

Warning!

Please read the user manual included in this work as it contains important information related with safety of installation and use of the device.

Only persons who read the user manual may use the device.

The user manual must be kept because it may be required in the future. The device is to be used exclusively for purposes specified in this user manual.

The device must be unpacked prior to starting-up. After removing the packaging make sure the device is in working order.

If the product has defects, it should not be used until it is repaired.

The product is intended for use at home and commercial use and may not be used for other than intended use.

The manufacturer is not liable for damages resulting from not adhering to the rules contained in the user manual, therefore, we recommend to follow the aforementioned safety rules for operation and maintenance of the device. In this way you will ensure yourself safety and avoid causing damage to the device.

The manufacturer and the supplier are not liable for losses or damages arising out of the product, including financial or intangible losses, loss of profits, income, data, pleasure from use of the product or other products related with it - indirect, incidental or consequential loss or damage. The above provisions apply whether the loss or damage concerns:

1. Deterioration of quality or the lack of operation of the products or products related with it due to damage as well as the lack of access to the product when it is undergoing repair, which results in stoppage the loss of user's time or a break in business activity;
2. Improper results of operation of the product or products related with it;
3. It applies to losses and damages according to any legal category, including negligence and other losses, termination of a contract, expressed or implied guarantee and strict liability (even if the manufacturer or the supplier was notified about the possibility of occurrence of such damages).

Safety measures:

Particular attention at designing was directed to quality standards of the device where ensuring safety of operation is the most important factor.

The device must be secured against contact with caustic, staining and viscous fluids.

The device was designed in such a way that it restarts operation when power supply is restored after a break.

Attention! We recommend using protections to further protect the device from possible overvoltages in installations. Surge protectors are effective protection against accidental pass to the device voltages higher than the rated. Damages caused by pass the voltages higher than specified in manual, are not under warranty.

Turn off the device before transporting it.

Prior to connecting the device to a power source check whether the supplied voltage is consistent with rated voltage specified in the user manual.

Proper product disposal:

A marking of a crossed out waste bin indicates that the product may not be disposed together with other household waste in the entire EU. To avoid possible damage to the natural environment of health due to uncontrolled waste disposal, therefore, it should be handed over for recycling, propagating in this way sustainable use of natural resources.

To return a worn-out product, use a collection and disposal system of this type of equipment or contact a seller from whom it was purchased. He will then be recycled in an environmentally-friendly way.

The TRVGA-300-P is designed for active transmission of the VGA signal via twisted-pair cable for the distance up to 300m. The transmitter converts the VGA signal, what enables its transmission via twisted-pair cable. Three pairs of wires allow to RGB signals transmission, the fourth pair - the synchronization of the transmission.

The device is equipped with overvoltage protection of the symmetrical line. The transmitter and receiver are sold as a set and a both devices need to be used for complete channel transmission.

Transmitter and receiver are in the kit.



Device type:	Active / Transmitter
Number of channels:	1 VGA
Power supply:	12 V / 70 mA (power adapter not included)
Video transmission range:	max. 300 m
Symmetrical socket impedance:	100 Ω
Connectors type:	VGA Socket
Symmetrical socket type:	RJ-45 (8-pin, 4 pairs) Socket
Weight:	0.078 kg
Dimensions:	118 x 30 x 48 mm
Device type:	Active / Receiver
Number of channels:	1 VGA
Power supply:	12 V / 170 mA (power adapter not included)
Video transmission range:	max. 300 m
Symmetrical socket impedance:	100 Ω
Connectors type:	VGA Socket female
Symmetrical socket type:	RJ-45 (8-pin, 4 pairs) Socket
Weight:	0.078 kg
Dimensions:	118 x 30 x 54 mm
Main features:	<ul style="list-style-type: none"> • Short-circuit protection • Signal correction
Resolution:	<ul style="list-style-type: none"> • 1920 x 1200 / 80 Hz @ 100 m • 1024 x 768 / 60 Hz @ 300 m
Manufacturer / Brand:	DELTA
Guarantee:	3 years

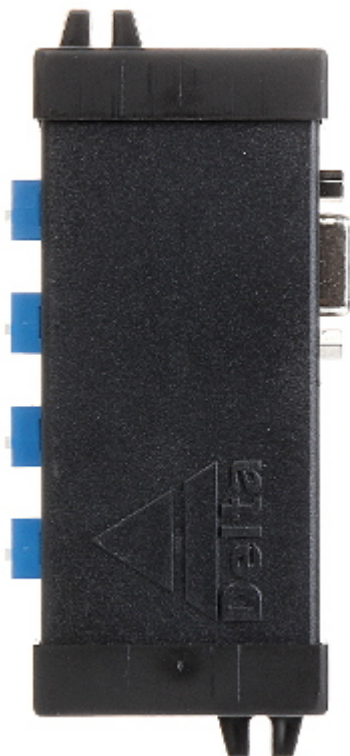
Transmitter and receiver respectively:





Transmitter and receiver - top view:

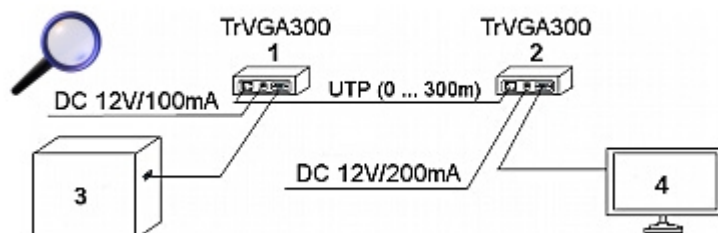




The switchers settings for different twisted-pair cable length:

50...100m		200...230m	
100...150m		230...260m	
150...200m		260...280m	
		280...300m	

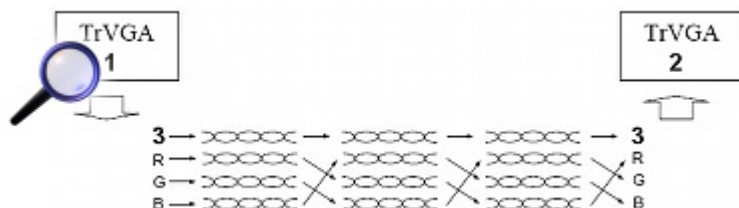
The TRVGA-300-P transmitter and receiver schematic diagram:



- 1) TRVGA-300-P TRANSMITTER
- 2) TRVGA-300-P receiver
- 3) Computer
- 4) Monitor

Each of RGB channels (each color) is transmitted via one pair of the twisted-pair cable. The length of the particular pair of wires in twisted-pair cable can be different from others. For long distances the differences are considerable. It causes the colors shift on the image. It is visible especially for long distances. In case of 300m distance the colors shift can be equal even two pixels. The resolve of the problem is the same length of each pair of wires for each RGB channel. To do that, we have to divide the distance between the transmitter and the receiver into three equal parts. For each part, it's necessary to change the pair of wires for the particular RGB channel. It means that each RGB channel is transmitted via three different pairs for the whole distance of the cable. This idea is presented on the picture below. This is not necessary to change the pairs for synchronization transmission.

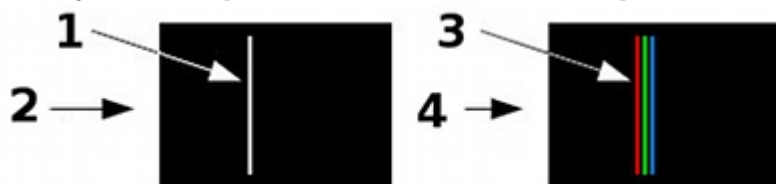
Schematic diagram of the pairs length compensation idea (crossover solution):



- 1) Transmitter
- 2) Receiver
- 3) Synchronization

The other way to eliminate the shifted colors problem is increase the length of the shorter pairs of wires. In this case is the necessary to check the length of the particular pairs. The simple way to do it is the white line test. We can generate the test image (for example in "Paint" application) as follows: on the monitor screen draw the vertical white line (1-pixel width) on the black background. If the shifted colors problem occurs, we will see the colors shifted lines - see the picture below.

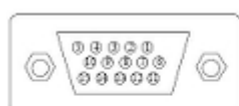
Test image after twisted-pair cable transmission - the shifted colors problem:



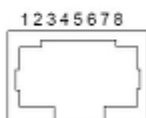
- 1) White vertical line
- 2) Testing signal from the computer
- 3) The shifted RGB colors problem
- 4) Image from the monitor

If the resolution equals 1280x1024 pixels and vertical line frequency is 60Hz, the horizontal line time is 14,6us. This is 11,4ns for the pixel (14,6us / 1280). The electrical current speed in the twisted-pair cable is about 192mlns m/s. If the shift is equal 1 pixel, the shortage of the pair length is 2,19m (192mlns m/s * 11,4ns * 1). In case of 2 pixels it equals 4,38m. The length of the pair of wire has to be increase if the proper RGB channel is shifted (on the right side of tested line). See the picture 3b. The length compensation allows to eliminate this problem. In practice the shifted colors problem doesn't exist below the distance of 50m. The length differences of the pairs can be measured by ohmmeter, too. The shorter length means smaller resistance.

Connectors description:

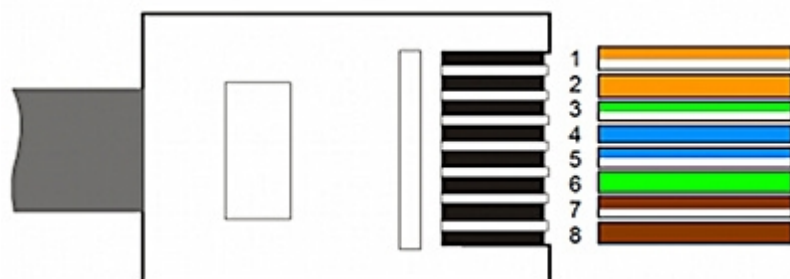


- | | |
|-----------|-----------------------------------|
| 1 - RED | 13 - HSYNC |
| 2 - GREEN | 14 - VSYNC |
| 3 - BLUE | 4,5,9,10,11,12,15 - not connected |
| 6 - RGND | |
| 7 - GGND | |
| 8 - BGND | |



- | | |
|--------|-----------|
| 1 - R- | 5 - B- |
| 2 - R+ | 6 - G+ |
| 3 - G- | 7 - SYNC- |
| 4 - B+ | 8 - SYNC+ |

Wiring sequence inside the plug (based on colors):





User Manual

Code: TRVGA-300-P
EXTENDER VGA **TRVGA-300-P**

PACKAGE

Dimensions (L x W x H): 0x0x0 mm	Gross Weight: 0 kg
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