DIGITAL INDUSTRIES SOFTWARE

Simcenter SCADAS RS Recorder Unit

Simcenter/SCRS-REC/2024/20240612

Product Information Sheet

Summary

Simcenter SCADAS RS

Recorder Unit

The SCRS-REC is part of the Simcenter SCADAS RS units. It collects data from 4 daisy chains of conditioning units, connects to networks (wired or wireless) and synchronizes with other REC units. In addition, it supports up to 4 CAN Busses, USB3.0 external HD, 3 Digital Encoders and a GNSS antenna connector.

BENEFITS

- 4 daisy chains of units
- Up to 6.8 MSamples/s throughput
- 4 CAN Busses, 3 connectors for Digital Pulses (up to 9 channels) or Encoders
- 240 GB SSD drive
- ETH (1 GbE), USB3.0 & Wi Fi connection
- USB3.0 connector
- Up to 3x USB cameras
- GNSS input
- Synchronize multiple REC units
- Wide temperature range from -40 °C (-40 °F) up to +65 °C (149 °F) (under certain conditions)
- On-board Simcenter SCADAS RS Recorder App

FEATURES

- Easy mounting and instrumentation
- Easy stacking of units without tools
- Centralized and distributed configurations
- Daisy chaining with single cable for power and data
- Low power
- 100 g Shock and 10 g vibration resistance
- Water and dust tight IP66/IP67 certified
- Standardized connector for analog inputs
- Use with Simcenter Testlab or with the on board App (accessible through any web browser)

Simcenter SCADAS RS

Product Family

Simcenter SCADAS RS is part of the Simcenter SCADAS signal conditioning and data acquisition systems and is designed for demanding test conditions.

Units connect in daisy chain to a Recorder unit for autonomous operation or in combination with a PC, tablet, or smartphone.

Use Simcenter Testlab or the on board Simcenter SCADAS RS Configuration or Recorder App for instrumentation, channel setup, calibration, sensor validation, measurement control, data viewing on-line and after a measurement.

Units are powered from an Uninterruptable Power Supply Unit (UPS) with flexible power distribution across multiple units.

Typical Sensors

GNSS signals, incremental encoders, quadrature encoders, TTL pulses, differential pulses (RS-422, RS-485), HTL pulses, CAN Bus.

Conditioning Options

• GNSS signals (GPS, GLONASS, BeiDou)

• TTL pulses

• HTL pulses (up to 15 VDC)

• Differential pulses (RS-422, RS-485) with A, B and ref pulse

• Incremental encoders

• Quadrature encoders

General	
Product code	SCRS-REC
Description	Simcenter SCADAS RS Recorder Unit
Inputs	2x 2 CAN Bus 3x Digital Pulse Input 1x DIO (4 individual IO ports) 2x USB2
Other inputs & connectors	1x Power IN 4x daisy chain 1x GNSS antenna 2x Wi-Fi antenna 1x ETH (1 Gb Ethernet) 1x USB3 1x SYNC
Dimensions	W255 mm x H85 mm x D90 mm (W10" x H3.34" x D3.54")
Weight	1.8 kg (4 lb) (approximately, without cables)
Power consumption	21.5 W (unit) Up to additional 10.25 W for 4x loaded CAN buses. Up to additional 8.2 W for 3x loaded Pulse inputs. Up to additional 3.3 W for USB2 input. Up to additional 5.9 W for USB3. Up to additional 0.5 W for DIO.
Power input	From main UPS (necessary for SCADAS RS system normal use). Siemens certified AC/DC adapter (only instrumentation).
Unit Feedback	
Unit information	Following unit information is reported via LED and to the user interface: · Unit status (booting, upgrading, identification, internal error, active) · Streaming data, recording, waiting for trigger, waiting for wake up, data storage almost full
Unit Mounting	
Mounting options	Units can be mounted individually (mounting holes available). Units can be stacked (no tools required). Units can be mounted with tie-down straps using mounting clamp (optional).
Maximum distance	Up to 50 m between two units. Extra UPS units may be required, depending on required sensor power and distance between units. It is recommended to add a UPS at the long end of a 50 m cable.
Activation	

Boot time	REC unit: <30 s REC unit and downstream units: <70 s REC unit and downstream units with GNSS clock sync: <95 s
MODE button	Start/Stop measurement. Long push (>15 s): Reset to factory defaults.

Connectivity

Ethernet	To network or host PC (1 GbE). This interface is isolated.
USB2.0	• Camera support (see SCRSA-CAM001). Requirements: -H.264 decoding -UVC support -Please contact Siemens for the list of supported cameras • To external HD drive for data transfer
USB3.0	• Camera support (see requirements above) • To external HD drive for data transfer
USB3.0 supply (over full temperature range)	A DC supply of 5 V (±6 %) up to 1100 mA is available (software selectable). Supply and signal grounds: • Isolated from unit supply • Connected to chassis
Wi-Fi	IEEE802.11ac (6 MSamples/s) and IEEE802.11g (800 kSamples/s). Up to 3x simultaneous connections (DHCP server hands out up to 6x leases for different devices in 24h). 5 GHz support.
LTE	Via external modem device
On-board storage	SSD 240 GB (at least 220 GB free user space). Terabytes Written (TBW): 488

REC available recording time [h]
(Conditioning units evenly distributed over the 4 daisy chains)

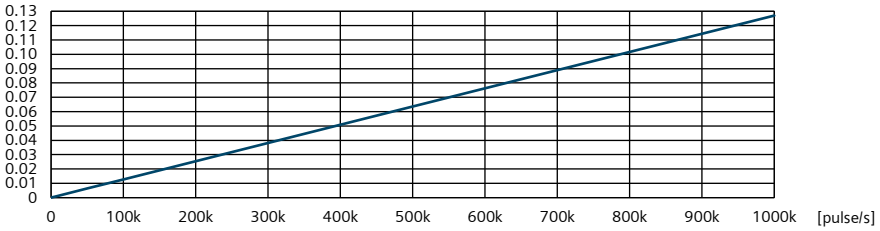
	B24, S24, U12					U12
Sample rate	**1 kHz**	**3 kHz**	**6 kHz**	**12 kHz**	**24 kHz**	**48 kHz**
Available budget	14696	4898	2449	1224	612	306
36 channels	408	136	68	34	17	8
72 channels	204	68	34	17	8	4
144 channels	102	34	17	8	4	2
288 channels	51	17	8	4	2	
576 channels	25	8	4	2		
1152 channels	12	4	2			

File system access	Samba, SFTP
File system format	EXT4, FAT compatible

Daisy Chain Connectors	
Daisy chain units	Up to 4 daisy chains of conditioning units at 1.7 MSamples/s per daisy chain
Aggregated Units	Max supported units: 64 (including secondary UPS's)

CAN Connection	
CAN connector type	Each CAN connector breaks out to SUB-D connectors (using mating cables)
CAN support	CAN data can be interpreted, interpolated, and stored on the REC unit: • In raw format • In LDSF format CAN2.0A/B and CAN FD ISO 11898-1 compatible. SAE J1939 standard supported. XCP (version 1.4 and Packed DAQ) over Ethernet and over CAN with configuration through A2L description file. Up to 8xTCK8 (TCK8-A and TCK8-B pair per CAN bus) conditioning units: up to 64x thermocouple channels.
CAN bus speed	CAN-FD up to 8 Mb/s CAN High Speed (ISO 11898-2): up to 1 Mb/s CAN Low Speed (ISO 11898-3): up to 125 kb/s Note: max. 2 CAN bus can be set to CAN-FD (speed above 1 Mb/s)
CAN cable distance	30 m except CAN-FD 10 m
CAN input	Maximum voltage without damage: ±26.1 V
Grounding and isolation	Own signal ground per connector: • Isolated from unit supply • Isolated from chassis Isolation: ±100 V (Class II)
CAN supply power (over full temperature range)	A DC supply of 15 V (±10 %) up to 340 mA is available per connector (2 CAN busses, software selectable).

Digital Pulse Input Connection	
Digital Pulse inputs	3 connectors for 9x digital pulse signals (or 3x digital encoders)
Pulse support details	TTL signals HTL signals (single ended and differential) Encoder signals RS-422, RS-485
Pulse conversion	Pulse signals can be converted to: · Frequency (RPM, speed, fuel flow ...) · Counter value up/down (distance, angle ...)
Pulse input connection	Single Ended and Differential
Pulse speed	Up to 1000000 pulses/s (TTL, RS422) Up to 400000 pulses/s (HTL differential) Up to 200000 pulses/s (HTL single ended)

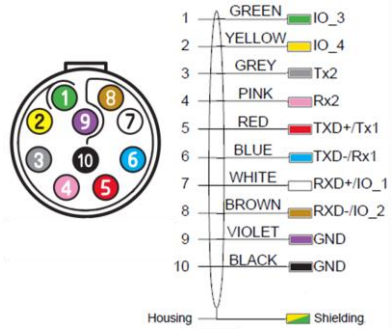
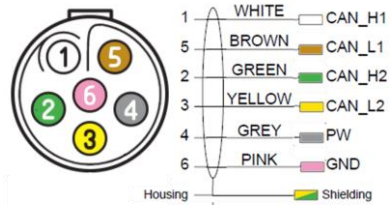
Pulse oversampling factor	5 or more (786.432 MHz internal clock)
Pulse output format	Count and rate converted signals are made available with next selectable sample rates: 400, 600, 800, 1000, 1200, 2000 and 3000 Hz
Pulse supply (over full temperature range)	A DC supply of 5 V (±8 %) or 12 V (±6 %) up to 220 mA is available (software selectable) When supply is turned on, possible inrush currents up to 400 mA are supported during 70 ms.
Pulse input specifications (over full temperature range)	TTL: L ≤ 0.8 V, H ≥ 2 V HTL single ended: L ≤ 6 V, H ≥ 8 V HTL differential: L ≤ -0.9 V, H ≥ 0.9 V (0 V ≤ Vcm ≤ 25 V) RS422/RS485 differential: L ≤ -0.2 V, H ≥ 0.2 V (-14.8 V ≤ Vcm ≤ 14.8 V) Max level without damage: ±32 V
Rate resolution [%]	
Grounding and isolation	Own signal ground per connector: • Isolated from unit supply • Isolated from chassis Isolation: ±100 V (Class II)
Pulse input impedance	25 kΩ ± 20 %

GNSS Connection

GNSS input	1 connector for external GNSS antenna
GNSS support details	GPS, GLONASS, BeiDou. Rates: • GPS: 10 Hz • Others: 10 Hz interpolated (from 5 Hz)
Dynamic accuracy	Optimized for automotive (radius within > 50 % measurements). Up to 0.05 m/s (depending on actual signal quality). Altitude signals not reliable for this mode.

Environmental Certification	
Temperature range	Operating: -40 °C to +50 °C (-40 °F to 122 °F). Storage: -40 °C to +85 °C (-40 °F to 185 °F). When using the heat sink accessory with 1 m/s light air flow (1 Beaufort): 65 °C (149 °F). Avoid file transfers when acquiring data close to max temperature. Because of internal heating, please exercise caution when touching the housing and connectors and attached accessories at ambient temperatures higher than 40 °C. Ensure proper protection (i.e., gloves) against burns or other injuries.
Ambient pressure	0.5 bar to 1.3 bar. Altitude: -2000 m (mining) to 5000 m (mountains).
Water and dust protection	IP66/IP67
Humidity	Fully protected against humidity. Feet vents equalize internal and external pressure and allow an outgoing path for humidity and moisture, being expulsed while warming up and cooling down during normal usage.
Vibration	MIL-STD-810G, method 514.6, procedure I, category 24, 20-2000 Hz, random vibration 10 g (rms), 1 h per axis. NOTE: Tested against more severe conditions than required by MIL-STD-810G (10 instead of 7.7 grms).
Shock	MIL-STD-810G, method 516.6, procedure I, trapezoidal shock, 100 g (peak), 11 ms, three shocks per direction
Drop	MIL-STD-810G method 516.6, Procedure IV – Transit Drop (26 drops from a height of 122 cm on each surface, edge and corner)
Salt protection	Salt spray test according to ISO 12944-2, ISO 12944-2, class C5I, exterior applications, average lifetime (720 h test corresponding to 10 years life)
ESD	EN61000-4-2 level 4 ISO10605
EMC Requirements	IEC 61326-1
Calibration	Compliant with ISO17025. Calibration formally traceable to international measurement standards from our accredited ISO17025:2017 fully compliant laboratory.
Certifications	CE, FCC, MIC

Connectors and Pinout

Digital Input connector chassis type	YCP-TIA15BCG-10FPGZX-000X
Digital Input connector plug type	YCP-TPR15BCX-10MSGEX-076X
Digital input connector pinout	
Digital I/O connector chassis type	YCP-TIA15BCG-10FPGZX-000X
Digital I/O connector plug type	YCP-TPR15BCX-10MSGEX-076X
Digital I/O connector pinout	
CAN connector chassis type	YCP-TIA15ACG-06FPKZX-000X
CAN connector plug type	YCP-TPR15ACX-06MSKFX-061X
CAN connector pinout	
Daisy Chain connector chassis type	YCP-TIA12FCG-08FPEZX-000X
Daisy Chain connector plug type	YCP-TPR12FCX-08MSEEX-065X

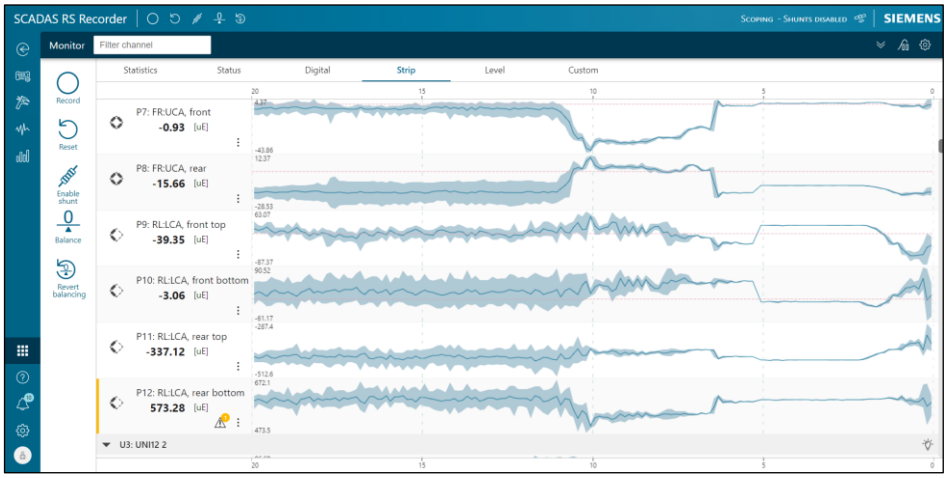
- For single ended wiring, it is not necessary to short negative inputs (-A, -B and/or -R) to GND
- 0 V supply selection renders Vsupply floating (high impedance)

The IO pins are 15 V tolerant:

- As outputs: 3.3 V
- As inputs: -15 V to 15 V (L< 0.8 V, H> 2.5 V)

On-board Simcenter SCADAS RS Recorder App

General	License-free software embedded on the SCADAS RS REC unit. Accessible through any web browser via wired (ETH) or wireless connection.
Instrumentation	• Single channel setup • Channel list (grid and card views) • Persist settings on each connected unit • Calculated channels setup • Template management
Calibration & checks	• DC calibration • Shunt calibration • Offset balancing • Shunt, offset and headroom checks
Monitoring	• Status info: health status, warnings and alarms • Statistics: overall and instantaneous • Time data • Frequency data (FFT) • Variety of customizable displays: digital, analog, strip chart, XY, 2D
Recording Setup	• Trigger settings (start/stop, logical triggers) • Measurement options
Track-side validation	• Time data • Overall statistics • Warnings and alarms



Detailed Info	See Simcenter SCADAS RS Recorder App

Ordering Information

SCRS-REC	Simcenter SCADAS RS Recorder Unit

Options and Accessories

Connectivity	SCRSA-CABD01	Daisy chain cable, 0.4 m
	SCRSA-CABD02	Daisy chain cable, 1 m
	SCRSA-CABD03	Daisy chain cable, 5 m
	SCRSA-CABD04	Daisy chain cable, 10 m
	SCRSA-CABD05	Daisy chain cable, 50 m
	SCRSA-CABN01	Daisy chain cable to RJ45, 5 m
	SCRSA-CABN02	REC ethernet cable RJ45, 5 m
	SCRSA-CAB004	Cable USB2.0, 0.5 m
	SCRSA-CAB006	Cable SYNC to 2x BNC, 1 m
	SCRSA-CAB007	Cable USB3 device, 1 m
	SCRSA-CAB008	Cable USB3 host, 1 m
	SCRSA-ACC-003	Antenna Wi-Fi (set of 2)
	SCRSA-CAB-ADP2	UTP to USB Ethernet adapter for PC
Measurement	SCRSA-CAB002	Cable DIO pigtail, 3 m
	SCRSA-CAB003	Cable CAN 2x SUB-D, 1 m
	SCRSA-CAB005	Cable Pulse pigtail, 3 m
	SCRSA-ACC-004	Antenna GNSS
Mechanic	SCRSA-CAB001	Grounding cable, 3 m
	SCRSA-CASE01	Travel case single unit
	SCRSA-CASE02	Travel case 6 units
	SCRSA-ACC-001	Side clamps (set of 2)
	SCRSA-ACC-002	Brackets (set of 2)
	SCRSA-ACC-005	Stacking tools (set of 4)
	SCRSA-CAP003	Protective caps set REC
	SCRSA-ACC-007	Cooling block for SCADAS RS REC unit
Power	SCRSA-ACDC-01	AC/DC adapter unit