

SIREC D Display Recorder

SIREC D200

Overview



Crystal Clear Display

- 5" Digital Colour LCD (TFT)
- QVGA Resolution (320 x 240 pixels)
- Clear and intuitive operation
- Industrial rugged Touch Screen with rapid navigation

Comprehensive Connectivity

- 10/100 Ethernet (DHCP), Web, OPC Server Web and E-mail
- FTP and TCP/IP
- RS485 Modbus Protocol (option)
- Front USB port as standard for keyboard and mouse. Rear USB option.

Data Storage

- On-board non-volatile memory - up to 400 Mbyte
- Removable USB storage
- No moving parts - all solid state Flash memory

Security Stringent - Total Data integrity

- Password Protection - 21CFR Part 11
- ESS - Extended Security System

Plus..

- Health Watch for preventative maintenance
- Remote Access - Advanced Software Data Analysis at your PC
- Independent Chart and Logging speeds
- Global Language Support
- Rapid review and replay of data at recorder
- Approvals - CE, CSA, UL
- NEMA 4X/IP66 option
- Up to 10 Hz (100 msec) Logging (including expansion card option)
- Up to 12 Analog Inputs
- Remote Viewing Tool
- 4 Pulse Inputs via the Digital I/O card (option)

Function

Display

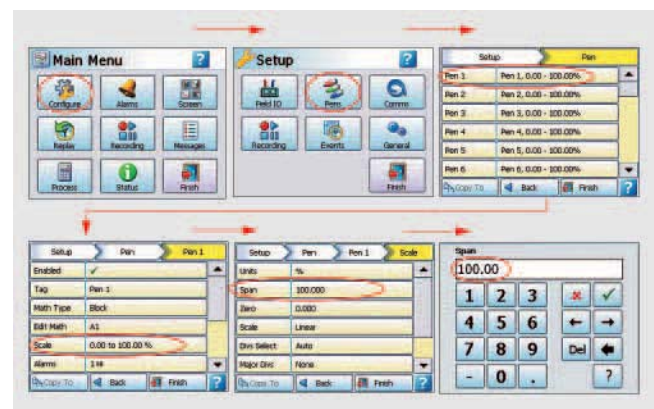
5" Colour Active TFT

With more than 256,000 colours makes it easy to interpret process data and take action with the intuitive bar charts, digital values, trends or trends displays. A screen saver function can be set from 1 to 720 minutes to extend the life of the backlight.

Touch Screen

The heavy duty durable touch screen provides easy data entry and rapid navigation through the menus. The touch screen operator interface provides fast, easy access to the recorder menus making set up and data analysis quick and efficient.

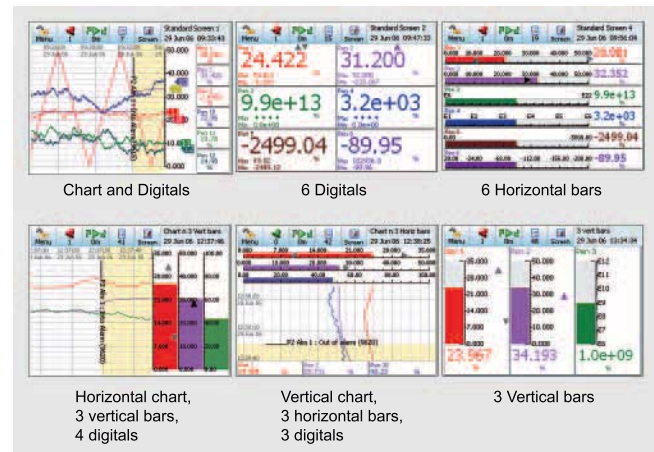
Navigation through the menus and text entry are direct and intuitive:



Example of a recorder menu path from the Main Menu to Pen Scale configuration with clear and rapid navigation

Standard Screens

Up to 10 screens displaying multiple combinations of Charts, Bars and Digitals can be configured, 6 examples below.



Help Files

A complete contextual help system can be accessed and visualised on the screen of the recorder.

Logarithmic Scales

All displayed scales can be set as linear or logarithmic.

Replay with Zoom

Select replay mode and zoom-in on a specific area on the screen. The data can easily be replayed at the recorder with the ability to "zoom". The touch screen makes it fast to review and analyse historical data. A "jump" function allows you to go from any message list directly to the trend showing the occurrence of the alarm.

Language Support

Standard language prompts for

- English UK & US
- French
- German
- Italian
- Spanish
- Portuguese (Braz)
- Polish
- Slovakian
- Czech
- Turkish
- Romanian
- Hungarian
- Russian

Communications

The recorder supports FTP, Modbus TCP/IP (slave mode), web and email over Ethernet (DHCP standard) communications port and Modbus RTU (slave mode) via an RS485 port (option). USB ports allow the use of an ASCII barcode reader. Email sent to your network connected PC triggered by an Alarm or an Event.

Ethernet Connectivity

The Ethernet (DHCP standard) connection, with support for various protocols, provides unlimited connectivity to local area networks (LANs). The standard Ethernet interface makes networking of the recorder to a LAN or the world wide web fast and convenient. Dynamic Host Configuration Protocol (DHCP) automatically acquires the settings (IP address) for network communications from a DHCP server.

Simple Network Time Protocol (SNTP)

The recorder can be synchronised over the ethernet network via a SNTP client or synchronise other recorders via a Server.

Web Server

With the recorder connected to a LAN, all process variables, alarm and messages can be viewed from an internet browser; values are automatically refreshed.

USB Ports

Front and rear USB host ports for data and setup transfers or remote screen through this port. Front USB port is standard and the rear USB port is available with the Communications card option. Use these ports to attach external devices (keyboard or mouse), for direct interfacing with the recorder.

Remote Viewer

Extends the user interface of the recorder onto the desktop PC. Providing remote viewing of the unit launched from a web browser. Full remote control is available as an option. Compatible with Microsoft™ Internet explorer 6 and higher.

Data Storage

Internal Data Storage

70 MByte to 400 MByte expandable internal non-volatile flash memory is available for data storage and chart history.

Pens	70 MByte	400 MByte
6	32 Days	182 Days
12	16 Days	91 Days
24	8 Days	45 Days

Internal memory (Logging rate = 1 s)

Data Export

Removable USB flash storage device. Data is stored in a secure binary encrypted format, with the recorder's configurations, providing added security of the data files

Events

Certain conditions or operations can be set up and logged according to the time and date of the occurrence. Subsequently events can be reviewed in a list or represented on a graph.

Batch

Batch enhances the management of data collected in non-continuous process, known as batch processing, used in thermal treatment, sterilisation, food processing and chemical reactions.

Soft Alarms

6 "software" alarms per pen are easily set up to display and record selected out-of-limit conditions. These can be tied to the relay or digital outputs to activate the user's external equipment.

Independent Display Chart Speeds and Logging rates

Logging rates can be programmed completely separate from the chart display speed, allowing the data to be displayed and stored at the rates that best suits the application.

Fuzzy Logging

This standard feature provides a unique method to increase the storage capacity of the recorder. The data is monitored to determine changes in process data; if no changes are observed data is logged periodically. If data is changing rapidly, it is recorded normally at the programmed rate. By not logging data that is static, data compression of up to 100:1 or more can be achieved saving valuable memory.

Pulse Inputs

The 8 Digital I/O option card has 4 channels that can be set as pulse inputs (first 4 channels). The operating frequency for pulse inputs on the Digital I/O card is 1 kHz max.

Data Security

Total Data Integrity

Data is stored in secure encrypted files making it easy to retrieve the data dependent on process information. Data is automatically recognised without having to remember file names.

Password Protection

Up to 4 levels of password protection with up to 50 different users are available. Multiple levels of password protection and an audit trail of actions enhance the security of the data.

Extended Security System (option)

ESS provides extended features including entry of unique User ID's and associate passwords, time-out of password entry, password expiration, and traceability of user actions. ESS is compatible with the requirements of 21CFR part 11.

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Safety Standards

CE Mark

Conformity with 73/23/EEC, Low Voltage Directive and 89/336/EEC EMC Directive.

Enclosure rating

standard NEMA 3/IP54 type front face protection. NEMA 4X/IP66 available as an option.

Security tag

"Wire seal provision" that provides added security to seal the front door and rear wiring when using optional rear cover to prevent undetected entry to these areas of the recorder.

Technical specifications

Design Attributes

Display size and Type	5" diagonal, color Diagonal, Digital Colour LCD (TFT) with Touch Screen Industrial grade with brightness adjustment and wide viewing angle
Resolution	QVGA (320 x 240 pixels)
Screen Saver	Set in minutes from 1 ... 720, can be set to dim the screen or to switch off. Automatic wake-up facility in the case of an alarm
Brightness adjustment	Adjustable between 10 and 100%, default set to 80% brightness
Backlight life time	40,000 hours to half brightness when used at 100% (62,500 h if used at 80%). Maximum luminosity 450 cd/m ²
Touch Screen life	1,000,000 touches
Display Update Rate	Display values updated every second
Status Display	A status bar, at the top of the recorder's screen, displays the real-time icons of the recorder status, such as recording time left and alarm active.
Communications	Ethernet 10/100 base - T with RJ45 connector supporting Modbus/TCP, FTP, Internet, DHCP or fixed IP address. RS485 Modbus RTU (up to 115200 Baud Rate). RS485 is available as an option on the Comms card
Mathematics	Basic maths include Add, Subtract, Multiply, Divide, Modulo and power. Full Maths (option) support up to 100 character free form math expression for each pen. Like SINE, COS, TAN, Log, Parenthesis (eg. A1 + A2), comm variables, free memory, and access to any data item variable (A1, P1, D1 etc.)
Front (standard) and Rear (option) USB Ports	USB host ports front (standard) and rear (option) for data and setup transfers through these ports. External devices keyboard or mouse, Barcode reader, or external mass storage device. (USB 1.1 compliant)

Standard Screens

Fully programmable display values in engineering units. Time & date stamp on every division.

Sets of Standard screens are available to display data on a chart, digital reading, bargraphs or numerous combinations thereof. Screen properties can be modified on the recorder and customised to suit.

Digital values displayed include

- alarms on bars,
- engineering units,
- pen name,
- tag, time and date,
- 20 character description and
- totalised values.

Data Storage

• Local Mass Storage Options

- USB memory key - up to 2 GByte
- USB hard drive - up to 120 GByte

• Internal Data Buffer

Non-volatile, 70 MByte (16 million acquisition values) and 400 MByte (up to 90 Million points)

• Setup and screens

Stored internally on non-volatile memory

• Manual Saving

Data saving by inserting USB memory stick

• Data Saving Period

Related to log rate, number of pens, totals and alarms. Each pen is capable of its own independent storage rate (200 ms ... 60 h)

• Data Format

Binary encoded format

• Recycling Mode

Internal memory has FIFO (First In First Out) capability where the newest data over-writes the oldest data

Power Requirements

• Voltage (VRMS)

100 V AC ... 250 V AC (auto select)

• Frequency

50/60 Hz

• Power Consumption

< 40 W

• 24 V optional instrument power

20 ... 30 V DC / 20 ... 25 V AC
Power Consumption: < 40 W

Battery

Battery backed up for clock, replaceable lithium battery Type 6032, 3.0 V – 10 years life (Recorder powered), 4 years life, typical (Recorder unpowered).

Password Protection

Multiple Administrator control of password setup and management with four levels of password protection for – Engineer, Supervisor, Technician, and Operator. Up to 50 different users are available. Password protection restricts user entry to the recorder set up and specific screens.

• Engineer

Highest access to all levels, Supervisor, Technician and Operator

• Supervisor

2nd highest level including Technician and Operator access

• Technician

3rd level including Operator access

• Operator

4th and lowest level of access

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Languages	<ul style="list-style-type: none"> • English UK & US • French • German • Italian • Spanish • Polish • Portuguese (Braz) • Slovakian • Czech • Turkish • Romanian • Hungarian • Russian 	CE Conformity (CE Mark)	This product conforms with the protection requirements of the following European Council Directives: 73/23/EEC, the Low Voltage Directive, and 89/336/EEC, the EMC Directive. Conformity of this product with any other "CE Mark" Directive(s) shall not be assumed.
Temperature Units	°C, °F, K	Immunity Product Classification	Complies with EN 61326 Class I: Cord Connected, Panel Mounted Industrial Control Equipment with protective earthing (grounding), (EN 61010-1)
Recorder Identification	Status bar: Alternately displays Recorder ID and Recorder Screen Name, Displays Time and Date	Enclosure Rating	Front panel designed to NEMA 3/ IP54 (Optional NEMA 4X/IP66)
Clock		Installation Requirements	Category II: Overvoltage (EN 61010-1) Pollution Degree 2
• Accuracy	± 29 ppm (± 1 minute/month) at 25 °C Summer/Winter manual or automatic time adjustment or via communications. SNTP Client and/or Server included for synchronising over Ethernet	EMC Standards	Emissions - EN 61326 Class B Immunity - EN 61326 Industrial Levels
Alarm Set Points	6 per pen integral "soft" alarm set points easily set by user to announce selected out of limit conditions; user can select if an alarm triggers a change in the chart background colour	Safety	Complies with EN 61010-1: 2001 Panel Mounted Equipment, Terminals must be enclosed within the panel
• Alarm triggers	Alarm triggers can be set for Hi, Lo, Deviation. Latched alarms require acknowledgement from the operator	Analog Inputs	
• Alarm Damping	1 s ... 24 h	Number of Inputs	3, 6, 9 or 12 input channels
• Hysteresis	± 100% of pen scale An alarm can change the log rate on the affected pen	Input Types	mV, V, mA with external shunt (provided as standard), Thermocouple, RTD and ohms
Data Replay Mode	Data replay facility on chart displays at normal, fast or slow speeds with zoom and cursor. Jump facility from the alarm history list directly to the occurrence on the chart	Minimum Input Span	Range is fully configurable with span limitation of the operating range selected with 4% under range to 4% over-range capability (50 V Range 2%)
Display Chart Speeds		Burnout (T/C)	Active (High or Low), Passive and Health watch/maintenance (option)
• Chart rates	<ul style="list-style-type: none"> • 1 mm/h • 5 mm/h • 10 mm/h • 20 mm/h • 30 mm/h • 60 mm/h • 120 mm/h • 600 mm/h • 1200 mm/h • 6000 mm/h Combinations of rates can be mixed and chart speeds can be set independently for each chart. Display speeds are independent of logging rate	Cold Junction Compensation	Internal compensation with the ability to manually adjust values, External Input for compensation, External CJC value specified
Messages Screen	The message screen displays system information and records any setup activity that has been changed. It also provides warning and error message updates, lists alarm activity and will display user defined marks on a chart	Input Resolution	0.0015% (16 Bit ADC)
		Input Impedance	
		• Current loop resistance	10 Ω, use ± 0.1% external resistor, Volts > 1 MΩ, all other > 10 MΩ
		Source Impedance	
		• T/C and RTD	100 Ω per lead maximum (a single point cal on Slot A will improve accuracy for a lead resistance above 10 Ω)
		Square Root Extraction	Available as standard on Volts and mA input types
		Sensor Compensation	Single point and Dual point for every input type
		Input Sampling Rate	Recorder has 2 available slots with up to 6 analog inputs each; first slot fixed
		• Analog Input card (standard)	200 ms (5 Hz), 500 ms (2 Hz)
		• Analog Input expansion card (option)	100 ms (10 Hz), 200 ms (5 Hz), 500 ms (2 Hz)
		Linear Scales	<ul style="list-style-type: none"> • Normal and Scientific notation • Decimal Point automatic or programmable • Engineering units, user definable (10 characters)

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Logarithmic Scales

- Logarithmic Decade limits -38 min ... +38 max, (recommend up to 20 decades on one screen to ensure clarity)

Input Isolation 300 V AC channel-to-channel, channel-to-ground (Resistance thermometers are not isolated for initial card, expansion card option RTs are isolated)

Noise Rejection At 50/60Hz ± 2%

• Analog Input card (standard)

- Common mode 2 Hz = -120 dB, 5 Hz = -120 dB
- Normal Mode 2 Hz = -80 dB, 5 Hz = -25 dB

• Analog Input expansion card (option)

- Common mode 2 Hz = -120 dB, 5 Hz = -120 dB, 10 Hz = -120 dB
- Normal Mode 2 Hz = -85 dB, 5 Hz = -80 dB, 10 Hz = -48 dB

Input Range Performance and Accuracy

Input Actuation (Linear)

- | | Range |
|-----------|--------------------|
| • mV (DC) | -1000 ... +1000 |
| • V (DC) | -50 ... +50 |
| • mA | 4 ... 20, 0 ... 20 |
| • 200 Ω | 0 ... 200 |
| • 500 Ω | 0 ... 500 |
| • 1000 Ω | 0 ... 1000 |
| • 4000 Ω | 0 ... 4000 |

Thermocouples

- | | Temperatur range |
|---|---|
| • B | 260 ... 538 °C (500 ... 1000 °F)
538 ... 1816 °C (1000 ... 3300 °F) |
| • E | -270 ... -200 °C (-454 ... -328 °F)
-200 ... -70 °C (-328 ... -94 °F)
-70 ... 1000 °C (-94 ... 1832 °F) |
| • J | -210 ... 0 °C (-346 ... 32 °F)
0 ... 1200 °C (32 ... 2192 °F) |
| • K | -270 ... -70 °C (-454 ... -94 °F)
-70 ... 1372 °C (-94 ... 2502 °F) |
| • R | -50 ... 260 °C (-58 ... 500 °F)
260 ... 650 °C (500 ... 1202 °F)
650 ... 1768 °C (1202 ... 3214 °F) |
| • S | -50 ... 260 °C (-58 ... 500 °F)
260 ... 1000 °C (500 ... 1832 °F)
1000 ... 1768 °C
(1832 ... 3214 °F) |
| • T | -270 ... -210 °C (-454 ... -346 °F)
-210 ... 400 °C (-346 ... 752 °F) |
| • L | -200 ... 0 °C (-328 ... 32 °F)
0 ... 900 °C (32 ... 1652 °F) |
| • G (W _{W26}) | 0 ... 100 °C (32 ... 212 °F)
100 ... 316 °C (212 ... 600 °F)
316 ... 830 °C (600 ... 1526 °F)
830 ... 1515 °C (1526 ... 2759 °F)
1515 ... 2315 °C
(2759 ... 4119 °F) |
| • C (W ₅ , W ₂₆) | 0 ... 180 °C (32 ... 356 °F)
180 ... 1220 °C (356 ... 2228 °F)
1220 ... 2315 °C
(2228 ... 4199 °F) |
| • M (NiMo-NiCo) (NNM90) | -50 ... 370 °C (-58 ... 698 °F)
370 ... 1410 °C (698 ... 2570 °F) |
| • N (Nicosil Nisil) | -200 ... 100 °C (328 ... 212 °F)
100 ... 1300 °C (212 ... 2372 °F) |
| • Chromel/Copel | -50 ... 600 °C (-58 ... 1112 °F) |

- | | |
|----------------|---|
| • P (Platinel) | 0 ... 1390 °C (32 ... 2534 °F) |
| • D | 0 ... 180 °C (32 ... 356 °F)
180 ... 1840 °C (356 ... 3344 °F)
1840 ... 2490 °C
(3344 ... 4515 °F) |

Resistance thermometers

- | | Temperatur range |
|----------------------|------------------------------------|
| • Pt100 α = 0,00385 | -200 ... 850 °C (-328 ... 1562 °F) |
| • Pt200 α = 0.00385 | -200 ... 850 °C (-328 ... 1562 °F) |
| • Pt500 α = 0.00385 | -200 ... 850 °C (-328 ... 1562 °F) |
| • Pt1000 α = 0.00385 | -200 ... 850 °C (-328 ... 1562 °F) |
| • Nickel, 100 Ω | -60 ... 180 °C (-76 ... 356 °F) |
| • Nickel, 120 Ω | -80 ... 260 °C (-112 ... 500 °F) |

Logging

- | | |
|----------------|---|
| Logging Method | Sample, Average, Min/Max - can be set independently per pen |
| Logging Types | Continuous, Fuzzy |
| Logging Rate | From 100 ms ... 60 h per Pen |
| Fuzzy Logging | A secure data storage technique which delivers data compression ratio of 100:1 or more; self teaching, storing the data at a variable rate to match the process |

Mechanical Design

- | | |
|------------------------------|---|
| Enclosure/Bezel | Zinc plated steel case with high impact resistant polycarbonate bezel; scratch resistant lens (Polyethylene Terephthalate). NEMA 3/IP54 protection rating standard. Optional NEMA 4X/IP66 (Front face only) |
| • Enclosure Rating | Front panel designed to NEMA 3/IP54 (Optional NEMA 4X/IP66) |
| • Colour | Bezel: Grey |
| Mounting Panel | Unlimited mounting angle
For the best view of the display the viewing angle should not exceed: <ul style="list-style-type: none"> • 55° from the left or right, • 10° looking down and • 30° looking up at the recorder display. Mounting adjustable for panel thickness of 2 mm ... 20 mm. Adapter kits available for covering existing panel cutouts. |
| Dimensions (W x H x D) in mm | 144 x 144 x 200
(5.67 x 5.67 x 7.87")
Additional 80 mm (3.15") clearance recommended for a straight type power cable and signal connectors |
| Cutout (W x H) in mm | 138 x 138 mm (5.43 x 5.43") |
| Weight | Max. 2.4 kg (5.3lb) |
| Wiring Connections | IEC Power Plug. Removable terminal strip for input and alarm connections |

Environmental and Operating Conditions

- | | |
|-------------------------|-----------------------------------|
| Ambient Temperature | 0 °C ... 50 °C (32 °F ... 122 °F) |
| Relative Humidity (%RH) | 10 ... 90 |
| Vibration | |
| • Frequency (Hz) | 0 ... 70 |
| • Acceleration (g) | 0.1 |
| Mechanical Shock | |
| • Acceleration (g) | 1 |

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• Duration (ms)	30
Mounting Position from Vertical	
• Tilted Forward	40°
• Tilted Backward	65°
• Tilted to Side (±)	65°
Power Requirements	
• Mains Voltage (Vrms)	100 ... 250
• Low Voltage AC (Vrms)	20 ... 25
• DC Voltages	20 ... 30
• Frequency (Hz)	47 ... 63
Power Consumption	AC: < 40 W (max), DC: < 40 W (max), typical 20 W
Warm Up	30 minutes minimum
Options	
Alarm Outputs	Programmable alarm set points (6 per pen) can be configured to activate up to 8 outputs
• Update rate	200 ms for all alarms
• Number/Type	<ul style="list-style-type: none"> • 4 or 8 relay contacts SPDT, 3 A 240 V AC, 3 A 24 V AC/DC, 0.2A 240 V DC (non-inductive, internally suppressed) • 8 I/O - SPNO 1 A 24 V DC (non-inductive, internally suppressed)
• Activation	Fully programmable internal alarm levels. Assignable to any relay output
Digital Input/Output	
• Quantity	<ul style="list-style-type: none"> • 8 I/O <p>All channels may be selected freely as either digital inputs or outputs. The Digital I/O card also has 4 channels that can be set as pulse inputs (channels 1 ... 4). The operating frequency for pulse inputs on the Digital I/O card is 1kHz max.</p>
- Inputs	Voltage free, isolated
- Outputs	4 relay outputs, all four channels are relay outputs only
• Relays/DI card	<ul style="list-style-type: none"> • 8 relays/ 2 DI card <p>2 outputs can be configured for use as digital inputs: A digital input is provided by a volt free contact between the normally open (NO) and the common (C) terminals of an output relay. If the 2 Digital inputs are used only 6 relay outputs are available. Closed < 500 Ω, Open > 300 kΩ</p>
Email	<p>Setup email accounts to send the following:</p> <p>When an Alarm is triggered or an Email can be sent as a part of an Event occurring, such as: Alarms - In/Out/Ack, Totaliser - Start, Stop or Reset, Digital Inputs - On, Off or State change, TC Burnout - on a specific Analog Input channel, Scheduled Events - Once, Interval, Specific days, Month End</p>
OPC Server	OPC DA and AE 3.0 compliant. Totalisers and up to 24 pens can be transmitted via OPC server, max poll rate 1/s

Events

User defined process events are recorded and can be set to cause particular recorder actions. Events can consist of recording start/stop, digital inputs, alarms, totalising actions, timers, bar-code, etc. Once an event has been caused it can produce a definable set of effects on the recorder which can include, mark on chart, relay outputs, recording control, acknowledge alarm, trigger an Event, set/clear Relay, Screen change, E-mail a message and Reset max/mins. Each event marker can be recorded for analysis using the SIREC D application software.

Health Watch/ Maintenance Capability

The recorder keeps track of important "life actions" for improved diagnostics and preventative maintenance notification. Including

- Powered On
- Last powered On
- Time On since power up
- Total On time
- Total Off time
- Longest Off time
- Lithium cell life
- Backlight life left at 100% brightness
- Hi/Lo CJC value (Hi & Lo temps),
- Analog In last factory/user cal
- Relay operations
- last configuration change

Agency Approval

- CSA
- UL

CSA22.2-No.1010.1-2004 Certificate Number L211230

ANSI/UL61010-1-2004 File # 201698

FM Class 1 Division 2 (optional)

Transmitter Power

130 mA at 24 V DC ± 3 V DC

Extended Security System (ESS)

Provides full support for 21 CFR Part 11.

Includes features for entry of unique User ID's and associated passwords:

- Timeout on inactivity (1 ... 10 min)
- Password expiration (1 ... 365 days)
- Up to 50 users
- Password re-entry lock out for incorrect entry of password more than 3 times, no re-use of passwords (programmable 4 ... 12 times)
- Traceability by user name

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Totaliser/Sterilisation*	<p>One totaliser per input. Totaliser value must be assigned to a pen for display and storage. Multiple totalisations (Maths option) are possible with the use of extra pens (option). Reset may be manual or programmed. Totalisation values are 10 digits plus exponent.</p> <p>Each pen can be totalised according to the Fo or Po sterilisation* function at 121.11°C (250 °F). The Standard Reference Temperature and Thermal Resistance (Z Value) are fully adjustable values of X, Y, W and V. Start temp, Reference temp and Z factor are all user defined, allowing support for many different types of sterilisation applications.</p> <p>*Specification table for Sterilisation</p> <p>The definition of Fo/Po is the sterilisation/pasteurisation time in minutes required to destroy a stated number of organisms with a known z at temperature T.</p>
Batch	<p>The Batch function allows the user to segment portions of data for further analysis. Batch controls include</p> <ul style="list-style-type: none"> • Start, • Stop, • Pause, • for viewing, • Resume and Abort.
Print Support	<p>Network printing from status, message and replay screens. Plus screen capture facility of process screens instantly using a basic USB standard PCL printer.</p>
Math Algorithms	<p>All analog input channels have a math expression block. This is a fully user programmable 100 character free form math expression for each pen. Math calculations are available on all pens, one per input plus 12 extra pens for the SIREC D200 recorder.</p>
Miscellaneous	<p>Optional customer ID Tagging (3 lines of up to 22 characters each line)</p>

Firmware Credit System

The credits system is a flexible way of adding to the recorder features without having to upgrade the firmware. Simply purchase a number of credits to cover your current and possibly future requirements and the recorder will be delivered with the credits loaded. The credit value in each recorder is displayed in the Factory menu.

- Select the Options button and by activating and de-activating the options in the credit list, the recorder will change its functionality. Any greyed out options on the list will mean there are not enough credits available for that feature on the recorder.

Credits can be applied as desired to the Firmware functions until the total number of credits purchased has been used up. Additional credits can be purchased later if new features are to be activated and not enough credits are available to support these additional functions.

Firmware option	Credit value	Description
Full Maths	4	Full Math - this can handle math expressions that can consist of expressions up to 100 characters in length. (Note 1)
Events	6	Events are certain conditions or operations that can be set up and logged according to the time and date of an occurrence. Subsequently events can be reviewed or displayed on a graph. Events can be set up to produce the following actions: Mark on Chart, start/stop Logging, start/stop/reset Totalisers, acknowledge alarm, trigger an Event, set/clear Relay, Screen change, E-mail a message and Reset max/mins. (Note 2)
Totalisers/ Sterilisation calculation	4	Each pen can be associated with a totaliser. Using extra pens, the totalised values can be displayed and recorded; multiple totals can be calculated out of the same variable (weekly, monthly, etc.). The totaliser function can handle Fo and Po sterilisation calculation. (Note 1)
Health Watch/ Maintenance	2	The recorder keeps track of important "life actions" for improved diagnostics and preventative maintenance notification. Including Powered On, Last powered On, Time On since power up, Total On time, Total Off time, Longest Off time, Lithium cell life, Backlight life left at 100% brightness, Hi/Lo CJC value (Hi & Lo temps), Analog In last factory/user cal, Relay operations.
Print Support	2	Network printing from status, message and replay screens. Plus screen capture facility of process screens instantly using a basic USB standard PCL printer.
Batch	3	The Batch function allows the user to segment portions of data for further analysis. Batch controls include Start, Stop, Pause, for viewing, Resume and Abort.
Groups	2	Groups of Pens can be specified and named with a Group number to display on the recorder.
Remote Viewer	3	Extends the user interface of the recorder onto the desktop PC. Providing full remote control of the unit launched from a web browser.
Email	3	Setup email accounts to send the following: When an Alarm is triggered or an Email can be sent as a part of an Event occurring, such as: Alarms - In/Out/Ack, Totaliser - Start, Stop or Reset, Digital Inputs - On, Off or State change, TC Burnout - on a specific Analog Input channel, Scheduled Events - Once, Interval, Specific days, Month End.
OPC Server	8	OPC (OLE for Process Control) -Software application for realtime interfacing between servers and clients. OPC is a software standard that defines common interfaces for data exchange between devices such as recorders, controllers, PLC's and Microsoft Windows™ based applications
Extra Pens	2	4 extra pens to store and display totalised values, results of calculations, etc. Maximum is up to 12 extra pens for the SIREC D200 recorder.

Notes

- (1) Additional pens ("Extra Pens") can be used to display and store the results of calculations, totalisers, variables imported via communications, or to store values.
- (2) Event markers are required to automatically reset the totalisers, for example on a periodic basis or on an external condition. (Not necessary if the totalisers are reset manually)

Additional information is available in the Internet under:



<http://www.siemens.com/sirec>

SIREC D Display Recorder

SIREC D200

Selection and Ordering Data	Order No.
SIREC D200 display recorder ¹⁾ Front dimensions: 144 mm x 144 mm, for all standard applications/ 5 TFT display, Ethernet interface (rear side) and USB interface (front face)	7ND4121-
Power supply 50 or 60 Hz, 90 ... 240 V AC 24 V DC	1 4
Signal inputs Universal inputs (mA, mV, V, TC, RTD, R) • 3 inputs • 6 inputs • 12 inputs	A B C
Switching outputs and inputs None (retrofitting digital input/digital out- put not possible) None (retrofitting digital input/digital out- put possible) 4 relays (240 V) 8 relays, of which 2 can be optionally configured as binary input (240 V) 8 binary outputs and inputs (24 V relay/freely-configurable)	0 1 2 3 4
Internal data storage 70 Mbyte (standard) 400 Mbyte	1 2
Transmitter power supply/ rear side ports None 24 V DC max. 200 mA/USB and RS485 (rear side)	1 2
Firmware options (see table below „Firmware options and required credits“) None 10 credits 20 credits 30 credits 40 credits	A B C D E
Extended Security System (ESS) IP54 protection rating standard (front face) • without ESS • with ESS IP66 (NEMA 4X) protection rating standard (front face) • without ESS • with ESS	A B C D
Documentation Manual in German Manual in English	1 2

▶ Available ex stock

¹⁾ Subject to export regulations AL:N, ECCN: EAR99**Scope of delivery:**

Recorder, CD-ROM with manual in German or English, SIREC D software (SIREC D-Viewer).

Accessories	Order No.
Firmware options for SIREC D200 Code No. of recorder required 10 credits 20 credits 30 credits 40 credits	7ND4 801-8AD 7ND4 801-8BD 7ND4 801-8CD 7ND4 801-8DD
Options/enabling of SIREC D software Code No. of recorder required Enabling of SIREC D-Manager Enabling of SIREC D-Server Upgrading of SIREC D-Manager to SIREC D-Server	7ND4 800-8BA 7ND4 800-8CA 7ND4 800-8EA
SIREC D software Only for subsequent orders; soft- ware is included in delivery of recorder Evaluation software for SIREC D200/D300/D400 (on CD) incl. enabling for SIREC D-Viewer and manual for the software on CD in German, English, French	7ND4 800-8AA
Documentation Included on CD-ROM in scope of delivery SIREC D200 recorder manual • German (can also be download- ed from Internet) • English (can also be download- ed from Internet) • French (can only be download- ed from Internet)	A5E01001785-03 A5E01001767-03

Firmware options and required credits

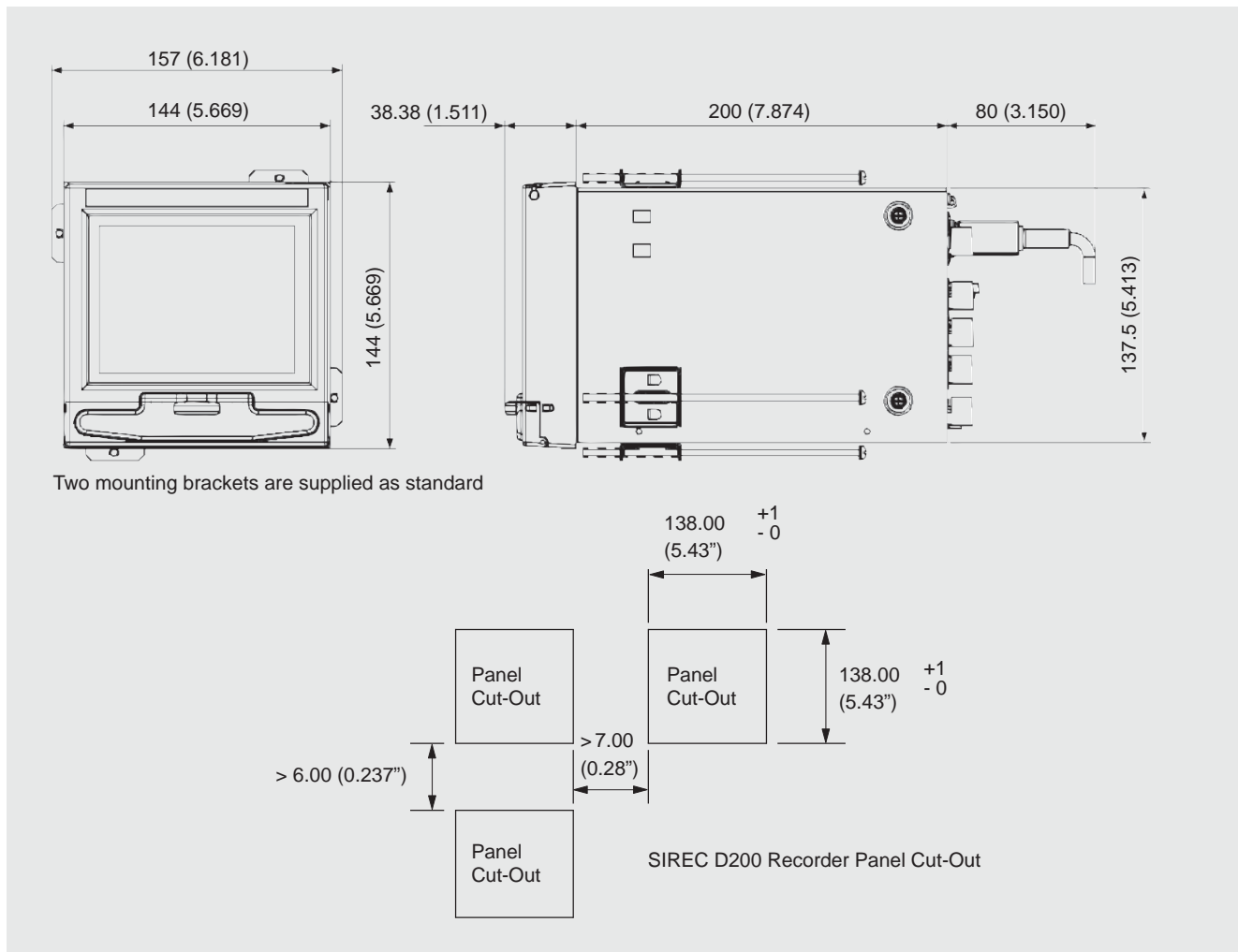
Options	Required credits
Groups/summarize channels	2
Diagnostic functions	2
Print Support	2
8 Extra Pens	2
Counter	2
Remote Viewer	3
Batch	3
E-mail function	3
Totalisers	4
Maths (free functions)	4
Events (logical connections)	6
OPC Interface	8

Options

Options - Hardware

- Alarm Card
 - 4 or 8 outputs relay contacts SPCO 240 V
 - 8 Digital I/O - SPNO 24 V DC
 - Programmable alarm set points can be configured to activate up to 8 outputs
- RS485 Modbus
 - the RS485 connection allows process data to be transferred to other devices, or to record data received in MODBUS RTU protocol (slave mode only).
- Portable Recorders
 - Portable cases available as an accessory item
- Digital Input
 - Two digital input options are available:
 - 2 inputs on 8 channel Alarm card,
 - 8 inputs on Digital I/O card.
 The digital inputs allow users to initiate, from a remote location via a dry contact closure, selected recorder functions.
- Approvals
 - CSA and UL
- 24 V AC/DC Power Supply
 - 20 to 30 V DC
 - 20 to 25 V AC
- 24 V DC Transmitter Power Supply
 - Can supply up to 130 mA to external transmitters.
- Print Support
 - Network printing from status, message and replay screens. Plus screen capture facility of process screens instantly using a basic USB standard PCL printer.

Dimensional drawings

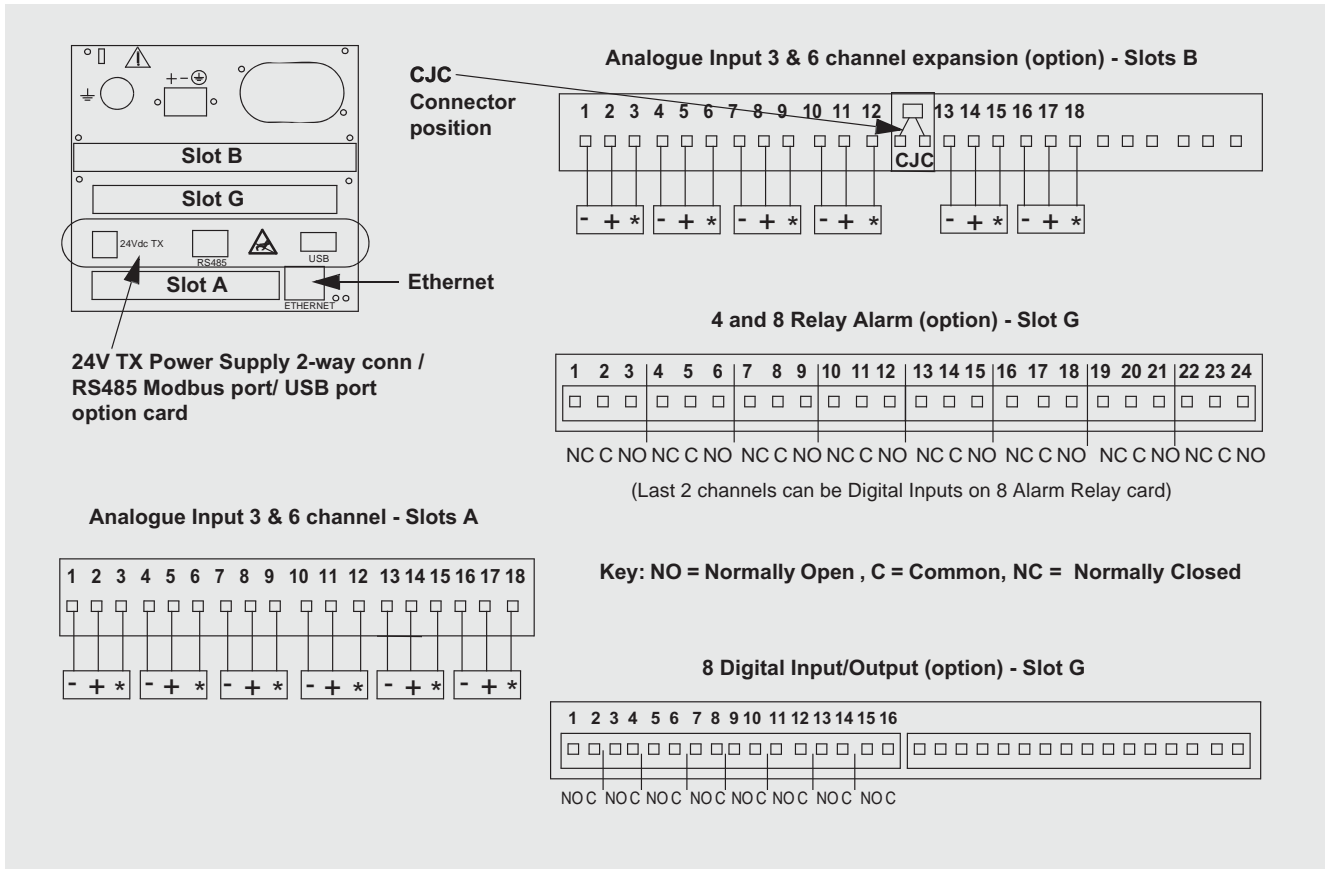


SIREC D200, dimensions in mm (inch) and panel cut-out

SIREC D Display Recorder

SIREC D200

Schematics



SIREC D200 - Terminal assignments and power requirements (rear of unit)

More information

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