

# Ogier Electronics

## Microwave Transmission for CCTV Systems

The use of Single Channel and Multichannel microwave equipment enables the transmission requirements of complete CCTV systems to be met simply and economically, with the flexibility for growth not available using other technologies.

### Applications

The application of microwave transmission systems include CCTV schemes for Local Authorities and distributed commercial sites.

The systems are particularly applicable to link outlying areas such as hospitals, villages and industrial estates into existing CCTV schemes. Concierge systems are also important, especially when communications are required between different areas.

Many systems have been installed using only microwave transmission. In others, microwave has been used to provide extensions to existing fibre based systems.

**Easy to install**

**Minimum disruption**

**In-built growth potential**

**Low environmental impact**

**Easily moved to meet new requirements**

**Low maintenance costs**

**Extendable to out of town areas**

**Accepts rapid deployment cameras**

### Benefits

The major benefits of microwave transmission for CCTV are the ease of installation together with the flexibility to grow and accommodate changes.

There are no underground cabling requirements or street cabinets and therefore no uncertainties in the cost of the installation. There is no disruption, other than that caused by the need to install the cameras themselves.

Installation is simple and straightforward and can frequently be completed in a matter of days.

Equally important, the system has the in-built flexibility to accommodate growth or changes, both in the camera and control room locations.

It has the capability to integrate out of town systems into existing schemes at minimum cost. Also uniquely, microwave has the ability to provide the transmission from temporary cameras to cover short term surveillance requirements.



## Features

The SL and ML Series of high technology microwave transmission equipment provides evidential video quality which exceeds the highest levels demanded in CCTV. The quality is equal to the best outside broadcast systems.

Microwave links require line of sight. Often it is not possible in an urban environment to transmit directly from the cameras to the control room. The use of local collecting points overcomes this. Single Channel equipment at the cameras transmit to a collecting point with Multichannels then transmitting all the videos from there to the Control Room as shown in the photograph below.

The major benefit of the collecting point concept is that it allows other cameras to be brought on-stream progressively and without any change to the trunk links except for the addition of plug-in modules.



## Capacity

The capacity of each system is 19 channels in one band and 19 in the other. The performance of the equipment is such that all the frequencies can be re-used every 15 degrees.

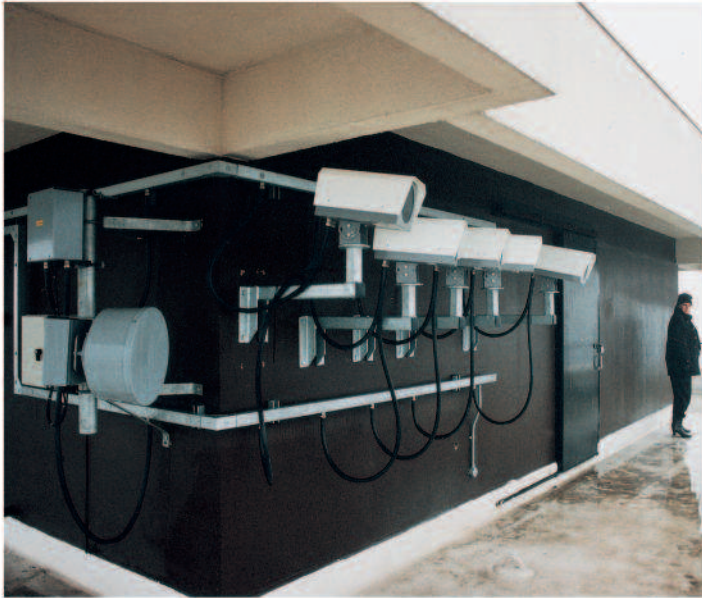
In practice therefore the capacity of the microwave transmission system is virtually limitless.

## Options

Increasingly there is a need to install temporary cameras to resolve short term problems or to cover special events. Such cameras can link into permanent systems at the collecting points using transportable microwave equipment.

Help alarms to provide assistance to members of the public, and other audio or video facilities, including video conferencing and general information services can also be added to the transmission systems. This can be either as part of the initial installation or as a retrofit.

No other transmission system offers the same quality, flexibility and growth options as microwave.



Ogier Electronics equipment is CE approved and is a supplier to major security and telecoms companies, local authorities, police, military and railway network operators world wide

## Ogier Electronics Limited

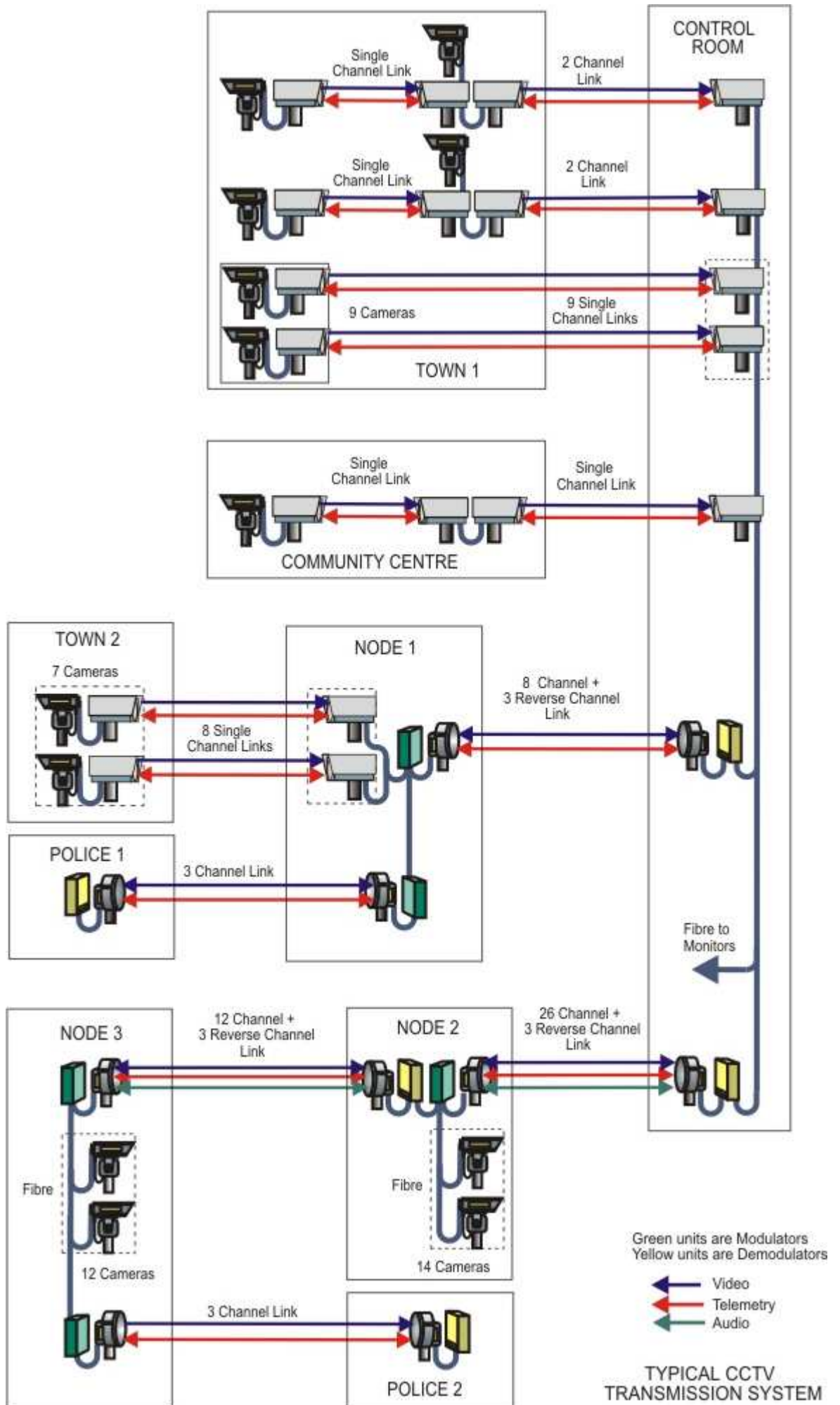
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# Ogier Electronics

## Single Channel Microwave Video Links

The SL series of equipment enable video and TV to be transmitted over ranges of 600 metres to 80 km. The transmissions are full resolution, full frame rate colour to broadcast levels of quality. There are 3 basic equipment types; the Split Configuration, the Compact, and our latest SuperCompact that provides 2 way communications with all the electronics packaged within a 30 x 18 x 9 cm enclosure.

### Applications

The primary application of these links is in CCTV systems. However they are also used by broadcasters, nature conservation groups and in many other areas where high definition TV is required. Many options are possible including, for example, a second video in the Compact and Split Configuration equipment.

The equipment can be installed on CCTV camera columns to transmit directly to the control centre. Alternatively several links can transmit to a common collecting point from where a multichannel equipment can relay the signals onwards.

**SuperCompact & Compact - to 10 km**

**Split Configuration - to 80 km**

**Broadcast quality**

**Guaranteed interference free**

**5 GHz, 31 GHz and 58 GHz**

**Bi-directional Data and Audio options**

**Built in test**

**High reliability, no routine maintenance**

### Benefits

In almost all cases the equipment is easier, quicker and more cost effective to install than fibre optic cable. Despite this it provides a video quality equal to the best fibre solutions.

The SuperCompact series of equipment is the smallest of its type in the world and provides ranges up to 10 km whilst the Compact series uses a camera type housing to minimise the environmental impact. At the other extreme the Split Configuration equipment is supplied with a variety of antennas from 30 to 120 cm for ranges up to 80 km in all weathers.

The SL series are ideal solutions for permanent or temporary applications where high performance and evidential quality is required under all conditions.



## Features

The system transmits video to broadcast levels of quality. Because of this, multiple repeaters can be used to extend the range or to overcome obscuration without any discernible effects on the picture or the commands to the camera.

The equipment incorporates automatic gain and frequency control, which avoids the need for adjustment on installation or during life. All the units have built in test with status LEDs on the modules. The SuperCompact also includes a built-in signal strength indicator which enables the alignment to be performed with a simple multimeter.

The use of phase locked synthesisers and the latest MMIC technology allow operation in the harshest of environments without the need for any routine maintenance. This, together with 100% factory burn-in, has provided an unrivalled reliability record.

All the equipment includes EMC protection against surges, interference and lightning. The features include extensive filtering, precision enclosures and EM sealing. Because of this we can guarantee interference free operation, even in complex radio and radar environments.

## Options

Many options are available to enable the standard equipment to be configured to meet a number of different requirements.

Various data and audio options are available. Also, reverse video channels can be included to allow pictures to be transmitted in both directions. A second video channel can be included on all but the SuperCompact, and if required, all the videos can be encoded with secure, line cut and rotate encryption.

Hot climate versions are available in which the cooling is optimised for operation in 1 kW/square metre sunlight with ambients of up to 60C.



Ogier Electronics is accredited to ISO9001:2000 and is a supplier to security and telecoms companies, to the police, military and local government.

## Typical Specifications

Regulatory	EN 300 632 & MPT 1425
Video channels	1 (2 in some equipment)
Data or audio channels	1 (2 in some equipment)
Frequency	5, 31 or 58 GHz
Frequency stability	Phase locked to 30 ppm
Ranges:-	
58 GHz Compact	1 km
31 GHz Compact & SuperComp't	10 km
31 GHz Split Configuration	25 km
5 GHz Split Configuration	80 km
Availability	99.95%(UK conditions)
Antenna sizes:-	
58 GHz Compact	15 & 25 cm horns
31 GHz Compact & SuperComp't	15 cm horns & planar
31 GHz Split Configuration	30 & 60 cm dishes
5 GHz Split Configuration	30, 60 & 120 cm dishes
Antenna gains:-	
58 GHz Compact	37 & 42 dBi
31 GHz Compact & SuperComp't	32 & 28 dBi
31 GHz Split Configuration	36 & 42 dBi
5 GHz Split Configuration	31, 27 and 33 dBi
Transmit power	0 to +20 dBm
Polarisation	Vertical or horizontal
Receiver Noise Figure	4 to 6 dB
Carrier to Noise	18 dB
Carrier to interference	30 dB
Signal to Noise	55 dB
Modulation	Wideband FM, 10.5 MHz
Pre-emphasis	CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1 Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay
Data inputs/outputs	RS485/422/232 19.2kbps
Audio option (instead of data)	0 dBm in 600 Ohms
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm



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## Ogier Electronics Single Channel Split Configuration SL3100 Links

The Split configuration SL3100 is a single video channel link comprising two units at either end. The designators 30 or 60 indicate the antenna size in cm and HP indicates those equipment with high power transmitters to increase the range

Regulatory compliance	ETSI EN 300 632 and MPT 1425
Number of video channels	1 in one direction
Number of data or audio channels	1 in both directions
Frequency band	31.0 to 31.8 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	SL3100-30           6 km SL3100-HP-30       13 km SL3100-HP-60       25 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	Low sidelobe high performance Parabola
Antenna size (both ends)	SL3100-30           30 cm diameter SL3100-HP-30       30 cm diameter SL3100-HP-60       60 cm diameter
Antenna gain (both ends)	SL3100-30           36 dBi SL3100-HP-30       36 dBi SL3100-HP-60       42 dBi
Transmit power	0 to +15 dBm
Transmit EIRP	SL3100-30           36 dBm typical SL3100-HP-30       51 dBm typical SL3100-HP-60       57 dBm typical
Polarisation	Vertical or horizontal
Receiver Noise Figure	6 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	100 - 250 Volts AC, 50 - 60 Hz
Input power	30 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Equipment	Transmit Transceiver and Modulator Base Unit at video transmit end. Receive Transceiver and Demodulator Base Unit at video receive end
Dimensions	SL3100-30 Transceiver   30 cm dia x 41 cm SL3100-HP-30 Transceiver   30 cm dia x 41 cm SL3100-HP-60 Transceiver   66 cm dia x 80 cm Base Unit                    29 x 26 x 14 cm
Connections	Power                       Terminal connectors in Base Units Video                       BNC connectors in Base Units Data/audio                 Terminal connectors in Base Units 2 CT100 cables from Base Units to Transceivers
Life	15 Years
Routine maintenance	None required
Weight	SL3100-30 Transceiver   15.5 kg SL3100-HP-30 Transceiver   16 kg SL3100-HP-60 Transceiver   42 kg Base Unit                    8 kg
Mounting	Transceivers               75 to 110 mm dia vertical pole Base Unit                   Wall
RF Hazard	None (< 0.05 mW/sqcm average at antenna)

### Ogier Electronics Single Channel Compact SL3100-C Links

The SL3100 is a compact single video channel link with a number of data and audio options. The designator HP indicates that high power transmitters are included to increase the range

Regulatory compliance	ETSI EN 300 632 and MPT 1425		
Number of video channels	1 in one direction		
Number of data or audio channels	1 in both directions		
Frequency band	31.0 to 31.8 GHz		
Frequency stability	Phase locked to 30 ppm		
Range - all weathers	SL3100-C	4.5 km	
	SL3100-HP-C	10 km	
Availability	99.95% (UK conditions)		
Antenna type (both ends)	High gain Lens Horn		
Antenna size (both ends)	15 cm diameter		
Antenna gain (both ends)	32 dBi		
Transmit power	0 to +15 dBm		
Transmit EIRP	SL3100-C	32 dBm typical	
	SL3100-HP-C	47 dBm typical	
Polarisation	Vertical or horizontal		
Receiver Noise Figure	6 dB		
Carrier to Noise	18 dB		
Signal to Noise	50 dB		
Carrier to Interference	30 dB		
Modulation	Wideband FM, 10.5 MHz deviation		
Pre-emphasis	Compliant with CCIR Rec 405-1		
Tuner bandwidth	27 MHz		
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm		
Video Quality	6% Differential Gain		
	6 Deg Differential Phase		
	6% Bar Amplitude Error		
	6% C/L Gain Inequality		
	6% C/L Intermodulation		
	75 nS C/L Delay		
	6% Bar Tilt		
	2% 2T K		
	6% 2T P/B		
	Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
		0 dBm in 600 Ohms balanced or unbalanced	
	Audio option (instead of data)	50 to 10,000 Hz +/-3dB	
	Audio frequency response	50 dB	
	Audio Signal to Noise	5% at 1 kHz and 0 dBm	
Audio harmonic distortion	100 - 250 Volts AC, 50 - 60 Hz		
Input voltage	30 Watts each end		
Input power	-20 to +60 C		
Temperature Range	Up to 200 kph		
Wind	20 x 20 x 40 cm		
Dimensions	Power	Terminal connectors	
Connections	Video	BNC connectors	
	Data or audio	Terminal connectors	
Life	15 Years		
Routine maintenance	None required		
Weight	8.5 kg		
Mounting	Horizontal plate with M10 stud and M8 locking		
RF Hazard	None (< 0.2 mW/sqcm average at antenna)		

November 2002 - Ogier Electronics reserve the right to alter this Specification without notification

## Ogier Electronics Single Channel SuperCompact SL3100-SC Links

The SL3100-SC and SL3100-HP-SC are extremely small, single video channel links with one data or audio channel. The designator HP indicates that high power transmitters are included to increase the range. Despite their small size, these units have the same high performance as the larger SL series of links and provide the same broadcast levels of quality. They include in-built power measurement to avoid the need for external power meters and have comprehensive built in test facilities with a single pass / fail indication.

**Please note that the equipment is powered from 24 Volts DC. Separate power supply modules or weatherproof units can be supplied if required**

Regulatory compliance	ETSI EN 300 632 in Europe using optional filters
Number of video channels	1 in one direction (1 in both directions as an option)
Number of data or audio channels	1 in both directions
Frequency band	31.0 to 31.8 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	SL3100-SC 5 km SL3100-HP-SC 8 km
Availability	99.95%
Antenna type (both ends)	2 flat plates. One for transmit, the other for receive
Antenna size (both ends)	15 cm square
Antenna gain (both ends)	28 dBi
Transmit power	SL3100-SC 17 dBm SL3100-HP-SC 26 dBm
Transmit EIRP	SL3100-SC 45 dBm SL3100-HP-SC 54 dBm
Polarisation	Vertical as standard, Horizontal as an option
Receiver Noise Figure	3 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	24 Volts +/- 10%
Input power	20 Watts each end
Temperature Range	-20 to +60 °C
Solar Radiation	1 kW per square metre at 50°C ambient
Wind	Up to 200 kph
Dimensions without sun shield	Width 30 cm, height 18 cm, depth 9 cm
Dimensions with sun shield	Width 32 cm, height 20 cm, depth 12 cm
Connections	24 Volt DC Power Terminal connectors Video BNC connectors Data or audio Terminal connectors Failure alarm Terminal connectors to solid state relay Short circuit - pass, Open circuit - fail
Life	Power Meter 0 to 3 volts over 20 dB dynamic range 15 Years
Routine maintenance	None required
Weight	6.75 kg with sunshield and swivel bracket
Mounting	Horizontal plate with M10 stud and M8 locking
RF Hazard	SL3100-SC Below 0.2 mW/sqcm at radome surface SL3100-HP-SC Safe at all distances outside main beam Below 1 mW/sqcm 2 metres from radome



## Ogier Electronics Single Channel Split Configuration SL500 Links

The Split configuration SL500 is a single video channel link comprising two units at either end. The designators 30 or 120 indicate the antenna size in cm

Number of video channels	1 in one direction		
Number of data or audio channels	1 in both directions		
Frequency band	4.4 to 5.0 GHz		
Frequency stability	Phase locked to 30 ppm		
Range - all weathers	SL500-30	20 km	
	SL500-120	80 km	
Antenna type (both ends)	Availability	99.95% (UK conditions)	
	SL500-30	High gain Lens Horn	
Antenna size (both ends)	SL500-120	High performance Parabola	
	SL500-30	30 cm diameter	
Antenna gain (both ends)	SL500-120	120 cm diameter	
	SL500-30	21 dBi	
Transmit power	24 dBm		
Transmit EIRP	SL500-30	45 dBm typical	
	SL500-120	56 dBm typical	
Polarisation	Vertical or horizontal		
Receiver Noise Figure	4 dB		
Carrier to Noise	18 dB		
Signal to Noise	50 dB		
Carrier to Interference	30 dB		
Modulation	Wideband FM, 10.5 MHz deviation		
Pre-emphasis	Compliant with CCIR Rec 405-1		
Tuner bandwidth	27 MHz		
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm		
Video Quality	6% Differential Gain		
	6 Deg Differential Phase		
	6% Bar Amplitude Error		
	6% C/L Gain Inequality		
	6% C/L Intermodulation		
	75 nS C/L Delay		
	6% Bar Tilt		
	2% 2T K		
	6% 2T P/B		
	Video Encryption option	Line cut and rotate	
	Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
	Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced	
	Audio frequency response	50 to 10,000 Hz +/-3dB	
Audio Signal to Noise	50 dB		
Audio harmonic distortion	5% at 1 kHz and 0 dBm		
Input voltage	100 - 250 Volts AC, 50 - 60 Hz		
Input power	30 Watts each end		
Temperature Range	-20 to +60 C		
Wind	Up to 200 kph		
Equipment	Transmit Transceiver and Modulator Base Unit at video transmit end. Receive Transceiver and Demodulator Base Unit at video receive end		
Dimensions	SL500-30 Transceiver	44 x 36 x 33 cm	
	SL500-120 Transceiver	Antenna 120 x 120 x 120 cm + Electronics Unit 26 x 26 23 cm	
Connections	Base Unit	29 x 26 x 14 cm	
	Power	Terminal connectors in Base Units	
	Video	BNC connectors in Base Units	
	Data/audio	Terminal connectors in Base Units	
	SL500-120 only	2 CT100 cables from Base Units to Transceivers N Type from Electronics Unit to Antenna	
Life	15 Years		
Routine maintenance	None required		
Weight	SL500-30 Transceiver	14 kg	
	SL500-120 Transceiver	60 kg Antenna + 8 kg Electronics Unit	
Mounting	Base Unit	8 kg	
	SL500-30 Transceiver	Horizontal plate with M10 stud and M8 locking nut and bolt	
RF Hazard	SL500-120 Transceiver	75 to 110 mm dia vertical pole	
	Base Unit	Wall	
	None (< 0.4 mW/sqcm average at antenna)		

### Ogier Electronics Single Channel SL5800 Links

The SL5800 is a compact, short range single video channel link with a number of data and audio options. The designators S, L and XL indicate whether the equipment has a short range, long range or extra long range respectively

Regulatory compliance	MPT 1415
Number of video channels	1 in one direction
Number of data or audio channels	1 in both directions
Frequency band	57.2 to 58.2 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	SL5800-S           600 metres SL5800-L           1 km SL5800-XL         1.2 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	High gain Lens Horn
Antenna size (both ends)	SL5800-S           15 cm diameter SL5800-L           15 cm diameter SL5800-XL         25 cm diameter
Antenna gain (both ends)	SL5800-S           38 dBi SL5800-L           38 dBi SL5800-XL         42 dBi
Transmit power	-5 to +5 dBm
Transmit EIRP	SL5800-S           33 dBm typical SL5800-L           41 dBm typical SL5800-XL         45 dBm typical
Polarisation	Vertical
Receiver Noise Figure	10 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	100 - 250 Volts AC, 50 - 60 Hz
Input power	20 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Dimensions	SL5800-S           20 x 20 x 40 cm SL5800-L           20 x 20 x 40 cm SL5800-XL         28 x 24 x 41 cm
Connections	Power               Terminal connectors Video               BNC connectors Data or audio       Terminal connectors
Life	15 Years
Routine maintenance	None required
Weight	SL5800-S           7.5 kg SL5800-L           7.5 kg SL5800-XL         9.5 kg
Mounting	Horizontal plate with M10 stud and M8 locking
RF Hazard	None (< 0.01 mW/sqcm average at antenna)

# Ogier Electronics

## Single Channel SL58-C Wireless Link

This licence exempt equipment is ideally suited for urban applications where transmission distance may be up to 1 km for the standard product. The high powered version provides a range up to 3 km for overseas applications. The equipment is easy to install with no set-up or adjustment other than selecting the operating channels. The unit incorporates a built-in signal strength meter and has user accessible rotary switches to allow a choice of 4 operating frequencies in either direction thereby maximising the probability of interference free operation.

The SL series of links transmit high quality video and data in the 5.8 GHz frequency band. They are small, lightweight and extremely cost effective. The video quality of these equipments is to broadcast levels. They are fully compatible with the ML3100 series of multichannel equipment, which allows them to be used in complete microwave CCTV networks.

**Licence Exempt**

**Low Latency for Real Time Operation**

**Broadcast Quality**

**Multiple operating channels**

**Up to 1km in the UK, 3km Overseas**

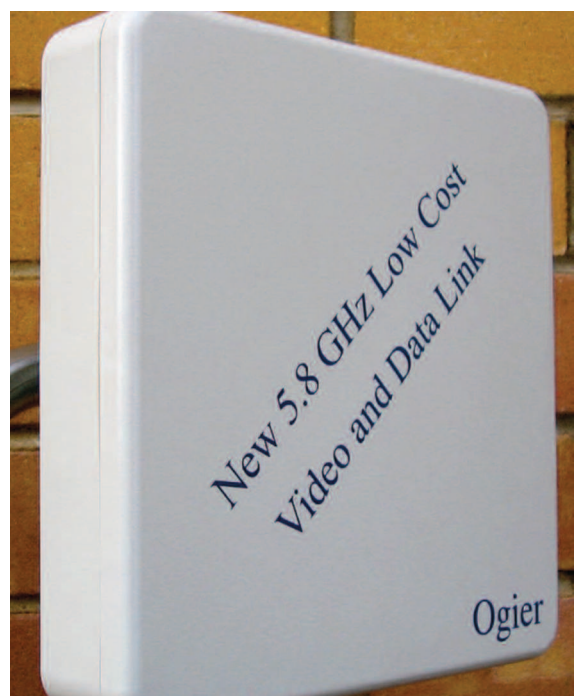
**PAL or NTSC**

**Choice of Antennas**

**Video and Data channels**

### Specification

RF Frequency Band	5.675 to 5.925 GHz
RF Output Power	3dBm in UK, 16dBm overseas
Frequency Stability	Phase locked to 10ppm
Number of Video Channels	1 in one direction
Number of Data Channels	1 in both directions
Number of operating Channels	4 in each direction
Range - all weathers	SL58-C 1 km SL58-HP-C 3 km
Availability	99.95%
Antenna Type	2 printed arrays
Antenna Gain	17 dBi
Video Inputs/Outputs	PAL or NTSC
Polarisation	Linear
Signal to Noise	45 dB
Modulation	Wideband FM
Tuner Bandwidth	20MHz
Data Inputs/Outputs	RS485 or 422 up to 38.4kbps
Input Voltage	12 Volts nominal (24V optional)
Input Power	15 Watts each end
Temperature Range	-20 to +60 deg C
Wind	Up to 200 kph
Dimensions (less sun shield)	Width 22 cm, Height 22 cm, Depth 5 cm
Connections	12 Volt Power, Video,Data
Routine maintenance	None required
Weight	5 kg with swivel bracket
RF Hazard	SL58-C Safe all distances SL58-HP-C Safe all distances outside main beam. Below 0.5 mW/sq cm at radome surface.



# Ogier Electronics

## Multichannel Microwave Links

The World class ML Series of equipment transmits up to 19 real time video or TV channels over ranges of up to 60 km.

The transmissions are full resolution colour to broadcast quality irrespective of the number of channels or the range.

### Applications

In CCTV and broadcast systems, the application is the transmission of video from many cameras simultaneously to a control room or studio, or the transmission from one control room to another.

In those cases where there is no line of sight from the cameras, the transmission can be via Single Channel links to a common collecting point where a Multichannel Link then combines and transmits all the videos to the control room.

In broadcast, there are also requirements to transmit from satellite terminals to studios and from studios to CATV head ends.

**Up to 19 real time Videos**

**Ranges to 80 km**

**Broadcast Quality**

**Upgradeable in Service**

**Bi-directional Data and Audio**

**High Reliability**

**No Maintenance**

**Low Purchase & Operating Cost**

### Benefits

The equipment is considerably easier, quicker and more cost effective to install than fibre optic cable. In many terrains it is the only viable option. Despite this, the video quality is equal to the best fibre systems.

The Multichannel capability enables all the signals to be transmitted using a single antenna at either end, so simplifying the installation and reducing the cost when compared to clusters of Single Channel equipment.

The system is modular and can be expanded in service to increase the number of video channels. There is no down time, waste or disruption.

The performance is such that many Multichannels can be co-located to enable reception from all directions simultaneously. Up to 2,000 videos can be received at a single point.



## Features

The system provides video quality to the highest outside broadcast standards. Multiple repeaters can be used to extend the range or to overcome obscuration without any discernible effects on the picture.

The equipment includes automatic gain and frequency controls in all the units and so avoids the need for any adjustment on installation or during its life.

The use of phase locked synthesisers and the latest MMIC technology enables operation in the harshest environments without any routine maintenance. This technology, together with 100% factory burn-in provides an unrivalled reliability record.

The system includes EMC protection to permit operation in the presence of other emitters including radars, cellular telephones and high power transmitters without mutual interference .

Built-in test with LEDs on all modules as standard.

## Options

Many options are available to enable the standard equipment to be configured to meet a range of different requirements.

Bi-directional video channels can be included in which multiple videos are transmitted in both directions. Additional data and audio channels can also be included.

Secure cut and rotate video encryption modules are available on any or all the video channels.

Enhanced performance options are available with appreciably higher specifications. Systems can be supplied for operation between -40C and +70C. Integrated digital alignment meters to aid installation, and built-in test can also be provided.

Different transmission frequencies are available to satisfy the Regulatory Authorities of most countries.

Ogier Electronics equipment is CE approved and is a supplier to major security and telecoms companies, local authorities, police, military and railway network operators world wide

## Specifications

Specification	MPT 1425 Applies
Frequency Band	31 GHz in UK 5 GHz outside UK
Stability	Phase Locked to 40 ppm
Polarisation	Vertical and Horizontal
Range	0 to 10 km in UK 0 to 60 km outside UK
Carrier to Noise	21 dB
Signal to Noise	55 dB
Carrier to interference	28 dB
Number of Channels	Up to 19 video + 1 data
Antenna Size	15 to 120 cm diameter
Availability	99.95%
Modulation	FM, 28 MHz Bandwidth
Inputs/Outputs	PAL & NTSC 5.6 MHz 1 Volt p-p Data RS485/422 to 64 Kbps Simplex, Half or Full Duplex Audio 600 Ohms RCA
Video Quality	3% Differential Gain 3 Deg Differential Phase 3% Bar Amplitude Error 3% C/L Gain Inequality 3% C/L intermodulation 75 nS C/L Delay 3% Bar Tilt 3% 2T K 3% 2T P/B
Options	Additional data and audio Bi-directional video Cut and rotate video encryption Enhanced video specifications Alignment meters and BITE pr ETS 300 339 (1984)
EMC specification	
Power	100 - 250 Volts AC, 50 - 60 Hz
Temperature range	-20 to +60 C
Wind	Up to 200 Kph
Dimensions	5km Transceivers 39 dia x 40cm 10km Transceivers 70 dia x 60cm 40km Transceivers 1.3 dia x 1.5m Mod/Demod 50 x 40 x 25cm
Fixings	To 10 cm diameter poles
Connections	Power, Video and Telemetry
Life	15 Years
Maintenance	None Required
RF Hazard	None safe at all distances



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## Ogier Electronics Multichannel ML3100 Links

The Multichannel ML3100 can transmit up to 19 video channels together with data or audio. The designators 30 or 60 indicate the antenna size in cm and HP indicates those equipment with high power transmitters to increase the range

Regulatory compliance	ETSI EN 300 632 and MPT 1425	
Number of video channels	Up to 19 in one direction	
Number of data or audio channels	1 in both directions as standard. Others can be added as options	
Frequency band	31.0 to 31.8 GHz	
Frequency stability	Phase locked to 30 ppm	
Range - all weathers	ML3100-30	2.5 km
	ML3100-HP-30	5 km
	ML3100-HP-60	10 km
Availability	99.95% (UK conditions)	
Antenna type (both ends)	Low sidelobe high performance Parabola	
Antenna size (both ends)	ML3100-30	30 cm diameter
	ML3100-HP-30	30 cm diameter
	ML3100-HP-60	60 cm diameter
Antenna gain (both ends)	ML3100-30	36 dBi
	ML3100-HP-30	36 dBi
	ML3100-HP-60	42 dBi
Transmit power	0 to +15 dBm shared between the channels	
Transmit EIRP	ML3100-30	36 dBm typical
	ML3100-HP-30	51 dBm typical
	ML3100-HP-60	57 dBm typical
Polarisation	Up to 10 chs	Vertical or horizontal
	Up to 19 chs	Vertical and horizontal
Receiver Noise Figure	6 dB	
Carrier to Noise	18 dB	
Signal to Noise	50 dB	
Carrier to Interference	30 dB	
Modulation	Wideband FM, 10.5 MHz deviation	
Pre-emphasis	Compliant with CCIR Rec 405-1	
Tuner bandwidth	27 MHz	
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm	
Video Quality	6% Differential Gain	
	6 Deg Differential Phase	
	6% Bar Amplitude Error	
	6% C/L Gain Inequality	
	6% C/L Intermodulation	
	75 nS C/L Delay	
	6% Bar Tilt	
	2% 2T K	
	6% 2T P/B	
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced	
Audio frequency response	50 to 10,000 Hz +/-3dB	
Audio Signal to Noise	50 dB	
Audio harmonic distortion	5% at 1 kHz and 0 dBm	
Input voltage	100 - 250 Volts AC, 50 - 60 Hz	
Input power	30 Watts each end	
Temperature Range	-20 to +60 C	
Wind	Up to 200 kph	
Equipment	Up to 10 chs	Transmit Transceiver and Modulator at video transmit end. Receive Transceiver and Demodulator at video receive end
	Up to 19 chs	Duplication of 10 channel build
Dimensions	ML3100-30 Transceiver	30 cm dia x 41 cm
	ML3100-HP-30 Transceiver	30 cm dia x 41 cm
	ML3100-HP-60 Transceiver	66 cm dia x 80 cm
	Modulator/Demodulator	50 x 40 x 22 cm
Connections	Power and Data/Audio	Terminal connectors in Modulator and Demodulator Units
	Video	BNC connectors in Modulator and Demodulator Units
	2 CT100 cables from each Modulator or Demodulator to its corresponding Transceiver	
Life	15 Years	
Routine maintenance	None required	
Weight	ML3100-30 Transceiver	15.5 kg
	ML3100-HP-30 Transceiver	16 kg
	mL3100-HP-60 Transceiver	42 kg
	Modulator/Demodulator	Up to 25 kg
Mounting	Transceivers	75 to 110 mm dia vertical pole
	Modulator/Demodulator	Wall
RF Hazard	None (< 0.05 mW/sqcm average at antenna)	

### Ogier Electronics Two Channel Compact ML3100-C2 Links

The ML3100-C2 is a compact two video channel link with a number of data and audio options. The designator HP indicates that high power transmitters are included to increase the range

Regulatory compliance	ETSI EN 300 632 and MPT 1425	
Number of video channels	2 in one direction	
Number of data or audio channels	1 in both directions with 1 optional extra channel	
Frequency band	31.0 to 31.8 GHz	
Frequency stability	Phase locked to 30 ppm	
Range - all weathers	ML3100-C2	2.4 km
	ML3100-HP-C2	4.0 km
Availability	99.95% (UK conditions)	
Antenna type (both ends)	High gain Lens Horn	
Antenna size (both ends)	15 cm diameter	
Antenna gain (both ends)	32 dBi	
Transmit power	0 to +15 dBm dBm shared between 2 channels	
Transmit EIRP	ML3100-C2	32 dBm typical
	ML3100-HP-C2	47 dBm typical
Polarisation	Vertical or horizontal	
Receiver Noise Figure	6 dB	
Carrier to Noise	18 dB	
Signal to Noise	50 dB	
Carrier to Interference	30 dB	
Modulation	Wideband FM, 10.5 MHz deviation	
Pre-emphasis	Compliant with CCIR Rec 405-1	
Tuner bandwidth	27 MHz	
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm	
Video Quality	6% Differential Gain	
	6 Deg Differential Phase	
	6% Bar Amplitude Error	
	6% C/L Gain Inequality	
	6% C/L Intermodulation	
	75 nS C/L Delay	
	6% Bar Tilt	
	2% 2T K	
	6% 2T P/B	
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced	
Audio frequency response	50 to 10,000 Hz +/-3dB	
Audio Signal to Noise	50 dB	
Audio harmonic distortion	5% at 1 kHz and 0 dBm	
Input voltage	100 - 250 Volts AC, 50 - 60 Hz	
Input power	35 Watts each end	
Temperature Range	-20 to +60 C	
Wind	Up to 200 kph	
Dimensions	20 x 20 x 40 cm	
Connections	Power	Terminal connectors
	Video	BNC connectors
	Data or audio	Terminal connectors
Life	15 Years	
Routine maintenance	None required	
Weight	9.5 kg	
Mounting	Horizontal plate with M10 stud and M8 locking	
RF Hazard	None (< 0.2 mW/sqcm average at antenna)	

January 2003 - Ogier Electronics reserve the right to alter this Specification without notification

## Ogier Electronics Two Channel Split Configuration ML3100-HP-2 Links

The Split configuration ML3100-HP-2 is a two video channel link comprising two units at either end. The designators 30 or 60 indicate the antenna size in cm and HP indicates that high power transmitters are included to increase the range

Regulatory compliance	ETSI EN 300 632 and MPT 1425
Number of video channels	2 in one direction
Number of data or audio channels	1 in both directions with 1 optional extra channel
Frequency band	31.0 to 31.8 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	ML3100-HP-2-30           10 km ML3100-HP-2-60           20 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	Low sidelobe high performance Parabola
Antenna size (both ends)	ML3100-HP-2-30           30 cm diameter ML3100-HP-2-60           60 cm diameter
Antenna gain (both ends)	ML3100-HP-2-30           36 dBi ML3100-HP-2-60           42 dBi
Transmit power	0 to +15 dBm shared between 2 channels
Transmit EIRP	ML3100-HP-2-30           51 dBm typical ML3100-HP-2-60           57 dBm typical
Polarisation	Vertical or horizontal
Receiver Noise Figure	6 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	100 - 250 Volts AC, 50 - 60 Hz
Input power	30 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Equipment	Transmit Transceiver and Modulator Base Unit at video transmit end. Receive Transceiver and Demodulator Base Unit at video receive end
Dimensions	ML3100-HP-2-30 Transceiver   30 cm dia x 41 cm ML3100-HP-2-60 Transceiver   66 cm dia x 80 cm Base Unit                           29 x 26 x 14 cm
Connections	Power                               Terminal connectors in Base Units Video                               BNC connectors in Base Units Data/Audio                       Terminal connectors in Base Units
Life	2 CT100 cables from Base Units to Transceivers 15 Years
Routine maintenance	None required
Weight	ML3100-HP-2-30 Transceiver   16 kg ML3100-HP-2-60 Transceiver   42 kg Base Unit                           9 kg
Mounting	Transceiver                       75 to 110 mm dia vertical pole Base Unit                         Wall
RF Hazard	None (< 0.05 mW/sqcm average at antenna)



## Ogier Electronics Multichannel ML3100-SEC Links

The Multichannel ML3100-SEC can receive up to 15 video channels together with data or audio from transmitters located over a 90 degree sector. It can transmit data and audio in the reverse direction.

Regulatory compliance	ETSI EN 300 632 and MPT 1425	
Number of video channels	Up to 15	
Number of data or audio channels	1 in both directions as standard. Others can be added as options	
Frequency band	31.0 to 31.8 GHz	
Frequency stability	Phase locked to 30 ppm	
Range - all weathers	2 km North West Europe with SL3100-HP-SC transmitters 4 km Middle East with SL3100-HP-SC transmitters	
Availability	99.95%	
Antenna type	16 patch planar array	
Antenna size	15 x 5 cm active area	
Antenna gain	19 dBi	
Transmit power	0 to +15 dBm	
Transmit EIRP	Up to 34 dBi	
Polarisation	Up to 8 channels	Vertical
	Up to 15 channels	Vertical and horizontal
Receiver Noise Figure	6 dB	
Carrier to Noise	18 dB	
Signal to Noise	50 dB	
Carrier to Interference	30 dB	
Modulation	Wideband FM, 10.5 MHz deviation	
Pre-emphasis	Compliant with CCIR Rec 405-1	
Tuner bandwidth	27 MHz	
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm	
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B	
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced	
Audio frequency response	50 to 10,000 Hz +/-3dB	
Audio Signal to Noise	50 dB	
Audio harmonic distortion	5% at 1 kHz and 0 dBm	
Input voltage	100 - 250 Volts AC, 50 - 60 Hz	
Input power	30 Watts	
Temperature Range	-20 to +60 C	
Wind	Up to 200 kph	
Equipment	Up to 8 chs	Receive Transceiver and Demodulator at video receive end
	Up to 15 chs	As above with additional Demodulator
Dimensions	Transceiver	40 x 40 x 41 cm
	Demodulator	50 x 40 x 22 cm
	Connections	Power and Data/Audio Terminal connectors in Demodulator Unit
	Video	BNC connectors in Demodulator Unit 2 CT100 cables from Transceiver to Demodulator
Life	15 Years	
Routine maintenance	None required	
Weight	Transceiver	15.5 kg
	Demodulator	Up to 25 kg
Mounting	Transceivers	75 to 110 mm dia vertical pole
	Modulator/Demodulator	Wall
RF Hazard	None (< 0.05 mW/sqcm average at antenna)	

## Ogier Electronics Multichannel ML500-120 Links

The Multichannel ML500-120 can transmit up to 16 video channels together with data or audio. The designator 120 indicates the antenna size in cm

Number of video channels	Up to 16 in one direction
Number of data or audio channels	1 in both directions as standard. Others can be added as options
Frequency band	4.4 to 5.0 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	60 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	High performance Parabola
Antenna size (both ends)	120 cm diameter
Antenna gain (both ends)	32 dBi
Transmit power	24 dBm shared between the channels
Transmit EIRP	56 dBm typical
Polarisation	Up to 8 chs                      Vertical or horizontal Up to 16 chs                    Vertical and horizontal
Receiver Noise Figure	4 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Video Encryption option	Line cut and rotate
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	100 - 250 Volts AC, 50 - 60 Hz
Input power	80 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Equipment	Up to 8 chs                      Antenna, Transmit Transceiver and Modulator at video transmit end. Antenna, Receive Transceiver and Demodulator at video receive end Up to 16 chs                    Duplication of 8 channel build except for Antennas
Dimensions	Antenna                            120x 120 x 120 cm Transceiver                      26 x 26 x 23 cm Modulator/Demodulator       50 x 40 x 22 cm
Connections	Power and Data/Audio        Terminal connectors in Modulator and Demodulator Units Video                              BNC connectors in Modulator and Demodulator Units 2 CT100 cables from each Modulator or Demodulator to its corresponding Transceiver N Type from each Transceiver to the Antenna
Life	15 Years
Routine maintenance	None required
Weight	Antenna                            60 kg Transceiver                      8 kg Modulator / Demodulator      Up to 25 kg
Mounting	Antenna and Transceiver      75 to 110 mm dia vertical pole Modulator / Demodulator      Wall
RF Hazard	None (< 0.4 mW/sqcm average at antenna)

### Ogier Electronics Two Channel Split Configuration ML500-2-30 Links

The Split configuration ML500-2-30 is a two video channel link comprising two units at either end. The designator 30 indicates the antenna size in cm

Number of video channels	2 in one direction
Number of data or audio channels	1 in both directions with 1 optional extra channel
Frequency band	4.4 to 5.0 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	15 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	High gain Lens Horn
Antenna size (both ends)	30 cm diameter
Antenna gain (both ends)	21 dBi
Transmit power	24 dBm shared between 2 channels
Transmit EIRP	45 dBm typical
Polarisation	Vertical
Receiver Noise Figure	4 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Video Encryption option	Line cut and rotate
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	100 - 250 Volts AC, 50 - 60 Hz
Input power	30 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Equipment	Transmit Transceiver and Modulator Base Unit at video transmit end. Receive Transceiver and Demodulator Base Unit at video receive end
Dimensions	Transceiver 44 x 36 x 33 cm Base Unit 29 x 26 x 14 cm
Connections	Power Terminal connectors in Base Units Video BNC connectors in Base Units Data/Audio Terminal connectors in Base Units 2 CT100 cables from Base Units to Transceivers
Life	15 Years
Routine maintenance	None required
Weight	Transceiver 14 kg Base Unit 8 kg
Mounting	Transceiver Horizontal plate with M10 stud and M8 locking nut and bolt Base Unit Wall
RF Hazard	None (< 0.4 mW/sqcm average at antenna)

### Ogier Electronics Two Channel ML500-2-60 Links

The Two Channel ML500-2-60 can transmit 2 video channels together with 2 channels of data or audio. The designator 60 indicates the antenna size in cm

Number of video channels	2 in one direction
Number of data or audio channels	2 in both directions as standard
Frequency band	4.4 to 5.0 GHz
Frequency stability	Phase locked to 30 ppm
Range - all weathers	60 km
Availability	99.95% (UK conditions)
Antenna type (both ends)	High performance Parabola
Antenna size (both ends)	60 cm diameter
Antenna gain (both ends)	26 dBi
Transmit power	24 dBm shared between the channels
Transmit EIRP	50 dBm typical
Polarisation	Vertical
Receiver Noise Figure	4 dB
Carrier to Noise	18 dB
Signal to Noise	50 dB
Carrier to Interference	30 dB
Modulation	Wideband FM, 10.5 MHz deviation
Pre-emphasis	Compliant with CCIR Rec 405-1
Tuner bandwidth	27 MHz
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm
Video Quality	6% Differential Gain 6 Deg Differential Phase 6% Bar Amplitude Error 6% C/L Gain Inequality 6% C/L Intermodulation 75 nS C/L Delay 6% Bar Tilt 2% 2T K 6% 2T P/B
Video Encryption option	Line cut and rotate
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced
Audio frequency response	50 to 10,000 Hz +/-3dB
Audio Signal to Noise	50 dB
Audio harmonic distortion	5% at 1 kHz and 0 dBm
Input voltage	12 or 24 Volts DC
Input power	25 Watts each end
Temperature Range	-20 to +60 C
Wind	Up to 200 kph
Equipment	Antenna, Transmit Transceiver and Modulator at video transmit end. Antenna, Receive Transceiver and Demodulator at video receive end
Dimensions	Antenna 60cm x 60cm x 60 cm Transceiver 26 x 26 x 23 cm Modulator/Demodulator 50 x 40 x 22 cm
Connections	Power and Data/Audio Terminal connectors in Modulator and Demodulator Units Video BNC connectors in Modulator and Demodulator Units 2 CT100 cables from each Modulator or Demodulator to its corresponding Transceiver N Type from each Transceiver to the Antenna
Life	15 Years
Routine maintenance	None required
Weight	Antenna 16 kg Transceiver 8 kg Modulator / Demodulator Up to 25 kg
Mounting	Antenna and Transceiver 75 to 110 mm dia vertical pole Modulator / Demodulator Wall
RF Hazard	None (< 0.4 mW/sqcm average at antenna)

## Ogier Electronics Multichannel ML500-60 Links

The Multichannel ML500-60 can transmit up to 10 video channels together with data or audio. The designator 60 indicates the antenna size in cm

Number of video channels	Up to 10 in one direction	
Number of data or audio channels	1 in both directions as standard. Others can be added as options	
Frequency band	4.4 to 5.0 GHz	
Frequency stability	Phase locked to 30 ppm	
Range - all weathers	15 km	
Availability	99.95% (UK conditions)	
Antenna type (both ends)	High performance Parabola	
Antenna size (both ends)	60 cm diameter	
Antenna gain (both ends)	26 dBi	
Transmit power	24 dBm shared between the channels	
Transmit EIRP	50 dBm typical	
Polarisation	Vertical	
Receiver Noise Figure	4 dB	
Carrier to Noise	18 dB	
Signal to Noise	50 dB	
Carrier to Interference	30 dB	
Modulation	Wideband FM, 10.5 MHz deviation	
Pre-emphasis	Compliant with CCIR Rec 405-1	
Tuner bandwidth	27 MHz	
Video inputs/outputs	PAL or NTSC 5.6 MHz 1Volt 75 ohm	
Video Quality	6% Differential Gain	
	6 Deg Differential Phase	
	6% Bar Amplitude Error	
	6% C/L Gain Inequality	
	6% C/L Intermodulation	
	75 nS C/L Delay	
	6% Bar Tilt	
	2% 2T K	
	6% 2T P/B	
Video Encryption option	Line cut and rotate	
Data inputs/outputs	Either, RS 485, 422 or 232 at 19.2 kbps Simplex, half duplex or full duplex. Other options available	
Audio option (instead of data)	0 dBm in 600 Ohms balanced or unbalanced	
Audio frequency response	50 to 10,000 Hz +/-3dB	
Audio Signal to Noise	50 dB	
Audio harmonic distortion	5% at 1 kHz and 0 dBm	
Input voltage	100 - 250 Volts AC, 50 - 60 Hz	
Input power	30 Watts each end	
Temperature Range	-20 to +60 C	
Wind	Up to 200 kph	
Equipment	Antenna, Transmit Transceiver and Modulator at video transmit end. Antenna, Receive Transceiver and Demodulator at video receive end	
Dimensions	Antenna	60cm x 60cm x 60 cm
	Transceiver	26 x 26 x 23 cm
	Modulator/Demodulator	50 x 40 x 22 cm
Connections	Power and Data/Audio	Terminal connectors in Modulator and Demodulator Units
	Video	BNC connectors in Modulator and Demodulator Units
		2 CT100 cables from each Modulator or Demodulator to its corresponding Transceiver
		N Type from each Transceiver to the Antenna
Life	15 Years	
Routine maintenance	None required	
Weight	Antenna	16 kg
	Transceiver	8 kg
	Modulator / Demodulator	Up to 25 kg
Mounting	Antenna and Transceiver	75 to 110 mm dia vertical pole
	Modulator / Demodulator	Wall
RF Hazard	None (< 0.4 mW/sqcm average at antenna)	

# Ogier Electronics

## ESL3100-SC Link SuperCompact Ethernet Wireless Bridge

### High Performance Ethernet Link

The SuperCompact Ethernet point-to-point Wireless Bridge/Repeater is one of a range of Ethernet based radio's from Ogier Electronics.

Operating in the 31 GHz band, with a field selectable choice of 16 separate operating channels, the links provide guaranteed interference free operation with high performance over ranges in excess of 8 km using built-in antennas.

The equipment is particularly suited to use in professional, high-end IP CCTV networks where guaranteed operation is demanded.

Based on the proven and rugged video links sold by Ogier all over the world, this compact equipment features IP66 sealing, heatsinks and optional sunshields to allow long-life operation even in the harshest environments.

### Technology

The Ogier SuperCompact Ethernet Link is based on 802.11g radio but operates in the interference free and uncluttered 31 GHz band. The equipment features data-rates up to 54 Mbps in standard mode and incorporates configurable features such as real-time data compression, superpacketisation and packet bursting for enhanced throughput. A range of encryption features for transmission security is also provided

Utilising built-in, flat-plate, narrow beamwidth antennas and with 16 user selectable frequencies to choose from, it allows for a high density of installation.

The link is fitted with a built in LCD alignment meter and it includes a 100 Mbps full-duplex auto cross-over Ethernet interface.

Two versions are available, a standard link and a high power link which is fitted with a Power Amplifier where extended range operation is required.



### Technical Specification

Frequency Band:	31.0 – 31.3 GHz paired with 31.5 – 31.8 GHz	
Transmit Power:	To +12 dBm without P.A To +18 dBm with P.A	
Operating Channels:	1 of 16 field selectable	
Frequency Stability:	<1ppm	
Antenna:	Flat plate, 4 deg beam	
Range vs data-rate based on UK rain-fade:		
	<u>No P.A</u>	<u>With P.A</u>
48 Mbps	min 1.5 km	min 2.1 km
24 Mbps	min 3.0 km	min 4.0 km
12 Mbps	min 4.2 km	min 5.5 km
6 Mbps	min 5 km	min 6.9 km
Security:	WEP, AES, TKIP, WPA	
Power:	24 Vdc nominal, 20 Watts	
Temperature Range:	-20 to +60 deg C	
Connections:	Buccaneer Ethernet Buccaneer 4-way DC connector	
Dimensions:	326x185x120mm inc sunshield	
Weight:	6.75 kg with sunshield	

**About Ogier:** Ogier Electronics Ltd is a UK based company that has designed and made high end Radio and Microwave equipment for CCTV, Broadband and Military users for over 15 Years. Selling into markets all over the world, Ogier also now acts as a system integrator for large and complex surveillance and telecom projects

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# Ogier Electronics

## EXSL3100

### Long Range 31 GHz Wireless Bridge

#### High Performance long-range 31 GHz Ethernet Link

The Long Range 31 GHz Ethernet point-to-point Wireless Bridge/Repeater is one of a range of Ethernet based radio's from Ogier Electronics.

Operating in the 31 GHz band, with a field selectable choice of 16 separate operating channels, the links provide guaranteed interference free operation over ranges up to in excess of 15 km using narrow beam, high discrimination dish antennas.

The equipment is particularly suited to use in professional, high-end IP CCTV networks where guaranteed operation is demanded.

Based on the proven and rugged video links sold by Ogier all over the world, this compact all-outdoor equipment features IP66 sealing, heatsinks and optional sunshields to allow long-life operation even in the harshest environments.

#### Technology

The Ogier point-to-point Long Range Ethernet Link is based on 802.11g radio but operates in the interference free and uncluttered 31 GHz band. The equipment features data-rates up to 54 Mbps in standard mode and incorporates configurable features such as real-time data compression, superpacketisation and packet bursting for enhanced throughput.

Utilising narrow beamwidth 30 or 60 cm dish antennas and with 16 user selectable frequencies to choose from, it allows for very a high density of installation.

The link is fitted with built in LCD alignment meters and includes a 100Mbps full-duplex auto cross-over Ethernet interface.

Two versions are available, a standard link or a high power (HP) link which is fitted with a Power Amplifier for extended range operation. Either version can be fitted with 30 or 60cm dish antennas again depending in the range required.



#### Preliminary Technical Specification

Frequency Band:	31.0 – 31.3 GHz paired with 31.5 – 31.8 GHz
Transmit Power:	To +12 dBm without P.A To +18 dBm with P.A
Operating Channels:	1 of 16 field selectable
Frequency Stability:	<1ppm
Antennas:	30 or 60 cm dish
Beamwidths:	2 or 1 deg (to 3 dB points)
Typical range vs selected data-rate based on UK rain-fade for HP links using 60cm dishes:	
48 Mbps	up to 8 km
24 Mbps	up to 11 km
12 Mbps	up to 14 km
6 Mbps	up to 16 km
Security:	WEP, AES, TKIP, WPA
Power:	24 Vdc nominal, 20 Watts
Temperature Range:	-20 to +60 deg C
Connections:	Buccaneer Ethernet Buccaneer 4-way DC connector
Weight:	<25 kg including pole mount brackets and sunshields

**About Ogier:** Ogier Electronics Ltd is a UK based company that has designed and made high end Radio and Microwave equipment for CCTV, Broadband and Military users for over 15 Years. Selling into markets all over the world, Ogier also now acts as a system integrator for large and complex surveillance and telecom projects

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# Ogier Electronics

## ESL2400 P-P Point-to-Point 24 GHz Link

The Ogier ESL2400 Ethernet wireless link has been designed to provide low latency wireless Ethernet connectivity for digital data, including I/P surveillance cameras in large-scale deployments. The ESL2400 provides a reliable, robust and cost effective solution for the transmission of CCTV IP video in point to point and point to multipoint configurations.

The system uses the 24 GHz licence-free band and proven design technology that is in service in a number of countries around the world. It is entering production and operational use with operators under all weather conditions and terrains. Although the equipment is aimed primarily at wide area CCTV Surveillance Systems, it can also be used for many other applications. These include E1 and T1 using multiplex equipment from established manufacturers.

The most important feature of the system is its compatibility with IPv4 and IPv6 the world standard for IP data transmission over fibre. The ESL2400 wireless solution is transparent and behaves identically to fibre.

Because of this, the system gives operators the opportunity to select the correct mix of peripheral equipment without being tied to a single supplier.

**Low Cost**

**No Interference**

**High Performance**

**Licence Exempt**

**Easy to Install**

**High Reliability**

**Flexible Configurations**

**Open Standard Interface**

### Preliminary Technical Specification

Frequency Band	UK	24.15 - 24.25 GHz
	Export	24.00 - 24.25 GHz
Transmit EIRP	UK	20 dBm
	Export	Up to 60 dBm
Channel Bandwidth		5,10 or 20 MHz
Frequency Stability		<1ppm
Antennas		Internal flat-plate or 30 cm / 60 cm dishes
Beamwidths		Flat-plate <5 deg 30 cm dish <3 deg 60 cm dish <2 deg
Operating Range	UK	>5 km P2P
	Export	>20 km P2P
Raw data-rates		To 54 Mbps
Security		WEP, AES, TKIP, WPA
Power		P.O.E.
Temperature Range		-20 to +60 deg C
Connections		Buccaneer Ethernet





# Ogier Electronics

## ESL2400 P-M-P Point-to-MultiPoint 24 GHz Link

### Low Cost

Scalable system from one or two transceivers to large, citywide installations. The infrastructure cost is committed as required, resulting in a system for future expansion. The low cost growth in capacity results in an affordable system for users to replace leased fibre links as well as users in the transport and industrial sectors.

### High Performance

Compared to other licence-free equipments the 24 GHz system offered by Ogier provides robust and reliable data connection combined with greater security from interference due to the use of the high frequency.

### High Availability

The specifications for the 24 GHz equipments give 99.99% availability assuming UK rain-fade statistics. In practice this yields a high system availability worldwide.

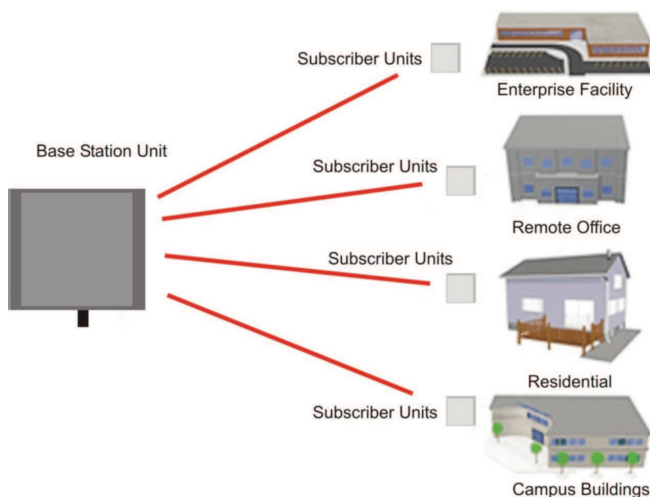
### Flexible Configurations

The equipment is designed for simple ease of installation. In areas with ranges of less than 1 km and with a high number of cameras within a 90-degree sector, the Point to Multipoint provides a truly cost effective solution. Export equipments offer increased ranges of 2 km or more. The average data rate from each camera is 1 Mbps, and videos from up to 10 cameras can be received in the common receiver. For greater than 10 cameras, or with wider coverage exceeding 90 degrees, further sector access points are installed at the Collector Point.

For example an overseas system includes over 400 cameras taken back to nine collector points. These signals are transmitted via a high capacity microwave link, to 4 sub control rooms and a main control room. The high degree of flexibility allows ease of operation over large areas.

### Overview

This equipment is ideally suited to the “first-hop” role in CCTV networks or for data distribution around large sites such as hospitals and universities. It provides sufficient capacity without being over-engineered or too complex. The equipment uses industry standard 802.11g protocol to provide high performance characteristics over ranges up to 2 km using built-in antennas.



Total Data per channel	54 Mbps
Usable Data per channel	25 Mbps
Bandwidth/channel	20 MHz
Total Bandwidth	200 MHz
Total Channels	10
Total Usable Data per sector	250 Mbps
With 4 x 90-degree sectors	1Gb

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