

SIRIUS®

 **DEWESoft®**

TECHNICAL REFERENCE MANUAL

SIRIUS® V25-1



5.7. General specification

The general specifications apply to all SIRIUS® measurement slices unless otherwise noted at the specific measurement slice.

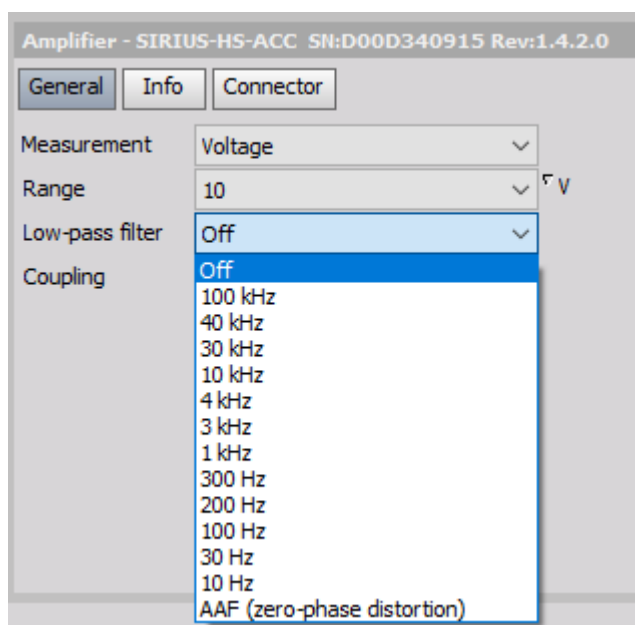
Power	
Power Supply	9 - 36 V DC
Power consumption	Typ. 15 - 35 W
Environmental	
Operating Temperature	-10 to 50 °C (40 °C for fanless series)
Storage Temperature	-40 to 85 °C
Humidity	5 to 95 % RH non condensing @ 60 °C
IP rating	IP20 (IP50 for fanless series)
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Dimensions	266 mm x 149 mm x 55 mm 266 mm x 149 mm x 69 mm (extended slice)
Acquisition rate	
Time base accuracy	Typical 5 ppm, Max: 20 ppm
Synchronisation	
Delay between slices	50 nsec
Max. Sync-cable length	100 m (Master/Slave), 200 m (IRIG)
EtherCAT®: Max. cable length	100 m
Sync Input / Output	
Level (Input/Output)	TTL compatible
Max. Output Current	±24 mA (±50 mA for 1 sec)

5.7.2. HS general specifications

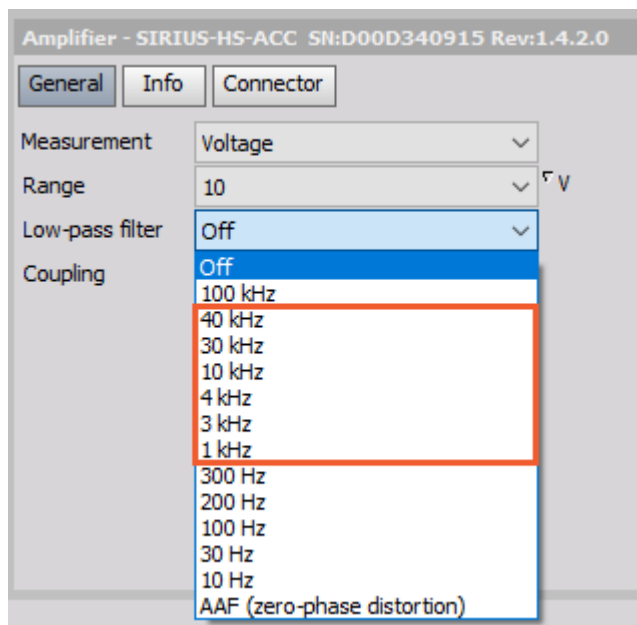
ADC	
Type	16-bit SAR
Sampling Rate	Simultaneous 1 MS/sec
Analog anti alias filter	Bypass or analog 100 kHz 5th order Bessel
Digital low pass filter	Software selectable
Digital filter Characteristic	Bypass, Butterworth or Bessel
Filter Order	2nd , 4th, 6th or 8th
Ratio Sample rate to Filter Freq.	From 2 to 100
Topology	Cascaded IIR Filter (up to 4 sections)

5.7.3. Low-pass filters on Sirius HS

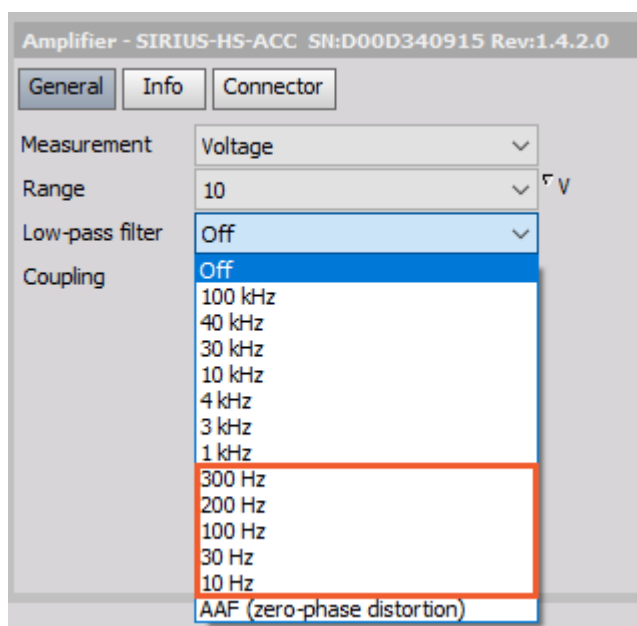
1. The **100 kHz filter** is a hardware filter and is always applied except for when the "Off" option is selected in the dropdown menu.
This hardware filter is a Bessel 5th order filter.



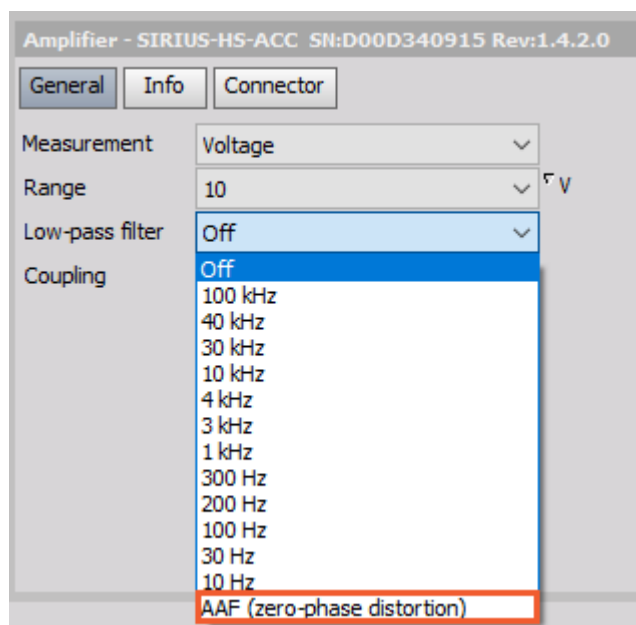
- IIR filters **between 40 and 1 kHz** are firmware filters, which means, that they are calculated on the FPGA.



- IIR filters with cut-off frequencies **lower than 1 kHz** are Software filters. If one of these filters is selected in the dropdown menu, then in addition to the software filter, with the selected cut-off frequency, a firmware filter with 1 kHz cut-off frequency is applied (the type and order of this filter is the same as the software one).



4. **AAF (zero-phase distortion)** has a cut-off frequency of 80 kHz, if the channel sample rate is equal or above 160 kHz. When a lower sample rate is selected, then the cut-off frequency of the AAF is equal to half the sampling rate of that channel.



5. **Special case:** If on a channel, that has a sample rate divider, a IIR filter is applied whose cut-off frequency is greater then 0.4 times the channels sampling rate, then in addition to the selected IIR filter a filter with a cut-off frequency at 0.4 times the sampling rate of the channel is also applied to the filter chain.

5.23. HS-LV / HS-LV+

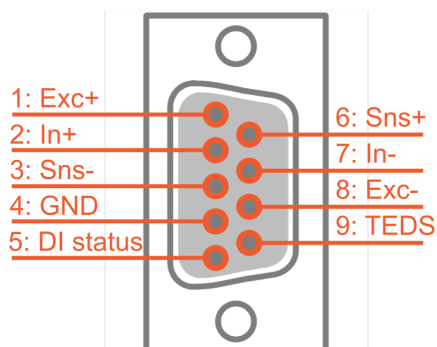
The HS-LV modules are perfect for high-speed, high-sample-rate, wide-bandwidth low voltage and current measurements in combination with current clamps.

5.23.1. HS-LVv2 Specifications

Inputs				
Input types	Voltage Full bridge strain Current (ext. Shunt)			
ADC Type	16-bit SAR			
Sampling Rate	Simultaneous 1 MS/s			
Filtering	See "HS general specifications"			
Analog bandwidth	1 MHz (800 kHz for ranges ≤0.2 V)			
Voltage Mode				
Ranges	±100, 50, 20, 10, 5, 2, 1, 0.5, 0.2, 0.1 and 0.05 Volt			
Input Accuracy	Signal frequency	Accuracy		
	DC	±0.03 % of reading ±0.02 % of range ±100 µV (2 mV for Ranges ≥10 Volt)		
	Up to 1 kHz	±0.03 % of reading ±0.02 % of range		
	Up to 10 kHz	±0.1 % of reading ±0.05 % of range		
	Up to 100 kHz	±2 % of reading ±0.1 % of range		
	Up to 1000 kHz	±5 % of reading ±0.5 % of range		
Offset accuracy after Balance Amplifier	Range <10 V: ±0.002 % of range ±3 µV; Range ≥10 V: ±0.005 % of range			
Typ. Noise floor	Sample rate/Range →	100 V	5 V	0.5 V
	1 MS/s	-85 dB	-86 dB	-78 dB
	200 kS/s	-88 dB	-88 dB	-87 dB
	20 kS/s	<-100 dB	<-100 dB	-95 dB
Typical CMR	Bandwidth/Range →	100 V	5 V	0.5 V
	50 Hz	70 dB	88 dB	102 dB
	400 Hz	70 dB	86 dB	100 dB
	10 kHz	55 dB	70 dB	80 dB
Gain Drift	Typical 10 ppm/K, max. 30 ppm/K			
Offset Drift	Typical 0.3 µV/K + 5 ppm of range/K, max 2 µV/K + 10 ppm of range/K			
Gain Linearity	<0.02 %			
Inter channel phase mismatch	0.02° * fin [kHz] + 0.1° (5 V Range)			
Channel Cross talk Range	<10 V: -120 dB @ 10 kHz; Range ≥10 V: -95 dB @ 10 kHz			
Input Coupling (see 1)	DC, AC 1 Hz (3 Hz, 10 Hz per SW)			
Input Impedance	Range <10 V: 10 MΩ; Range ≥10 V: 1 MΩ 110 pF between INx to GND			
Max. Common Mode Voltage	Isolated version: ±500 V			
	Differential version: Ranges ≥10 Volt: ±100 V; all other Ranges: ±12 V			

Overvoltage Protection	<10 V: 100 V (200 V peak for 10 msec); Range ≥10 V: 300 V cont.
Excitation Voltage	
Excitation Voltage	Unipolar or Bipolar Software selectable Free programmable (16-bit DAC)
Excitation Level	unipolar 0...24 Volt; Predefined levels: 1, 2.5, 5, 10, 12, 15, 20 and 24 VDC
Excitation Level	bipolar 2...30 Volt; Predefined levels: 2.5, 5, 10, 12, 15, 24 and 30 VDC
Accuracy	±0.1 % ±5 mV
Drift	±50 ppm/K ±100 µV/K
Stability 10 % to 90 % load (bipolar)	<0.01 %
Current limit	200 mA (2 Watt max. per Channel, 12 Watt max. per Slice)
Protection	Continuous short to ground
Input short, Sensor offset adjust	Software selectable
Counters (only on HS-LV+ type)	
Inputs	1 digital counter input 3 digital inputs Fully synchronised with analog data
Counter modes	counting, waveform timing, encoder, tacho, gear tooth sensor
General Counter Specifications	See "SIRIUS counter specification"
Additional Specifications	
Input connector	DSUB-9, Banana, BNC (others on request)
TEDS support	Standard + DSI® adapters
1) In- must be within ±10 V referred to GND (iso); for Ranges ≥10 V the DC value of In- is not rejected	

5.23.2. HS-LV



HS-LV connector: pin-out (DSUB-9 female)



SIRIUSi-HS-8xLV



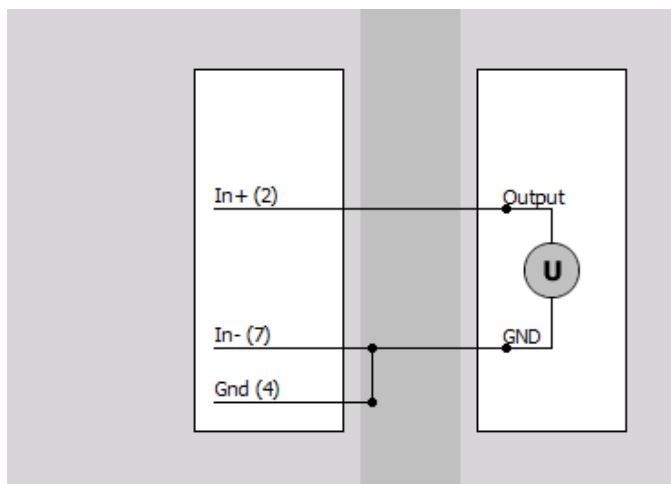
Important

Digital status input

Pin 5: DI Status is used for digital status input: i.e. show alarm status in DewesoftX® when a current clamp is open. See "[Accessories and Sensors Technical Reference Manual](#)"!

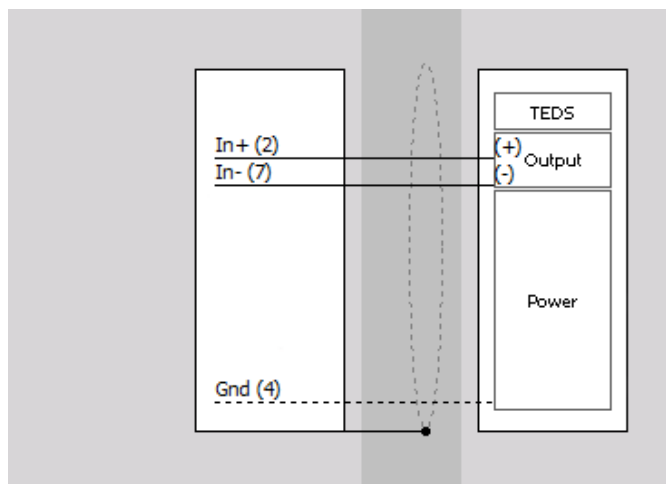
5.23.2.1. HS-LV: Voltage

Voltage - Single ended



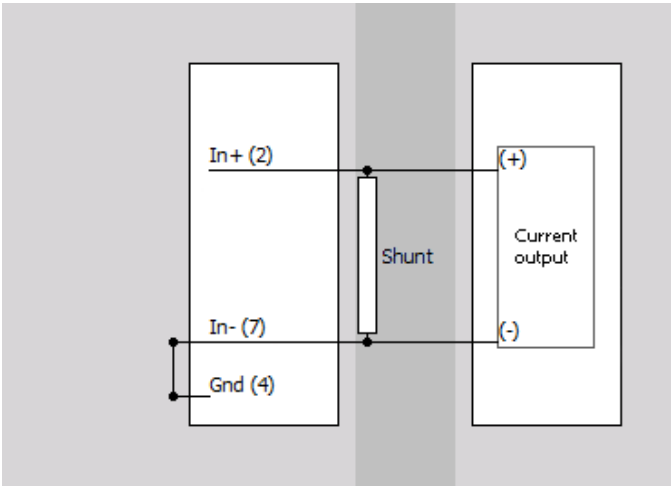
Voltage – Differential

Use only when sensor Output (+) and Output (-) are referenced to Gnd. Gnd must be connected.

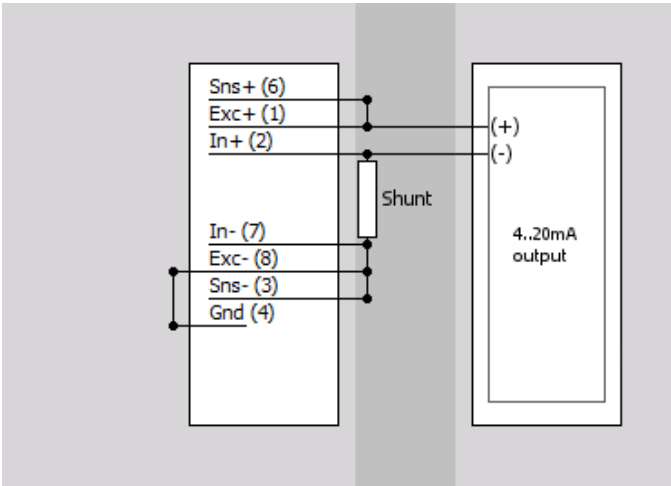


5.23.2.2. HS-LV: Current

External direct shunt



External loop powered shunt



5.23.2.3. HS-LV: Bridge

Full Bridge

