

User Manual



CFO121 - 1 Channel Video Link for PTZ camera applications

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Hardware Version E

This version is not compatible with earlier releases (B, C and D).

New implemented features in version E are:

- management over fibre (remote-end communication)
- audio channel L available either for unbalanced or balanced operation

CFO121 – One Channel Optical Transmitter & Receiver

CFO121 multimode 1 channel video link for uni-directional video and bi-directional stereo audio, data & contact closure transmission, in-band management



Introduction

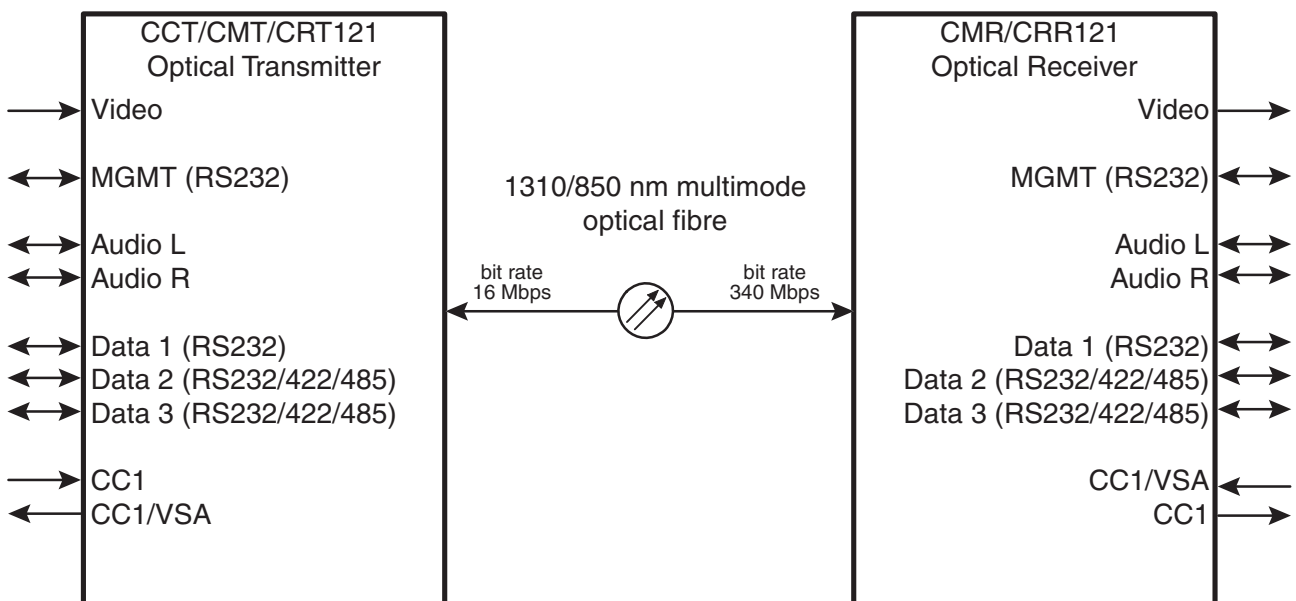
The **CFO121** is a one channel uni-directional video link with three bi-directional data, two stereo audio and one contact closure channels. **PAL**, **NTSC** and **CVBS** video formats are supported to provide a transparent video transmission. All common data protocols are supported as well and are easily configured by terminal software interface. Optical transmission is based on **FP** laser operation. The multiplexed data stream of 320 Mbps enables a full quality and a real-time video transmission in one multimode fiber up to 4 km typical transmission distance.

Management connection between **CFO121** units and e.g. laptop or PSION is based on a serial data communication by means of any terminal type program. Management software for **CFO121** series fibre optic link units is a Command Line Interface (CLI) type and it is meant for configuration and controlling of **CFO121** link units.

CRT/CRR121 units are compatible with all CFO rack systems.

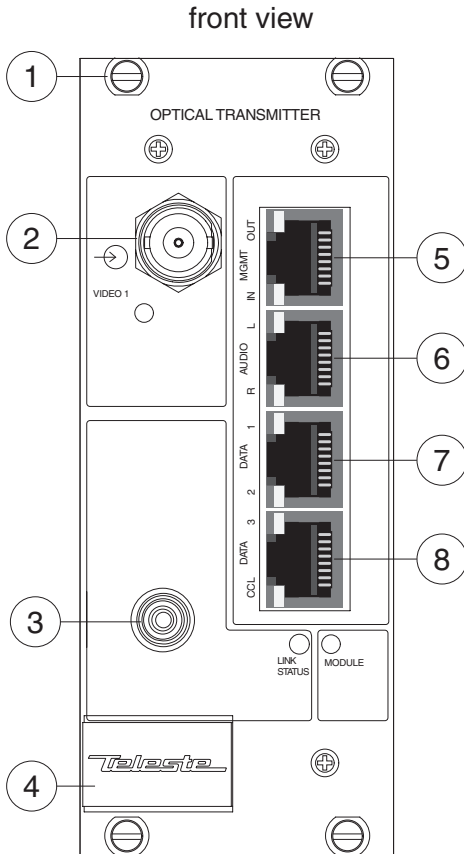
Stand-alone options are available with the CMT/CMR121 units and a separate mains adapter.

CCT121 unit is a compact size housing for special stand-alone installations requiring minimal installation space.



CF0121 – One Channel Video Link Front Panel

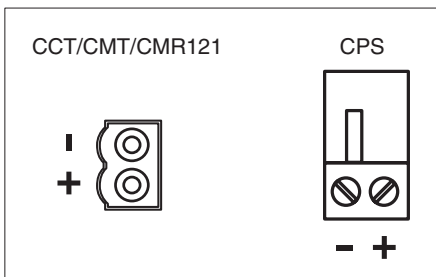
CAUTION:
THESE OPTICAL UNITS USES CLASS 1 LASER DIODE.
DO NOT STARE INTO BEAM OR VIEW DIRECTLY WITH
OPTICAL INSTRUMENTS. APPLICABLE STANDARD
IEC825-2: 1993



Picture 1.

CRT121 Optical Transmitter

- 1) Locking screw
- 2) Video input (BNC female) and video indicator (led)
- 3) Optical input/output (ST)
- 4) Handle
- 5) MGMT connector (RJ-45 female)
- 6) AUDIO connector (RJ-45 female)
- 7) DATA 1 & 2 connector (RJ-45 female)
- 8) DATA 3 & CCL connector (RJ-45 female)



Picture 2. DC connection polarity

Frame installation

The **CRT/CRR121** unit is to be pushed along the guide rails into the installation frame (e.g. **CSR216** or **316** series) and secured with the four 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. The supply voltage is to be provided by a **CPS384** or **CPS390** power supply unit.

Stand-alone installation

The **CCT/CMT/CMR121** units are designed for stand-alone installation. The unit should be mounted to a vertical surface. The supply voltage for **CCT/CMT/CMR121** should be supplied by a separate mains adapter with a regulated output (e.g. **CPS231**). The power supply connector is type 2-pin removable screw terminal. See instructions from picture 2 to connect the DC wires with correct polarity.

Video connection and indicator led

The impedance of the video connection (BNC female) is 75 Ω. The nominal input/output level is 1 Vpp. Video connection is equipped with the dual colour VIDEO led on the front panel. See table 1 for explanation of VIDEO indicator led's lights.

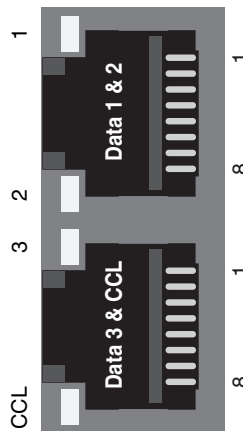
CSX multiplexer operation

Alternatively the video channel can be used for **CSX** series multiplexer operation --> multiplexed audio/data/contact closure transmission. No extra adjustments are needed.

Colour	Status
Green	Video signal is present, in nominal level, and the unit detects video sync pulses
Green*	A signal is present and in nominal level
Yellow	No video signal, or the video level is too low

Table 1. VIDEO indicator led / lights.

* When **CSX** series multiplexer or S-video operation is used.



Picture 3. DATA connector. Data 1, 2 & 3 leds indicates status of data signal.

Pin	Colour
1	White / green stripe
2	Green
3	White / orange stripe
4	Blue
5	White / blue stripe
6	Orange
7	White / brown stripe
8	Brown

Table 2. CIC603 cable's pinout / wire colors (RJ-45 male / open wires).

Data led	Colour	Status
1, 2 & 3	Green	Data "1"
	Yellow	Data "0"

Table 3. Data connection's indicator operation. The data connector's leds 1, 2 & 3 indicates ingoing data signal. Alternatively It is possible to change these leds operation to indicate outgoing data signal via management connection.

Data connections

The **CFO121** link contains three bi-directional data channels (TX <--> RX). The connector is type **RJ-45 female** (see picture 3 and tables 4 & 5 for detailed description). Supported data modes for data channel 2 & 3 are **RS232**, **RS422**, **RS485-2w** and **RS485-4w**. Data channel 1 is always in **RS232** mode. A recommended DATA cable is **CIC603** (RJ-45/open wires, see table 2 for detailed description). The desired data mode for data channel 2 & 3 can be set via management connection. The default factory settings is **RS485-2w + Dwell time 75µs**. See table 3 for explanation of DATA indicator leds.

Pin	Signal	RS232	RS422	RS485-2w	RS485-4w
1	Data 2		in (-)	in / out (-)	in (-)
2	Data 2	in	in (+)	in / out (+)	in (+)
3	Data 2	out	out (-)		out (-)
4					
5	Ground				
6	Data 2		out (+)		out (+)
7	Data 1	out			
8	Data 1	in			

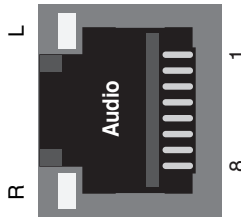
Table 4. DATA 1 & 2 connector's pinout.

Pin	Signal	RS232	RS422	RS485-2w	RS485-4w
1	Data 3		in (-)	in / out (-)	in (-)
2	Data 3	in	in (+)	in / out (+)	in (+)
3	Data 3	out	out (-)		out (-)
4	CC1	in			
5	Ground				
6	Data 3		out (+)		out (+)
7	CC1/VSA	out A			
8	CC1/VSA	out B			

Table 5. DATA 3 (& CCL) connector's pinout.

Data mode	Input termination options
RS232	None
RS422	No term (only failsafe) Hard bias Line bias (120 Ω line impedance)
RS485 - 2w	No term (only failsafe) + Dwell time adjustable 50...10000µs Hard bias Line bias (120 Ω line impedance)
RS485 - 4w	No term (only failsafe) Hard bias Line bias (120 Ω line impedance)

Table 6. Data input termination options for data channel 2 & 3.



Picture 4. The AUDIO connector. Audio R and L leds indicates status of audio signal.

Audio connection

The **CFO121** link contains two bi-directional audio channels (TX <--> RX), which can be used for one stereo audio or two mono audio purposes. Audio channel R is fixed for unbalanced wiring, the input impedance is fixed to high (>10 kΩ) and the output impedance is fixed to 10 Ω. Audio channel L has two options, either unbalanced wiring (details as above) or balanced wiring. In balanced operation the input impedance can be set either to 600 Ω or high. The audio connector type is a RJ-45 female (see picture 4 and table 8 for detailed description). A recommended AUDIO cable is **CIC603** (RJ-45/open wires, see table 7 for detailed description). See table 9 for explanation of AUDIO leds. The audio channels operates independently, i.e. despite the absence of all video signals.

Pin	Colour
1	White / green stripe
2	Green
3	White / orange stripe
4	Blue
5	White / blue stripe
6	Orange
7	White / brown stripe
8	Brown

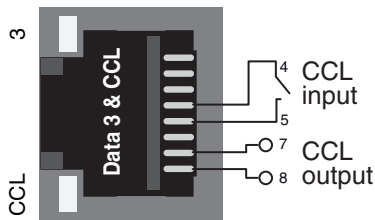
Table 7. CIC603 cable's pinout / wire colors (RJ-45 male / open wires).

Pin	Unbalanced signal	Ch L balanced signal
1	Audio R out	Audio R out
2	-	Audio L out -
3	Audio L out	Audio L out +
4	Ground	Ground
5	Audio R in	Audio R in
6	-	Audio L in -
7	Audio L in	Audio L in +
8	Ground	Ground

Table 8. AUDIO connector's pinout.

Led	Colour	Status
L	Green	Audio L signal level is good
	Yellow	Audio L signal level is too high
	No light	Audio L signal is missing
R	Green	Audio R signal level is good
	Yellow	Audio R signal level is too high
	No light	Audio R signal is missing

Table 9. Audio connection's indicator operation. The audio L and R leds indicates ingoing audio signal. Alternatively It is possible to change audio leds operation to indicate outgoing audio signal.



Picture 5.

The CCL connector. CCL led indicates status of CCL input/output signal.

Pin	Colour
1	White / green stripe
2	Green
3	White / orange stripe
4	Blue
5	White / blue stripe
6	Orange
7	White / brown stripe
8	Brown

Table 10.

CIC603 cable's pinout / wire colors (RJ-45 male / open wires).

Contact closure loop (CCL) connection

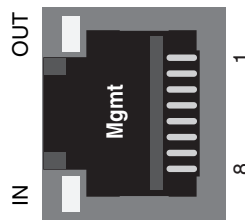
The **CFO121** link contains one bi-directional contact closure channel line (TX <--> RX). The CCL input is a normal short circuit on/off - signal between connector's contact pins (4 and 5). The CCL output is a normal relay on/off - signal (24V / 1A) between connector's contact pins (7 and 8). The connector type is a RJ-45 female (see picture 5 and table 11 for detailed description). A recommended CCL cable is **CIC603** (RJ-45/open wires, see table 13 for detailed description). See table 15 for explanation of CCL connector's leds. The CCL output channel can be alternatively configured for VSA (video source alarm) usage via management connection. The default factory setting is **CCL** usage (VSA on).

Pin	Signal	RS232	RS422	RS485-2w	RS485-4w
1	Data 3		in (-)	in / out (-)	in (-)
2	Data 3	in	in (+)	in / out (+)	in (+)
3	Data 3	out	out (-)		out (-)
4	CC1	in			
5	Ground				
6	Data 3		out (+)		out (+)
7	CC1/VSA	out A			
8	CC1/VSA	out B			

Table 11. CCL (& DATA 3) connector's pinout.

Led	Colour	Status
CCL	Green	CCL input is closed (pin 8 to ground)
	Yellow	CCL input is open

Table 12. CCL indicator operation.



Picture 6. The MGMT connector. The MGMT IN/OUT leds indicates the status of MGMT data.

Pin	RJ-45	D9
1	-	-
2	Mgmt out	Mgmt in
3	Mgmt in	Mgmt out
4	-	-
5	Ground	Ground
6	-	-
7	-	-
8	-	-
9		-

Table 13. CIC503 cable's pinout (RJ-45 male / D9 female).

MGMT led	Colour	Status
OUT	Green	Data "1"
	Yellow	Data "0"
IN	Green	Data "1"
	Yellow	Data "0"

Table 14. Mgmt connection's indicator operation

Management (MGMT) data connection

The management connection to the **CFO121** unit can be create via MGMT connector. The MGMT (Management) connector provides one bi-directional serial data (**RS232**) interface.

The Mgmt connector type is a RJ-45 female (see picture 6 and table 15 for detailed description). The management cable is type **CIC503** (see table 13 for pinouts). See table 14 for explanation of MGMT indicators.

Pin	Signal
1	Ground
2	Mgmt out (RS232)
3	Mgmt in (RS232)
4	Ground
5	Ground
6	Ground
7	Ground
8	Ground

Table 15. Mgmt connector's pinout.

Video source alarm (VSA)

The **CCL output** channel can be alternatively configured for VSA usage. When VSA mode is enabled at **transmitter** and if video signal is missing (e.g. a camera malfunction, link otherwise operates normally), the CCL output pins are closed. While VSA is enabled at **receiver**, the CCL input can be used normally to control the CCL output at **transmitter**. In case when VSA is enabled both at **transmitter** and **receiver**, the CCL channel is no longer available for any other use. The VSA mode can be set on/off via management connection.

Note! Video detection circuitry has 20 sec delay before VSA alarm is activated/inactivated.

Data led	Colour	Status
CCL	Green on/off blinking	Video OK
	Yellow on/off blinking	Video missing

Table 16. CCL indicator operation when VSA is enabled.

Link status and module indicator leds

The **CFO121** unit contains LINK STATUS and MODULE indicators which inform generic status of unit. See tables 17 and 18 for explanation of these indicators.

Colour	Status
Green	Optical signal level is adequate and synchronization is achieved
Blinking Yellow/ Green	Optical signal level is adequate, but no synchronization is achieved
Yellow	Optical signal is missing or it's level is too low

Table 17. LINK STATUS indicator operation.

Colour	Status
Blinking green	Normal operation (blinking indicates embedded software is working properly)
Red	Supply voltage is not in the permitted range or there is a transmitter laser failure

Table 18. MODULE indicator operation.

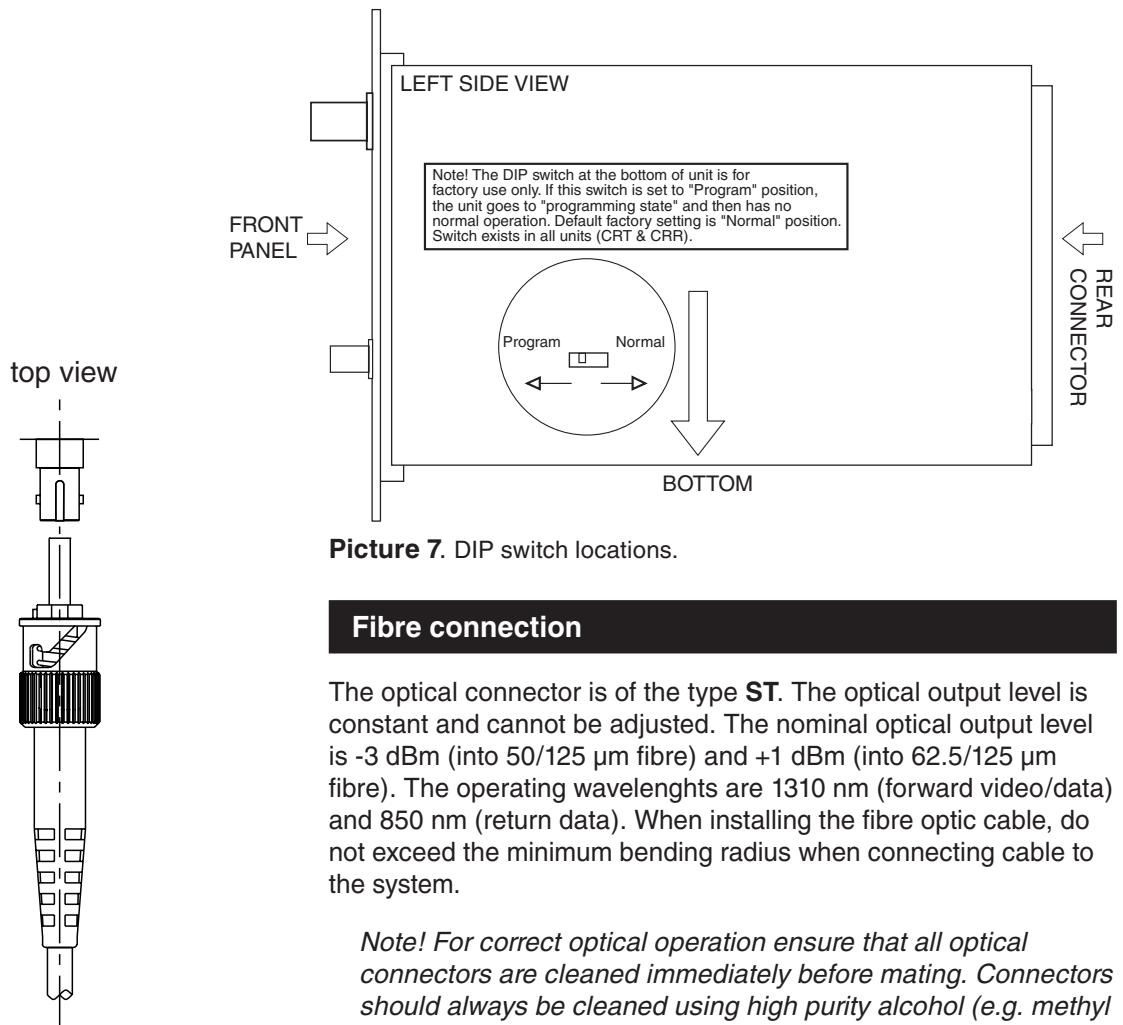
Alarm connections

All alarms at the rear connector of the unit are low open collector outputs, with the capability of 30 V/10 mA switching.

Alarm	Description	Reason
A	Hardware failure	TX laser failure Supply voltage is not in the permitted range
B	Link status alarm	No synchronisation achieved at optical input

Table 19. Open collector alarms.

*Note! At the bottom of unit is located a **DIP** switch for factory use only (see picture below). If this switch is set to "Program" (backwards position), the unit goes to "programming state" and then has no normal operation. Default factory setting is "Normal" (forwards position).*



Picture 7. DIP switch locations.

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 -3 dBm (into 50/125 µm fibre) and +1 dBm (into 62.5/125 µm fibre). The operating wavelengths are 1310 nm (forward video/data) and 850 nm (return data). 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 optical connectors on the equipment should always be protected with dustcaps when there is no fibre inserted.

Picture 8. ST Connectors

Make sure the key is aligned in the slot properly before tightening!

Command Line Interface - CLI

General

The **CLI** is a screen interface that allows the user to interact with the operating system by entering commands and optional arguments. CLI is accessed through any terminal program (e.g. Hyper Terminal).

System requirements for CLI

- * PC equipped terminal emulation program e.g. Hyper Terminal (supporting **VT100** / **102** or **ANSI** protocols)
- * **RS232**-cable (type **CIC503**). See table 20 for cable pinout.

PC/PSION	D9 female	RJ-45 male	CFO121
Receive data	2	2	MGMT output
Transmit data	3	3	MGMT input
System ground	5	5	Ground

Table 20. **CIC503** pinout (D9 female / RJ-45 male).

How to use the CLI commands

CLI consists of several commands. To execute the command, press **enter** after typing command. Entering **help**, **+** or **?** displays all list of commands (see picture 12). The remote device's settings can be changed with entering **rc** [command] [value].

Note! All letters must be typed as lowercase.

Software version

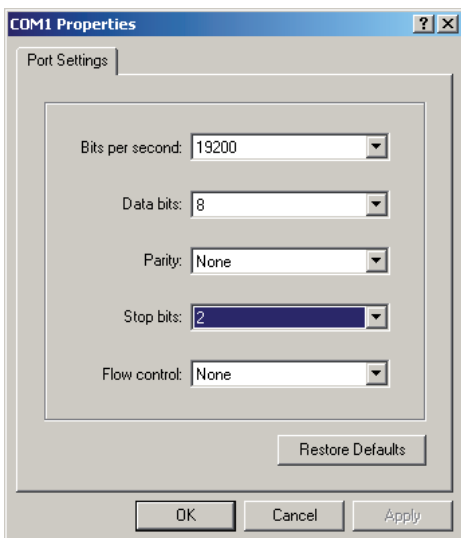
Device functional and operational suitability described in this manual is for embedded software version **3.14**.



Picture 9.
Naming a terminal connection.



Picture 10.
Selecting COM port.



Picture 11.
Settings for COM port.

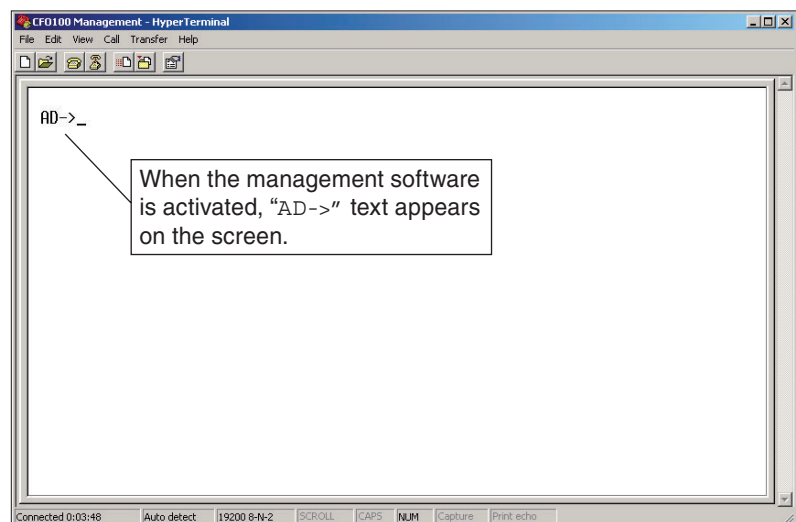
Connection methods - Hyper Terminal

1. Start the Windows Hyper Terminal program (in Windows by choosing -> Start/Programs/Accessories/Communications/Hyper Terminal). Wait until the following “**Connection Description**” window appears on the screen (see picture 9).
2. Enter a name for connection, e.g. “**CFO121 Management**” and click button to continue. The following “**Connect To**” window appears on the screen (see picture 10).
3. Choose **COM** port where the **management (RS232)** cable is connected, e.g. **COM1** port and click button to continue. The following “**COM1 Properties**” window appears on the screen (see picture 11). Set here the values as described in table 21. Click button to continue. The “**CFO121 Management**” window appears on the screen (like picture 11).
4. To activate the terminal connection, press Enter --> The “**CFO121 Management**” Hyper Terminal window appears on the screen (see picture 12). The terminal connection to **CFO121** device is now completed and you can now use the CLI commands to management the device.

The Hyper Terminal connection can be terminated by selecting File/Exit, Alt+F4 or clicking on the right upper corner of Hyper Terminal window.

Setting	Value
Emulation	VT100, VT102 or ANSI
Protocol	Serial
Baud rate	19200
Data bits	8
Parity	None
Stop bits	2
Flow control	None

Table 21. Port settings to terminal connection.



Picture 12. The Windows Hyper terminal program window view.

Detailed Descriptions of Commands

?..... help	datatype2.....rs232/rs422/rs485/rs485-4w
<tab>..... Previous Command	dataterm2.....off/on
<Esc>..... Clear Line	databias2.....off/on
rc..... Remote Prefix	dwelltime2.....50 - 10000 us
status..... Status, Local	datatype3.....rs232/rs422/rs485/rs485-4w
<space><space>Status, Local	dataterm3.....off/on
alias..... Element Name	databias3.....off/on
vers..... SW Version	demonr #Set Demo Mode
factoryset ... Defaults	tv.....Set Test Value
audio high... Audio Imp High*)	audio 600.....Audio Imp 600 ohm*)
audio unbal...Audio Unbalanced*)	audio balanced.. Audio Balanced*)
reset cpu.... Reset CPU	dwelltime3.....50 - 10000 us
cc1=cc1..... CC out = CC Out	cc1=vsaCC out = Video Source Alarm
leds=input ... Indicate Inputs	leds=output....Indicate Outputs
about..... About The Program	Comment# or // or .

Picture 13. CFO121 “help” view. *) Affects only in Ch L

Note! Receiver’s view is similar with Transmitter.

help / ? / +	Help view (a list of commands, see picture 13)
rc [command] [value]	Remote end command via fibre, e.g. status view of <u>remote</u> unit: rc status
status	Status view of <u>local</u> unit (see picture 14)
alias [name]	Alias naming (max 32 characters)
vers	Application software version, alias name, hardware version and serial number info of the local unit
factoryset	Set default factory settings
audio high	Set audio channel (L) input impedance value high
audio unbal	Set audio channel (L) input unbalanced
reset cpu	CPU boot (last settings are kept in memory)
cc1=cc1	Set cc output channel to cc usage
leds=input	Set leds operation to indicate incoming signal
about	Additional information displays (12 pages, by pressing tab and enter the pages steps). Includes e.g. info code explanations describing the link status (during malfunction info codes are echoed to the prompt and demo modes for unit/link testing)
datatype2 [value]	Set datatype 2 [RS232/RS422/RS485/RS485-4W]
dataterm2 [value]	Set dataterm 2 [on/off]
databias2 [value]	Set databias 2 value [on/off]
dwelltime2 [value]	Set dwelltime 2 value [50...10000] µs
datatype3 [value]	Set datatype 3 [RS232/RS422/RS485/RS485-4W]
dataterm3 [value]	Set dataterm 3 [on/off]
databias3 [value]	Set databias 3 value [on/off]
demonr [value]	Set desired demo mode on (values, see page 14)
tv [value]	Set test value for demo mode (values, see page 14)
audio 600	Set audio channel (L) input impedance value 600 Ω
audio balanced	Set audio channel (L) input balanced
dwelltime3 [value]	Set dwelltime 3 value [50...10000] µs
cc1=vsa	Set cc output channel to video source alarm
leds=output	Set leds operation to indicate outgoing signal
comment	Configurating with script files

Detailed Descriptions of Status Listing

```
Status Listing

Data Type Ch 1 ..... rs232, fixed
Data Termination Ch 1... no, fixed
Data Biasing Ch 1..... no, fixed
Dwell Time Ch 1..... no, fixed

Data Type Ch 2 ..... rs422
Data Termination Ch 2... on
Data Biasing Ch 2..... on
Dwell Time Ch 2..... 75 us

Data Type Ch 3 ..... rs422
Data Termination Ch 3... on
Data Biasing Ch 3..... on
Dwell Time Ch 3..... 75 us

Audio Input L Impedance. 600 ohm
Audio Input L Balancing. Balanced
Audio Input R Impedance. High, fixed
Audio Input R Balancing. Unbalanced, fixed

CC / Vid Src Alarm..... CC
CC / VSA relay..... Closed

Temperature..... 42 Cels
Tracking..... 1
Hours:Mins ..... 7:59
Up Time In Seconds..... 62
Voltage 12V..... 12.8
Voltage 5V0 ..... 5.0
Voltage 3V3 ..... 3.3
Voltage 1V8 ..... 1.8
Leds are indicating..... Inputs
```

Picture 14. CFO121 “status” info view/settings
(transmitter example view).

Note! Receiver’s view is similar with Transmitter.

Data Type Ch 1	Data type for data channel 1 (fixed 232)
Data Termination Ch 1	-
Data Biasing Ch 1	-
Dwell Time Ch 1	-
Data Type Ch 2	Data type for data channel 2 (selectable)
Data Termination Ch 2	Data termination for data channel 2 (on / off)
Data Biasing Ch 2	Data bias for data channel 2 (on / off)
Dwell Time Ch 2	Defined dwelltime setting for RS485 (data channel 2)
Data Type Ch 3	Data type for data channel 3 (selectable)
Data Termination Ch 3	Data termination for data channel 3 (on / off)
Data Biasing Ch 3	Data bias for data channel 3 (on / off)
Dwell Time Ch 3	Defined dwelltime setting for RS485 (data channel 3)
Audio Input L Impedance	Set audio channel input impedance value (selectable)
Audio Input L Balancing	Set audio channel balancing (selectable)
Audio Input R Impedance	Audio channel impedance value (high , fixed)
Audio Input R Balancing	Audio channel balancing (unbalanced , fixed)
CC / Vid Src Alarm	Cc channel's state (CC / VSA)
CC / VSA relay	VSA relay state (open / closed)
Temperature	Current internal temperature value (°C)
Tracking	Tracking value
Hours:Mins	Usage hour meter (hours:mins)
Up Time In Seconds	Display the time since last boot
Voltage 12V	+12V voltage value (V)
Voltage 5V0	+5V voltage value (V)
Voltage 3V3	+3V3 voltage value (V)
Voltage 1V8	+1V8 voltage value (V)
Leds are indicating	Inputs / outputs

Demo numbers

To simulate and test certain alarm and indicator functions, the unit can be configured to operate in demo mode with help of commands **demonr** and **tv**. Note that the test value (**tv**) must be write in hexadesimal value --> e.g. **tv 50 (hex) = 80 (dec)**. The desimal value can be seen on demo number reminder or by writing command status (lowest line).

Example: Set temperature demo 60°C:

```
AD->demonr 05
Demo-Number-Is 5
AD->tv 3c
testvalue is loaded with 003C
AD->
DEMO NUMBER REMINDER. Demo Number 5 Test
value Hex 0x003C Dec 60
```

Note! Unit will return from demo mode to normal operation mode automatically after one hour when using demo numbers which values are under 1000.

00	No Demo, Default
03**	Video Signal Demo
05*	Temperature Demo
07*	VU meter test, use testvalue(TV)
08*	Power Supply #1 Demo
21	CC1 Input Close State Demo
31**	Video Detection Demo Ch #1
58*	Temperature & Power Supply #1 Demo
222**	Led Test
2222	Running Led Demo
22222	All RJ45 Connector Leds Used For VU meter Display

* This Demonstration Uses Test Value.

Note! Testvalue (tv) is same for all demonstrations.

** Video Leds In Transmitter Not Affected

Technical Specifications

Parameter	Specification	Note
Optical (video + data)		
Output wavelength	1310 nm	
Output power	-3 dBm +1 dBm	into 50/125 µm fibre into 62.5/125 µm fibre
Input sensitivity	-18 dBm	
Optical (return data)		
Output wavelength	850 nm	
Output power	-3 dBm +1 dBm	into 50/125 µm fibre into 62.5/125 µm fibre
Input sensitivity	-18 dBm	
Video		
Number of channels	1	uni-directional
Standard	PAL/NTSC	CVBS
Level	1 Vpp	
Impedance	75 ohm	
Sampling resolution	12 bit	
Sampling rate	16 MHz	
Bandwidth	5.5 MHz 6.5 MHz	-1 dB -3 dB
C/L gain inequality	3 %	
C/L delay inequality	60 ns	
Differential gain	< 2 %	
Differential phase	< 2 °	
S/N ratio	70 dB	
Audio		
Number of channels	2 bi-directional	unbalanced or 1 x balanced and 1 x unbalanced
Sampling frequency	62.5 kHz	
Sampling resolution	16 bits	
Input impedance	10k ohm	Ch L can be configured to 600 ohm
Output impedance	1k ohm	
Nominal level	+0 dBV	
Clipping level	+12 dBV	
Frequency response	1 dB 0.02...20 kHz	ref. 1 kHz
S/N ratio	64 dBqp	CCIR weighted
Data		
Number of channels	3 bi-directional	
Data 1 format	RS232	fixed
Data 2 & 3 formats	RS232/422/485	selectable
Data rate	0...160 kbps	
Oversampling rate	1.6 MHz	
Dwelltime setting	50...10000 µs	RS485
Contact Closure		
Number of channels	1	bi-directional
Input	dry contact	
Output	24V / 1A (relay)	max
Switching frequency	5 Hz	
Management		
CLI	RS232	
General		
Supply voltage	10.5...14 V DC	regulated
Current consumption (max)	600 mA	12 V
Dimensions (H x W x D)		
CRT/CRR121	3U • 10HP • 190 mm	(without connectors)
CMT/CMR121	133 • 54,2 • 88 mm	(without connectors)
CCT121	115,5 • 50,5 • 85 mm	(without connectors)
Weight	0.5 kg	
Connectors		
Video	BNC female	
Data/audio/cc/mgmt	RJ-45 female	
Optical	ST	
Operating temperature	-34...+74 °C	field hardened
Storage temperature	-40...+80 °C	
Humidity	0...95 %	non condensing
Enclosure classification	IP21	
EMC compatibility	EN55022-B, EN50130-4, CE	

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WEEE directive

Directive 2002/96/EC of the European Parliament and of the Council on waste electrical and electronic equipment (WEEE) obliges that producers appropriately mark electrical and electronic equipment with the symbol indicating separate collection. This obligation applies to the equipment put on the market in EU after 13 August 2005.

Teleste devices which belong to the scope of the directive have been marked with the separate collection symbol shown below. The marking is according to the standard EN 50419. The symbol indicates that the device has to be collected and treated separately from unsorted municipal waste.



User manual revision history note:
The latest version is always available in pdf-format on our web site:
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