IO_TRANSMITTER

USER MANUAL

This user manual refers to:
PCB (K1002) version 2.0
Firmware version 1.1

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DOCUMENT VERSION HISTORY

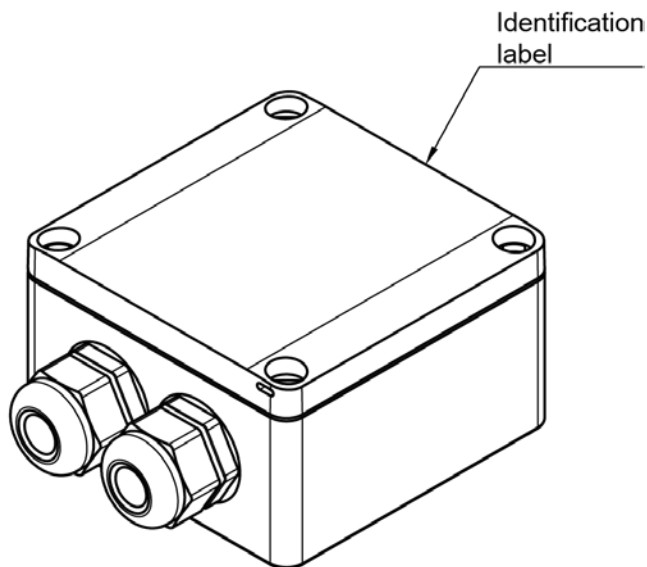| Date	Revision	Notes
18.10.2022	1.0	Initial release.
22.11.2022	1.1	Change to A5 format. Added Appendix. Minor updates in content.

1 INTRODUCTION

The IO_Transmitter (IO_TX) is mainly designed to be used for transmitting signals from external sources to receivers within the IO_Series and Tele Radio Panther range.

High level digital sources, such as sensors (5-32V) and Low level (Gnd) such as push buttons, switches or other external sources, can be used.
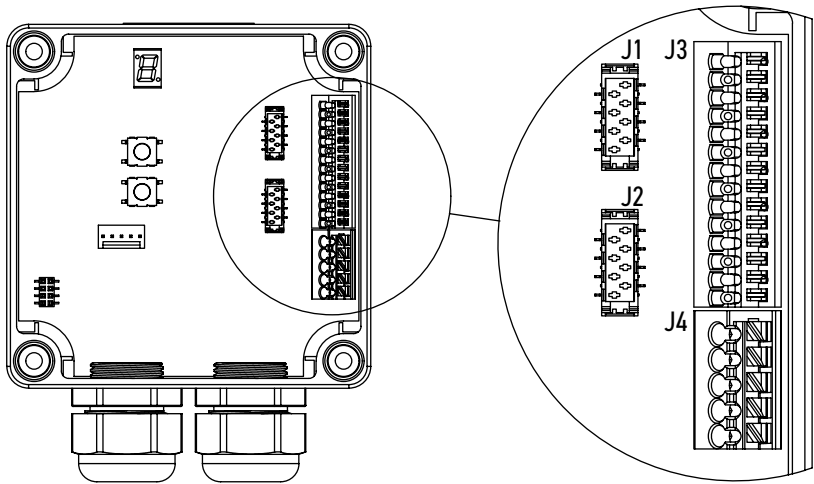
Please read this manual carefully before mounting, installing, configurating or operating this product.

Identification
label

2 TECHNICAL DATA

Input Voltage	8-32 VDC (see capter 3 **)
Current Consumption	~ 25 mA + (DO max 0,4 A) + (5V max 0,75 A)
Inputs (IN_1-12)	12 pcs (DIGITAL); configurable LOW or HIGH
Reference Voltage Outputs (REF5)	1 pc (5V, max 0,75 A)
Digital Outputs (DO)	1 pc (8-32 VDC, activated by Inputs)
Ingress Protection	IP66
Dimensions (width x length x height)	100 x 100 x 60 mm
Connectors Dimensions	GND, BATT, DO, REF5: max 1,5 m2 IN_1-12, GND: max 0,5 m2
Weight	250g
Certifications	CE, FFC, IC
Operating frequency	2,4 GHz (2,405 - 2,480 GHz as per IEEE 802.15.4)

3 ELECTRICAL CONNECTION

Connector Terminal Blocks J1 & J3

J1-1	J3-1	Ground
J1-2	J3-2	Input 12*
J1-3	J3-3	Input 11*
J1-4	J3-4	Input 10*
J1-5	J3-5	Input 9*
J1-6	J3-6	Input 8*
J1-7	J3-7	Input 7*

Connector Terminal Blocks J2 & J3

J2-1	J3-8	Ground
J2-2	J3-2	Input 6*
J2-3	J3-3	Input 5*
J2-4	J3-4	Input 4*
J2-5	J3-5	Input 3*
J2-6	J3-6	Input 2*
J2-7	J3-7	Input 1*

* All inputs are configurable **HI** or **LO** (see chapter 4.2.2)

Connector Terminal Block J4

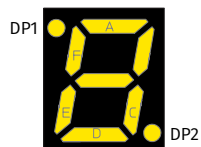|		
J4-1	GND	Ground
J4-2	POT/EXT_IN	5V out/in (0,75A)**
J4-3	SW_OUT	Outputs sourcing power. Supplies power (8-32VDC/0,4A) when any input is activated.
J4-4	BATT+	Supply power (8-32VDC)
J4-5	GND	Supply ground

4 OPERATION

By default the Display shows the active input. 1...9, A=10, B=11, C=12.

The Dot (DP1) flashes when the transmitter is powered and also to indicate every new digit.

During restart, the firmware version is displayed.

4.1 REGISTERING

Registering means linking or joining a transmitter and a receiver. Make sure both are powered up before proceeding.

To enter Register Mode:
press the FUNCTION button - *the Dot (DP2) lits.*
within 10 seconds, press the SELECT button - *the transmitter is now in register mode.*

> In the receiver, also press the FUNCTION button and then the SELECT button.
>
> *When the registration is successful, all LEDs in the receiver flashes once.*
>
> (Depending on receiver-model, the registering procedure may differ *slightly.*)

To exit register mode, press any button, activate any input or power-cycle the transmitter.
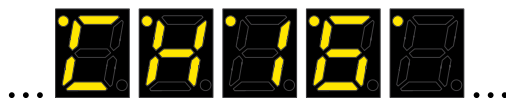
4.2 MENU

To enter Menu Mode press and hold the FUNCTION button for 10 seconds.

In the Menu, press the FUNCTION button to navigate to next Menu Section.

To save and Exit Menu Mode, leave the transmitter without pressing anything for 10 seconds - *the transimtter saves all changes and restarts.*

4.2.1 CHANNEL (Menu Section 1)

The transmitter can send on 16 different (11-26) channels.

To change channel press the SELECT button.

If used in a dense wi-fi environments it's recommended to use channels 15, 20, 25. Heavy traffic on wi-fi (802.11) channels 1, 6 and 11 may othervise cause some interference.
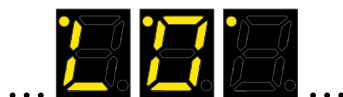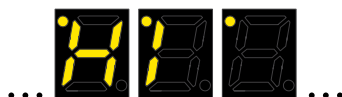
4.2.2 INPUT MODE (Menu Section 2)

(Factory default: LO)

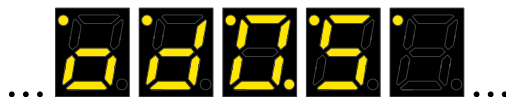To change Input Mode press the SELECT button.

HI = Activated when   LO = Activated when
pulled HIGH (5-32V)   pulled LOW (Ground)

4.2.3 OFF DELAY (Menu Section 3)

(Factory default: LO)

The time the SW_OUT output (J4-3) deactivates after deactivating an input can be set from 0-1,5 seconds in steps of 0,1 seconds.
To change channel press the SELECT button.

4.2.4 REGION (Menu Section 4)

(Factory default: EU)

To change region press the SELECT button.

EU = For use in Europe. This setting ensures compliance with ETSI EN 300 328 clause 4.3.2.2 Maximum Power Spectral Density.

US = For use in USA or Canada. This setting ensures FCC and IC compliance.

5 APPROVALS AND SAFETY

5.1 EMC TESTS

Emission tests according to the E/ECE Regulation No. 10, Revision 6 (2019)

Emission test	Test method	Conclusion
Measurement of radiated interference field strength in the frequency range 30 – 1000 MHz	E/ECE Reg. No. 10, Annexes 7 and 8	Pass
Measurement of conducted disturbances	E/ECE Reg. No. 10, Annex 10	Pass

Immunity tests according to the E/ECE Regulation No. 10, Revision 6 (2019)

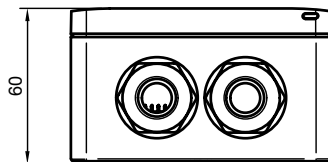| Emission test	Test method	Conclusion
Radiated radio-frequency electromagnetic field	E/ECE Reg. No. 10, Annex 9	Pass
Immunity to transient disturbances conducted along supply lines	E/ECE Reg. No. 10, Annex 10	Pass

5.2 ENVIRONMENTAL TESTS

The enclosure is certified according to EN 62208:2011:2011

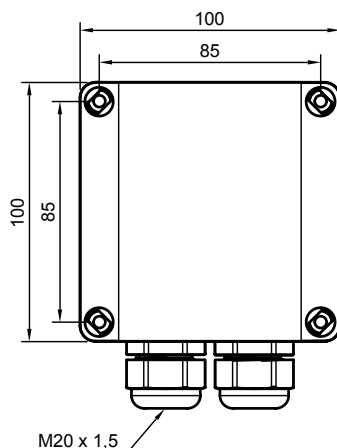|	
Degree of protection (EN 60529)	IP66 / IP67
Mechanical strength (EN 62262)	IK08 +35 oC / -40 oC
Material	Polycarbonate

6 DIMENSIONS AND MOUNTING

When mounting the transmitter in moist or otherwise harch environments, make sure that the cable glands are pointing downwards.
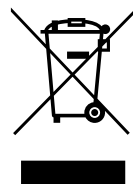
7 WARRANTY AND SERVICE

The enclosure is rated IP66, however cable glands may be a subject of leakage and should be mounted pointing downwards. Warranty does not cover failure or damage caused by water or moist, incorrect installation or normal wear and tear. High pressure water cleaning is NOT recommended.

For service or repair, Tele Radio Finland should be contacted for further instructions.

8 REGULATORY INFORMATION

This product is subject to THE EUROPEAN PARLIAMENT AND OF THE COUNCIL DIRECTIVE 2012/19/EU on waste electrical and electronic equipment (WEEE). For proper treatment, recovery and recycling, please take this product to a designated collection point.

This product is in compliance with the Radio Equipment Directive 2014/53/EU. The latest version of the complete EU Declaration of Conformity is available on request from Tele Radio Finland Oy.

IMPORTANT: Contains FCC ID: VW4A091729. This equipment 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 (FCC 15.19).

IMPORTANT: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense (FCC section 15.105).

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

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.

This equipment complies with radio frequency exposure limits set forth by Industry Canada for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the device and the user or bystanders.
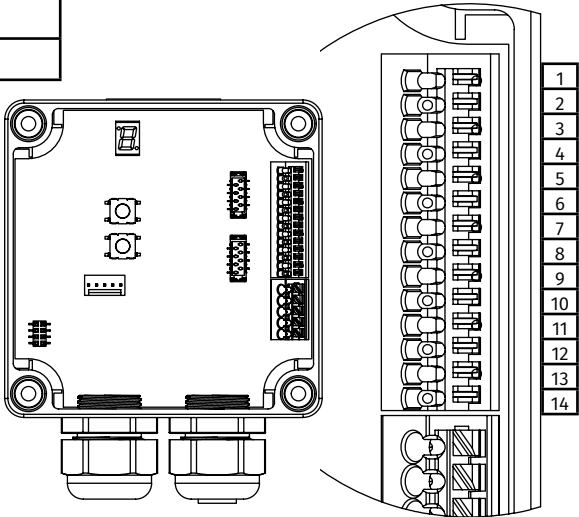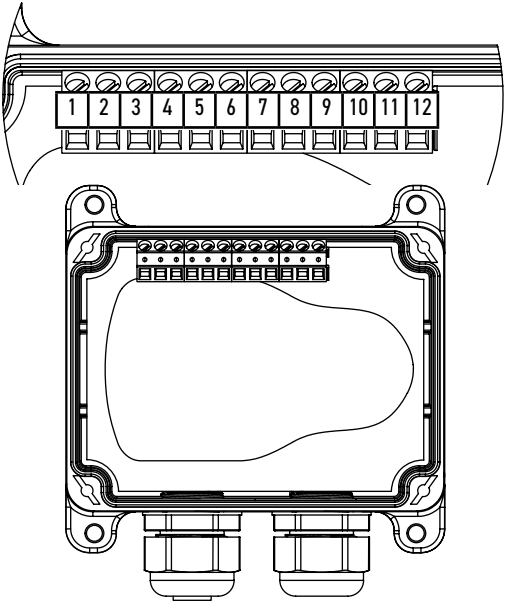
Cet équipement est conforme aux limites d'exposition aux radiofréquences définies par Industrie Canada pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre le dispositif et l'utilisateur ou des tiers.

Contains Transmitter Module IC:11019A-091729

APPENDIX A: REPLACING THE T2182 (WALL TRANSMITTER)
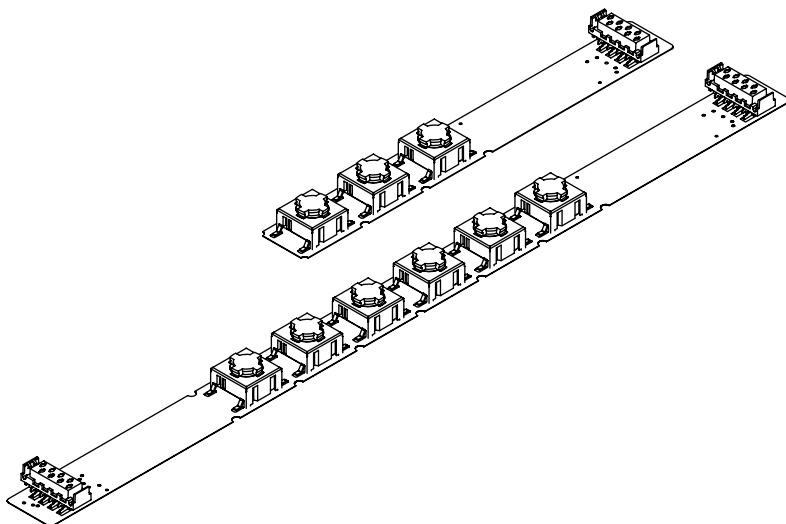
T2182 connector corresponding to IO_TX connector J3:

T2182	Function	IO_TX
1	Ground	J3-14
2	Input 1	J3-13
3	Input 2	J3-12
4	Input 3	J3-11
5	Input 3	J3-10
6	Input 5	J3-9
7	Ground	J3-1
8	Input 6	J3-8
9	Input 7	J3-7
10	Input 8	J3-6
11	Input 9	J3-5
12	Input 10	J3-4
	(Input 11)	J3-3
	(Input 12)	J3-2

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IO_TRANSMITTER
REV_1.1(ENG)

APPENDIX B: BUTTON_FLEX

The Button_Flex is an easy way to add extra push-button functions to a joystick or any other similiar controlling unit.
Available in 3- or 6-button versions with a 1,5m cable and connector that fits directly into the IO_Transmitter's connector J1 or J2.

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