Technical Data Sheet

DC21-1CSH-RS
DC ENERGY METER - DIN RAIL

DC21-1CSH-RS is a modern Single channel DC Energy meter with bidirectional energy measurement, designed for EV charging station, telecommunication base stations, solar photovoltaic, and other applications of DC Energy measurement. The meter is engineered using advanced micro controller technology and it is suitable for electrical parameter measurement and monitoring. It displays parameters on bright intuitive LCD and also has Pulse Outputs and Impulse LED for energy monitoring. It has inbuilt industry standard MODBUS RTU for remote monitoring. Meter housing is standard Din Rail Mount that allows ease of installation.

Application

- Solar Photovoltaic Systems
- Battery Chargers and Systems
- Wind Power Generation
- Electroplating Industries
- Power Distribution For Telecommunication
- Industrial DC control System

Product Features

Direct Connection Meter

- The Meter can safely measure 2000A maximum current through external shunt resister output 50-150mv.

Measured Electrical Parameters

- The Meter is primarily for bidirectional Energy measurement but it also accurately measures important electrical parameters like Voltage, Current, Power, Energy, Amper hours. The measured parameters can be viewed on display and MODBUS for remote viewing.
  Note: Voltage channel is isolated(4kVDC).

Demand

- The Demand parameter for Power (Import/Export)and Current are calculated as per configurable demand integration time.

Pulse Outputs

- The Meter has one opto-isolated Pulse Outputs (SO) that can be configured for (Import/Export) Energy parameter. The pulse width and rate of pulse out is onsite programmable.

Impulse LED

- The meter has Impulse LED which flash at rate of 1000 IMP/kWh indicating the Energy consumption.

Front Keys

- Two keys are provided for easy navigation and accessibility of different parameters and onsite programming of the meter.

Remote Communication

- The Meter provides RS485 communication based on MODBUS protocol for remote data acquisition of measurement data and configuration. MODBUS parameters baud rate, device address and parity- stop bits are programmable.

LCD

- The LCD has bold seven segment digits with bright white backlit for display of measurement parameters. Special symbols, units and bar graph are provided for effective display and easy onsite configuration. Indications for communication status, pulse outputs are available on screen. Measurement screen can be set as automatic scrolling or manual scrolling.

Compliance to Standards

National / International Standards are complied

- Accuracy Standard : EN 50470-4:2023
  IEC 62053-41:2021
- IP for water & dust: IEC 60529
- Plastic Flammability Standard: UL 94
- Electromagnetic Compatibility : IEC 61326 - 1, Table 2

Technical Specifications

Input Voltage	
Operating Voltage range	± 5-1000 VDC
Nominal Input Voltage range	100-1000 V
Operating Voltage range	± 5% to 110% of Nominal
Voltage Overload Withstand	2x rated value for 1sec, repeated 10 times at the 10sec intervals
Power consumption in Voltage Circuit	< 2 W
Current Sensor	External Shunt
Shunt Setting Range	50 - 150(375) mV (Note 1)
Nominal Input Current range	5 to 2000A (via External Shunt)(Note 1)
Operating Current range	± 0.4% to 100% * Imax(Note 1) of Nominal
Auxiliary Supply	
Aux Higher	60-300V AC / DC (230V AC/DC nominal)
Aux Lower	20-60V AC / DC (24V AC/DC nominal)
Aux Supply Frequency	45 to 65 Hz range
Burden	< 3VA approx. (at nominal value)
Accuracy	
Voltage	± 0.5% of nominal value
Current	± 0.5% of Nominal value.
Power	± 1% of range max
Energy	± 1%
Energy(Import/Export)	Class 1 as per IEC 62053-41:2021 Class B as per EN 50470-4:2023
Pulse Output	
SO	Passive Opto-isolated
Contact Ranges	5-27V DC, 27 mA DC (max)
Pulse Duration	60, 100 and 200 millisecond
Pulse Rate	1, 10, 100, 1000 pulse per kWh.
Impulse LED	
Impulse Rate	1000 pulse per kWh

Note 1 :
IEC62053-41:2021 standard applicable to nominal input current range setting of 5A to 2000A and the shunt settings 50mV to 150mV

Current measurement parameters	5 to1000A	1001 to 2000A
Nominal Current (I_n)	5 to1000A	1001 to 2000A
Maximum Current Imax	<=2*In	2000A

EN50470-4:2023 standard applicable to nominal input current settings 5A to 400A and the shunt settings 50mV to 75mV.

Current measurement parameters	5A	400A
Starting Current (0.04*I_{tr})	0.02A	1.6A
Minimum Current (0.5*I_{tr})	0.25A	20A
Transitional Current (I_{tr})	0.5A	40A
Nominal Current (I_n)	5A	400A
Maximum Current Imax (50*I_{tr})	25A	2000A

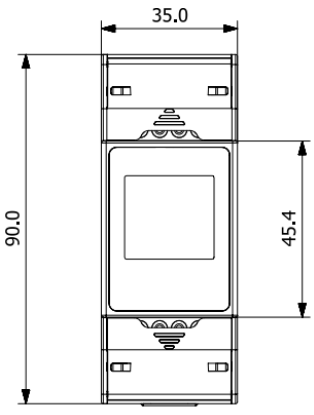
Technical Specifications

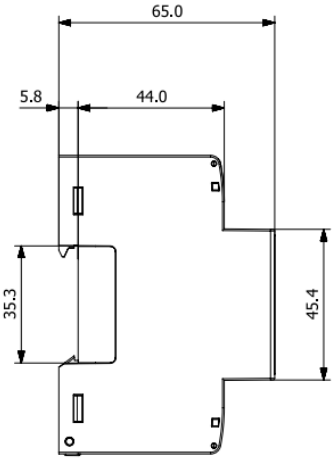
Communication Interface	
Protocol	RS485 MODBUS
Baudrate	2.4 / 4.8 / 9.6 / 19.2 / 38.4 / 57.6 kbps
Data Width	8
Parity - Stop Bits	None -1 / None -2 / Even -1 / Odd -1
Response Time	<200 millisecond
Display Ranges	
Energy (Import / Export)	0 -99999.99 kWh & Autoranging further
Ampere Hour	0 - 99999.99 Ah & Autoranging further
Voltage	±0 - 9999 V
Current	±0 - 9999 A
Power	±0 - 9999 VA
Installation	
Installation	Indoor
Enclosure	IP51 (Front side) & IP20 (Terminal side) (IEC 60529: 2001)
Housing	2 Module DIN 43880
Dimensions	35 mm X 90 mm X 65 mm
Weight	250 gm
Mounting	35 mm DIN Rail
Safety	
Safety Standard	According to IEC61010
Installation Category	II
Protective Class	II
Pollution Degree	2
High Voltage Test	6200V DC for 1 minute
Impulse Voltage Withstand	9.3 kV (1.2 microsecond waveform)
Housing Flame Resistance	Flammability Class V-0 acc. to UL 94, Self Extinguishing, Non Dripping, free of Halogen
Environmental Conditions	
Mechanical Environment	M1
Electromagnetic Environment	E2
Operating Temperature	-25°C to +70°C
Storage/Transport Temperature	-40°C to +70°C
Relative Humidity	0... 95% (Non Condensing)
Altitude	<2000 m max
Wiring Guidelines	
Aux / Voltage Input Wire Size	1 to 2.5 mm^2 (use insulated pin types lugs)
Aux / Voltage Tightening Torque	0.4 Nm
RS485 / SO / Current Wire Size	0.5 to 2.5 mm2 (Solid/Stranded with pin type lug)
RS485 / SO / Current Tightening Torque	0.4 Nm

Parameter Measurement and Display

Sr No	Displayed Parameters
1	Total Energy
2	Import Energy
3	Export Energy
4	Partial Total Energy
5	Partial Import Energy
6	Partial Export Energy
7	Voltage
8	Current
9	Power
10	Total Amper Hour
11	Import Amper Hour
12	Export Amper Hour
13	Partial Total Amper Hour
14	Partial Import Amper Hour
15	Partial Export Amper Hour
16	Import kW Demand
17	Export kW Demand
18	Max Import kW Demand
19	Max Export kW Demand
20	Max Import Current Demand
21	Max Export Current Demand
22	Import Current Demand
23	Export Current Demand
24	Max Current
25	Min Current
26	Max Voltage
27	Min Voltage
28	Max Power
29	Min Power
30	Run Hours
31	On Hours
32	Number of Interruptions

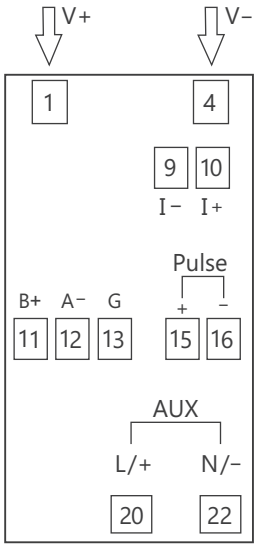
Dimensions



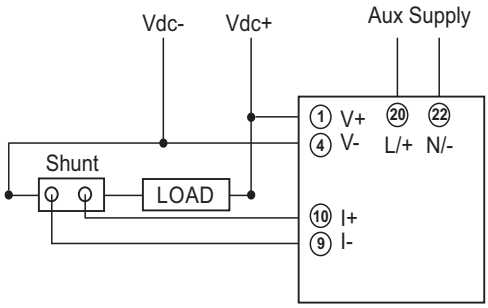


Electrical Connections

Connection Diagram For DC21-1CSH-RS



Shunt Connection :



Ordering information

Product Code	DC21-	Z	0	XX	XX	X	X	X	00ST
Input Voltage Range	5-1000VDC			01					
Current Range	5-2000A(50-150mV)				01				
Meter Interface	RS485 with 1 SO output					A			
Auxiliary Supply	Lower aux (20-60V AC/DC)						L		
	Higher Aux (60-300V AC/DC)						H		
Accuracy	Class B							B	

Order Code Example

DC21-Z00101ALB00ST - DC21-1CSH-RS Single Channel DC Energy Meter, voltage range 5-1000V, lower aux 20-60V AC/DC, 50 Hz with RS485 Modbus and SO output.

sifam tinsley
PRECISION INSTRUMENTATION

Sifam Tinsley Instrumentation Inc.
2105, Barrett Park Dr. Unit 105.
Kennesaw, GA 30144, USA
E-mail Id : psk@sifamtinsley.com
info@sifamtinsley.com
Web : www.sifamtinsley.com
Contact No. : +1 404 736 4903

Sifam Tinsley Instrumentation Ltd
Unit 1 Warner Drive,
Springwood Industrial Estate
Braintree, Essex, UK, CM72YW
E-mail: sales@sifamtinsley.com
Web: www.sifamtinsley.com/uk
Contact: +44(0)1803615139