

TECHNICAL REFERENCE MANUAL

IOLITE® V26-1



Physical			
Dimensions	483 x 148 x 133 mm	266 x 169 x 139 mm	321 x 155 x 151 mm
Weight	IOLITE-RACK: 2.85 kg IOLITE-GATE (4× RJ45): 260 g IOLITE-GATE-L (2× LEMO, 2× RJ45): 280g	2.6 kg	2.6 kg
1) Extended operating temperature range depends of module configuration			

Hint



For detailed explanation of IOLITE-R8 and IOLITE-R8r chassis shock and vibration specifications check this [LINK](#).

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 1 sample to Sirius®	< 200 ns within same EtherCAT chain < 2 µs using sync for multiple EtherCAT chains below 1 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 for devices produced after September 2024.		

6.5.2. IOLITEi 8xTH-HS

IOLITEi TH-HS (IOLITEir-8xTH-HS and IOLITEi-8xTH-HS) modules are isolated DAQ devices for temperature measurements using thermocouples. Isolated thermocouple modules can acquire data from any kind of thermocouple (K, J, T, R, S, N, E, C, B). It offers sensor break detection in software as well as using LED indicators. IOLITE TH-HS is a perfect choice for thermal shock measurements with sampling rate up to 10 kS/s.



IOLITEir-8xTH-HS



IOLITEi-8xTH-HS

6.5.2.1. IOLITEi 8xTH-HS: Specifications

Inputs		
Input type	Isolated universal thermocouple and voltage	
Number of channels	8	
ADC Type	24-bit delta-sigma	
Sampling Rate IOLITE	Simultaneous 10, 20, 40, 50, 80, 100, 200, 500, 1k, 2k, 5k, 10k S/s (license for high rates)	
Sampling Rate OBSIDIAN	Simultaneous 10, 20, 40, 50, 80, 100, 200, 500, 1k, 2k, 5k (license for high rates)	
Voltage Mode		
Ranges	±1 V	±100 mV
Input Accuracy	±0.02 % of reading ±50 µV	±0.02 % of reading ±7 µV
Typical Noise Floor @ 10 / 100 / 1k / 10k S/s	-130 dB / -120 dB / -110 dB / -104 dB	-120 dB / -110 dB / -100 dB / -90 dB
Offset Drift	Typ. 0.05 µV/K (Max. 0.2 µV/K)	Typ. 0.01 µV/K (Max. 0.1 µV/K)
Gain Drift	Typ. 2 ppm/K (Max. 10 ppm/K)	
Gain Linearity	< 0.007%	
Input Coupling	DC	
Input Impedance	100 MΩ	
Temperature Mode		
Thermocouple Types	K, J, T, R, S, N , E, C, B	
CJC reference	PT1000	
Accuracy	±0.02 % of reading ±0.5 °C ±7 µV	
Typical Noise	0.002 °C RMS @ Type K @ 10 S/s 0.006 °C RMS @ Type K @ 100 S/s 0.02 °C RMS @ Type K @ 1 kS/s 0.05 °C RMS @ Type K @ 10 kS/s	
Additional Specifications		
Rack	IOLITEir-8xTH-HS	
Input connectors	Mini Thermocouple connector (copper)	
Isolation voltage	1000 Vpeak channel to ground & channel to channel	
Power supply	9 - 48 V DC	
Power consumption	Typ. 2.6 W (Max. 3.4 W)	
Weight	290 g	
Slice Dimensions	128.4 x 115.4 x 30.1 mm	
Additional Specifications		
Modular	IOLITEi-8xTH-HS	
Input connectors	Mini Thermocouple connector (copper)	
Isolation voltage	1000 Vpeak channel to ground & channel to channel	
Power supply	9 - 48 V DC	
Power consumption	Typ. 2.6 W (Max. 3.8 W)	

Weight	555 g
Slice Dimensions	137 x 115.0 x 35.0 mm

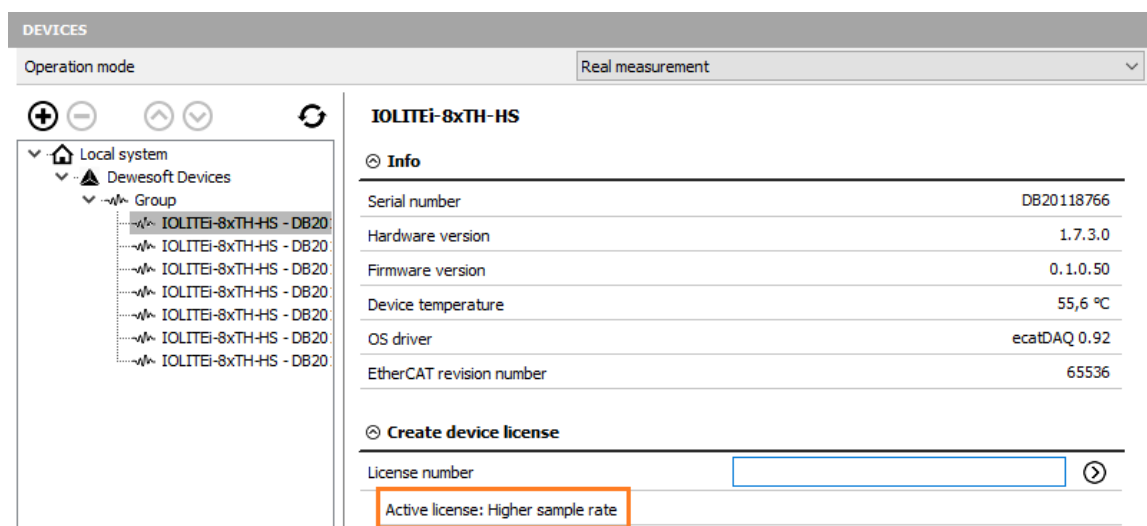
6.5.2.1.1. IOLITEi 8xTH-HS: Specifications: Accuracy table

Temperature	Type K	Type J	Type T	Type R	Type S	Type N	Type E	Type B	Type C
-200 °C	1.00 °C	0.86 °C	0.98 °C	✗	✗	1.24 °C	0.71 °C	✗	✗
-100 °C	0.75 °C	0.69 °C	0.77 °C	✗	✗	0.85 °C	0.67 °C	✗	✗
0 °C	0.68 °C	0.64 °C	0.68 °C	1.82 °C	1.79 °C	0.77 °C	0.62 °C	✗	1.07 °C
100 °C	0.69 °C	0.65 °C	0.67 °C	1.46 °C	1.47 °C	0.76 °C	0.62 °C	7.96 °C	0.96 °C
400 °C	0.75 °C	0.71 °C	0.72 °C	1.26 °C	1.31 °C	0.77 °C	0.67 °C	2.30 °C	0.95 °C
700 °C	0.81 °C	0.75 °C	✗	1.23 °C	1.30 °C	0.82 °C	0.73 °C	1.67 °C	1.01 °C
1000 °C	0.88 °C	0.82 °C	✗	1.23 °C	1.31 °C	0.88 °C	0.83 °C	1.47 °C	1.07 °C
1300 °C	0.96 °C	✗	✗	1.26 °C	1.34 °C	0.98 °C	✗	1.40 °C	1.17 °C
1700 °C	✗	✗	✗	1.36 °C	1.45 °C	✗	✗	1.45 °C	1.34 °C



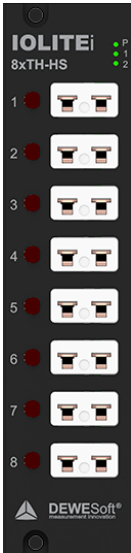
Hint

The higher sample rate is unlocked with a device license key as it is shown on the image below. This upgrade raises the maximum possible sample rate of the IOLITEi 8xTH-HS from 100 S/s to 10 kS/s.



6.5.2.2. IOLITEi 8xTH-HS: Miniature Thermocouple Connector

IOLITEir-8xTH-HS and IOLITEi-8xTH-HS modules have 8 miniature thermocouple-connectors for temperature measurement.



IOLITEir-8xTH-HS front

6.5.2.2.1. IOLITEi 8xTH-HS: Miniature Thermocouple Connector: Pinout



TH-HS connector: pin-out (Mini TC female)

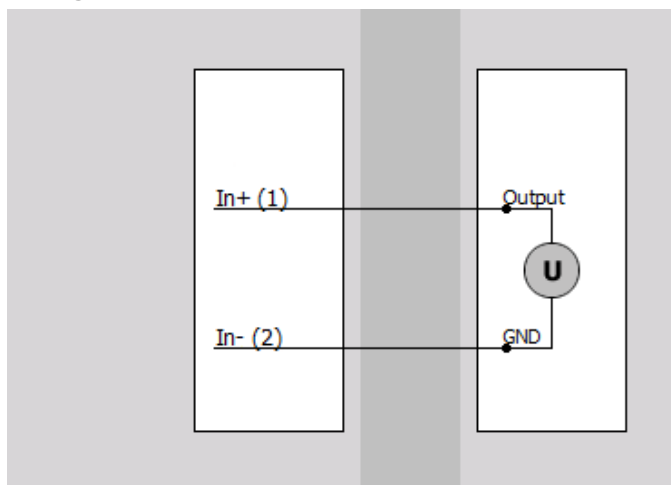
Pin	Name	Description
1	In+	Input+
2	In-	Input-



Note
IOLITEirw-8xTH-HS devices have potted input connectors to ensure that the module is waterproof.

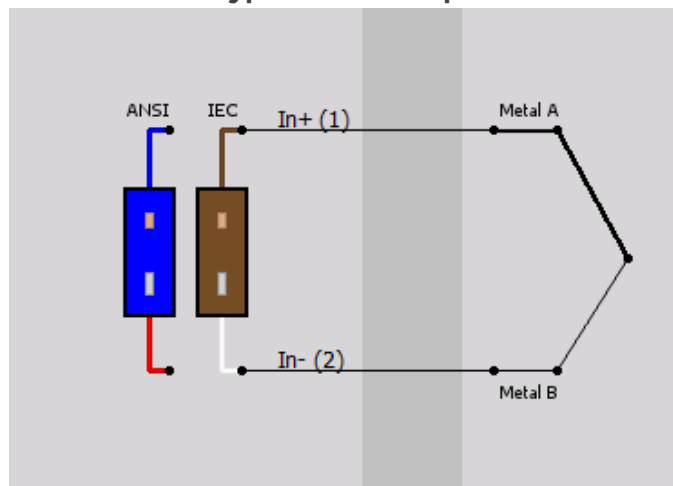
6.5.2.2.2. TH-HS: Miniature Thermocouple Connector: Wiring diagram

Voltage

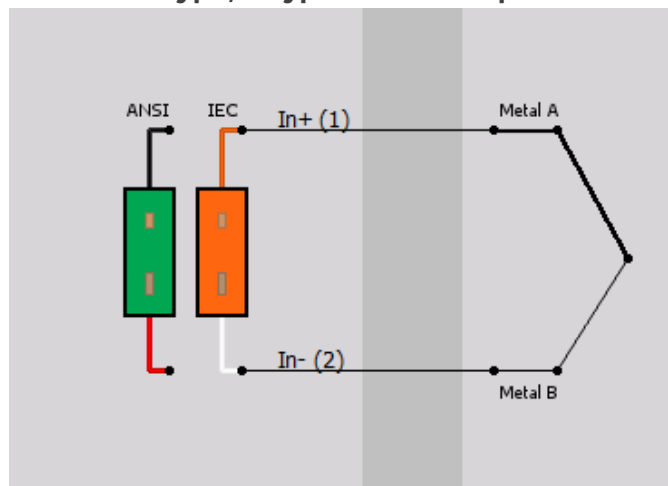


Temperature

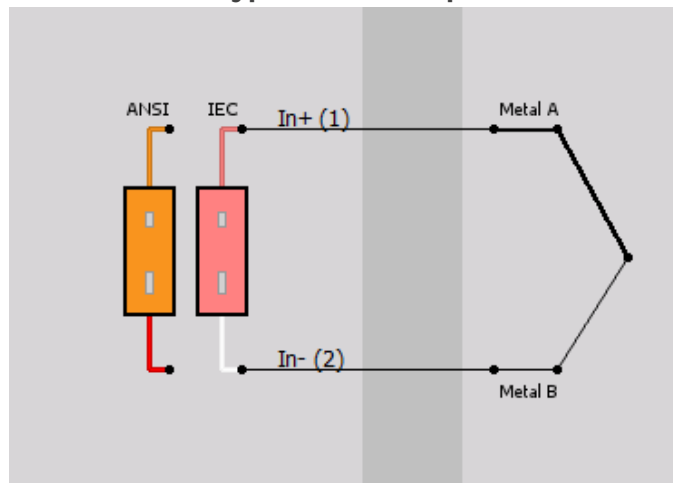
T-type thermocouple



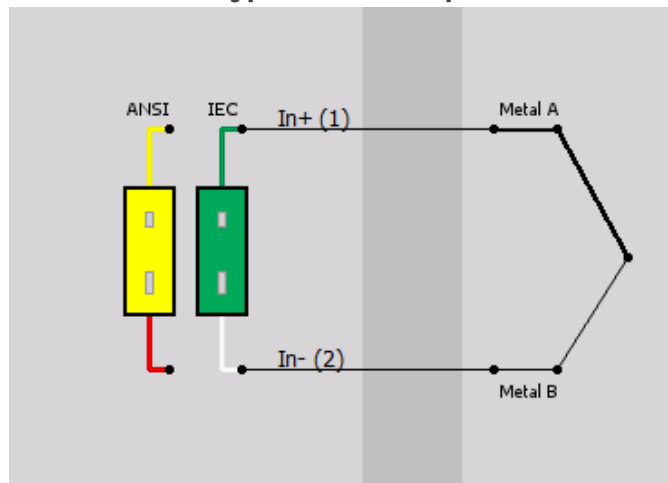
S-type, R-type thermocouple



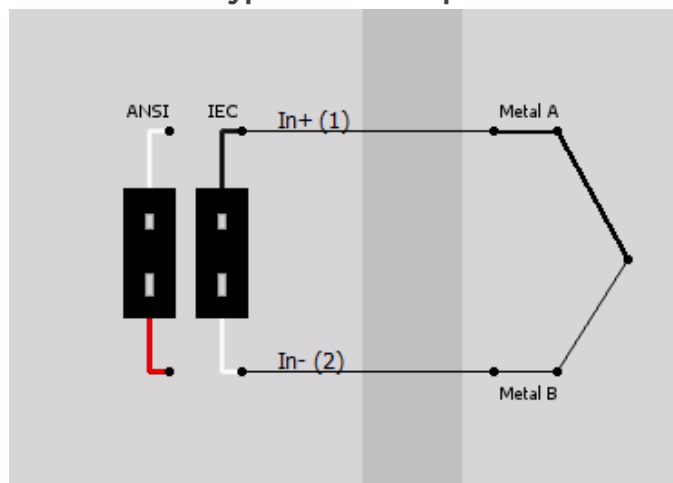
N-type thermocouple



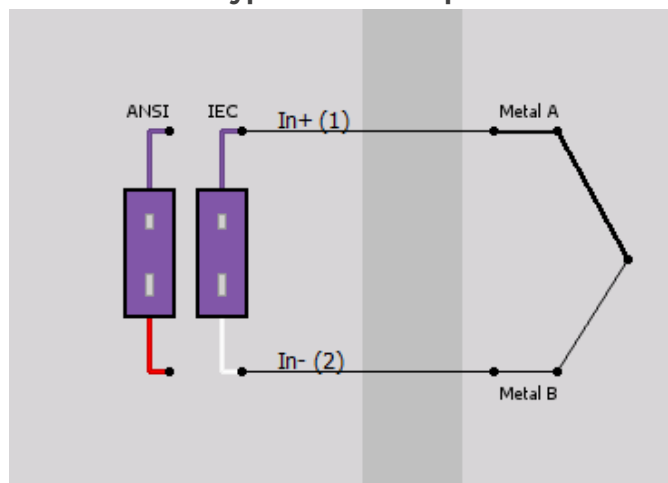
K-type thermocouple



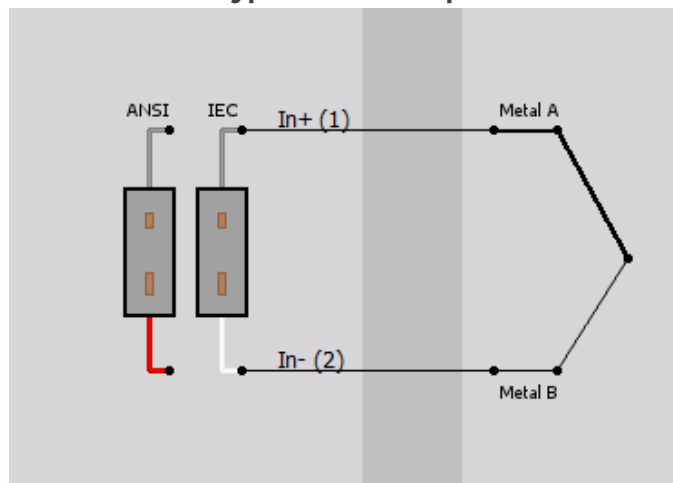
J-type thermocouple



E-type thermocouple



B-type thermocouple



C-type thermocouple

