

*ENJOY THE BEST OF TWO WORLDS. DATA ACQUISITION AND REAL TIME CONTROL FRONT-END IN ONE DEVICE.*



# IOLITE® INDUSTRIAL REAL TIME DATA ACQUISITION DEVICES



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- DUAL EtherCAT®: IOLITE uses two EtherCAT® buses in parallel. EtherCAT® primary bus is used for full speed buffered data acquisition to a computer. EtherCAT® secondary bus is mainly used for real-time data to any 3rd party control system.
- GREAT SIGNAL CONDITIONING: IOLITE features high-quality amplifiers which offer great signal quality and up to 20 kHz sampling rate.

## IOLITEr

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

DAQ system with Dewesoft

Real time control system

*Clemessy Syclone  
Beckhoff TwinCAT®  
MATLAB® Simulink  
Acontis*



- REDUNDANT POWER SUPPLY: Together with dual EtherCAT® interface provides maximum system reliability.
- MULTIPLE CHASSIS OPTION: IOLITE can be configured in the 19-inch cabinet compatible chassis or in more rugged SIRIUS-like compatible chassis.
- GREAT PRICE/PERFORMANCE: IOLITE offers great price/performance ratio and is suitable for test-bed and industrial applications.

## IOLITEs

SIRIUS form chassis with up to eight slots, dual EtherCAT® interface and redundant power supply



Data acquisition and real-time control front-end system for industrial applications.

All-in-one solution for real-time control and feedback monitoring DAQ.

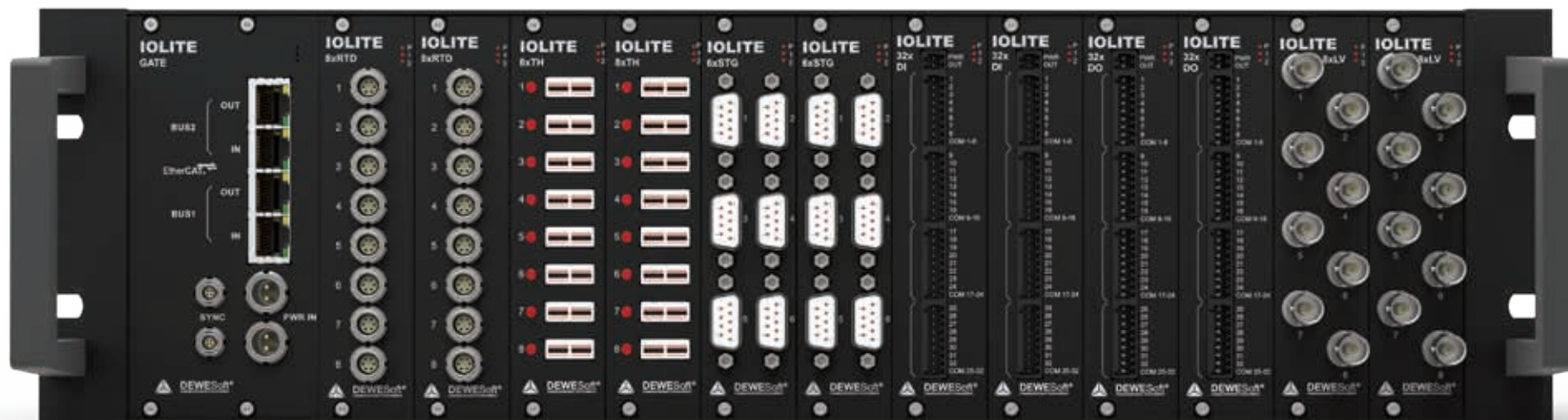
# IOLITE® MODULES



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## AMPLIFIERS

IOLITE 6xSTG	Universal 6 channel differential voltage, current and Full/Half/Quarter bridge input with DSUB9 connector. Compatible with DSI adapters for IEPE, CHG, 200V, RTD, TH measurements.	IOLITEi 32xDO	32 channel digital output module with screw terminal connections and integrated watchdog function.
IOLITEi 8xTH	8 channel-channel isolated universal thermocouple input module with mini TC connector. Accepts K, J, T, R, S, N, E, C, B thermocouple types.	IOLITEi 8xRTD	8 channel-channel isolated PTx temperature, resistance and voltage with Lemo 0B connector.
IOLITEi 32xDI	32 channel isolated digital input module with screw terminal connection.		





	6xSTG	8xTH	32xDI	32xDO	8xRTD
Connectors	DB9	Thermocouple	screw terminal	screw terminal	L0B6f
#ch per module	6x	8x	32x	32x	8x
Data rate / channel	20 kHz	100 Hz	20 kHz	20 kHz	100 Hz
Resolution	24-bit	24-bit	digital	digital	24-bit
Bandwidth	0.49*fs				
Voltage ranges	±50 V, ±10 V, ±1 V, ±100 mV	1 V, 100 mV		open collector	1 V, 100 mV
Input coupling	DC, AC 1 Hz (3, 10 Hz SW)	DC			DC
Sensor excitation	0..12 V (bipolar), 0..24 V (unipolar) max. 0.4 W/ch				
Bridge connection	Full, ½, ¼ 350 Ω, ¼ 120 Ω 3-wire				
Programmable shunt	100 kΩ				
IEPE input	DSI-ACC				
Current	20 mA (internal shunt), DSI-5A				
Temperature (PTx)	DSI-RTD				PT100, 200, 500, 1000, 2000
Thermocouple	DSI-TH		K, J, T, R, S, N, E, C, U, B		
Resistance	✓				1 kΩ, 10 kΩ
Potentiometer	✓				
LVDT	DSI-LVDT				
Charge	DSI-CHG				
TEDS	✓				
Isolation voltage	Differential	1000 V	1000 V	1000 V	1000 V
Power consumption per module	Typ. 5.4 W, Max. 11.1 W	3.2 W	Typ. 1.2 W, Max. 1.9 W	Typ. 1.2 W, Max. 2.0 W	Typ. 2.1 W, Max. 2.7 W
Advanced functions	Supports all strain types and high input range	High voltage, high isolation		watchdog	High voltage, high isolation

## IOLITE® SPECS

## A M P L I F I E R S S P E C S

## 32xDO

Digital Output	
Isolated Output Channels	32
Compatibility	Solid state relay
Maximum sink current	0.5 A
Maximum switching voltage	50 V
Maximum update rate	depending on EtherCAT master
Isolation voltage peak	1000 V channel to ground, no channel to channel isolation
Additional Specifications	
Input connectors	Terminal block, 2 pole, 4 x 9 pole OMNIMATE SL 2.50 / BLF 2.50/180
Power supply	12 - 48 V DC
Power consumption	Typ. 1.2 W, Max. 2.0 W
Weight	230 g
Slice Dimensions	128.4 x 115.4 x 30.1 mm

## 32XDI

Digital Input	
Isolated Input Channels	32
Input low level	-1 V ~ +1 V
Input high level	-48 V ~ -3 V, +3 V ~ +48 V
Input high current @5 V	UIN < 1 mA
Input high current @30 V	UIN < 1 mA
Sampling rate	Simultaneous 20 kS/sec
Overvoltage protection	100 V continuous (250 Vpeak)
Isolation voltage peak	1000 V channel to ground & channel to channel
Additional Specifications	
Input connectors	Terminal block, 2 pole, 4 x 9 pole OMNIMATE SL 2.50 / BLF 2.50/180
Power supply	12 - 48 V DC
Power consumption	Typ. 1.2 W, Max. 1.9 W
Weight	220 g
Slice Dimensions	128.4 x 115.4 x 30.1 mm

## 8xRTD

Analog inputs		
Input types	voltage, resistor or universal PTxxx inputs	
Number of channels	8	
ADC Type	24-bit delta-sigma	
Sampling Rate	Simultaneous 100 S/sec	
Voltage Ranges		
	±1 V	±100 mV
Input Accuracy	±0.02 % of reading ±0.01 % of range ±10 µV	±0.02 % of reading ±0.01 % of range ±10 µV
Typical Noise floor @10/100 s/sec	117 dB / 107 dB	111 dB / 101 dB
Gain Drift	Typical 4 ppm/K (max. 10 ppm/K)	
Offset Drift	Typical 0.05 µV/K (max. 0.2 µV/K)	
Gain Linearity	< 0.01 %	
Input Coupling	DC	
Input Impedance	1 MΩ	
Temperature		
	PT500, PT1000, PT2000	PT100, PT200
Measurement range	-200 °C to +850 °C	
Accuracy	±0.05 % of reading ±0.2 °C	
Temperature Drift	typ. ±5 ppm/K (max. ±12 ppm/K ±0.003 °C/K)	
Input Connection	3-wire or 4-wire	
Resolution	< 0.001 °C	
Resistance		
	0...10 kΩ	0...1 kΩ
Accuracy	±0.02 % of reading ±0.01 % of range	
Input Connection	3-wire or 4-wire	
Additional Specifications		
Input connectors	Lemo 0B 6pin EEA.0B.306.CLN	
Isolation voltage	1000 Vpeak channel to ground & channel to channel	
Power supply	12 - 48 V DC	
Power consumption	Typ. 2.1 W, Max. 2.7 W	
Weight	260 g	
Dimensions	128.4 x 115.4 x 30.1 mm	

## 8xTH

Inputs		
Input type	Isolated universal thermocouple and voltage	
Number of channels	8	
ADC Type	24-bit delta-sigma	
Sampling Rate	Simultaneous 100 S/sec	
Voltage Ranges		
	±1 V	±100 mV
Input Accuracy	±0.02 % of reading ±10 µV	±0.02 % of reading ±10 µV
Typical Noise floor @10/100 s/sec	115 dB / 106 dB	110 dB / 106 dB
Gain Drift	Typical 4 ppm/K (max. 10 ppm/K)	
Offset Drift	Typical 0.05 µV/K (max. 0.2 µV/K)	
Gain Linearity	<0.01%	
Input Coupling	DC	
Input Impedance	100 MΩ	
Thermocouple		
	TC Types: K, J, T, R, S, N, E, C, U, B	
Accuracy	±0.02 % of reading ±0.5 °C ±10 µV	
Resolution	< 0.001 °C	
Sampling rates	10, 20, 40, 80, 100 S/sec	
Typical Noise	0.007 °C RMS@Type K @ 10 S/sec 0.02 °C RMS@Type K @ 100 S/sec	
Additional Specifications		
Input connectors	Mini Thermocouple connector (copper)	
Isolation voltage	1000 Vpeak channel to ground & channel to channel	
Power supply	12 - 48 V DC	
Power consumption	3.2 W	
Weight	230 g	
Slice Dimensions	128.4 x 115.4 x 30.1 mm	

**6xSTG****Analog inputs - Voltage**

Input type	Voltage Full/half/quarter bridge strain Current Potentiometer, Resistance			
Number of channels	6			
ADC Type	24-bit SAR with anti-aliasing filter			
Sampling Rate	Simultaneous 20 kS/sec per channel (software-selectable)			
Voltage Ranges	±50 V	±10 V	±1 V	±100 mV
Input Accuracy	±0.03 % of reading, ±0.02 % of range, ±0.1 mV			
Typical Dynamic Range @10 kS	100 dB	110 dB	130 dB	145 dB
Typical Noise floor @10 kS	103 dB	97 dB	103 dB	94 dB
Typical CMR @400 Hz / 1 kHz	-71 dB / -66 dB	-72 dB / -66 dB	-96 dB / -88 dB	-96 dB / -87 dB
Gain Drift	Typical 10 ppm/K (max. 40 ppm/K)			
Offset Drift	Typical 0.3 $\mu$ V/K + 5 ppm of range/K, max 2 $\mu$ V/K + 10 ppm of range/K			
Gain Linearity	< 0.02%			
Input Coupling	DC, AC 1Hz			
Input Impedance	1 M $\Omega$	1 M $\Omega$	20 M $\Omega$	20 M $\Omega$
Oversampling	In+ to In-: 50 V continuous, 200 V peak (10 msec)			

**Analog inputs - Current**

Current ranges	20 mA	2 mA
Input Accuracy	±0.03 % of reading, ±0.02 % of range, ±2.1 $\mu$ A	
Internal Shunt Resistor	50 $\Omega$	

**Analog input performance**

Bandwidth (-3 dB)	0.49*fs
Alias-free Bandwidth	DC to 0.453*fs
Alias Rejection	-100 dB (all sample rates)
Delay Through ADC	37 / fs
Oversampling	32

**Excitation Voltage**

Excitation Voltage	Free programmable (16-bit DAC)
Predefined Levels	Bipolar: 0, 1, 2, 5, 10 and 12 VDC Unipolar: 0, 2, 5, 10, 15, 24 VDC
Accuracy	±0.05 % ±2 mV
Drift	±50 ppm/K ±100 $\mu$ V/K

Stability 10 % to 90 % Load	< 0.01 %
Current Limit	42 mA (550mW max. power)
Protection	Continuous short to ground

**Excitation Current**

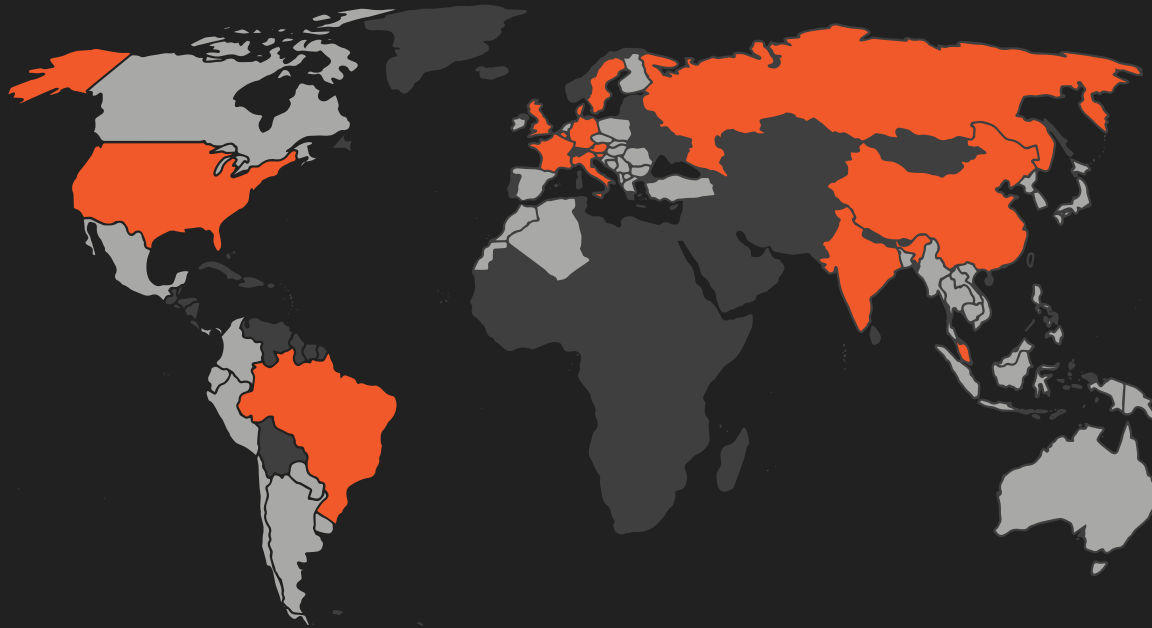
Excitation Voltage	Free programmable (16-bit DAC)
Predefined Levels	0, 2, 4, 8, 16, 44 mA
Accuracy	±0.1 % ±2 $\mu$ A (<10 mA), ±0.5 % ±5 $\mu$ A (>10 mA)

**Bridge measurement**

Bridge Connection Types	full bridge strain, ½ bridge strain, ¼ bridge strain (3-wire)
Ranges	2...1000 mV/V free programmable
Internal Bridge Completion	½ bridge and ¼ bridge 120 and 350 $\Omega$
Bridge Completion Accuracy	0.05 %; TCR: 5 ppm/K (others on request)
Internal Shunt Resistor	100 k $\Omega$ (others on request)
Shunt Resistor Accuracy	0.05 %; TCR: 10 ppm/K (others on request)
Input Short, Sensor Offset Adjust	Software-selectable

**Additional Specifications**

Input connectors	DB9
TEDS support	Standard + DSI adapters
Power supply	12 - 48 V DC
Power Consumption	5.4 W, Max. 11.1 W (7.9 W 120 $\Omega$ @ 5 V load, 8.8 W 350 $\Omega$ @ 10 V load)
Weight	340 g
Slice Dimensions	128.4 x 115.4 x 30.1 mm



DEWESOFT® WORLDWIDE: SLOVENIA, Austria, Brasil, Belgium, China, Denmark, France, Germany, Hong Kong, Italy, India, Russia, Singapore, Sweden, UK, USA and PARTNERS IN MORE THAN 50 COUNTRIES

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