



V23-1

 **DEWESoft**  
**YEAR WARRANTY**

# IOLITE® RACK

## IOLITE®R12

19" rack version with up to twelve slots, dual EtherCAT® interface and redundant power supply.



## IOLITE®R8

SIRIUS form chassis with up to eight slots, dual EtherCAT® interface and redundant power supply - also available in rugged chassis.



## IOLITE® R8R

Rugged IP50 chassis variation with -10°C to 50 degrees Celsius operation range.



## DUAL EtherCAT

IOLITE is equipped with two EtherCAT buses in parallel. The primary bus is used for full-speed buffered data acquisition to a PC computer hard drive. The secondary bus is mainly used for the real-time low-latency data feed to any 3rd party EtherCAT-based control system.

## MULTIPLE CHASSIS OPTION

IOLITE R12 aluminum chassis is compatible with 19" rack cabinets. It can fit up to 12 I/O amplifier modules. IOLITE R8 and R8R are rugged aluminum compatible chassis for field-use and can fit up to 8 amplifier module cards.

Data acquisition and real-time control front-end system with dual EtherCAT buses for industrial testing applications.

## HIGH-END SIGNAL CONDITIONING

IOLITE data acquisition systems feature high-quality analog and digital amplifiers that offer excellent signal quality. The amplifiers use 24-bit ADCs with up to 20 kS/s sampling rate, freely software selectable.

## REDUNDANT POWER SUPPLY

IOLITE main frame chassis feature an integrated redundant power supply. This provides maximum system reliability for mission-critical applications.

## MULTI-PURPOSE

With IOLITE you can measure voltage, current, strain, stress, vibration, sound, temperature, digital, counters, and more.

## WIDE OPERATING TEMPERATURE RANGE

While IOLITE DAQ systems are labeled to run at -10°C ... 50°C, certain configurations can operate in the -40°C ... +85°C temperature range.

## DEWESOFT QUALITY AND 7-YEAR WARRANTY

Enjoy our industry-leading 7-year warranty. Our data acquisition systems are made in Europe, utilizing only the highest build quality standards. We offer free and customer-focused technical support. Your investment into the Dewesoft solutions is protected for years ahead.



### IOLITE®

Standalone, distributed, and cost-effective data acquisition devices for monitoring and industrial applications.

# IOLITE® MODULAR

### IOLITE®

High-end signal conditioning with a wide range of input and output channels.



### DISTRIBUTABLE AND SCALABLE

A wide variety of amplifiers with different channel counts per module allows perfect channel distribution for monitoring, systems can be distributed with 100m distance between the modules and great signal quality due to short sensor cable length.

### MULTI-PURPOSE

With IOLITE you can measure voltage, current, strain, stress, vibration, sound, temperature, digital, counters, and more.

### HIGH-END SIGNAL CONDITIONING

IOLITE features high-quality analog and digital amplifiers that offer excellent signal conditioning and up to 50 kS/s sampling rate.

Distributed, and cost-effective data acquisition device with high-end signal conditioning for monitoring and industrial applications.

### STANDARD INTERFACES

IOLITE devices are standard EtherCAT slave devices that are compatible with any EtherCAT master controller. When connected to DewesoftX DAQ software, retransmit functionality ensures no samples are lost during measurement.

### PERFECT SYNCHRONIZATION

Units are perfectly synchronized and can use external timing sources like GPS for precise synchronization of dislocated units.



## IOLITE RACK AND IOLITE MODULAR MULTI CHANNEL

	6xSTG	8xSTGS	8xLV	8xLVe	16xLV	8xLA	8xACC	8xTH
Connectors	DSUB-9	Terminal block, DSUB-37	BNC, Terminal block	Terminal block, DSUB-37	Terminal block	BNC, Terminal block	BNC	MINI TC
Channels per module	6x	8x	8x	8x	16x	8x	8x	8x
Data rate / channel	20 kS/s	20 kS/s	20 kS/s	20 kS/s	20 kS/s	20 kS/s	40 kS/s	100 S/s
Resolution	24-bit	24-bit	24-bit	24-bit	24-bit	24-bit	24-bit	24-bit
Bandwidth	0.49*fs	0.433*fs	0.49*fs	0.433*fs	0.433*fs	0.49*fs	0.433*fs	X
Voltage ranges	±50 V, ±10 V, ±1 V, ±100 mV	±1 V, ±100 mV, ±20 mV	±100 V, ±10 V (±10 V, ±1 V on request)	±100 V, ±5 V	±200 V, ±10 V	X	±10 V, ±5 V, ±1 V, ±200 mV	±1 V, ±100 mV
Input coupling	DC, AC 1 Hz	DC	DC	DC	DC	DC	DC, AC 1 Hz, AC 0.1 Hz	DC
Sensor excitation	0.24 V (unipolar), 0.12 V (bipolar), 0.44 mA (current), max. 0.55 W/ch	1 V, 2 V, 5 V	X	0...24V (unipolar)	X	X	2 mA, 4mA, 6 mA	X
Bridge connection	Full, ½, ¼ 350 Ω, ¼ 120 Ω 3-wire	Full, ½, ¼ 350 Ω, ¼ 120 Ω 3-wire	X	X	X	X	X	X
Programmable shunt	100 kΩ	100 kΩ	X	X	X	X	X	X
IEPE input	DSI-ACC	X	X	X	X	X	✓	X
Resistance	✓	X	X	X	X	X	X	X
Temperature (PTx)	DSI-RTD	X	X	X	X	X	X	X
Thermocouple	DSI-TH	X	X	X	X	X	X	K, J, T, R, S, N, E, C, B
Current	20 mA (internal shunt), DSI-5A, DSII-10A, DSII-20A	X	X	X	X	±20 mA, ±2 mA	X	X
Potentiometer	✓	✓	X	✓	X	X	X	X
LVDT	DSI-LVDT	X	X	X	X	X	X	X
Charge	DSI-CHG	X	X	X	X	X	X	X
TEDS	✓	✓ (except DB37)	X	✓	X	X	✓	X
Isolation voltage	Differential	Differential	450 V	250 V	250 V	450 V	250V	1000 V
Isolation arrangement	None	Isolated common GND	Ch-Ch & Ch-GND	Ch-GND	Isolated common GND	Ch-Ch & Ch-GND	Ch-GND	Ch-Ch & Ch-GND
Power consumption per module	Typ. 5.4 W, Max.1.1W	Typ. 2.7 W, Max. 5.1 W	Typ. 2.4 W, Max. 3.5 W	Typ. 3.3 W, Max. 4.2 W	Typ. 3.4 W, Max. 4.2 W	"Typ. 2.4 W, Max. 3.5 W"	Typ. 4.5 W, Max. 6 W	3.2 W
Advanced functions	Supports all strain types, high input range	Supports all strain types, low power consumption	High isolation, high input range	High isolation, high input range	High isolation, high input range	High isolation, high input range	IEPE, supports TEDS, high channel density	High isolation, support of main TC types

<sup>1</sup> Not supported on the OBSIDIAN

Rev: 1668186000

# AMPLIFIER SPECS

## IOLITE RACK AND IOLITE MODULAR MULTI CHANNEL

8xTH-HS <sup>1</sup>	8xRTD	8xRTD-HS	8xRTDp <sup>1</sup>	32xDI <sup>1</sup>	32xDO <sup>1</sup>	8xDI-4xDO <sup>1</sup>	4xCNT	16xAO
MINI TC	LOB6f, Terminal block	LOB6f, Terminal block	LOB6f	Terminal block	Terminal block	Terminal block	L1B7f	Terminal block
8x	8x	8x	8x	32x	32x	8x digital in, 4x digital out	4x	16x
100 S/s, upgradable to 10 kS/s	100 S/s	100 S/s, upgradable to 10 kS/s	100 S/s	20 kS/s	X	X	20 kS/s	20 kS/s
24-bit	24-bit	24-bit	24-bit	digital	digital	digital	100 MHz timebase 5 ppm, 20 ppm max	16-bit
0.49*fs (max. 1 kHz)	X	0.49*fs (max. 1 kHz)	X	X	X	X	10 MHz	X
±1 V, ±100 mV	±1 V, ±100 mV	±1 V, ±100 mV	±1 V, ±100 mV	X	open collector	X	TTL (Low: <0.8 V, High > 2 V)	±10 V
DC	DC	DC	DC	X	X	X	X	X
X	244 uA / 440 uA	150 uA / 400 uA	0.4 mA / 2 mA	X	X	X	5 V, 12 V	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	1 kΩ, 10 kΩ	1 kΩ, 10 kΩ	100 Ω, 1 kΩ, 10 kΩ	X	X	X	X	X
X	PT100, 200, 500, 1000, 2000	PT100, 200, 500, 1000, 2000	PT100, 200, 500, 1000, 2000	X	X	X	X	X
K, J, T, R, S, N, E, C, B	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
X	X	X	X	X	X	X	X	X
1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	1000 V	X	X
Ch-Ch & Ch-GND	Ch-Ch & Ch-GND	Ch-Ch & Ch-GND	Ch-Ch & Ch-GND	Isolated common GND, groups of 8 ch.	Isolated common GND, groups of 8 ch.	Isolated common GND, group of 4/8 ch	Isolated common GND	Isolated common GND
Typ. 2.6 W, Max. 3.4 W	Typ. 2.1 W, Max. 2.7 W	"Typ. 3.5 W Max. 4.3 W"	Typ. 2.1 W, Max. 2.7 W	Typ. 1.2 W, Max. 1.9 W	Typ. 1.2 W, Max. 2.0 W	Typ. 1.1 W, Max. 1.8 W	Typ. 1.9 W	Typ. 4.3 W, Max. 7.2 W
High isolation, support of main TC types	High isolation	High isolation	Pulsed excitation, Cryogenic temperature range, High isolation	X	Watchdog	High sink current, watchdog	Supercounter technology	X

<sup>1</sup> Not supported on the OBSIDIAN

# IOLITE® RACK SYSTEM SPECS

## IOLITE RACK SYSTEM SPECS

.System	IOLITE R12	IOLITE R8	IOLITE R8r
Number of slots	12	8	8
Synchronization	2x SIRIUS SYNC on L00B4f	2x SIRIUS SYNC on L00B4f	2x SIRIUS SYNC on L00B4f
Sync accuracy	< 200 ns within same EtherCAT chain < 2 µs using sync for multiple EtherCAT chains below one sample to Sirius	< 200 ns within same EtherCAT chain < 2 µs using sync for multiple EtherCAT chains below one sample to Sirius	< 200 ns within same EtherCAT chain < 2 µs using sync for multiple EtherCAT chains below one sample to Sirius
Dual EtherCAT interface			
Number of buses	Two (both with buffered DAQ or real time)	Two (both with buffered DAQ or real time)	Two (both with buffered DAQ or real time)
Data Rate	Dual 100 Mbit bus speed	Dual 100 Mbit bus speed	Dual 100 Mbit bus speed
Max. Throughput per Chain	From 6 MB/s to 10 MB/s	From 6 MB/s to 10 MB/s	From 6 MB/s to 10 MB/s
Bus 1 connectors	2x Ethernet RJ45	2x Lemo 1T	2x Lemo 1T
Bus 2 connectors	2x Ethernet RJ45	2x Ethernet RJ45	2x Ethernet RJ45
Minimum delay (analog input to EtherCAT bus)	70 µs	70 µs	70 µs
Minimum EtherCAT cycle time	100 µs	100 µs	100 µs
Power			
Power supply	Dual redundant 9 - 48 V DC	Dual redundant 9 - 48 V DC	Dual redundant 9 - 48 V DC
Power consumption	"9 W to 11 W (incl. IOLITE-GATE) IOLITE-GATE: Max. 1.9 W"	8 W (Max: 9 W)	2.2W
Maximum input current	10 A	10 A	10 A
Environmental			
Operating temperature	-10 to 50 °C (-40 to 85 °C optional) (see 1)	-10 to 50 °C (-40 to 85 °C optional) (see 1)	-10 to 50 °C (-40 to 85 °C optional) (see 1)
Storage temperature	-40 to 85 °C	-40 to 85 °C	-40 to 85 °C
Humidity	5 to 95 % RH non-condensing at 50 °C	5 to 95 % RH non-condensing at 50 °C	5 to 95 % RH non-condensing at 50 °C
IP rating	IP30	IP40	IP50
Shock	Shock (EN 60068-2-27:2009)	Shock (EN 60068-2-27:2009)	50g 6ms, half sine 25x in all six directions (150x total) (-X, +X, -Y, +Y, -Z and +Z)
Vibration	Vibration random (MIL-STD-810D) Vibration random (EN 60721-3-2: 1997 - Class 2M2)	Random: ProPle breakpoints: 10 Hz - 0.75 g <sup>2</sup> /Hz 150 Hz - 0.015 g <sup>2</sup> /Hz ProPle RMS / Peak = 3.4 g / 10.2 g 4 hrs in each axis, 12 hrs total	Random: ProPle breakpoints: 24 Hz - 0.04 g <sup>2</sup> /Hz 60 Hz - 0.5 g <sup>2</sup> /Hz 100 Hz - 0.5 g <sup>2</sup> /Hz 240 Hz - 0.01 g <sup>2</sup> /Hz 2 kHz - 0.01 g <sup>2</sup> /Hz ProPle RMS / Peak = 15 g / 45 g 2 hrs in each axis, 6 hrs total
Physical			
Dimensions	483 x 148 x 133 mm	266 x 169 x 139 mm	321 x 155 x 151 mm
Weight	3.1 kg (incl. IOLITE-GATE), 230 g (IOLITE-GATE)	2.6 kg	2.6 kg

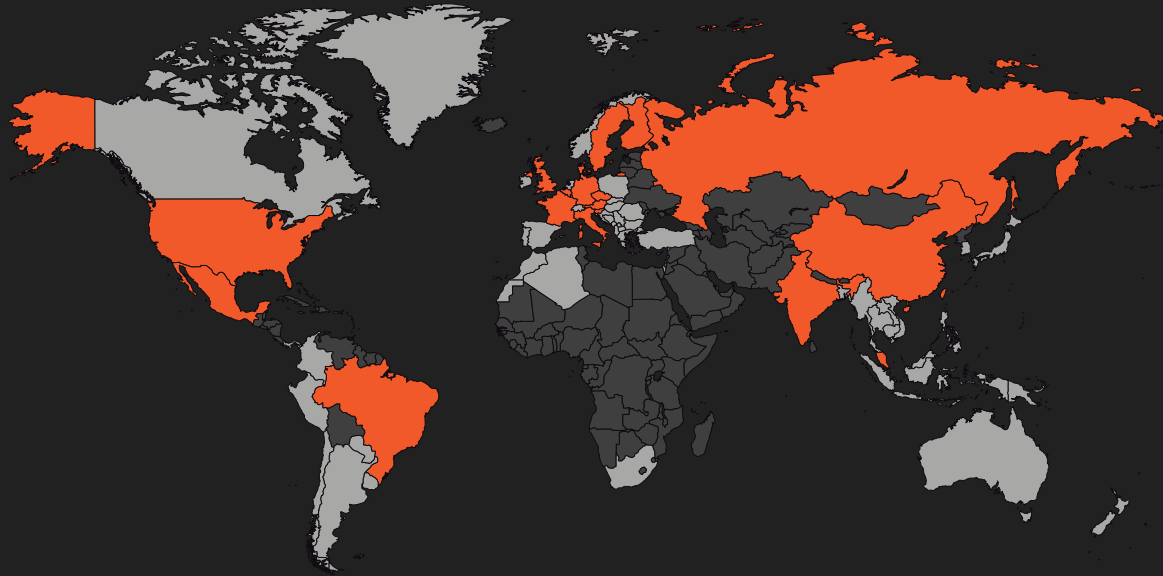
1) Extended operating temperature range depends of module configuration

# IOLITE® MODULAR SPECS

## IOLITE MODULAR SINGLE CHANNEL

Interface	IOLITE Single channel	IOLITE Multi channel
Data interface	EtherCAT	EtherCAT
Data rate	100 Mbps Full Duplex bus speed	100 Mbps Full Duplex bus speed
Sync accuracy	< 200 ns within same EtherCAT chain < 2 μs using sync for multiple EtherCAT chains below one sample to Sirius	< 200 ns within same EtherCAT chain < 2 μs using sync for multiple EtherCAT chains below one sample to Sirius
Bus connectors	Ethernet RJ45	Ethernet RJ45
Max. cable length between devices	100 m	100 m
Max. throughput per chain	From 6 MB/s to 10 MB/s (see 1)	From 6 MB/s to 10 MB/s
Data interface connection	Ethernet RJ45, Single cable for data, power and sync, daisy chainable	Ethernet RJ45, single cable for data, power and sync, daisy chainable (see 2)
Power		
Power supply	9 V - 48 V	9 V - 48 V
Power consumption	~2 W (see individual modules)	~4 W (see individual modules)
Power supply connector	-	SCDN-THR 3.81/04/90G 3.2SN BK BX
Environmental		
Operating temperature	-20 to 60 °C	-40 to 85 °C
Storage temperature	-20 to 60 °C	-40 to 85 °C
Humidity	95 %, no condensation	95 %, no condensation
IP rating	IP20	IP20
Physical		
Dimensions	82 x 62 x 52 mm (might differ for different modules)	137 x 119 x 35 (might differ for different modules)
Weight	130 g (might differ for different modules)	530 g (might differ for different modules)
1) 55 per chain (@ 20 kS/s total sample rate per device), multiple chains possible. Additional power injectors are necessary.		
2) Passive PoE is supported only on IOLITE-16xLV, IOLITE-8xSTGS, IOLITEI-8xTH-HS, IOLITEI-8xRTD-HS, IOLITE-8xLVE, IOLITE-8xACC. All other modules have power and data separated. Daisy-chain for data is available with Ethernet RJ45 cable, Daisy-chain for power is available with T3B2m-T3B2m-0.1m cable.		

AMPLIFIER	1xACC	1xSTG	4xDI	4xDO	1xAO
Connector	BNC	DB9	DSUB15HD male	DSUB15HD female	BNC
Number of channels per module	1	1	4	4	1
Data rate per channel	40 kS/s	40 kS/s	20 kS/s		
Resolution	24-bit	24-bit	Digital	Digital	18-bit
Bandwidth	0.49 fs	0.49 fs	X	X	X
Voltage ranges	±10 V, ±5 V, ±1 V, ±200 mV	±50 V, ±10 V, ±1 V, ±100 mV	Digital (Low: < 1 V, High: > 2 V)	X	±10 V
Input coupling	DC, AC 0.1 Hz, 1 Hz	DC, AC 1 Hz			
Sensor excitation	IEPE 4 mA, 8 mA	Unipolar 0 - 24 V Bipolar 0 - 12 V	X	X	X
Bridge connection	X	Full, ½, ¼ 350 Ω, ¼ 120 Ω 3 wire	X	X	X
Programmable shunt	X	100 kΩ	X	X	X
IEPE input	✓	DSI-ACC	X	X	X
Resistance	X	✓	X	X	X
Temperature (PTx)	X	DSI-RTD	X	X	X
Thermocouple	X	DSI-TH	X	X	X
Current	X	2 mA, 20 mA (internal shunt)	X	X	X
Potentiometer	X	✓	X	X	X
LVDT	X	DSI-LVDT	X	X	X
Charge	X	DSI-CHG	X	X	X
TEDS	✓ (IEPE only)	✓	X	X	X
Isolation	125 Vrms Isolation CH, GND	125 Vrms Isolation CH, GND	CH-CH, GND-GND	CH-GND	X
Power consumption	2W	2.5W	2.5W	2.5W	2W



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**HEADQUARTERS**

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