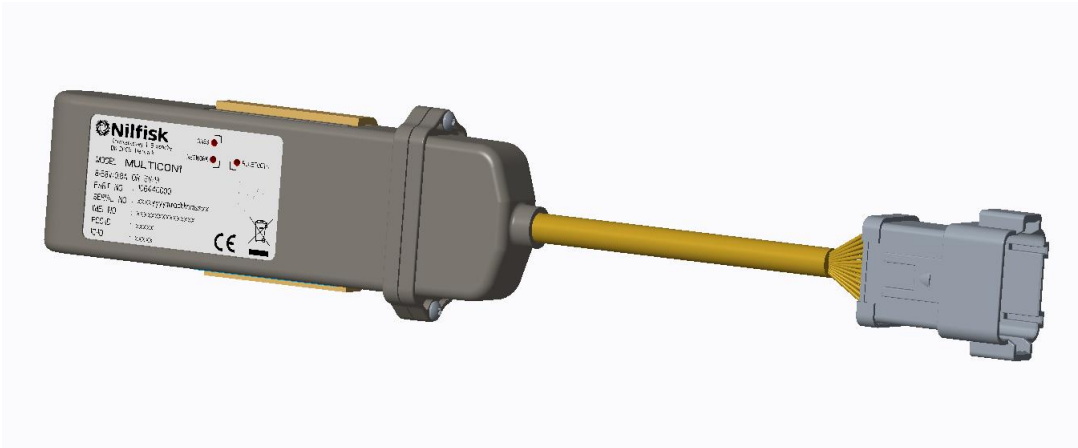


Manual

Nilfisk Telemetry module TC-1



Functional description

The TrackClean module TC-1 is an IoT module which collects data from machines via CAN, UART and/or analog inputs and send it to cloud. There is also 2 digital outputs with special functions.

Furthermore it have location positioning (GNSS), motion sensor, temperature sensor and built-in backup battery.

Precautions!

- Follow installation instructions for the relevant target machine
- To be installed only by Nilfisk authorized people
- Do not open the housing
- Do not change or modify the cable
- The module must be installed with at least 12.1 cm distance from any part of machine operators human body.

Specifications

Product specifications	
Supply voltage	8-58VDC / 0.8A or 5V / 1A
Wireless interface	GSM, LTE Cat-M1, NB-IoT, GNSS, Bluetooth 5.0
Key_Switch input active	5 – 60V
Analog inputs (7 inputs)	0 – 60V
Digital output	Open drain, max 60V / 200 mA
Backup battery	3.7V, 1000 mAh, Li-ion
Temperature range	
Operating Temp	-10 to +60°C (internal Li-Ion battery charging limited to 0 to +45°)
Storage Temp	-10 to +60°C
Mechanical specifications	
Length	157 mm (430 mm incl cable)
Width	60 mm
Height	26.5 mm
Cable length	250 mm (incl connector)
Weight	163 g

Recommended fuse:






Supply Voltage 5-24V:

- a) ATO blade fuse (Max 32V/1A) used with Littelfuse FHAC0002SXJ fuse holder.
- b) ATP blade fuse (Max 32V/1A - ATO style) used with TaiTek FH-006WR-12R-12-U fuse holder.

Supply Voltage 12-48V:

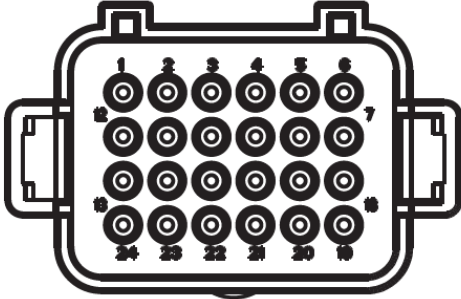
- a) FKS blade fuse (Max 80V/3A - ATO style) used with Littelfuse FH2 fuse holder (recommended)

LED Status

LED mode	LED pattern	Status indication
Network (Red)		
No light		Off or in stand-by mode
Long flashing		Searching network
Short flashing		Connected
GNSS (Green)		
Off		Searching (if Red LED is flashing)
On (constant)		Location fix
Bluetooth		
Off		BT deactivated or module is off
Flashing		BT on, not connected
On (constant)		BT on, connected

Connections

Use counterpart: ITT CTC 132015-0075



ITT CTC connector pin #	Signal name	Description	Wire color
1	GND	GND (0V)	Dark Green
2	UART_TX	TX signal for NEO1 UART (cross to RX)	Red
3	UART_RX	RX signal for NEO1 UART (cross to TX)	Black
4	GND	GND (0V)	Light Green
5	NC	Not connected	
6	Analog In1	Analog input for sensor / measurement	Orange
7	Analog In3	Analog input for sensor / measurement	Yellow
8	Analog In5	Analog input for sensor / measurement	Yellow / Black
9	Analog In6	Analog input for sensor / measurement	Pink
10	Digital Out 1	Digital output for i.e. disabling machine	White / Blue
11	B+ (8 – 58V in)	Main power input	Brown / Black
12	B+ (8 – 58V in)	Main power input	Red / Black
13	GND	GND (0V)	Light Green
14	5V in	5V power input (alternative to Main power input)	Blue
15	5V in	5V power input (alternative to Main power input)	Blue / Black
16	GND	GND (0V)	Green / Blue
17	Key Switch	Key switch signal to activate module	White
18	Analog In2	Analog input for sensor / measurement	Orange / Black
19	Analog In4	Analog input for sensor / measurement	Red / Blue
20	NC	Not connected	
21	Analog In7	Analog input for sensor / measurement	Pink / Black
22	M_BAT_WKUP	Wake-up signal for Nilfisk Li-ion battery	Grey / Black
23	CAN H	CAN interface	Yellow / Blue
24	CAN L	CAN interface	Grey

Regulatory approvals and information

CE

This product comply with:

RED 2014/53/EU directive with respect to radio, EMC and safety requirements.

RoHS 2011/65/EU directive with respect to restrictions of hazardous substances.

This product contains radio equipment operating in the frequency bands and with max TX power as indicated below:

Radio Technology	Harmonized Radio Standard	Frequency range [MHz]	Max TX pwr [dBm]
Cellular 2G	EN 301 511 V12.5.1	880-915 1710-1785	33 30
Cellular 3G			
Cellular 4G	EN 301 908-13 V11.1.2	1920-1980 1710-1785 2500-2570 880-915 832-862 703-748 1900-1920 2300-2400	23
BT LE / WiFi 2.45 GHz	EN 300 328 V2.2.2	2400-2483,5	5

FCC

FCC-ID: 2AVNE-TC1

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Users are not permitted to make changes or modify the device in any way. Changes or modifications not expressly approved by Nilfisk, Inc. will void the user's authority to operate the equipment.

This device and its antenna must not be co-located or operating in conjunction with any other antenna or transmitter. Non body-worn devices must be placed at least 4.8" (12 cm) away from the body.

IC

IC-ID: 25476-TC1

This device complies with Industry Canada ICES-003. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This device complies with Industry Canada license-exempt RSS standards RSS-210 and/or RSS-247. The term "IC" before the equipment certification number only signifies the the Industry Canada technical specifications were met. It does not imply that Industry Canada approved the equipment. The radio transmitter has been approved by Industry Canada to operate only with the antenna supplied. Use of any other antenna is strictly prohibited for use with this product. This device complies with the ICES RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 12 cm between the radiator and any part of the human body.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement. Cet Appareil numérique de la classe (B) est conforme a la norme NMB-003 du Canada.