



**Cove
Communications**

User Guide

SILVERLINE VRx

Miniature Fibre Optic Video Receiver

Serial Number

Date Commissioned

Commissioned By

Cove Communications
Contacts.....

**Cove Communications Ltd.
8 Copthorne Business Park,
Dowlands Lane,
Copthorne, Crawley,
West Sussex,
England
RH10 3HX**

**Tel: +44 (0) 845 838 8850
Fax: +44 (0) 1342 715384**

CONTENTS

1. INTRODUCTION
2. FEATURES
3. SPECIFICATION
4. ANALOGUE VIDEO DISTRIBUTION SYSTEMS
 - 4.2 Levels and Impedance
 - 4.3 Bandwidths
5. OPERATION
 - 5.1 General
 - 5.2 AGC (Automatic Gain Control)
 - 5.3 Video Source Switching
 - 5.4 VCR Operation
6. INSTALLATION
 - 6.1 Installation Records
 - 6.2 Power Requirements
 - 6.3 Power Connections and LED Indications
 - 6.4 Video Connector and LED Indications
 - 6.5 Fibre Optic Connections
7. MAINTENANCE
8. FAULT DIAGNOSIS

1. INTRODUCTION

The **SILVERLINE** VRX is a miniature free standing Fibre Optic Receiver which has been designed for use with composite colour and monochrome video signals that fall within the frequency bandwidth of 15MHz. As all current terrestrial broadcasting standards such as PAL, NTSC and SECAM require only 5.5MHz of bandwidth they are eminently suitable for reception over fibre with this product. This product enables high quality video distribution over fibre without the need for equalisation for distances up to 4km.

Because of the wide bandwidth of the Cove Communications Fibre Optic Video Receiver and its video encoding systems independence, users can be confident when using this product that they are relatively future proof against the introduction of new composite video standards and compatibility problems. However the extended bandwidth of the Cove Communications Fibre Optic Video Receiver currently allows its use with high quality video sources such as some high quality, high resolution cameras and will give far superior results compared to the use of coaxial cable even for relatively short distances.

The extended bandwidth also ensures that the new 16 x 9 aspect ratio wide screen video format, which has a bandwidth of 7.5 MHz may be used with this product.

The receivers feature AGC (Automatic Gain Control) which greatly simplifies installation and eliminates the requirement for user set-ups. This feature ensures that whatever length of fibre optic cable is used the video output from the receiver will always be of the correct amplitude.

This product is intended for use with multimode fibre and is available to order fitted with either the ST or SMA fibre optic connectors. The Cove Communications **SILVERLINE** VRx Miniature Fibre Optic Video Receiver is intended for use with the range of Cove Communications Fibre Optic Video Transmitters. This range includes the **SILVERLINE** VTx miniature transmitter and the **STARLINE** 19 inch rack mountable range of transmitters, VTX 1 Channel, VTX 2 Channel, and the VTX 3 Channel version.

The unit is constructed in a robust light weight metal housing and is fitted with a BNC video connector.

Power is connected to the unit via a miniature circular connector requiring a nominal +12v D.C. supply.

To help during installation LED's are provided to indicate that the D.C. power is connected, that video is present and the AGC system is operating within its range.

2. FEATURES

- Compact miniature metal case construction
- Conforms fully to all world composite broadcasting standards (PAL, NTSC, SECAM)
- Video composite encoding system independent
- Up to 4km video distribution with multimode fibre optic cable
- Suitable for colour and monochrome video systems
- ST or other Optical connectors to order
- AGC (Automatic Gain Control) compensates for all lengths of interconnection fibre
- Easy Installation no adjustments
- Connects directly to the video monitoring system
- Video clamp for clear picture reproduction
- Low cost
- Wide Bandwidth
- Low Distortions
- Transparent operation
- Video present LED
- Power connection indication LED

- AGC within range LED indication
- Nominal 12V D.C. power operation
- Internal D.C. Supply regulation
- Optional mains power cube D.C. supply
- Separate D.C. supply connector for host powering
- High efficiency optical receiver
- Optical interface gives immunity to all electromagnetic interference
- Total electrical isolation between sites with no earthing problems
- Wide operating temperature range

3. SPECIFICATION

Video output Level:	1V p-p (Composite) (AGC sets syncs to 300mV p-p)
AGC Range:	16dB optical (32dB signal voltage)
Video Input requirement at the TX (sync to video relationship):	0.3V syncs to 0.7V video
Video output Impedance:	75 Ohms
LED Indications:	Power present, video present, AGC in range
Light Source Wave Length:	850nm
Optical Input power minimum:	1 μ W
Optical Connectors:	ST or SMA 9mm to order
Construction:	Metal Case
Overall Size:	97 x 63 x 30mm
Weight:	150g
d.c Power Requirements:	+11-15V at 100mA
Operating Temperature:	-5° C to +50° C
Storage Temperature:	-20°C to +70°C
Humidity:	90% non-condensing

Link Performance video TX and RX

Bandwidth	Up to 15MHz
Frequency Response: 50HZ to 5.5MHz	± 1dB
Operating Distance (fibre):	4km (with Fox & Starline video transmitters)
Differential Phase:	2°
Differential Gain:	2%
Gain:	0dB ±0.1dB (factory set)
Non-linearity:	<1% CCIR all lines, bar ON/OFF
Frame tilt:	<2% CCIR all lines, bar ON/OFF
Signal/Noise Ratio:	>54dB CCIR 625 line
Optical fibre:	Multimode: 50/125, 62.5/125, 100/140µm

Cove Communications reserves the right to change the specification without notice

4. ANALOGUE VIDEO DISTRIBUTION SYSTEMS

Apart from the normal terrestrial video broadcast systems; PAL, NTSC and SECAM the Cove Communications **SILVERLINE** VRx Miniature Fibre Optic Video Receiver may be used with other distribution systems, provided that the signal has a composite format, i.e. it has a mixed sync part to its waveform.

4.1 Levels and Impedance

The output level and impedance of the Cove Communications **SILVERLINE** VRX Fibre Optic video receiver is 1V p-p into 75 Ohms. Should the application require an output impedance other than the standard this can be provided as an option.

4.2 Bandwidths

The **SILVERLINE** VRX has a bandwidth that extends to 15MHz and over the broadcast specified frequency response for PAL, NTSC and SECAM, when used in conjunction with the Cove Communications Fibre Optic Video Transmitter the frequency response will be within ±1dB from 50HZ to 5.5MHz.

5. OPERATION

5.1 General

The **SILVERLINE** VRX is intended for use with the range of Fibre Optic Video Transmitters. This range includes the **SILVERLINE** VTx miniature transmitter and the **STARLINE** 19 inch rack mountable range of transmitters, VTx 1 Single Channel, VTx 2 Channel, and the VTx 3 Channel version.

The video signal is processed in the analogue domain and converts the analogue amplitude modulated infra-red light that travels down the fibre optic cable into the standard electrical video signal.

5.2 AGC (Automatic Gain Control)

The AGC (Automatic Gain Control) featured in the range of Cove Communications Fibre Optic Video Receivers uses the mixed sync portion of the video signal to set the through gain. If the mixed sync signal presented to the transmitter is 0.3V and the peak white level is 0.7V then the output signal from the receiver will be the same. However, if the input video mixed sync amplitude is low compared to the peak white level, at the transmitter the video output level will be high from the receiver because the mixed sync level will be amplified up to the standard 0.3V level. Conversely if the input mixed sync level is too high compared to the peak white at the transmitter the output video level at the receiver will be too low because the mixed syncs will be attenuated back to the correct 0.3V level. If the amplitude relationship between the mixed syncs and the peak white video is correct at the transmitter but happens to be overall either too high or too low the AGC in the receiver will correct for this and output a perfectly correct signal.

The AGC therefore offers to the installer many benefits provided that the video signal presented to the transmitter has the correct sync to peak white video relationship.

The AGC fully compensates for the loss in the fibre optic cable and no amplification or frequency response equalisation is required. There is also the added benefit to the installer that any amplitude loss from the video source to the fibre optic transmitter is compensated for.

5.3 Video Source Switching

The AGC has a fixed time delay before it can take effect and if the input signal to the video transmitter is removed and reconnected a disturbance to the viewed picture will be observed. Synchronous and non-synchronous cutting will not cause any disturbances.

5.4 VCR Operation

The Cove Communications fibre optic video receivers contain a video clamp. This circuit clamps the video signal in the back porch and has special circuitry such that it will work with colour and monochrome signals. Some VCR's when in the pause/freeze mode display white bars horizontally across the screen. This signal is non-standard and is not PAL, NTSC or SECAM.

Quite often the back porch of the signal completely disappears and the unwanted white bars are frequently at two to three times above the normal peak white level.

The video clamping feature in the receiver will clearly not work under this circumstance as it will try to clamp to the abnormal peak white level and not black level and the output picture from the fibre optic receiver will either be highly distorted or not present.

8. FAULT DIAGNOSIS

The Cove Communications Fibre Optic Video Receivers can only be fully tested in conjunction with a known working Cove Communications Fibre Optic Video transmitter. However the LED indicators will give a guide as to its operation

FAULT

POSSIBLE CAUSE

Green LED 'OFF'.

Mains input to the D.C. power unit is not present.
Refer to the power units User Guide If the power unit is functioning correctly the VRX unit will be at fault

Green LED 'ON' but Yellow video LED is 'OFF'

No video signal connected to the unit via the fibre.
Level is non Video signal standard or too low in level.
Fibre optic cable loss is too high
Dirt on fibre optic connectors

Green and Yellow LED's are 'ON' but the video output level at the receiver is low in amplitude.

Mixed sync level at the transmitter is too high in amplitude compared to the peak white level.

Green and Yellow LED's are 'ON' but the video output level at the receiver is high in amplitude.

Mixed sync level at the transmitter is too low in amplitude compared to the peak white level.

-END-

This User Guide has been produced by Cove Communications and may not be copied or reproduced in any way shape or form without the written permission of Cove Communications.