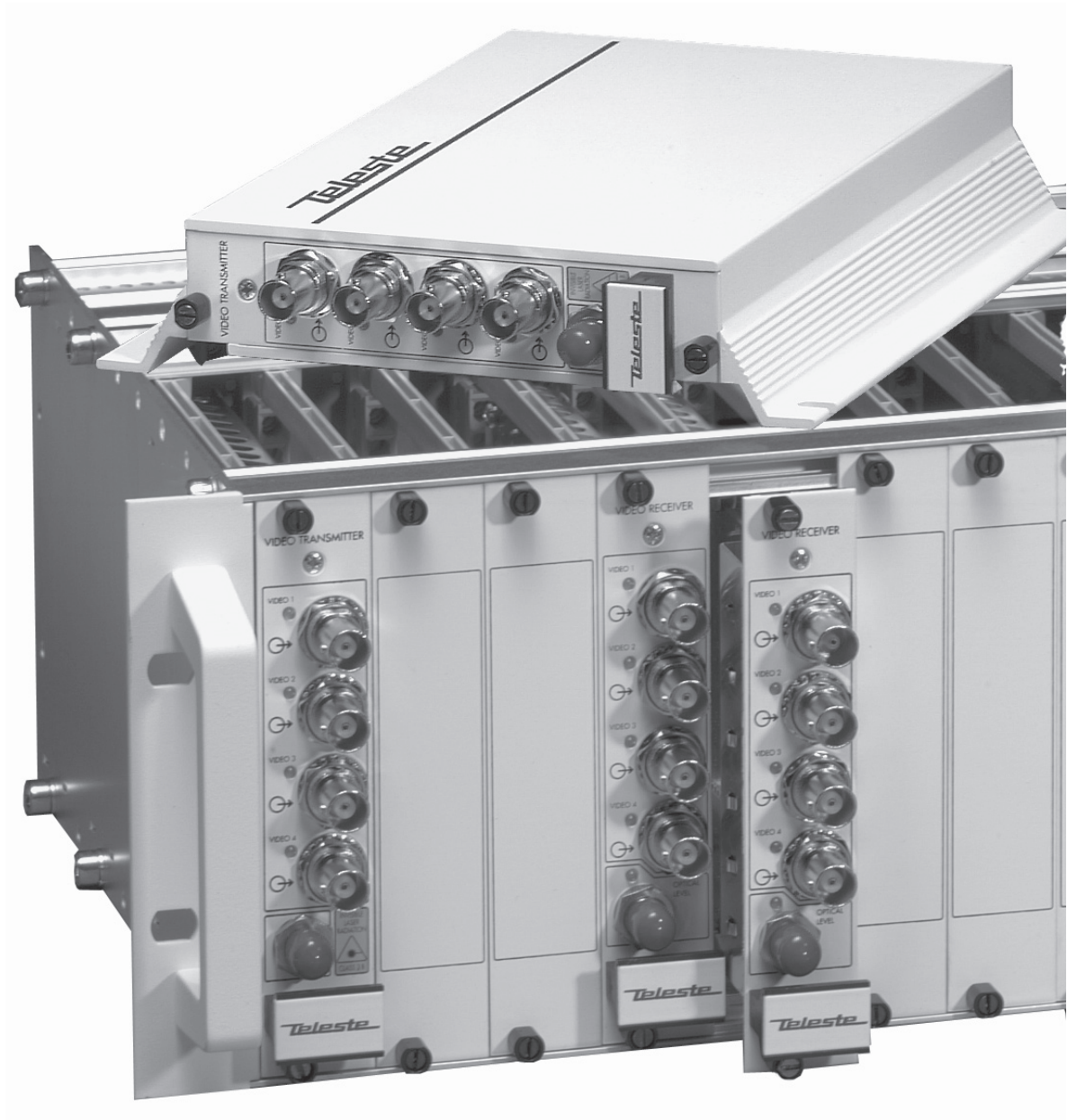


User Manual



CRT411 & CRR411

Contents

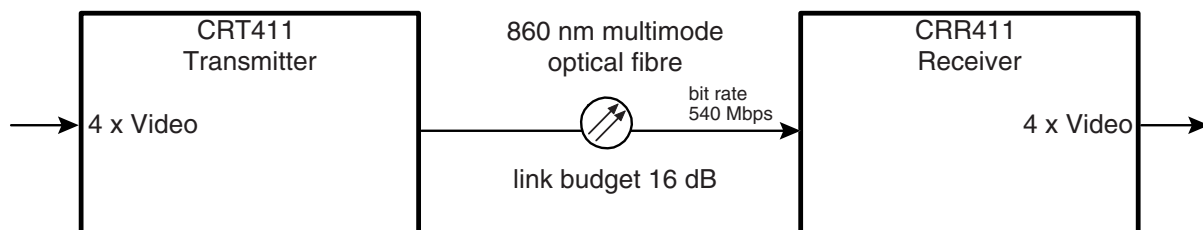
Introduction	1
Optical Transmitter CRT411 (version C)	2
General	2
Frame Installation	2
Stand-Alone Installation	2
Video Inputs and Indicator Leds	2
Super Video Connection	3
Fibre Connection	3
Optical Receiver CRR411 (version D)	4
General	4
Frame Installation	4
Stand-Alone Installation	4
Video Outputs and Indicator Leds	4
Fibre Connection and Indicator Led	5
Copyright Acknowledgements	6

CFO411 Multimode 4 Channel Digital Units for Uni-directional Video only

Introduction

The **CFO411** is a four channel uni-directional video link. PAL, NTSC and SECAM video formats are supported to provide a transparent video transmission. It is also possible to transmit **S-video** channels (2 pcs) that comprises separate luminance (Y) and chrominance (C) signals. Optical transmission is based on a VCSEL laser operation. The multiplexed data stream of 540 Mb/s enables a full quality and a real-time video transmission in one multimode fiber up to 1...1.5 km typical transmission distance.

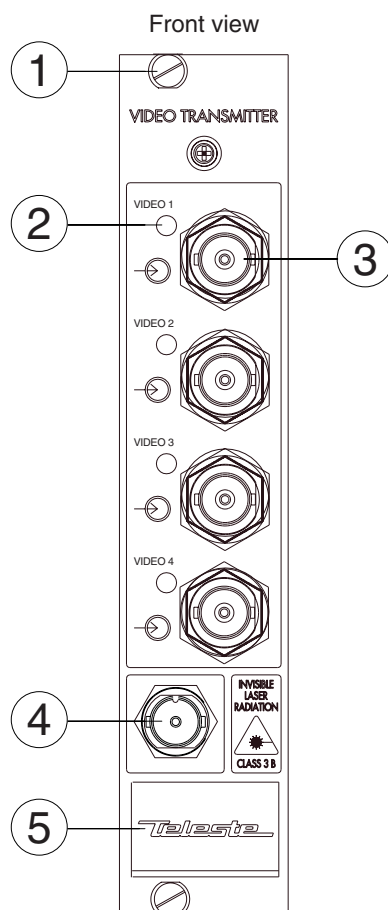
All CFO411 units are compatible with all CFO rack systems. Stand-alone options are available with the CMA011 module adapter and a separate mains adapter.



VIDEO TRANSMITTER CRT411 (version C)

CAUTION:
THIS OPTICAL SYSTEM USES CLASS 3A* VCSEL LASER,
MAXIMUM OUTPUT 1mW AT WAVELENGTH 860 nm.
DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH OPTICAL
INSTRUMENTS. APPLICABLE STANDARD
IEC825-1: 1993

* In normal operational circumstances.



Picture 1.

CRT411 Video Transmitter.

- 1) Locking screw.
- 2) Video input indicator (led).
- 3) Video input connector (BNC female).
- 4) Optical output (ST).
- 5) Handle.

GENERAL

The **CRT411** is a four channel optical transmitter for uni-directional video transmission in a multimode fibre. The current consumption is max. 450 mA (+12V DC).

FRAME INSTALLATION

The module is to be pushed along the guide rails into the installation frame (e.g. **CSR014** or **CSR216**) and secured with the two locking screws. The unit can be freely positioned in any slot in the frame. The empty positions in the frame should be blanked off with cover plates. If only **CRT411** units are used in the system, there is no need to use a wideband combiner at the back of the frame. The supply voltage is provided by a **CPS3**** PSU which is installed either right-hand end of frame or back of frame.

STAND-ALONE INSTALLATION

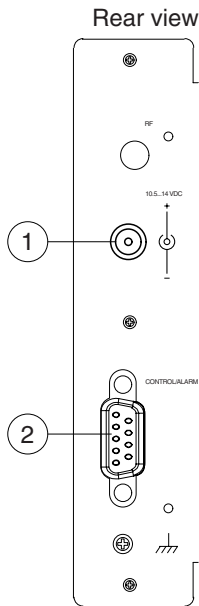
In a stand-alone installation, the unit should be mounted in the module adapter **CMA011** (see picture 2). The module adapter containing the optical transmitter is to be positioned near the video signal source. The 12V supply voltage is supplied by the means of a separate mains adapter **CPS22***.

The permitted supply voltage range is 10.5...14V DC. The current consumption is 450 mA (max). The permitted operational temperature range is from -10...+55 °C.

VIDEO INPUTS AND INDICATOR LEDS

The impedance of the video inputs (BNC female) is 75 Ω. The nominal input level is 1 Vpp.

Each video input is equipped with the dual colour VIDEO led on the front panel. In case a video signal is present and in nominal level (and the unit detects video synchronization pulses), the VIDEO led is green. If there is no video signal, or the video level is too low, the VIDEO led is yellow.



Picture 2.

- CMA011 Module Adapter**
- 1) Supply voltage connector.
 - 2) Control / alarm interface connector (D9).

PIN	SIGNAL
1	N/A
2	Ground
3	A - alarm
4	+12 V DC in / out
5	B - alarm
6	N/A
7	N/A
8	Ground
9	N/A

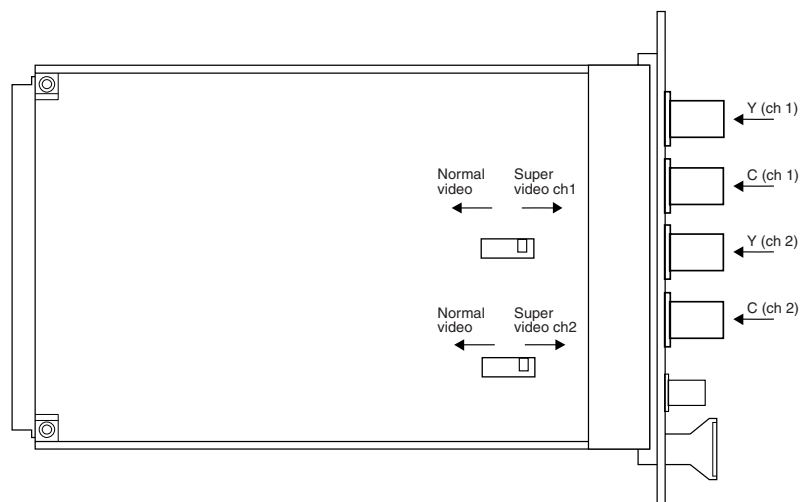
Table 1.

Pin information for the D9 connector of the CMA011 module adapter (with **CRT411** installed).

SUPER VIDEO CONNECTION

It is also possible to transmit **S-video** signal that comprises separate luminance (Y) and chrominance (C) signals. This, however, uses two channels per one transmission channel as shown in a picture 3. The video inputs are switched to **S-video** settings by **DIP** switches on the left-hand side of the unit (default factory setting is normal video).

Note! The video LEDs on the front panel are locked to the synch pulse transmitted in the Y channels.



Picture 3.

DIP switch settings for Super Video transmission.

*Note! No adjustments are needed on the receiver **CRR411** for the **S-video** reception.*

FIBRE CONNECTION

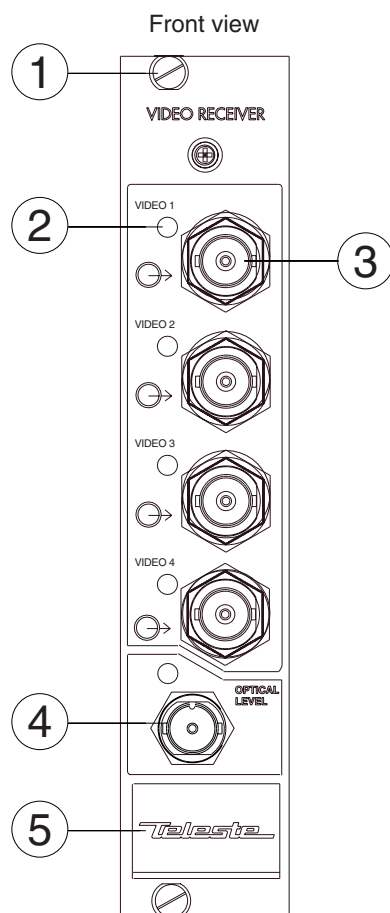
The optical connector is of the type **ST**. The optical output level is constant and cannot be adjusted. The nominal optical output level is -4 dBm. The operating wavelength is 860 nm.

When installing the fibre optic cable, do not exceed the minimum bending radius when connecting cable to the system.

*Note! For correct optical operation ensure that all optical connectors are cleaned immediately before mating. Connectors should always be cleaned using high purity alcohol (e.g. methyl or isopropyl alcohol). Dry the surfaces using clean compressed air or other equivalent pressurised gas. The female **ST** optical connectors on the equipment should always be protected with dustcaps when there is no fibre inserted.*

VIDEO RECEIVER CRR411 (version D)

CAUTION:
THIS OPTICAL SYSTEM USES CLASS 3A VCSEL LASER.
DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH
OPTICAL INSTRUMENTS. APPLICABLE STANDARD
IEC825-1: 1993



Picture 1.

CRR 411 Video Receiver.

- 1) Locking screw.
- 2) Video output indicator (led).
- 3) Video output connector (BNC female).
- 4) Optical input (ST).
- 5) Handle.

GENERAL

The **CRR411** is a four channel optical receiver for uni-directional video transmission in a multimode fibre. The current consumption is max. 550 mA (+12V DC).

FRAME INSTALLATION

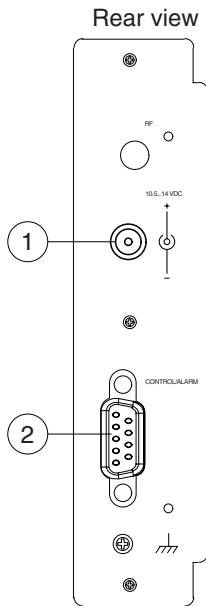
The module is to be pushed along the guide rails into the installation frame (e.g. **CSR014** or **CSR216**) and secured with the two locking screws. The unit can be freely positioned in any slot in the frame. The empty positions in the frame should be blanked off with cover plates. If only **CRR411** units are used in the system, there is no need to use a wideband combiner at the back of the frame. The supply voltage is provided by a **CPS3**** PSU which is installed either right-hand end of frame or back of frame.

*Note! The maximum number of **CRR411** units in **CSR014 / 114** rack installations is **9 pcs** and it is recommended that doubled PSU is used in **CSR216 / 316** rack installations if number of **CRR411** units exceeds **15 pcs**.*

STAND-ALONE INSTALLATION

In a stand-alone installation, the unit should be mounted in the module adapter **CMA011** (see picture 2). The module adapter containing the optical receiver can then be positioned on a vertical mounting surface. The 12V supply voltage is supplied by the means of a separate mains adapter **CPS22***.

The permitted supply voltage range is 10.5...14V DC. The current consumption is 550 mA (max). The permitted operational temperature range is from -10...+55 °C.



Picture 2.

CMA011 Module Adapter

- 1) Supply voltage connector.
- 2) Control / alarm interface connector (D9).

PIN	SIGNAL
1	N/A
2	Ground
3	A - alarm
4	+12 V DC in / out
5	B - alarm
6	N/A
7	N/A
8	Ground
9	N/A

Table 1.

Pin information for the **D9** connector of the **CMA011** module adapter (with **CRR411** installed).

VIDEO OUTPUTS AND INDICATOR LEDS

The impedance of the video outputs (BNC female) is 75 Ω. The nominal output level is 1 Vpp.

Each video output is equipped with the dual colour VIDEO led on the front panel. In case a video signal is present, the VIDEO led is green. If there is no video signal, or the video level is too low, the VIDEO led is yellow.

FIBRE CONNECTION AND INDICATOR LED

The optical connector is of the type **ST**. The optical input level range is -20 dBm. The optical input is equipped with the dual color OPTICAL LEVEL led on the front panel. If the optical input signal is corrupted (e.g. if the fibre is too long), too low (i.e. the input level is below -20 dBm), or missing, the OPTICAL LEVEL led is yellow. If the optical signal is present and otherwise correct, the OPTICAL LEVEL led is green. The operating wavelength is 860 nm.

When installing the fibre optic cable, do not exceed the minimum bending radius when connecting cable to the system.

*Note! For correct optical operation ensure that all optical connectors are cleaned immediately before mating. Connectors should always be cleaned using high purity alcohol (e.g. methyl or isopropyl alcohol). Dry the surfaces using clean compressed air or other equivalent pressurised gas. The female **ST** optical connectors on the equipment should always be protected with dustcaps when there is no fibre inserted.*

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Teleste Corporation
Video Networks
P.O. Box 323
FIN-20101 Turku
FINLAND
www.teleste.com/cctv