

## Datasheet

# TereScope® 5000



TereScope® 5000

### Overview

The Carrier class TereScope® 5000 provides high-speed Free Space Optics (FSO) connectivity for a variety of last-mile applications. Operating at data rates of 1 Mbps to 155 Mbps, TereScope® 5000 systems are deployable rapidly, without requiring right-of-way or government permits for installation, providing you with communication links in hours instead of weeks or months.

### Removable power supply

One of the features of the TereScope 5000 is its modular power supply that can be field removed and replaced. No need for dismounting the whole device and taking it to repair, losing time and money - the power supply can be replaced instantly on site.

### Performance

The TereScope® 5000 provides 1 Mbps to 155 Mbps wire speed connectivity for distances of up to 5.5 km.

### Reliability

TereScope® 5000 systems are extremely reliable with an MTBF (Mean Time Between Failures) of more than 10 years.

### Technology

TereScope® 5000 uses multiple transmit aperture technology (3 transmitters) to ensure high performance in adverse weather conditions. The receiver of the long-range TereScope® 5000 has an 8" diameter to overcome scintillation and other atmospheric noises in hot or cold weather.

### Heating

TereScope® 5000 is equipped with our special internal air circulation feature, based on dissipation of the power supply heat. This prevents the formation of condensation on the lenses under all weather conditions without the need for additional heating at low temperatures.

### Safety

MRV offers this equipment based on low power lasers. TereScope® 5000 is eye and skin safe at the aperture and complies with eye safety Class 1M.

### Features

- Carrier Class
- Accommodates 1 to 155 Mbps networks, for protocols such as E3/T3, Fast Ethernet, FDDI, OC-3, ATM and STM-1
- Distances up to 5.5 km
- Fast deployment
- Supports multiple protocols
- License-free operation
- Visual and receive power measurement alignment functionality
- Remote management options
- Connection to dry contact box (RSM-DC) - optional
- Weatherproofing: IP66
- Secure transmission
- Eyes safety Class 1M
- Modular Power Supply
- Chain multiple connections

### Applications

- Last-mile connectivity
- Mesh networking
- LAN/MAN environments
- Temporary or permanent installation
- Cross Border Links
- Disaster Recovery

### SNMP Management

TereScope® 5000 is fully managed by using the SNMP option. SNMP monitoring can be done via MegaVision Web®, MRV's SNMP Element Management web-based system or any other SNMP browser.

### Dry Contacts

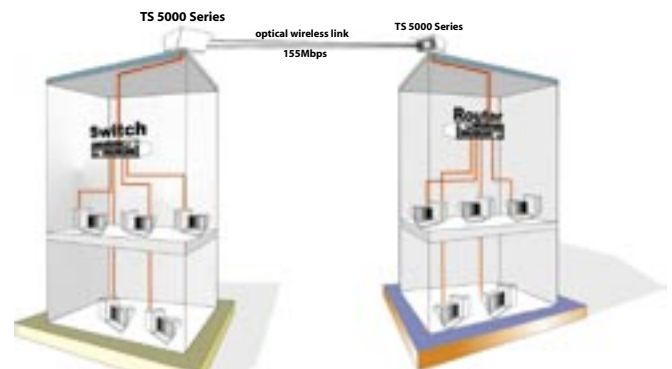
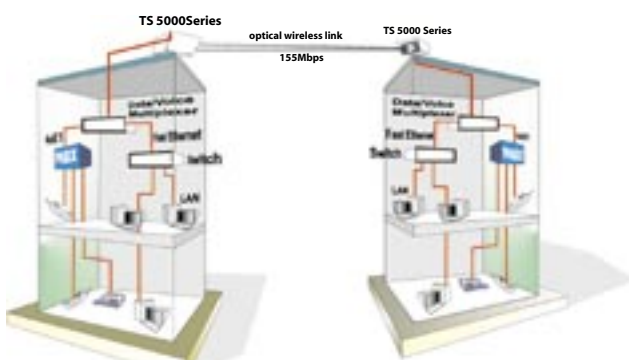
TereScope® 5000 can be equipped with a dry contact option that enables interfacing to dry contacts based local and remote management and monitoring systems.

### TereScope® Fusion (option for TS155 PS)

Maximizing Link Availability in ALL Weather Conditions

TereScope Fusion option was designed to combine the best features of two transport media, laser light and radio waves, to form a single, seamless, unlicensed wireless communication link between network devices. By leveraging both technologies, we can provide the 99.999% availability that your network requires.

The TereScope Fusion option consists of a TereScope® 5000 system with a built-in link redundancy option with an optical wireless link that provides Fast Ethernet connectivity as the primary link and Ethernet RF (802.11b) as the backup link.



### Technical Specifications: TereScope 5000

MODEL/ PROD CODE	TS155/G/XXX/V* or TS155/G/XXX/F*	
Applications/ Data Protocol	Fast Ethernet, ATM, OC3, STM1, E3, T3, OC1/STM0 & Open Protocol	
Performance	Rate	1-155 Mbps
	Range <sup>(1)</sup>	
	@ 3 dB/km	5500 m
	@ 5 dB/km	4100 m
	@10 dB/km	2700 m
	@17 dB/km	1850 m
	@30 dB/km	1200 m
Minimum Range	1000 m	
Bit error rate	Less than 1E - 12 (unfaded)	
MTBF	more than 10 years	
Transmitter	Light source	3 x Lasers
	Wavelength	830 - 860 nm
	Total Output power	100 mW
	Beam divergence	2 mrad
Receiver	Detector	Silicon Photodiode
	Field of view	5 mrad
	Sensitivity	-46 dBm
Interface	Type	Fiber Optic Transceiver - Multimode (Singlemode available upon request)
	Connectors	SC (other connectors available)
	Wavelength	1300 nm (other wavelength available)
	Output power	-17 ± 3 dBm
	Receiver operating range	-14 to -30 dBm
Power Supply	Voltage range	Factory set: 100 - 240 VAC @50/60 Hz or 24-60 VDC
	Power consumption	22 W
Environmental Information	Operating temperature	-20° C to +50° C
	Storage temperature	-50° C to +70° C
	Humidity	95% non-condensing
	Housing	Weatherproofing: IP66
	Eye safety Class	1M
Mechanical Design	Dimensions (mm)	822 x 384 x 526
	Weight	9 kg
	Accessories	18 kg
Diagnostics	Indicators	Airlink: Flag, Sync., Fiber Optic: Flag, Sync. Alignment, Loopback, Receive Signal Strength (Digital Display), Lasers status (3 LEDs)
	Selectors	Data Rate, Alignment, Loopback (local)
Management	SNMP protocol - Built-in	
Standards Compliance	Jitter Specifications proposed for SONET/SDH equipment defined by the Bellcore Specifications: GR-253-CORE, Issue 2, December 1995 and ITU-T Recommendations: G.958 document. Typical Applications: OC-1, STS-3, ATM, FDDI, E3, Fast Ethernet etc... EN50081-1: 1991; EN50082-1: 1998; EN55022: 1997; EN61000-4-2: 1995; EN61000-4-3: 1995; EN61000-4-4: 1995; EN61000-4-5: 1995; ENV50142; EN61000-4-6: 1996/ENV50141; EN61000-4-8: 1993; EN61000-4-11: 1994; EN61000-3-2: 1995; IEC950, 1991, A1, A2, A3, A4; EN60950, 1992, A1, A2, A3, A4, A11; FCC part 15 Class A; UL1950, 3rd Edition (1995); CSA22.2, No.950 (1995); weather proofing IP66	
<sup>(1)</sup> @ 3 dB/km = Light rain (5-10 mm/hr) - Light haze @ 5 dB/km = Light to medium rain (15-20 mm/hr) - Haze @ 10 dB/km = Medium to heavy rain (45 mm/hr) - Light snow - Thin fog @ 17 dB/km = Cloudburst (100 mm/hr) - Medium snow - Light fog @ 30 dB/km = Rain (up to 180 mm/hr) - Blizzard - Moderate fog		

Product	Description
<b>TS155/G/M3C/V*</b>	TereScope 5000/155, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (MM 1310nm, DSC). SNMP-RSM included, Power supply VS or V3*.
<b>TS155/G/S3C/V*</b>	TereScope 5000/155, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1310nm, DSC). SNMP-RSM included, Power supply VS or V3*.
<b>TS155/G/M3T/V*</b>	TereScope 5000/155, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1310nm, DST). SNMP-RSM included, Power supply VS or V3*.
<b>TS155/G/S5C/V*</b>	TereScope 5000/155, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1550nm, DSC). SNMP-RSM included, Power supply VS or V3*.
<b>TS155/G/M3C/F*</b>	TereScope 5000/155F, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (MM 1310nm, DSC). SNMP-RSM and built-in Fusion option included, Power supply FS or F3*.
<b>TS155/G/S3C/F*</b>	TereScope 5000/155F, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1310nm, DSC). SNMP-RSM and built-in Fusion option included, Power supply FS or F3*.
<b>TS155/G/S3T/F*</b>	TereScope 5000/155F, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1310nm, DST). SNMP-RSM and built-in Fusion option included, Power supply FS or F3*.
<b>TS155/G/S5C/F*</b>	TereScope 5000/155F, 8 inch receiver Free Space Optics 5400m, Open Protocol 1-155Mbps, Selectable Protocols 34-155Mbit/s, visual alignment (SM 1550nm, DSC). SNMP-RSM and built-in Fusion option included, Power supply FS or F3*.

VS or FS: High voltage: 100 - 240 VAC  
 V3 or F3: Low voltage: 24 - 60 VDC

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