ
HV voltage logging error	0.2	0.5	%
HV current logging error	2	3	%
Logging sample rate	250		Hz
Communication method	WIFI 2.4GHz		

Table 1 Electrical specifications

Housing dimensions	138x62x31 mm Hammond 1591BSFLBK RS Part Number:741-7464
Weight	310g

Table 2 Mechanical specifications

Connection	Connector
HV- side shunt, Energy meter side	Copper bolt, M10 (Max 10Nm)
HV- side shunt, Vehicle side	M10 ring-lug or similar
Load side shunt, Energy meter side	Copper bolt, M10 (Max 10Nm)
Load side shunt, Vehicle side	M10 ring-lug or similar
HV voltage measurement connector	TBD
LV, Energy meter side	Phoenix Contact M12 5-pin RS Part Number: 652-8166  Pin 1: LV+ Pin 2: GND Pin 3: Reserved – Do not connect Pin 4: Reserved – Do not connect Pin 5: Reserved – Do not connect
LV, Vehicle side	M12 5-pin RS Part Number: 877-4803

Table 3 Connection specifications



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**Technical drawings**

**TBD**

**Connection diagram**

Please connect the FSN Energy meter V1.0 at the position displayed in the schematic below.

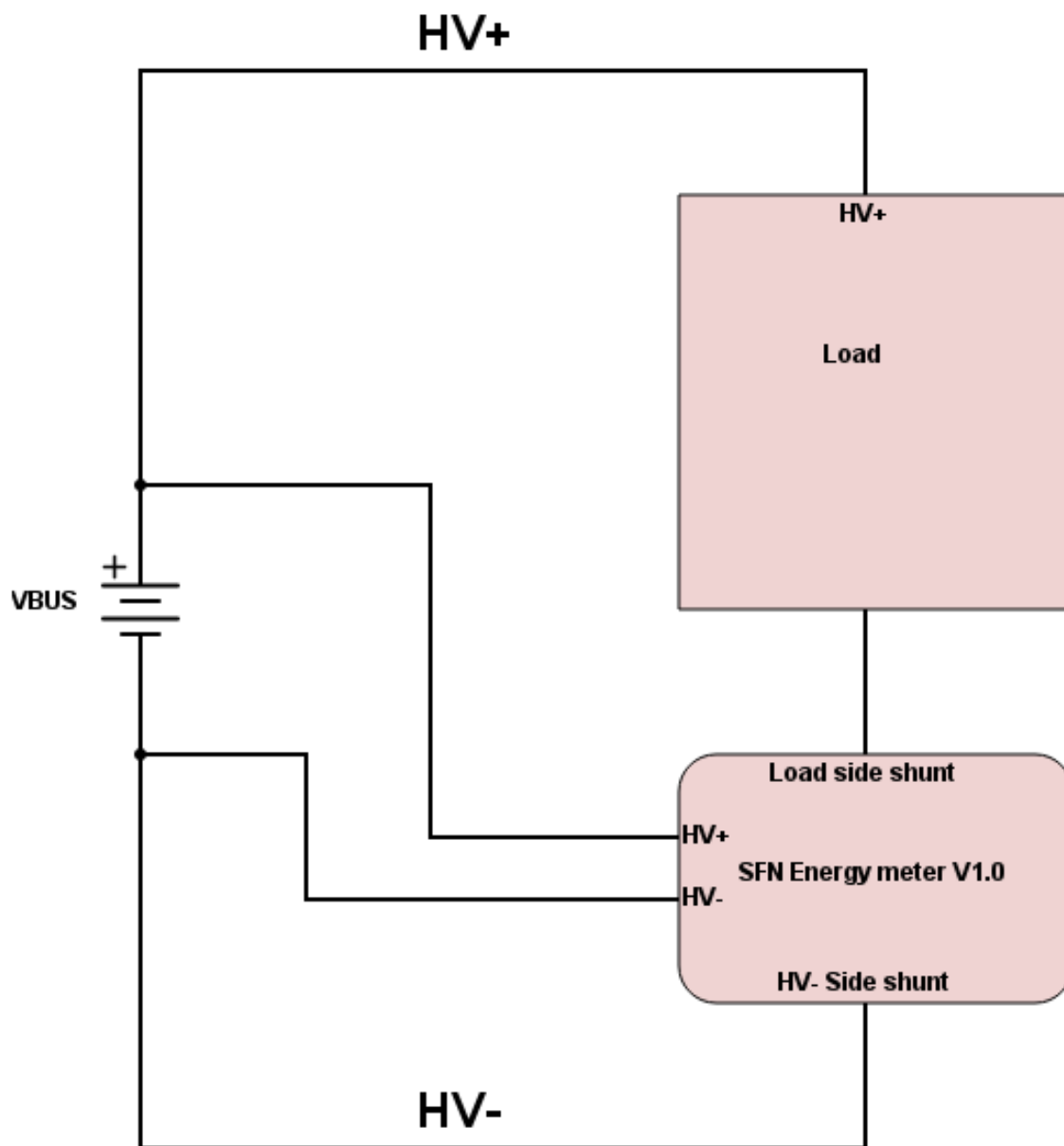


Figure 1 FSN Energy meter V1.0 Installation schematic