

T-10 for imc ARGUSfit

10-channel measuring amplifier for temperature measurement with thermocouples



The T-10 module out of the imc ARGUSfit series is a 10-channel measuring amplifier that can measure temperatures with thermocouples of all common types. It is used in conjunction with an imc ARGUS system (or a base unit), to which it is docked directly with its housing.

Highlights

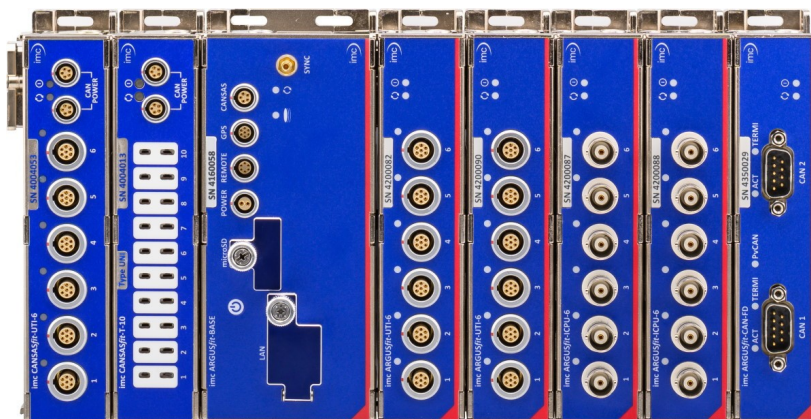
- Per-channel isolated measurement inputs, individual filtering and ADCs
- Individual cold junction compensation (CJC) per channel
- Universal version that suits all thermocouple types
- Measurement ranges and sampling rates individually selectable
- 24-bit digitization, internal processing and data output
- Robust, compact and miniaturized
- Click mechanism providing both mechanical and electrical coupling

Typical applications

- Operated on the imc ARGUSfit system bus, which can also be extended via fiber optic cable using a fiber converter, decentralized distributed topologies can be implemented.
- Universal measurement applications with additional ARGUSfit measuring amplifier that can combine a wide variety of sensors, measurement modes and data rates.
- Robust test and measurement for mobile applications such as in drive tests.



imc ARGUSfit: Flexible modular platform for fast measurement systems

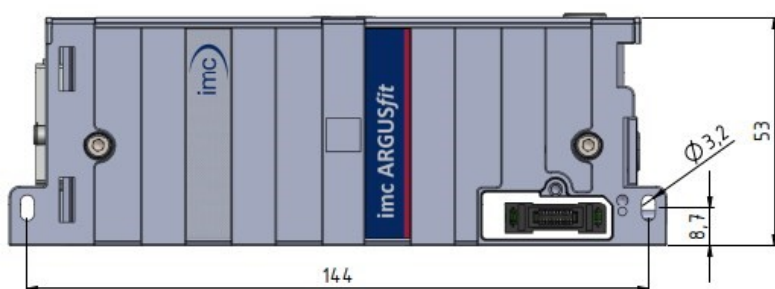


Based on an imc ARGUSfit base unit, imc ARGUSfit measurement amplifier and interface modules can be combined to form complete systems by means of a robust click mechanism, which can even integrate imc CANSASfit modules. The click connectors provide the electrical connection to the power supply and system bus.

For expansion to decentralized distributed topologies, the fast internal ARGFT system bus can be converted to fiber optic cables by means of a clickable fiber converter module.

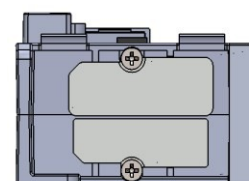
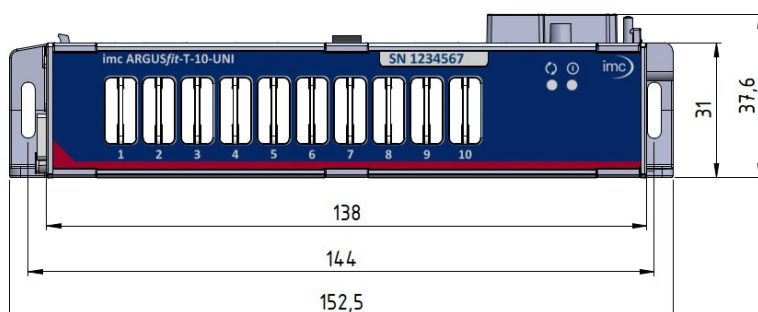
The entire system can be controlled via a common Ethernet connection (LAN/WLAN) with a PC (imc STUDIO software) and can be networked and operated synchronously and uniformly with all other imc data acquisition instrument series. Furthermore, it can also be operated autonomously and stand-alone without PC with data storage on microSD.

Dimensions



imc ARGUSfit T-10

Module shown in standard operating position (terminal connections upwards)



left module panel with parking position for the covers of the module connectors

Overview of the available variants

Order Code	Properties	article no.
ARGFT/T-10	temperature amplifier (operating temperature range: -40°C... +85°C)	11400204
ARGFT/T-10-EC	variant for extended condensation	11410209

Included accessories

Documents
Getting started with imc ARGUSfit (one copy per delivery)
Device certificate
Miscellaneous
10x ACC/CAP-TC, 13500243 (protective cover for miniature thermocouple terminal socket)

Optional accessories

Fiber-Converter Set		
ARGFT/FIBER-CONVERTER-SET	Media converter for the ARGUS system bus Includes: 2 converter modules, 2x SFP+ transceiver, 5 m fiber optic cable, AC/DC power adaptor and a power plug	11400225
Mounting accessories		
CANFT/BRACKET-DIN	Mounting on DIN-Rail (top hat rail) for imc ARGUSfit and imc CANSASfit	12100029
CANFT/BRACKET-MAG	Mounting with magnet system for imc ARGUSfit and imc CANSASfit	12100030
Documents		
SERV/CAL-PROT	Calibration protocol per amplifier imc manufacturer calibration certificate with measurement values and list of calibration equipment used (pdf).	150000566
SERV/CAL-PROT-PAPER	Calibration protocol per amplifier (paper print) imc manufacturer calibration certificate with measurement values and list of calibration equipment used with signature and seal.	150000578
Device certificates and calibration protocols: Detailed information on certificates supplied, the specific contents, underlying standards (e.g. ISO 9001 / ISO 17025) and available media (pdf etc.) can be found on our website, or you can contact us directly.		



Technical Specs - ARGFT/T-10

General

Inputs, measurement mode			
Parameter	Value		Remarks
Inputs	10		
Measurement mode	temperature measurement		thermocouple measurement
Connector / socket	miniature thermocouple terminal socket 2-pin, female Click-connection (covering caps)		For the supply and system bus of directly connected modules without further cables, see data sheet of ARGFT base unit.
Measuring input			
Module connector			
Sampling rate, Bandwidth			
Parameter	Value typ.	min. / max.	Remarks
Sampling rate		≤100 Hz	configurable, individually per channel
Bandwidth	23 Hz		-3 dB
	5 Hz		0.1 dB
Resolution	24 Bit		output: 32 Bit Float (24 Bit mantissa)
Isolation			
Parameter	Value typ.	min. / max.	Remarks
Isolation	galvanically isolated		
channel-to-case (CHASSIS)	±60 V		test voltage: ±300 V (10 s)
channel to power supply	±60 V		test voltage: ±300 V (10 s)
channel-to-channel	±60 V		test voltage: ±300 V (10 s)
Power supply of the module			
Parameter	Value typ.	min. / max.	Remarks
Input supply voltage		7 V to 50 V DC 9.5 V to 50 V DC	operating upon power up power supply via base unit, fiber converter or UPS module
Power consumption	1.7 W	2.0 W	max. at input voltage 50 V
Isolation	±60 V		to case (CHASSIS), isolation impedance ≥1 MΩ



Pass through power limits for directly connected modules (click-mechanism)

Parameter	Value	Remarks
Max. current	5 A	at 85 °C current rating of click connector to ARGFT modules
	60 W at 12 V DC 120 W at 24 V DC	typ. DC vehicle voltage AC/DC power adaptor and installations

Status-LED

Parameter	Value	Remarks
Power-LED green	 bicolor power active	
Status-LED green blue yellow red	 multicolor operating, run init, firmware update etc. prepare configuration error	overall status of module
Channel-Status-LED off green red	bicolor channel passive channel active sensor break / over-range error	channel number (1..10) lights up and indicates individual channel status



Measurement mode

Temperature measurement - thermocouple			
Parameter	Value typ.	min. / max.	Remarks
Measurement mode	thermocouple type K, J, T, E, L, N, C, S, R		max. 2 types simultaneously in the same configuration
Input ranges	-270 °C to +1370 °C -210 °C to +1200 °C -270 °C to +400 °C -270 °C to +950 °C -200 °C to +900 °C -270 °C to +1300 °C 0 °C to +2320 °C -50 °C to +1760 °C -50 °C to +1760 °C		type K type J type T type E type L type N type C (W5Re/W26Re) type S type R
Input coupling	DC		
Input configuration	differential, isolated		
Input impedance		>850 kΩ	
Measurement error	±0.25 K	±0.5 K	-150°C up to upper measurement limit at 25°C
Measurement error type S, type R	±0.5 K	±1.0 K	+500 °C up to the upper measurement limit at 25 °C
Deviation of cold junction compensation		±0.5 K ±0.75 K	operating temperature -20°C to +85 °C other operating temperatures
Drift	±8 ppm/K·ΔT _a +60 nV/K·ΔT _a		relating to the measured thermo voltage ΔT _a = T _a -25°C
Noise	1.9 μV _{rms}		max. bandwidth
Common Mode Rejection Ration CMRR	140 dB		



Operating conditions

Operating conditions		
Parameter	Value	Remarks
Operating environment	dry, non corrosive environment within specified operating temperature range	
Ingress protection class	IP50	with correctly mounted covers over both module connectors
Pollution degree	2	
Operating temperature range	-40 °C to +85 °C	standard version: without condensation "-EC" version: temporary condensation allowed
Shock- and vibration resistance	IEC 60068-2-27, IEC 61373 IEC 60068-2-64 category 1, class A and B MIL-STD-810 Rail Cargo Vibration Exposure U.S. Highway Truck Vibration Exposure	
Extended shock- and vibration resistance	upon request	specific tests or certification upon request
Dimensions (L x W x H)	approx. 153 x 40 x 54 mm	including mounting flanges and click mechanism, see mechanical drawings 

