

Data Logger

SDR1000



Versatile Data Acquisition for Flexible Application in Various Workplaces

Low Operating Noise

Multi-Screen Display Supporting Various Data Types

Data Recording for User-Friendly Viewing and Analysis Facilitation

Safety Function Limiting Instrument Operation for Ensuring Safe Use

Touch Screen and Handwriting Function for Convenient and Flexible Data Utilization

Man-Machine Interaction: Simple, Direct, and Easy-to-Use



Suita Electric Website

Description

The SDR1000 data logger is a common recording device that records the collected data and operational data in the internal storage system of the instrument based on time to reduce the consumption of paper, pen and ink. The stored data recorded in the instrument is displayed on the LCD screen after operation and simulation. The recorded data can be displayed in various forms such as trend, number, bar chart and alarm list on the LCD screen.

Functional Advantages and Features

Extensible Modular Structure

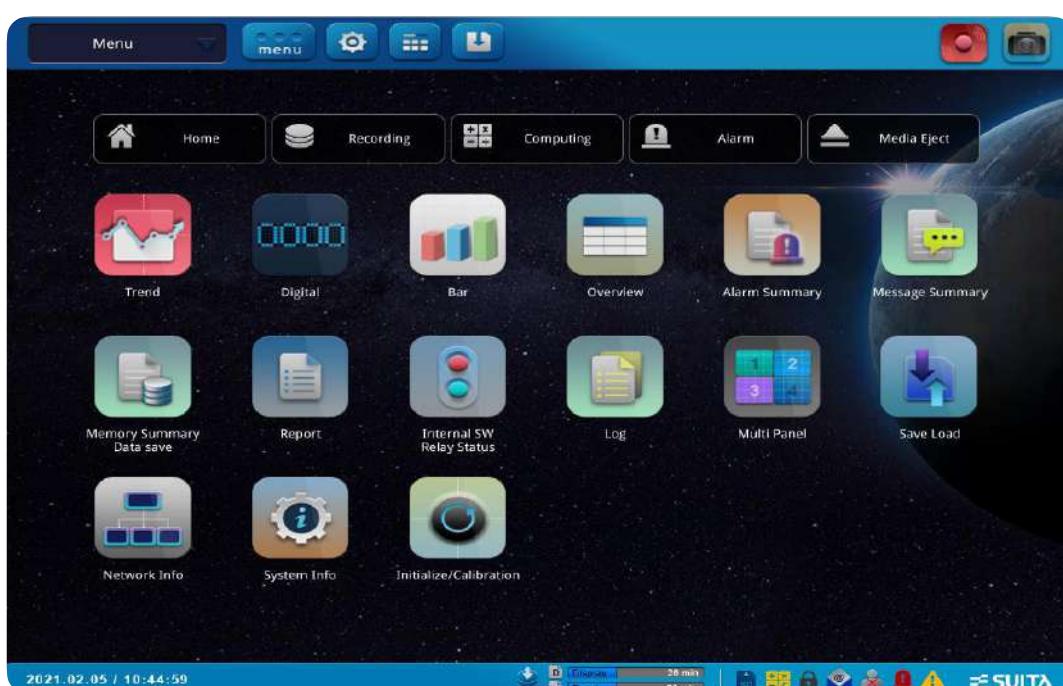
The power analyzer of this series can measure all DC and AC parameters. It can also measure harmonics and perform integration simultaneously without changing the measurement mode.

Support Multi-channel Data Measurement and Recording

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User-friendly GUI

With the 12.1" high-resolution touch display screen, the User-friendly GUI is more intuitive and simple, and it is convenient to switch between screens.



Handwriting Input Function

Support touch and handwriting input operations. You can draw or input text in the waveform area with a

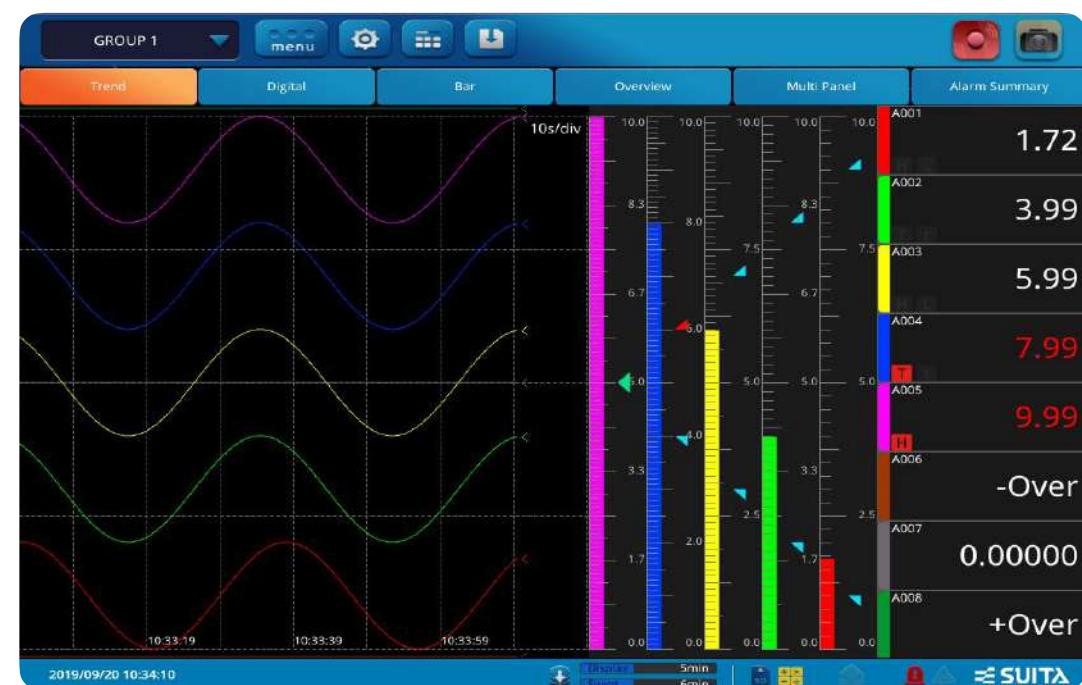
handwriting pen or fingertip, and can also specify the input color and line thickness. The design of functional module is clear and convenient for users to operate intuitively.

Safety Handling

The digital certificate management function guarantees the network information security, and the multi-user login and authority management guarantees the user operation and data security.

Intelligent Operation Interface

You can seamlessly display historical trends by sliding or dragging data during the measurement process. Manipulate the numerical display section by dragging it up and down, left and right, adjusting its position freely, and move the ruler for a detailed view.



Multi-screen Monitoring Display

The image display can be divided into 2~6 sections, which are arranged on the screen respectively. These 2~6 sections have 9 formats, and up to 10 custom images can be saved.



Mass Storage and Print Function

SDR1000 has the capability to store real-time test and operational data, with an internal storage capacity of 16GB. Additionally, it can connect to a printer via the LAN port for on-site printing. Reports and screenshots can be printed directly from the instrument without the need for a computer connection.

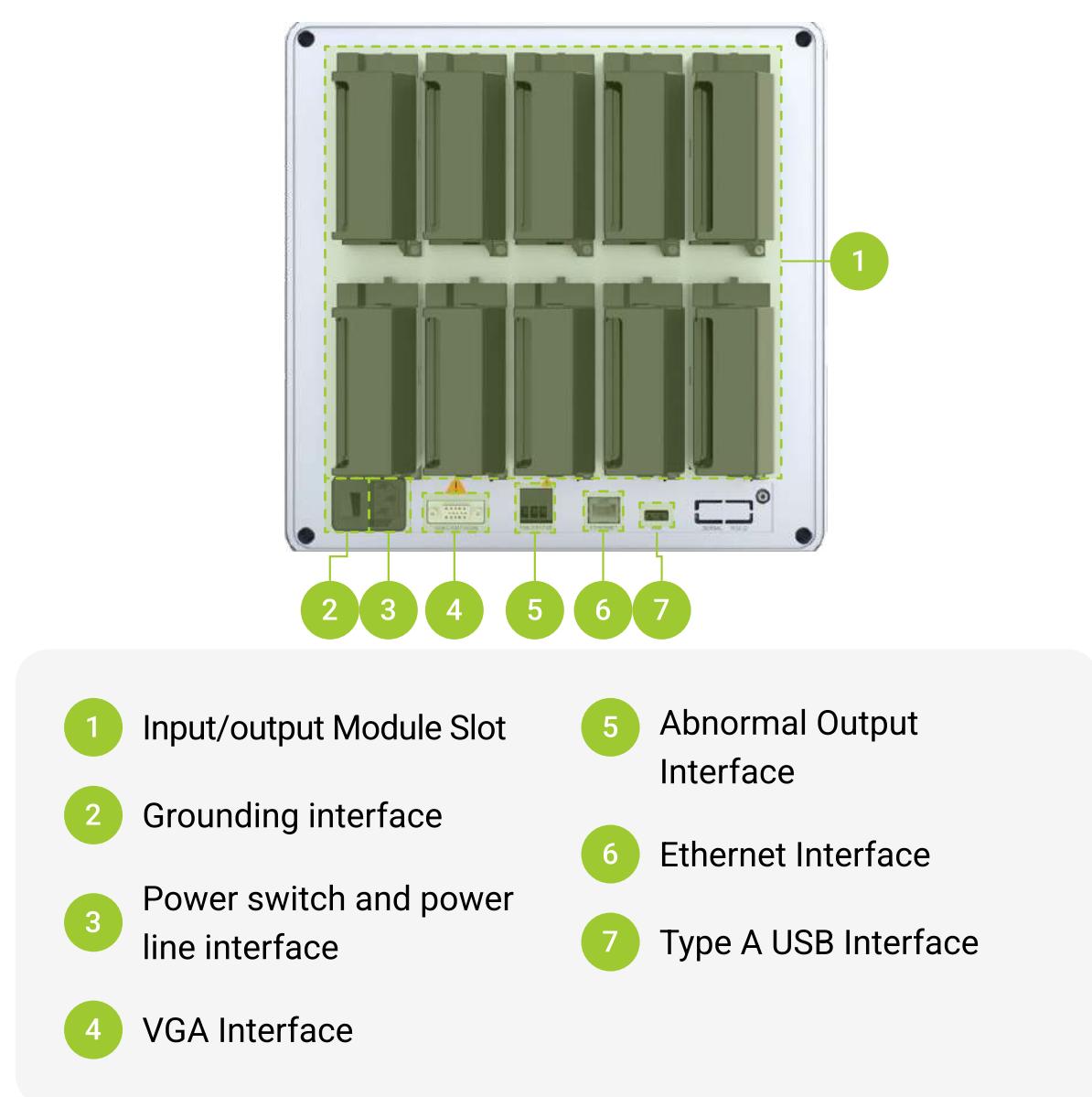
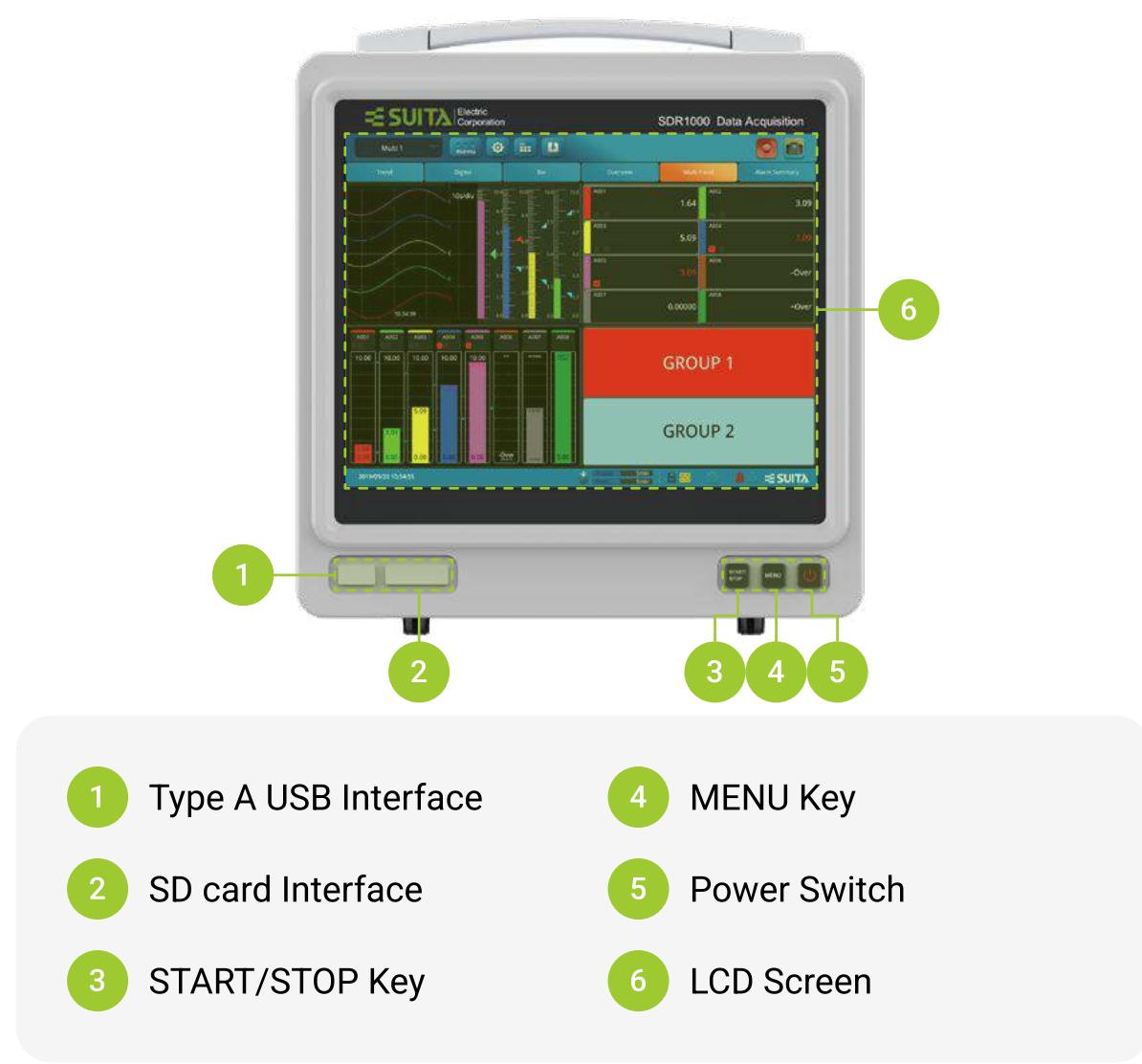
Main Network Function

Users can access and transmit measurement data files from computers through FTP server function. At the same time, it supports E-mail sending, time synchronization (SNTP), network automatic setting (DHCP) and FTP client functions.

Mouse and Keyboard Interface

Connect the mouse and keyboard through the USB interface of the front and rear panels to perform screen operations (text input, etc.). At the same time, use USB memory to save data and transmit it to the computer easily.

Product Overview



Applications

Data acquisition of environmental test device

Measure environmental test data, display and record various data in a concise and easy-to-understand way. Multiple input types can be selected to automatically calculate the dry-bulb temperature and relative temperature of wet bulb. The operation results can be recorded in combination with temperature and other parameters (such as pressure).

Sterilization engineering management of drug and food (acquisition of sterilization data)

The data in the sterilization process can be recorded through the operation function. Value F0 is calculated automatically according to the heating temperature, and the operation results are recorded in combination with the heating temperature and other parameters (drug/ food temperature, pressure, etc.).

Management of wrapping process (data acquisition of wire temperature and outer diameter)

Measure and simultaneously display the outer diameter and temperature in the process of wire wrapping during wire manufacturing to monitor the insulation quality. Multiple input modes are available; display the field temperature and outer diameter of wire simultaneously to monitor the relevant data; monitor and record the outer diameter, temperature and alarm when abnormality occurs.

Technical Specifications

Analog Input Module

Item	Specification
Model No.	RAI
Input Point	10
Input Type	DC voltage, standard signal, thermo- couple, thermal resistance *1, D1 (level, contact)
Measurement Period	General module: 100ms, 200ms, 500ms, 1s, 2s and 5s Electromagnetic relay module: 1s, 2s and 5s
Broken Couple Detection	Positive display, negative display and Off can be specified (for each channel)
Detection Conditions (Thermocouple)	Normal: 41KΩ or below Disconnected: 41KΩ or above Parallel capacity: 10nF or below Detection current: about 10uA
Detection Conditions (Thermal Resistance)	Normal: wiring resistance specification or lower Disconnected: about 500Ω or above Parallel capacity: 10nF or below Detection current: about 10uA
Detection Conditions (Standard Signal)	Normal: within the measuring range Disconnected: depends on the set broken couple judgment value (the broken couple judgment value is set according to the proportion with the set range width) Lower limit value: -20.0~-5.0% Upper limit value: 105~120%
Input External Resistance	DC voltage/thermocouple input: 2KΩ or below Thermal resistance input: single line 10Ω or below (3 line resistance is also equal)
Input Offset Current	±10nA or below (except when setting broken couple detection)
Measurement Current (RTD)	About 1mA
Input Resistance	10MΩ or above for thermocouple/DC voltage (range of 1V or below). Approximately 1MΩ for DC voltage (range of 2V or above)/standard signal
Influence of Signal Source Resistance	10μV/1kΩ or below for thermocouple/DC voltage (range of 1V or below) ±0.15% of reading/1kΩ or below for DC voltage (range of 2V or above)/standard signal
Allowable Wiring Resistance	The maximum of each wire is 10Ω (wire resistance between three wires is equal) for thermal resistance input
Allowable Input Voltage	10VDC for thermocouple/DC voltage (range of 1V or below)/thermal resistance/DI contact input 60VDC for DC voltage (range of 2V or above)
Standard Mode Voltage	Thermocouple/DC voltage (range of 1V or below)/DI (voltage): 1.2 times rated range or below Standard signal 0.4-2V range: 2.4V Standard signal 1-5V range: 6V
Maximum Common Mode Voltage	30VACrms (50/60Hz) or 60VDC (measure the input maximum common mode disturbance voltage: 250VACrms)
Measurement the Maximum Voltage between Input Channels	30VACrms (50/60Hz) or 60VDC (measure the maximum common mode disturbance voltage between input channels: 250VACrms)
Withstand Voltage	General input mode: between input terminal and internal circuit: 3,000VAC, 1min Electromagnetic relay mode: between input terminal and internal circuit: 1,000VAC, 1min Between analog input channels: 1,000VAC, 1min (except terminal b)
Insulation Resistance	Between input terminal and internal circuit: 500VDC, 20MΩ or above Between analog input channels: 500VDC, 20MΩ or above

*1: Only general board card supported

Measurement Accuracy

Conditions: temperature $23\pm2^{\circ}\text{C}$, humidity $55\pm10\%\text{RH}$, supply voltage $90\sim132\text{ VAC}$, $180\sim264\text{ VAC}$, supply frequency within $50/60\text{Hz}\pm1\%$, and preheat for at least 30 minutes. Vibration and other environmental conditions do not adversely affect the performance of the instrument.

Voltage Measurement Accuracy

Type	Range	Measurement Accuracy (Digital Display)		Maximum Resolution Ratio
		Integration Time 16.67ms and above	Integration Time 1.67ms	
DC Voltage	20mV	$\pm(0.05\% \text{ of reading} + 12\mu\text{V})$	$\pm(0.1\% \text{ of reading} + 20\mu\text{V})$	$1\mu\text{V}$
	60mV	$\pm(0.05\% \text{ of reading} + 0.03\text{mV})$	$\pm(0.1\% \text{ of reading} + 0.1\text{mV})$	$10\mu\text{V}$
	200mV	$\pm(0.05\% \text{ of reading} + 0.03\text{mV})$	$\pm(0.1\% \text{ of reading} + 0.2\text{mV})$	$10\mu\text{V}$
	1V	$\pm(0.05\% \text{ of reading} + 1.2\text{mV})$	$\pm(0.1\% \text{ of reading} + 2\text{mV})$	$100\mu\text{V}$
	2V	$\pm(0.05\% \text{ of reading} + 1.2\text{mV})$	$\pm(0.1\% \text{ of reading} + 2\text{mV})$	$100\mu\text{V}$
	6V	$\pm(0.05\% \text{ of reading} + 3\text{mV})$	$\pm(0.1\% \text{ of reading} + 10\text{mV})$	1mV
	20V	$\pm(0.05\% \text{ of reading} + 3\text{mV})$	$\pm(0.1\% \text{ of reading} + 20\text{mV})$	1mV
	50V	$\pm(0.05\% \text{ of reading} + 0.03\text{V})$	$\pm(0.1\% \text{ of reading} + 0.1\text{V})$	10mV
	0.4-2V	$\pm(0.05\% \text{ of reading} + 1.2\text{mV})$	$\pm(0.1\% \text{ of reading} + 2\text{mV})$	$100\mu\text{V}$
Standard Signal	1-5V	$\pm(0.05\% \text{ of reading} + 3\text{mV})$	$\pm(0.1\% \text{ of reading} + 10\text{mV})$	1mV

Thermal Resistance Measurement Accuracy

Type	Range	Measurement Accuracy (Digital Display)		Maximum Resolution Ratio
		Integration time 16.67ms and above	Integration time 1.67ms	
Thermal Resistance	Pt100	$\pm(0.15\% \text{ of reading} + 0.3^{\circ}\text{C})$	$\pm(0.3\% \text{ of reading} + 1.5^{\circ}\text{C})$	0.1°C

Thermocouple Measurement Accuracy(Excluding Cold End Compensation Accuracy)

Type	Range	Measurement Accuracy (Digital Display)		Maximum Resolution Ratio
		Integration time 16.67ms and above	Integration time 1.67ms	
TC-K	K	$\pm 0.15\% \text{ of reading} + 0.7^{\circ}\text{C}$ -200~ 0.0°C : $\pm 0.35\% \text{ of reading} + 0.7^{\circ}\text{C}$; when lower than -200°C, the accuracy cannot be guaranteed	$\pm 0.2\% \text{ of reading} + 5.0^{\circ}\text{C}$ -200~ 0.0°C : $\pm 3\% \text{ of reading} + 5.0^{\circ}\text{C}$; when lower than -200°C, the accuracy cannot be guaranteed	0.1°C
TC-T	T	$\pm 0.15\% \text{ of reading} + 0.5^{\circ}\text{C}$ -200~ 0.0°C : $\pm 0.35\% \text{ of reading} + 0.5^{\circ}\text{C}$; when lower than -200°C, the accuracy cannot be guaranteed	$\pm 0.2\% \text{ of reading} + 2.5^{\circ}\text{C}$ -200~ 0.0°C : $\pm 2\% \text{ of reading} + 2.5^{\circ}\text{C}$; when lower than -200°C, the accuracy cannot be guaranteed	0.1°C

DI Measurement Accuracy

Type	Range	Measurement Accuracy
DI	Level	Threshold level ($V_{th}=2.4\text{V}$), accuracy $\pm 0.1\text{V}$
	Contact point	Threshold level ($V_{th}=2.4\text{V}$), accuracy $\pm 0.1\text{V}$

Digital Input Module

Item	Specification
Model No.	RDI
Purpose	Remote control input, pulse input, etc.
Input Point	16
Input Signal Type	DI and pulse
Measurement Period	The fastest is 100ms
Input Type	Open collector or no-voltage contact
Insulation Mode	Photocoupler insulation and transformer insulation (input power supply)
Rated Specification of Contact	12VDC, 20mA or above
Input Resistance	About 2.6KΩ
Allowable Input Voltage	10V
ON/OFF Detection	In case of open collector contact input: Voltage when ON: 0.5VDC or below Leakage current when OFF: 0.5mA or below In case of no-voltage contact input: Contact resistance when ON: 200Ω or below Contact resistance when OFF: 50kΩ or above
Common-mode Number	2
Withstand Voltage	Between input terminal and internal circuit: 1,500VAC, 1min
Insulation Resistance	Between input terminal and internal circuit: 500VDC, 20MΩ or above
Pulse Input Specification	Counting method: calculate the rising edge of pulse Open collector: the voltage level of input terminal changes from high to low No-voltage contact: the contact changes from disconnected to closed Minimum detection pulse width: 2ms or above in total for Low (closed) and High (disconnected) Pulse detection period: 1ms Pulse measuring accuracy: 1 pulse Pulse counting interval: measurement period

Digital Output Module

Item	Specification
Model No.	RDO
Purpose	Alarm output, etc.
Input point	6
Input Signal Type	Relay contact (contact C)
Measurement Period	The fastest is 100ms
Insulation Mode	Mechanical insulation
Rated Load Voltage	30VDC or 250VAC or below
Maximum Load Current	3A (DC)
Minimum Load Voltage/Current	DC12V/100mA
Common-mode Number	6 (all points are independent)
Withstand Voltage	Between output terminal and internal circuit: 3,000VACrms, 1min Between output terminals: 3,000VrmsAC, 1min
Insulation Resistance	Between output terminal and internal circuit: 500VDC, 20MΩ or above Between output terminals: 500VDC, 20MΩ or above

Digital Input / Output Module

Digital Input (DI) Section

Item	Specification
Purpose	Remote control input, pulse input, etc.
Input Point	8
Input Signal Type	DI and pulse
Measurement Period	The fastest is 100ms
Input Type	Open collector or no-voltage contact
Insulation Mode	Photocoupler insulation and transformer insulation (input power supply)
Rated Specification of Contact	Use external contact of 12VDC, 20mA or above
Input Resistance	About 2.4KΩ
Allowable Input Voltage	10V
ON/OFF Detection	In case of open collector contact input: Voltage when ON: 0.5VDC or below Leakage current when OFF: 0.5mA or below In case of no-voltage contact input: Contact resistance when ON: 200Ω or below Contact resistance when OFF: 50kΩ or above
Common-mode Number	1
Withstand Voltage	Between input terminal and internal circuit: 1,500VAC, 1min
Insulation Resistance	Between input terminal and internal circuit: 500VDC, 20MΩ or above
Pulse Input Specification	Counting method: calculate the rising edge of pulse Open collector: the voltage level of input terminal changes from high to low No-voltage contact: the contact changes from disconnected to closed Minimum detection pulse width: 2ms or above in total for Low (closed) and High (disconnected) Pulse detection period: 1ms Pulse measuring accuracy: 1 pulse Pulse counting interval: measurement period

Digital Output (DO) Section

Item	Specification
Purpose	Alarm output, etc.
Input Point	6
Input Signal Type	Relay contact (contact C)
Measurement Period	The fastest is 100ms
Insulation Mode	Mechanical insulation
Rated Load Voltage	30VDC or 250VAC or below
Maximum Load Current	3A (DC)
Minimum Load Voltage/Current	DC12V/100mA
Common-mode Number	6 (all points are independent)
Withstand Voltage	Between output terminal and internal circuit: 3,000VACrms, 1min Between output terminals: 3,000Vrms- sAC, 1min
Insulation Resistance	Between output terminal and internal circuit: 500VDC, 20MΩ or above Between output terminals: 500VDC, 20MΩ or above

Display Function

Basic Display

Item	Specification
Display Group Number	Up to 50 groups
Group Switching	Switch display groups by specified period
Number of Channels (Assigned to Each group)	Up to 20 channels
Module Type	Analog input, digital input, digital output, digital input/output, operation channel
Channel Display Color	24 fixed colors +1 custom color

Display Type

Item	Specification
Trend Display	Display direction: vertical or horizontal Trend cycle: 5*1, 10*1, 15*1, 30s/div, 1, 2, 5, 10, 15, 20, 30min/div, 1, 2, 4 and 10h/div optional Waveform line width: thick, standard and thin are optional Ruler: the maximum position is 10. The current value bar chart, color ruler band area and alarm point mark can be displayed on the ruler. Movable ruler: it can be moved to any position on the waveform. Others: grid (number of partition is 4~12, automatic), split line, message, area display, partial compression and amplification display.
Historical Trend	Redisplay the display data/event data in memory or external memory. Data retrieval: it can redisplay from the specified location in memory by specifying the date and time. Movable ruler: it can be moved to any position on the waveform.
Bar Graph Display	Direction: vertical or horizontal Ruler: display by channel ruler, and can display the color ruler band area and alarm point mark on the ruler.
Digital Display	The digital page displays the measured values in numbers only Can display the status of DI input with any character string (0=off/1=On etc.) Update cycle: 0.5s
Overview Display	Display form: can display all channels or display by groups. Display measurements of all channels
Alarm List Display	Up to 1,000 alarm records can be displayed. After the alarm is specified with the cursor, it can jump to the historical trend of this part.
Information List Display	The write time and content of up to 500 messages can be displayed. After the message is specified with the cursor, it can jump to display the historical trend of this part.
Memory List Display	Display data information in memory (up to 500 pieces of display/event data respectively) After the file is specified with the cursor, it can jump to display the historical trend of this part.
Report Display	Display report data of memory (hourly report, daily report, weekly report, monthly report, user-defined report and batch processing report)
Log Display	Display operation log and error log
Multi-image Display	Divide the image into 2-6 sections and set different contents to display
Internal Switch/Relay Status Display	Display ON/OFF status of internal switch and DO ON/OFF display of operable internal switch and DO
Other Display	Network information, system information, and system setting

Data Saving Function

Item	Specification
Internal Storage	SD memory card
Internal File Storage Capacity	16G
External Storage	SD memory card or USB flash memory
External File Storage Format	FAT32 or FAT16
Data Type	Display data, event data, alarm list data, manual sampling data, report data and image storage data

Display Data

Item	Specification
Objective	Measurement, operation, report list and information list
Contents	Maximum/minimum value within each recording period
Recording Period	Depending on the trend cycle, record the data type (display, display + event)
Data Format	Binary system or text

Event Data

Item	Specification
Objective	Measurement, operation, report list and information list
Contents	Instantaneous value within each recording period
Recording Period	Depending on the sampling period, record the data type (display, display + event)
Data Format	Binary system or text
Mode	Free, single trigger, and loop trigger

Manual Sampling Data

Item	Specification
Objective	Measurement (input/output module), operation
Contents	Measured value at any time
Record Channel Number	50
Maximum Storage Number of Memory	400
Data Format	Text

Report Data

Item	Specification
Objective	Measurement (input/output module), operation
Record Channel Number	60
Contents	Report generated by report creation time
Maximum Storage Number of Memory	800
Data Format	Text

Image Storage Data

Item	Specification
Contents	Screenshot image data of display screen
Image Data Format	PNG
Output Location	External memory or communication output

Event Action Function

Item	Specification
Event Action	Perform the specified action when an event occurs
Setting Number	50
Event Type	Internal switch, relay, alarm input/out- put channel, alarm operation channel, all alarms, timer, matching time timer, user function key, instrument status and remote control input
Action Type	Recording, operation, switch display rate, mark, manual sampling, release alarm, image storage, save display data, save event data, event trigger, informa- tion, display group switching, relative time timer reset, read in set data, display standard screen, internal switch, relay, start/stop recording, start/stop opera- tion, switch display rate 1/2, standard on/off, relay on/off, internal switch on/off

Alarm Function

Item	Specification
Alarm Number	Up to 4 alarms (levels) can be set for each measurement channel
Alarm Type	Upper limit, lower limit, upper limit of difference, lower limit of difference, rising limit of change rate, falling limit of change rate, upper limit of delay and lower limit of delay
Alarm Delay Time	1s~24h
Lag	Set the difference between alarm occurrence value and release value
Alarm Output	Output to internal switch and relay, and action can be set as and/or
Display	When the alarm occurs, the status is displayed in each running screen, and the alarm icon is displayed in the status display section
Function of Releasing a Single Alarm	For a single alarm, the alarm display and relay output can be released

Operation Function

Item	Specification
Operation Channel Number	100
Operation Type	General operation: Arithmetic (+, -, *, /), square root, absolute value, common logarithm, natural logarithm, exponent and power Relational operation: .GT. (greater than), .LT. (less than), .GE. (great than or equal to), .LE. (less than or equal to), .EQ. (equal to) and .NE. (not equal to) Logical operations: and, or, non, xor Statistical operations: TLOG and CLOG Special operations: PRE, HOLD, RESET and CARRY Conditional expression: [a?b:c] Bit operation: BIT Rounding operation: INT Mod operation: MOD Trigonometric function: SIN and COS
Operation Accuracy	Double precision floating point
Available Data (Channel Data)	Measurement channels: all IO channels Operation channel: A001~A100 Constant: 100 (K001~K100) Internal switch: 100 (S001~S100) Mark: 20 (F01~F20) Record status: 1 (REC01)

Ethernet Communication Function

Item	Specification
Specification of electric apparatus	Conform to IEEE802.3 (Ethernet frame conforms to DIX specification)
Medium	Ethernet
FTP Client	Automatically transfer data files to FTP server object files: display data, event data, image data, report data, manual sampling and alarm data
SMTP Client	Control the way of sending mails
SNTP Client	Set instrument time after querying SNTP server
Email Client	Automatically send E-mail at specified time, when alarm occurs, when alarm is released (up to 50 channels), when power supply is turned on (when power is restored after interruption), when report data is created, when memory is full, and when timer notification is given
Server Settings	Setting FTP server and SNTP server functions

Hardware Interface

Item	Specification
Input/Output Module Interface	Port number 10
Abnormal Output Interface	1 point at node C; rated load voltage: 12VDC/250VAC, rated load current: 6A (DC/AC), minimum load current: 100mA, service life: 1 million times

Communication Interface

Item	Specification
SD Card Interface	Conform to SD2.0 protocol
Type A USB Interface	Conform to USB Rev. 2.0
VGA Interface	High density D-sub 15 pins
Ethernet Interface	RJ-45 interface, and conform to IEEE802.3: 1000BASE\100BASE-TX,10BASE-T

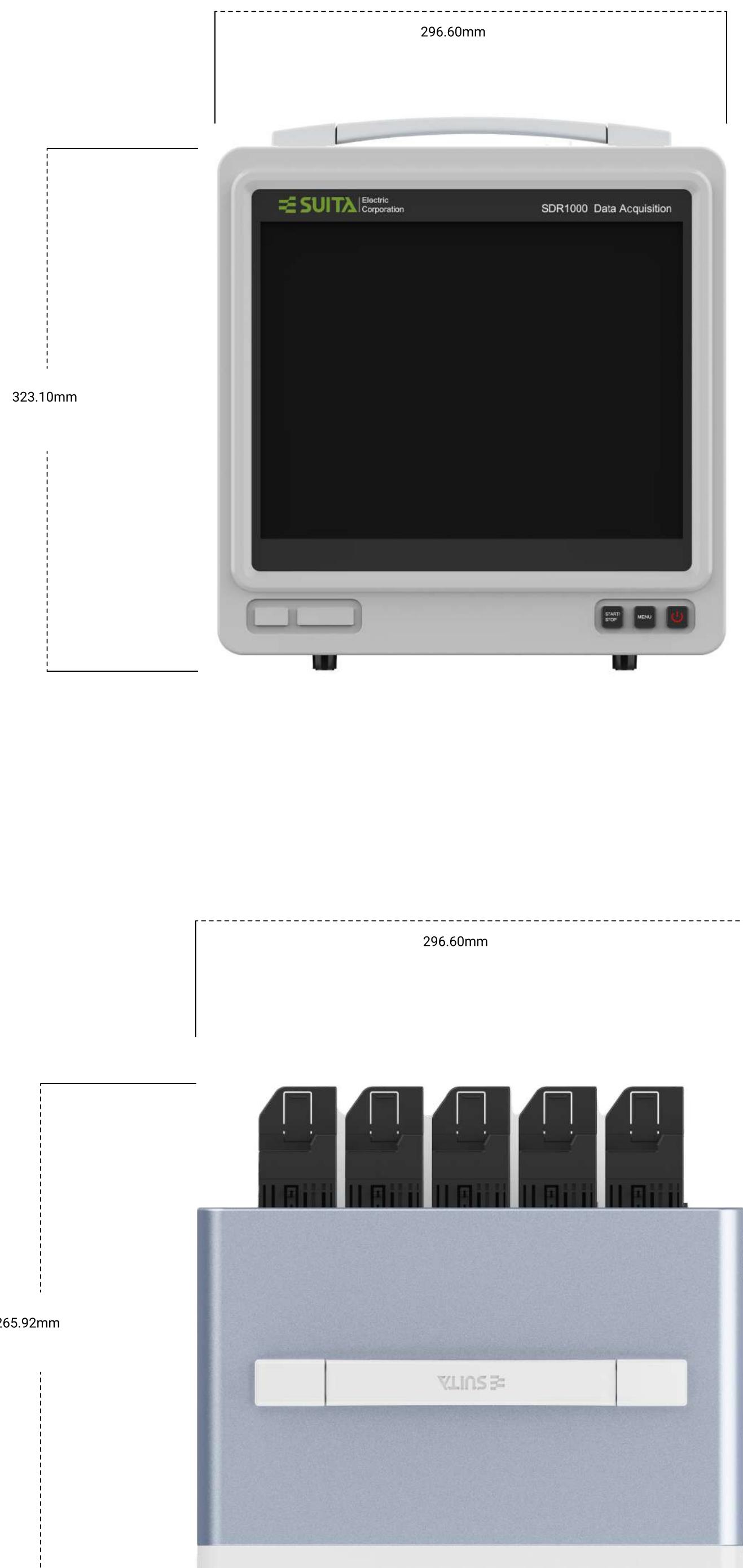
General Specifications

Item	Specification
Preheating Time	≥30 minutes
Working Environment	0~50°C 20~80%RH (5~40°C, no condensation)
Storage Environment	-25~60°C 5~95%RH (no condensation)
Applicable Place	Indoor
Installation Angle	A maximum of 30° backward tilt is allowed, and horizontal at the left and right
Working Altitude	2,000m or below
Rated Supply Voltage	100~240VAC (±10%)
Rated Power Supply Frequency	50/60Hz (±2%)
Maximum Power Consumption	Maximum 80VA (100VAC) or maximum 100VA (240VAC)
Size	292.9mm*263.5mm*313.4mm (including modules)
Weight	About 5.2kg (single machine) + 0.265kg (weight of single sub-board card) *10
Size of Display Screen	12.1"
Image Pixel	1024*768

Model and Code

Name	Model No.	Description
Main Frame	SDR1000	Data Logger
Optional Module (Digital I/O)	RDI	Digital input module
	RDO	Digital output module
	RDIO	Digital input/output module
Optional Module (Analog Input)	RAI-SR-P	AI general
	RAI-ER-P	AI electromagnetic relay
Standard Accessories	NX-COVER	Dust cover

Dimensions of the Instrument





SUITA Electric Co. Ltd

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Global HQ Office: Unit 1608, 16/F, One Harbourfront,
18 Tak Fung Street, Hung Hom, Kowloon, Hong Kong

TEL: +852 2605 6955 / FAX: +852 2605 6933

Japan Office: 8-65 Higashiotabichō, Suita City, Osaka 564-0033

TEL: +81 06-6383-1700 / FAX: +81 06-6383-1701

Website: <http://suitaelectric.com>

Email: sales@suitaelectric.com