DIGITAL INDUSTRIES SOFTWARE

Simcenter SCADAS RS Ethercat Unit

Simcenter/SCRS-ECAT/2024/20240610

Product Information Sheet

Summary

Simcenter SCADAS RS

Ethercat Unit

The SCRS-ECAT is part of the Simcenter SCADAS RS units. It allows to digitally connect a Simcenter SCADAS RS system to the real-time ethernet based Ethercat® fieldbus. Ideal for interfacing Test Rig controllers.

BENEFITS

- Ideal interface for test rig controllers
- Support of distributed clocks
- Up to 96 real-time channels
- Sample rate up to 10 kHz synchronized with EtherCAT® cycle
- End-to-end latency < 100 µs
- External clock synchronization < 1 µs
- CAN Open for active configuration
- Wide temperature range from -40 °C (-40 °F) up to +65 °C (149 °F) (under certain conditions)
- On-board Simcenter SCADAS RS Configuration 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.

Optimized solution for: rig testing closed loop testing, real-time applications, hardware in the loop testing.

Low latency

In control systems, it is essential to reduce latency to an absolute minimum. Upon an EtherCAT request, each selected channel sends one sample to the EtherCAT bus.

Synchronization

Each sample that is made available on the EtherCAT bus is fully synchronized with the EtherCAT bus cycle. Advanced asynchronous resamplers provide the bridge between SCADAS internal sampling rate and the EtherCAT requests for data.

The normal data acquisition process runs independent from the real-time EtherCAT sampling process.

General	
Product code	SCRS-ECAT
Description	Simcenter SCADAS RS EtherCAT Unit
Inputs	4x low latency inputs
EtherCAT® connectors	1x bus IN 1x bus OUT
Other connectors	2x daisy chain (power and data)
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	6 W
Power input	From UPS or Siemens certified AC/DC adapter

Unit Feedback	
Unit information	Following unit information is reported via LED and to the user interface: · Unit status (booting, upgrading, identification, internal error, active) EtherCAT® bus information via 4x dedicated LEDs and conform to EtherCAT® standard.

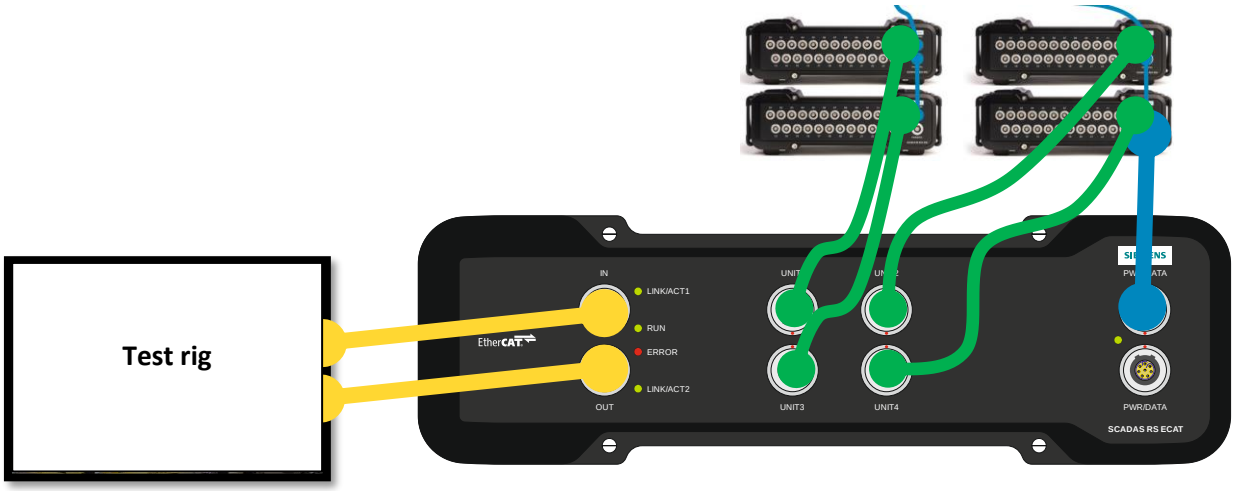
Unit Mounting	
Mounting options	Units can be mounted individually (mounting holes available). Units can be stacked (no tools required). Units can be mounted with tie-down straps using mounting clamp (optional).
Maximum distance	Up to 50 m between two units. Extra UPS units may be required, depending on distance between units. It is recommended to add a UPS at the long end of a 50 m cable.

Activation	
Boot time	< 40 s when a REC unit is present in the system

EtherCAT® bus	
Device type	EtherCAT® slave device
External clock synchronization	Better than 1 µs. Support of distributed clocks.
CAN Open support	Object description of active configuration (i.e. smart channel number, MKS unit, range, sensitivity).
ESI file	Available at ECAT url: (IP)/ESI/download.html
Channel publishing	Automatic availability to the EtherCAT® bus of the enabled acquisition channels

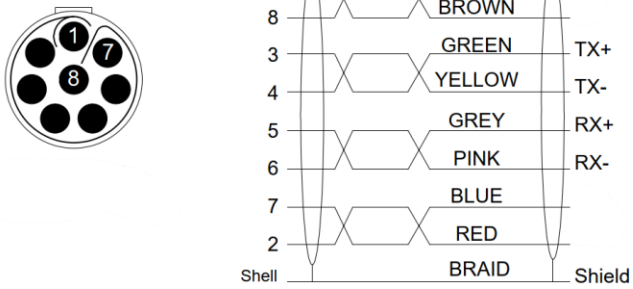
Input	
Digital interface	4x proprietary low latency, high speed digital inputs
Supported units	S24, B24-120 and B24-350
Number of channels	Up to 96 channels (24 per digital input)

Output	
Sample rate	Up to 10 kHz, and synchronized with EtherCAT® cycle
End-to-end latency	Better than 100 µs
Mating cable	Cable accessory to RJ45 available (i. e. to connect to EtherCAT® master and/or other EtherCAT® modules with a standard RJ45 connection). Refer to SCRSA-CABN01 (daisy chain cable to RJ45, 5m).



Environmental Certification	
Temperature range	Operating: -40 °C to +65 °C (-40 °F to 149 °F) Storage: -40 °C to +85 °C (-40 °F to 185 °F) 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 during 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

Connectors and Pinout

Input connector plug type	YCP-TPR12FCX-E8MSCBX-065X
Input connector layout	
EtherCAT® connectors plug type	YCP-TPR12FCX-08MSEEX-065X
EtherCAT® connectors pinout	

On-board Simcenter SCADAS RS Configuration App

General	License-free software embedded on the SCADAS RS unit. Accessible through any web browser via UTP connection.
Monitoring	• EtherCAT® status info: (INIT, PRE-OP, SAFE-OP and OP mode) • Lock status • Variety of customizable displays: digital, analog, strip chart, XY, 2D
Detailed Info	See Simcenter SCADAS RS Configuration App

Ordering Information

SCRS-ECAT	Simcenter SCADAS RS EtherCAT 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-CAB-ADP2	UTP to USB Ethernet adapter for PC
	SCRSA-CAB017	Digital OUT cable to ECAT, 1m
	SCRSA-CAB018	Digital OUT cable to ECAT, 10m
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-CAP007	Protective caps set ECAT
Power	SCRSA-ACDC-01	AC/DC adapter unit