

SRS 121.1 DC

6-channel System Reference Standard for DC Power/Energy
(Class 0.04)



The SRS 121.1 DC is a 6-channel single-phase reference standard for DC Power/Energy accuracy class 0.04 for verification of 1 up to 6 DC Meters or DC Energy Measuring Units of EVSE (Electric Vehicle Supply Equipment) at the same time.

The voltage is measured with 6 independent channels U1 to U6. The current is measured common for all channels with two external Zero Flux Precision Current Transducers connected to the two Current Transducer inputs CT1 and CT2.

The DC Power/Energy measurement with 6 channels (voltage U_x multiplied with current I) allows to calibrate up to 6 DUTs with closed test link (voltage and current path connected) at the same time.

The operation and processing of the measured values of this device without display is carried out by using special operation commands from a personal computer.

Advantages

- 6 wide range voltage inputs 10... 1000 VDC (2000 VDC on demand)
- Wide range current input 0.5 ... 600 ADC (CT2: 0.5 ... 60 ADC, CT1: 60 ... 600 ADC)
- Data transfer and communication via USB (Type B), ETHERNET
- Data storage on removable SD memory card
- Two USB (Type A) connectors for future extensions

Functions

- DC Power/Energy measurement parallel with 6 channels with 6 programmable pulse outputs (fou1 electrical and optical)
- DC Reference Standard for integration in a DC Test System with up to 6 positions, each equipped with a SMM400 error evaluation module.
- Integrated error calculator with 2 pulse inputs

Options

- Software CALegration

Technical Data SRS 121.1 DC

General

Auxiliary power supply:	88 VACmin ... 264 VACmax / 47 ... 63 Hz 125 VDCmin ... 373 VDCmax
Power consumption:	max. 45 VA
Housing:	19" plug-in unit, 3 HE
Dimensions:	W 483 x D 133 x H 326 mm
Operation temperature:	-10 °C ... +50 °C (operating range) +10 °C ... +40 °C (specified range)
Storage temperature:	-20 °C ... +60 °C
Relative humidity:	≤ 85% at Ta ≤ 21°C ≤ 95% at Ta ≤ 25°C, 30 days / year spread

Safety CC

Isolation protection:	IEC 61010-1:2010
Measurement Category:	1000 VDC CAT II (2000 VDC CAT II ³)
Degree of protection:	IP-20

Measurement Ranges

Measuring Quantity	Range	Input
DC Voltage	10 V ... 1000 V (2000 V) ³	U1 ... U6
DC Current 60A / 600A	0.5 A ... 60 A	CT2
	60 A ... 600 A	CT1

Measurement Accuracy

Voltage / Current		≤ ± E [%] ^{1 2}
Measuring Quantity	Range	Class 0.04
DC Voltage	100 V ... 1000 V (2000 V) ³	0.04
	10 V ... 100 V	0.04
DC Current	5 A ... 600 A	0.04
	0.5 A ... 5 A	0.06

DC Power / Energy Voltage: 100 V... 1000 (2000) V		≤ ± E [%] ^{1 2}
Measuring Quantity / Input I	Range	Class 0.04
DC Current CT1, CT2	5 A ... 600 A	0.04
	0.5 A ... 5 A	0.06
DC Power / Energy Voltage: 10 V... 100 V		
Measuring Quantity / Input I	Range	
DC Current CT1, CT2	5 A ... 600 A	0.04 (Un)
	0.5 A ... 5 A	0.06 + 0.04 (Un)

Notes

- x.x :Related to the measuring value
x.x :Related to the internal measuring range final value (full scale, FS), Un, In in the U, I range left or Un at x.x (Un) in the U range indicated above
 $E(M) = FS/M * x.x$ (e.g. 5 A, 0.06: FS = 6 A, E(5) = 6 / 5 * 0.06 = 0.072 %)
- at temperature + 23 °C ± 2 °C
- 2000 V version on demand

Pulse inputs 1 ... 2

Level:	5 ... 24 VDC
Frequency:	max. 200 kHz
Supply:	12 VDC (I < 60 mA)

Pulse outputs 1 ... 6

Pulse output 1 parallel electrical and optical (fiber optic connection)

Level:	5 VDC				
Frequency:	max. 60 kHz				
Pulse length:	≥ 8µs				
Supply:	12 VDC (I < 60 mA)				
Meter constant: DC energy	C = C ₀ / (In * Un) C ₀ = 216'000'000 [imp/Wh] The meter constant depends on the highest selected internal ranges In, Un. Internal current ranges In [A]				
DC Current CT2	6	12	25	50	60
DC Current CT1	60	120	250	500	600
	Internal voltage ranges Un [V]				
DC Voltage U1 ... U6	30	60	120	250	500
	1000	(2000)			
	Example: Un = 500 V, In = 250 A C = 1'728 [imp/Wh]				
Output frequency:	CPZ ₁ = C / 3'600 [imp/Ws] f ₀ = CPZ ₁ * P f _{max} = CPZ ₁ * Un * In = 0.48 imp/Ws * 500V * 250A = 60'000 [imp/s]				

