

SIRIUS®

TECHNICAL REFERENCE MANUAL



4.11. SIRIUS-R8DB

High channel count data acquisition system with built-in data logger and powerful data processing computer, touch screen display (R8D) and internal batteries (R8B, R8DB) for maximum portability.



SIRIUS-R8DB

Main Features:

- HIGH-END SIGNAL CONDITIONING: R8 data acquisition systems are built around SIRIUS DAQ technology and feature the same versatile and powerful amplifiers for world-leading signal conditioning. Visit SIRIUS product page for detailed SIRIUS DAQ technology overview.
- ALL-IN-ONE INSTRUMENT: R8 instruments are high channel count, standalone DAQ systems with built-in powerful data processing computer, SSD data logging capabilities, touch-screen LED display (R8D and R8DB), and internal Li-Ion batteries (R8B/R8DB) for maximum portability.
- UP TO 128 ANALOG INPUTS: Systems can be configured with up to eight SIRIUS DAQ slices for a total of 128 analog inputs for virtually any sensor.
- UP TO 64 COUNTER/ENCODER INPUTS: R8 DAQ system can be configured with up to 64 counter/encoder or 192 digital input channels, all equipped with our patented SUPERCOUNTER® technology.
- UP TO 8 ISOLATED CAN PORTS: Configure up to 8 high speed CAN 2.0b channels with 1 Mbit/sec data throughput with additional support for CCP, OBDII, J1939, and CAN output.
- UP TO 64 ANALOG OUTPUTS: R8/R8B can be configured with up to 64 analog outputs and can function as a multi-channel function generator, analog replay, or control device with the output voltage signal of $\pm 10V$.
- ETHERCAT MASTER PORT: R8 DAQ systems include an EtherCAT master port with built-in synchronization for easy connection and extension of any of our EtherCAT based DAQ system like KRYPTON DAQ modules or SIRIUS DAQ system.
- ALL INTERFACES: Interfaces for Wireless LAN, dual GLAN, 4x USB 3.0, GPS, HDMI, 2x synchronization are available.
- 100 Hz GPS WITH RTK: Optional 10 Hz or 100 Hz GPS receiver with additional RTK support can be built straight into R1DB/R2DB DAQ system.



Hint

The analog out option is available only on SIRIUS-R8B and SIRIUS-R8.

4.11.1. SIRIUS-SBOXre

At the heart of every R8 DAQ system is a powerful SBOX computer powered by Intel Core i7 CPU. Together with 4 GB of memory, fast internal SSD storage, and a removable data SSD hard drive it provides enough storage and power for processing data from thousands of channels. The R8 SBOX computer is also equipped with all the modern interfaces for connectivity and expansion:

- Network interfaces: 1x GLAN, 1x WLAN, optionally with two GLAN ports.
- USB 3.0: 4x USB 3.0 ports for data acquisition devices like SIRIUS, DEWE-43A, and peripherals like mouse, keyboard, printers and external hard drives.
- EtherCAT master port: for connecting any of our EtherCAT data acquisition devices like KRYPTON or SIRIUS.
- HDMI and VGA video: for connecting an external display.
- GPS receiver: optional built-in 10 Hz or 100 Hz GPS receiver with an option to connect external GPS display.



Hint

There are two different versions - SBOXre and SBOXre-2GLAN where the difference is that the SBOXre-2GLAN has two LAN connectors and no WLAN, while SBOXre has WLAN and one LAN connector.



SBOXre



SBOXre-2GLAN

On the front side of the SBOXre you can find these connectors:

Name	Description
LAN	1 (SBOXre) or 2 Ethernet (SBOXre-2GLAN) 1 Gbps, RJ45 connector
WLAN ANT	RP-SMA Female WLAN antenna: WiFi 802.11 b/g/n (not for SBOXre-2GLAN)
DVI	DVI Video out (VGA and HDMI compatible)
GPS ANT	SMA Female GPS antenna
SSD	Removable Solid State Drive
EtherCAT	8-pin LEMO female connector
PWR Led light	Green when Power is available and switched on
PWR switch	To switch the SBOX on/off.
GPS	DSUB-9 female GPS connector
PWR OUT	2-pin LEMO female connector
SYNC	2x 4-pin LEMO male sync connector
USB 3.0	4x USB 3.0
POWER	Power in 3-pin LEMO male connector
GND	Protective Ground banana plug and M4 insert

4.11.2. SIRIUS-R8: Specifications

	R8	R8B	R8D	R8DB
Computer				
Processor	Intel® Core™ i7; 4x 2.0 GHz base, 2.8 GHz max; 8 threads			
Memory	8 GB (optional up to 32 GB)			
Storage	500 GB removable SATA SSD Option: 1 TB removable SATA SSD Option: 250 GB mSATA internal SSD			
Interfaces and options				
USB	Front: 4x USB 3.0	Front: 4x USB 3.0	Front: 3x USB 3.0, 1x USB 2.0 Rear: 4x USB 3.0	Front: 3x USB 3.0, 1x USB 2.0 Rear: 4x USB 3.0
Ethernet	Standard: 2x GLAN (RJ45) Optional: 1x GLAN (RJ45), 1x WLAN (RP-SMA Female Jack)			
EtherCAT®	1x EtherCAT® 100 Mbps Full Duplex, 8-pin LEMO female, 8 A (shared with power out connector)			
Power out	Switched input supply on 2-pin LEMO female, 8 A (shared with EtherCAT® connector)			
Synchronization	2x SIRIUS® SYNC			
Video	1x DVI-I (VGA and HDMI compatible)			
GPS (option)	10 Hz or 100 Hz or 100 Hz + RTK			
GPS display (option)	External on DSUB-9 female connector + remote power on			
Analog out option	up to 64 channels	-	-	-
Display				
Type	-	-	17", Full-HD, Multi-touch display	17", Full-HD, Multi-touch display
Resolution	-	-	1920 x 1080	1920 x 1080
Brightness	-	-	400 cd/m ²	400 cd/m ²
Batteries				
Battery type	-	NL2024HD	-	NL2024HD
Number of batteries	-	4, hot swappable	-	4, hot swappable
Voltage	-	14.4 V (at fully charged state 16.8 V)	-	14.4 V (at fully charged state 16.8 V)
Total capacity of single battery	-	6.25 Ah	-	6.25 Ah
Discharge current of single battery	-	8 A	-	8 A
Wrong polarity protection	-	YES	-	YES
Battery weight	-	0.65 kg	-	0.65 kg
Power				
Power supply	12 - 36 V DC	18 - 24 V DC	12 - 36 V DC	18 - 24 V DC
Power consumption	Typ. 28 W (Max. 56 W) (excl. SIRIUS® slices)	Typ. 28 W (Max. 56 W) (excl. SIRIUS® slices)	Typ. 45 W (Max. 73 W) (excl. SIRIUS® slices)	Typ. 45 W (Max. 73 W) (excl. SIRIUS® slices)
Charging power	-	60 W	-	60 W
Environmental				

Operating Temperature	-10 to 50 °C	0 to 40 °C	-10 to 50 °C	0 to 40 °C
Storage Temperature	-40 to 85 °C	-20 to 60 °C	-40 to 85 °C	-20 to 60 °C
Humidity	5 to 95 % RH non-condensing at 50 °C			
IP rating	IP20			
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D			
Physical				
Dimensions	446 x 317 x 148 mm	446 x 317 x 205 mm	446 x 317 x 165 mm	446 x 317 x 205 mm
Weight	7.4 kg (excl. SIRIUS® slices)	9.6 kg incl. 4 batteries (excl. SIRIUS® slices)	9.0 kg (excl. SIRIUS® slices)	11.9 kg incl. 4 batteries (excl. SIRIUS® slices)

4.11.3. SIRIUS-R8rt: Specifications

Computer	
Processor	Intel® Core™ i7; 4x 2.0 GHz base, 2.8 GHz max; 8 threads
Memory	8 GB (optional up to 32 GB)
Storage	250 GB removable SATA SSD Option: 1 TB removable SATA SSD Option: 250 GB mSATA internal SSD
Interfaces and options	
USB	Front: 4x USB 3.0
Ethernet	Option 1: 1x GLAN (RJ45), 1x WLAN (RP-SMA Female Jack) Option 2: 2x GLAN (RJ45) instead of WLAN
EtherCAT®	1x EtherCAT® 100 Mbps Full Duplex, 8-pin LEMO female, 8 A (shared with power out connector)
Power out	Switched input supply on 2-pin LEMO female, 8 A (shared with EtherCAT® connector)
Synchronization	2x SIRIUS® SYNC
Video	1x DVI-I (VGA and HDMI compatible)
GPS (option)	10 Hz or 100 Hz or 100 Hz + RTK
GPS display (option)	External on DSUB-9 female connector + remote power on
Analog out option	up to 64 channels
EtherCAT® slave port	
Minimum delay (analog input to EtherCAT® bus)	70 µs
Minimum EtherCAT® cycle time	100 µs
Power	
Power supply	12 - 36 V DC
Power consumption	Typ. 25 W (max. 55 W) (excl. SIRIUS® slices)
Environmental	
Operating Temperature	-10 to 50 °C
Storage Temperature	-40 to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C
IP rating	IP20
Shock & Vibration	Vibration sweep sinus (EN 60068-2-6:2008) Vibration random (EN 60721-3-2: 1997 - Class 2M2) Shock (EN 60068-2-27:2009) MIL-STD-810D
Physical	
Dimensions	446 x 317 x 148 mm
Weight	7.4 kg (excl. SIRIUS® slices)

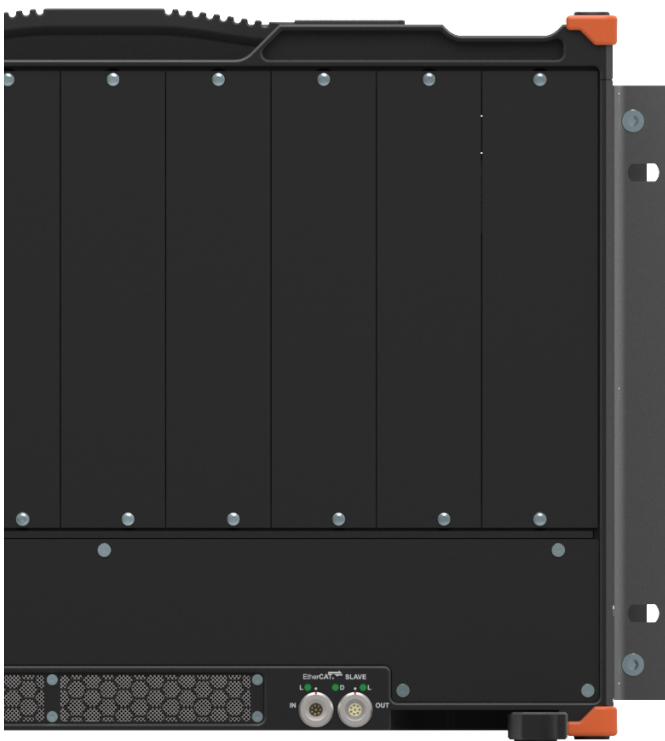
4.11.5. SIRIUS-R8: Rear side



SIRIUS-R8 EXT CAL



SIRIUS-R8 Analog Out



SIRIUS-R8rt

Name	Description
EXT CAL	R8 system features (optional) cal reference input. External calibration reference can be connected via single BNC connector on the rear side of the R8 and can be switched in the software to all input channels at once to check the amplifier performance and accuracy.
AO 1 to 8	8x BNC connectors per slice (optional) Up to 64 analog outputs
EtherCAT IN	EtherCAT® slave port (optional) 8-pin LEMO male connector
EtherCAT OUT	EtherCAT® slave port (optional) 8-pin LEMO female connector



Important

See chapter “EtherCAT® slave port” for details.

4.11.6. SIRIUS-R8DB: Rear side



SIRIUS-R8DB or SIRIUS-R8D Rear side

Name	Description
USB 3.0	3x USB 3.0
USB 2.0	1x USB 2.0
PWR switch	To switch the SBOX on/off.