

Control complex for FPV and other UAVs of the 'kamikaze' type

TLM-10-F

1. Summary:

The FPV "TLM-10-F" control complex is designed to provide one-way EW-resistant transmission of digital data of control channels from the remote control to the control object. The complex provides a noise-resistant encrypted radio communication channel based on the principle of FHSS (pseudorandom radio frequency tuning) and using "LoRa" modulation.

2. Specifications:

2.1. General features:

2.1.1 Operating frequency range, MHz	410 – 525
2.1.2 Modulation type	LoRa
2.1.3 Channel bandwidth (by level - 3dB), kHz	125-500
2.1.4 Data interface type	UART (LVTTL)
2.1.5 UART connection speed, bps	115200
2.1.6 Data transfer protocol type	CRSF
2.1.7 Radio data transfer rate, kbps	up to 30
2.1.8 Data refresh rate, Hz	up to 100
2.1.9 Presence of FHSS (Frequency Hopping Spectrum Spreading)	yes
2.1.10 Number of frequency jumps per second	up to 100
2.1.11 Number of working channels	1024

2.2. Features of the matching unit

2.2.1 Type of input data interface	UART (LVTTL)
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2.2.2 UART connection speed, bps	115200
2.2.3 Type of input data interface	CRSF
2.2.4 Type of output data interface	RS422
2.2.5 Connection speed by RS422, bits/s	115200
2.2.6 Power supply voltage, V	5-28
2.2.7 Power consumption, W, maximum	1
2.2.8 Display and controls presence	no
2.2.9 Overall dimensions of transceiver, mm, not more than (WxDxH)	62x47x41
2.2.10 Weight, g, not more than	150
2.2.11 Ambient operating temperature range, °C, within	-20 .. + 40
<i>2.3. Features of the control unit</i>	
2.3.1 Type of input data interface	RS422
2.3.2 UART connection speed, bps	115200
2.3.3 Type of output data interface	RS422
2.3.4 RS422 connection speed, bps	115200
2.3.5 Power supply voltage, V	20-36
2.3.6 Power consumption, W, maximum	1
2.3.7 Display and controls presence	yes
2.3.8 Overall dimensions of transceiver, mm, not more than (WxDxH)	180x95x26
2.3.9 Weight, g, not more than	350
2.3.10 Ambient operating temperature range, °C, within	-20 .. + 40
<i>2.4. Features of the transmitter</i>	
2.4.1 Output power, W, minimum	10

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2.4.2 Power supply voltage, V	20-36
2.4.3 Power consumption, W, maximum	30
2.4.4 Type of input data interface.	RS422
2.4.5 Connection speed by RS422, bits/s	115200
2.4.6 Power connector type	XT-30
2.4.7 Controlling interface connector type	DB-9
Transmitter is structurally combined with transmitting antenna.	
<i>2.5. Features of the transmitting antenna</i>	
2.5.1 Polarization	elliptical
2.5.2 Gain relative to isotropic emitter, dBi	7-9
2.5.3 Orientation	directional
2.5.4 Maximum input power for each input, W	100
2.5.5 Standing wave ratio of the input in the operating frequency range, not more than	2
2.5.6 Input resistance, Ohm	50
2.5.7 Input connectors	SMA(f)
2.5.8 Overall dimensions of transmitter with antenna, mm, not more than (WxDxH)	500x207x840
2.5.9 Weight, kg, maximum	10
2.5.10 Ambient operating temperature range, °C, within	-20 .. + 40
<i>2.6. Features of the receiver</i>	
2.6.1 Receiver sensitivity, dBm	-105 .. -115
2.6.2 Power supply voltage, V	4,5-5,5
2.6.3 Power consumption, W, maximum	1

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2.6.4 RF connector type	SMA(f)
2.6.5 Output interface type	UART (LVTTTL)
2.6.6 UART connection speed, bps	416666
2.6.7 Data transfer protocol type	CRSF
2.6.8 Data transfer rate, kbps	up to 30
2.6.9 Overall dimensions of receiver, mm, not more than (WxDxH)	30x50x10
2.6.10 Weight, g, not more than	15
2.6.11 Ambient operating temperature range, °C, within	-20 .. + 40
<i>2.7. Features of the receiver antenna</i>	
2.7.1 Polarization	vertical
2.7.2 Gain relative to isotropic emitter, dBi	2
2.7.3 Orientation	omni-directional
2.7.4 Maximum input power for each input, W	1
2.7.5 Standing wave ratio of the input in the operating frequency range, not more than	10
2.7.6 Input resistance, Ohm	50
2.7.7 Input connectors	SMA(f)
2.7.8 Overall dimensions of transmitter with antenna, mm, not more than (WxDxH)	10x35x190
2.7.9 Weight, g, maximum	30
2.7.10 Ambient operating temperature range, °C, within	-20 .. + 40

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3. Composition:

The control complex for FPV "TLM-10-F" includes:

3.1. Ground control station FPV including:

- Matching unit - 1 pcs
- Control unit - 1 pcs
- Transmitter combined with transmitting antenna - 1 pcs
- Extension cable for remote control - 1 pcs
- Radiomaster "TX12" control panel (optional) - 1 pcs
- Mast "Shpil-6K" (RAL 6003) aluminum telescopic, together with tripod, a set of guy lines, and a case - 1 pcs

Ground part of communication system is mounted as a single unit.

3.2. UAC onboard receiver including:

- Receiver board - 1 pcs
- Antenna on-board - 1 pcs

The number of onboard receivers can be any as per pre-order.

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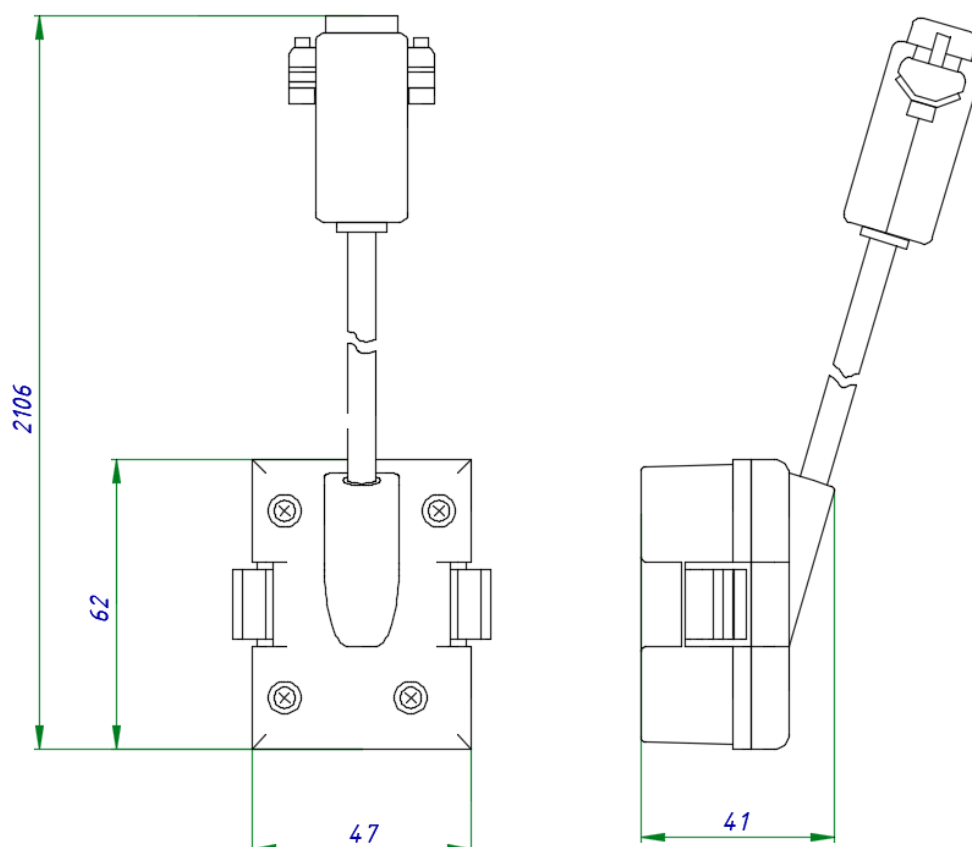
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4. Appearance of complex components:

Matching unit



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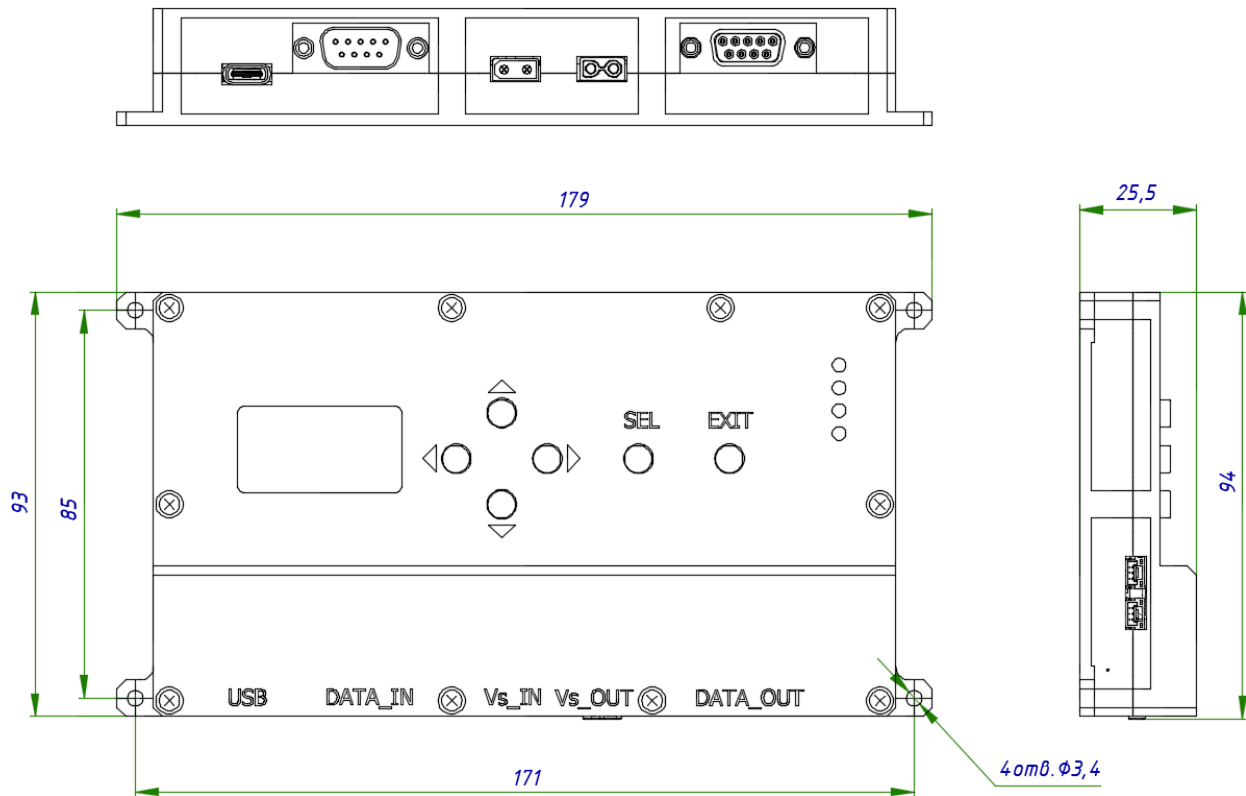
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Control unit



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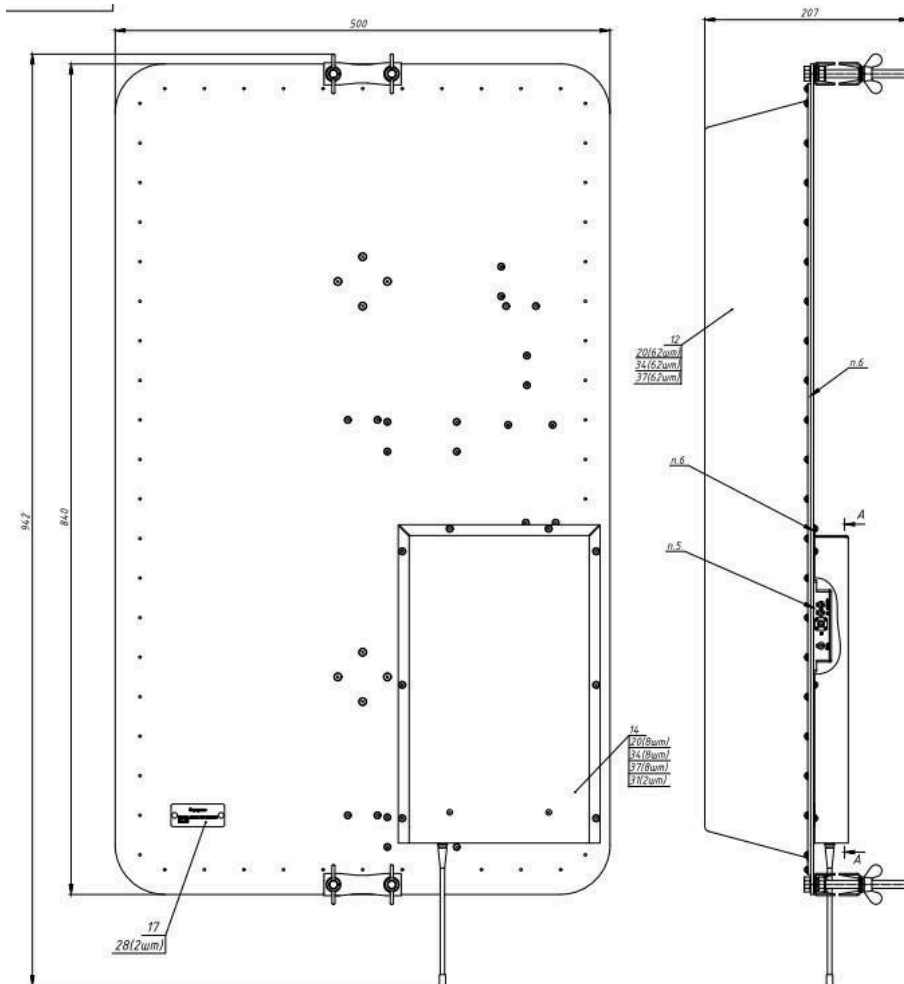
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Transmitter



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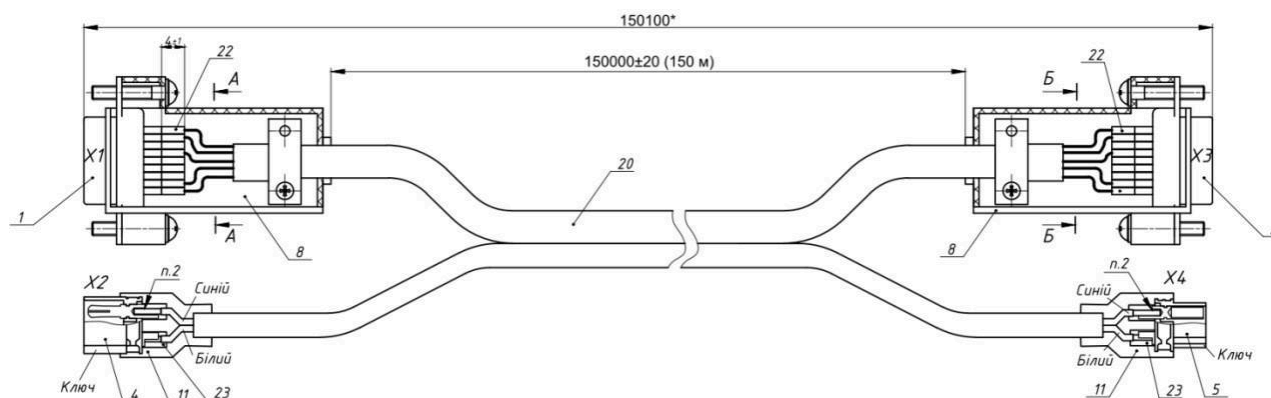
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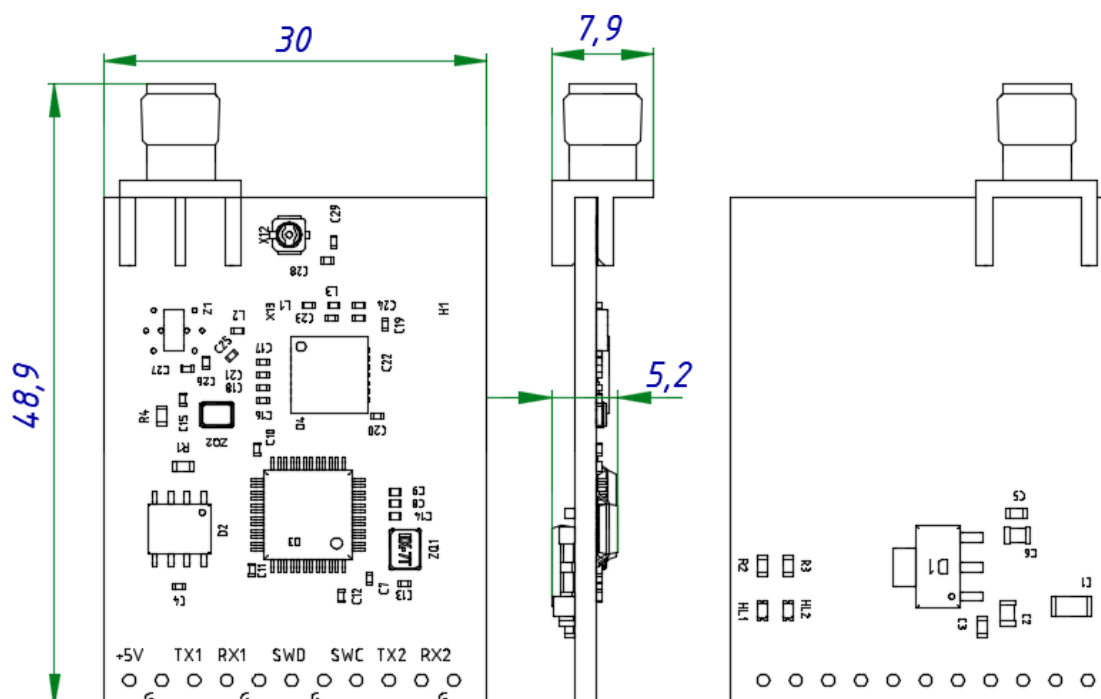
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Extension cable for remote control



Receiver board



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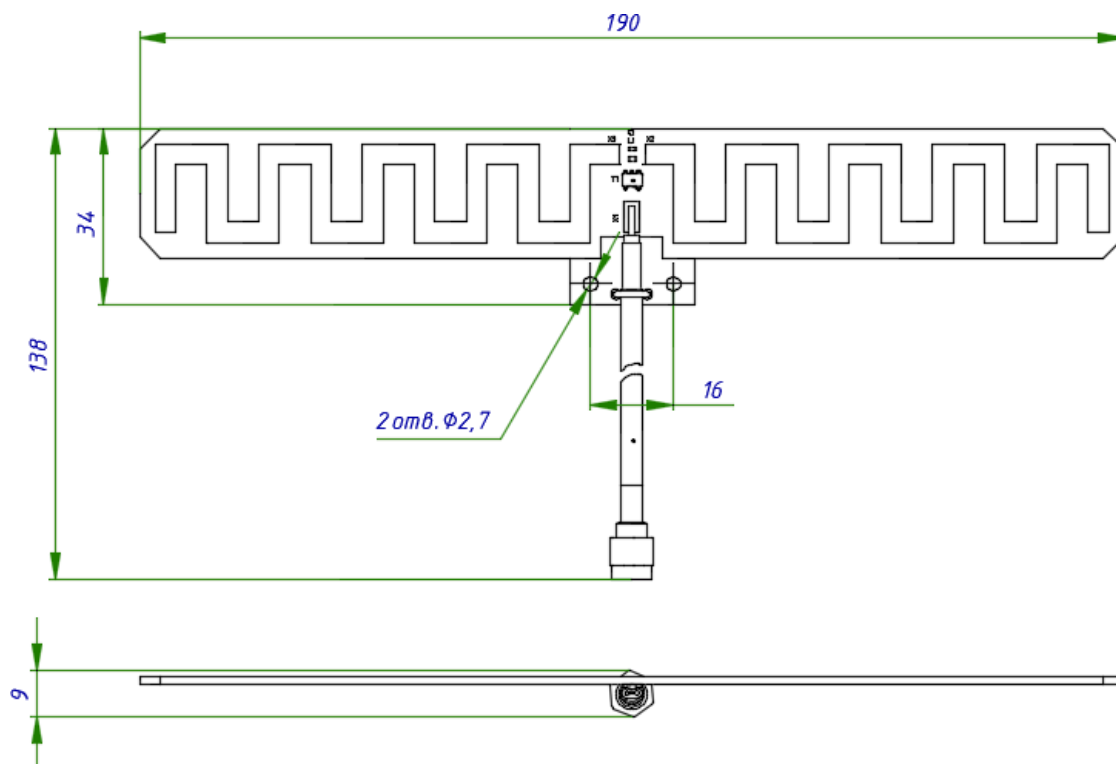
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Antenna TLM-10F-AS**Price of control complex for FPV and other UAV kamikaze type****"TLM-10-F"****Ground part of the complex "TLM-10-F" :**

• Matching unit	1 pcs
• Control unit	1 pcs
• Transmitter combined with transmitting antenna	1 pcs
• Extension cable for remote control	1 pcs

TOTAL : 95 000,00 UAH

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Onboard part of the equipment "TLM-10-F":

- | | |
|----------------------|-------|
| • Receiver board | 1 pcs |
| • Antenna TLM-10F-AS | 1 pcs |

TOTAL : 5 000,00 UAH

Ground control station:

has an extension cable from the ground station to the operator and a remote control for turning the mast at a distance of 150 m. The ability to replace the battery without power-cut - without losing control and video - allows the group to perform combat missions without leaving the shelter.

In the composition:

- Ground part of the complex "TLM-10-F"
- Rotary mechanism with remote control - 1 pcs
- Distribution unit - 1 pcs
- Connection unit - 1 pcs
- Ground station power supply (6 6S2P batteries) - 1 pcs
- Mast turning remote control - 1 pcs
- FPV goggles with batteries (2S1P) - 2 pcs
- Control panel for UAVs with batteries (18650 (3500mAh)) - 2 pcs
- Mast aluminum telescopic, together with tripod, a set of guy lines, and a case - 1 pcs

TOTAL : 358 000,00 UAH

** This price offer is valid exclusively for the needs of the Ukrainian Armed Forces*

For ordering: +38 096 109 8953