



SPECTRONITE S10

with **LinkProtect**

Superior capacity & unprecedented robustness

High-performance split-mount system

Optimal Tx power

Dynamic Channel Management



PRODUCT DATASHEET

v3.0 January 2017

SPECTRONITE S10

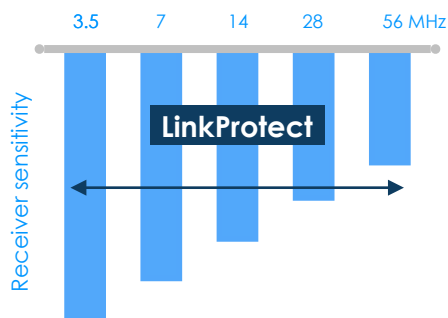
A breakthrough in microwave transmission

With the growing demand for wireless backhaul capacity, usage of advanced modulation is spreading and wider channels are becoming more popular. As a result, transmission is getting more sensitive to fading and network reliability is strongly affected.

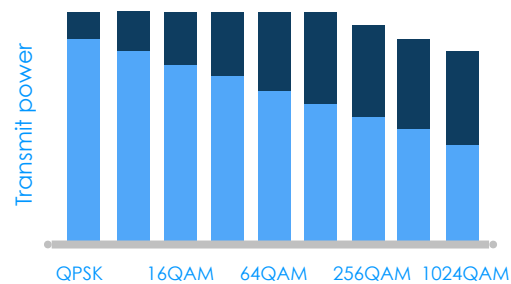
Spectronite S10 brings revolutionary innovations to fight against the side-effect of high-capacity transmission.

With LinkProtect technology, microwave links get more robust than ever before. Extending power control and adaptive modulation, LinkProtect enables a full dynamic management of the transmission channel, resulting in the strong improvement of the overall link sensitivity.

Planning a network with LinkProtect provides unprecedented fade margin to reach aggressive availability figures, while keeping antenna size at the lowest.



LinkProtect provides a strong improvement of sensitivity when transmitting in wider channels.



Optimized transmit power provides superior fade margin and makes higher modulation truly usable.



Superior capacity

over 500Mbps average Ethernet throughput per channel with 1024QAM modulation and Ethernet header compression.

High modulation you can truly use

high-transmit power is available at all modulation steps, providing superior availability at maximum link speed and reduction of antenna size.

Spectral efficiency for all channels

support for 512QAM and 1024QAM modulations in narrow bands of 3.5, 7 or 14 MHz change the economics of licensing spectrum for last mile interconnection.

TDM legacy

provides connectivity through legacy TDM networks through E1/DS1

Service oriented platform

hierarchical QoS, advanced VLAN management and per port Ingress & Egress rate shaping for rapid service provisioning down to the network edge.



RADIO

Frequency bands

6, 7, 8, 11, 13, 15, 18, 23, 26, 28, 32, 38, 42 GHz

Channel bandwidth

3.5 MHz - 56 MHz, all ETSI and ANSI channels

Modulation

1024QAM, 512QAM, 256QAM, 128QAM, 64QAM, 32QAM, 16QAM, 8QAM, QPSK

Radio protection

- LinkProtect technology for dynamic channel management
- Adaptive coding and modulation (ACM)
- Adaptive power control (ATPC)
- 1+1

Transmit power

- Dynamic distortion compensation for higher power at all modulation orders
- Up to 35 dBm with full-Indoor Unit
- Up to 30 dBm with high power outdoor radio

ETHERNET

L2 switching

- Maximum MAC addresses: 8192
- Jumbo frames: 10240 bytes
- Number of VLANs: 4096
- Port-based VLAN, 802.1Q VLAN
- Link aggregation*
- IEEE 802.3: 10BASE-T
- IEEE 802.3u: 100BASE-T
- IEEE 802.3ab: 1000BASE-T
- IEEE 802.3z: 1000BASE-X
- IEEE 802.3ac: Ethernet VLANs
- IEEE 802.1Q: VLAN tagging
- IEEE 802.1Q: Trunk Interconnect
- IEEE 802.3x: Pause Frames/Flow control
- IEEE 802.1w: Rapid Spanning Tree Protocol (RSTP)*

Quality of Service

- Port Priority
- IEEE802.1p/IEEEtag
- IPv4 DiffServ
- TC
- MAC

Synchronisation

IEEE-1588 TC*

MECHANICAL

Dimensions

- S10 IDU
Height: 43,7 mm (1RU)
Width: 218 mm
Depth: 185 mm
- S10 ODU
Height: 275 mm
Width: 225 mm
Depth: 60 mm

Weight

- S10 IDU: 1.6 kg
- S10 ODU: < 3 kg

Mounting options

- 19 in. or ETSI rack mount
- single or dual unit mount (side by side) in 1RU
- wall mount

ELECTRICAL

Power consumption

- S10 IDU: 15W max.
- S10 ODU: 35W max.

Power supply

-48 V (-36.0 V to -59.0 V), DC power
100 V - 240 V AC power as an option

THROUGHPUT

Ethernet throughput

575 Mbps max. bi-directional / full-duplex
(with Header Compression over 64B only traffic)

Air interface throughput

466 Mbps max. bi-directional / full-duplex

Ethernet Ports

Per port Ingress rate shaping
Per port Egress rate shaping

Latency

50 to 180 µsec depending on traffic type

CONNECTIVITY

Ethernet interface

- 4x 10/100/1000BASE-T Ethernet ports type RJ-45
- 1x 1000BASE-X SFP fiber port
- 1x E1/DS1 port (optional) type RJ-45
- EOW Engineering Order Wire through IP Phone (optional)

Radio

female TNC connector

Local console

USB Type B Jack

Power

2 pins with tear protection

TDM

E1/DS1 Interface

- E1 2.048 Mb/s 120 Ohm balanced
- DS1 1.554 Mb/s 100 Ohm balanced
- SAToP (RFC4553)
- Jitter and wander compliant to MEF18, ITU-T G.8261 and G.823

MANAGEMENT

Management modes

- In-band (local and remote)
- Out-of-band through dedicated port
- VLAN based management (local and remote)
- Local (console)
- Integrated SNMP agent

Remote management

SNMPv1/v2c

Alarms

- Multi-level logs activation option
- Remote logging to Syslog server
- User-defined criticality settings

ENVIRONMENTAL

Operation temperature

- S10 IDU: -5°C to +55°C
- S10 ODU: -33°C to +55°C
ETSI 300 019-2-4 Class 4M5

Humidity

0 to 100% non condensing

ANTENNAS & COUPLERS

Diameters

1/2, 2/3, 1, 1.5, 2, 3, 4, 5, 6 ft.
direct or remote mount

Couplers

- 3dB, 6dB or 10dB single polarised 1+1 hybrid couplers
- Orthomode transducer for dual-polarisation operation

Mounting Pole

ø51 to ø114 mm

CERTIFICATIONS

Spectrum

EN 302 217-2-2

EMC

EN 301 489-1, EN 301 489-4

Safety

EN 60950-1

Surge

EN61000-4-5, Class 4

Storage

ETSI EN 300 019-1-1 Class 1.2

Transportation

ETSI EN 300 019-1-2 Class 2.3

Maximum transmit power (dBm)					
Frequency	6 - 8 GHz	11 GHz	13 - 18 GHz	23 - 26 GHz	28 - 42 GHz
QPSK	30	28	26	25	23
8QAM	30	28	26	25	23
16QAM	30	28	26	25	23
32QAM	30	28	26	25	23
64QAM	30	28	26	25	23
128QAM	29	26	25	24	22
256QAM	28	25	24	23	21
512QAM	27	24	23	22	20
1024QAM	26	23	22	21	19

Air interface throughput (Mbps)							
	56 MHz	40 MHz	28 MHz	20 MHz	14 MHz	7 MHz	3.5 MHz
QPSK	93	67	47	33	23	11	6
8QAM	140	100	70	50	35	17	8
16QAM	186	133	93	67	47	22	11
32QAM	233	166	116	83	58	28	14
64QAM	279	200	140	100	70	34	17
128QAM	326	233	163	116	81	39	20
256QAM	372	266	186	133	93	45	22
512QAM	419	299	210	150	105	50	25
1024QAM	466	333	233	166	116	-	-

Maximum Ethernet throughput (Mbps)							
	56 MHz	40 MHz	28 MHz	20 MHz	14 MHz	7 MHz	3.5 MHz
QPSK	115	82	58	41	29	14	7
8QAM	173	124	86	61	43	21	10
16QAM	230	164	115	82	58	28	14
32QAM	288	206	144	103	72	35	17
64QAM	345	246	173	124	86	41	21
128QAM	403	288	201	144	101	48	24
256QAM	460	329	230	164	115	55	28
512QAM	518	370	259	185	129	62	31
1024QAM	575	411	288	206	144	-	-

Receiver sensitivity (dBm @ BER 10⁻⁶) for channel bandwidth of 3.5 MHz

Frequency	6	7	8	13	15	18	23	26	28	32	38	42
QPSK	-95.0	-94.5	-94.5	-94.0	-93.0	-94.5	-93.5	-93.0	-93.0	-92.5	-92.0	-92.0
8QAM	-90.5	-90.0	-90.0	-89.5	-88.5	-90.0	-89.0	-88.5	-88.5	-88.0	-88.0	-88.0
16QAM	-88.5	-88.0	-88.0	-87.0	-86.5	-88.0	-87.0	-86.5	-86.5	-85.5	-85.5	-85.5
32QAM	-85.0	-84.5	-84.5	-83.5	-83.0	-84.5	-83.5	-83.0	-83.0	-82.0	-82.0	-82.0
64QAM	-82.0	-81.5	-81.5	-80.5	-80.0	-81.5	-80.5	-80.0	-80.0	-79.0	-79.0	-79.0
128QAM	-78.5	-78.0	-78.0	-77.5	-77.0	-78.0	-77.0	-76.5	-76.5	-76.0	-76.0	-76.0
256QAM	-75.5	-75.0	-75.0	-74.5	-74.0	-75.0	-74.0	-73.5	-73.5	-73.0	-73.0	-73.0
512QAM	-73.0	-72.5	-72.5	-72.0	-71.5	-72.5	-72.0	-71.5	-71.5	-70.5	-70.5	-70.5
1024QAM	-	-	-	-	-	-	-	-	-	-	-	-

Receiver sensitivity (dBm @ BER 10⁻⁶) for channel bandwidth of 7 MHz

Frequency	6	7	8	13	15	18	23	26	28	32	38	42
LinkProtect	-95.0	-94.5	-94.5	-94.0	-93.0	-94.5	-93.5	-93.0	-93.0	-92.5	-92.0	-92.0
QPSK	-92.5	-92.0	-92.0	-91.5	-90.5	-92.0	-91.0	-90.5	-90.5	-90.0	-90.0	-90.0
8QAM	-88.0	-87.5	-87.5	-87.0	-86.0	-87.5	-86.5	-86.0	-86.0	-85.5	-85.5	-85.5
16QAM	-86.0	-85.5	-85.5	-84.5	-84.0	-85.5	-84.5	-84.0	-84.0	-83.5	-83.0	-83.0
32QAM	-82.5	-82.0	-82.0	-81.0	-80.5	-82.0	-81.0	-80.5	-80.5	-80.0	-79.5	-79.5
64QAM	-79.5	-79.0	-79.0	-78.0	-77.5	-79.0	-78.0	-77.5	-77.5	-77.0	-76.5	-76.5
128QAM	-76.5	-75.5	-75.5	-75.0	-74.5	-75.5	-74.5	-74.5	-74.0	-74.0	-73.5	-73.5
256QAM	-73.5	-72.5	-72.5	-72.0	-71.5	-72.5	-71.5	-71.5	-71.0	-71.0	-70.5	-70.5
512QAM	-71.0	-70.0	-70.0	-69.5	-69.0	-70.0	-69.5	-69.0	-68.5	-68.5	-68.0	-68.0
1024QAM	-	-	-	-	-	-	-	-	-	-	-	-

Receiver sensitivity (dBm @ BER 10⁻⁶) for channel bandwidth of 14 MHz

Frequency	6	7	8	13	15	18	23	26	28	32	38	42
LinkProtect	-95.0	-94.5	-94.5	-94.0	-93.0	-94.5	-93.5	-93.0	-93.0	-92.5	-92.0	-92.0
QPSK	-90.0	-89.5	-89.5	-89.0	-88.0	-89.5	-88.5	-88.0	-88.0	-87.5	-87.5	-87.5
8QAM	-85.5	-85.0	-85.0	-84.5	-83.5	-85.0	-84.0	-83.5	-83.5	-83.0	-83.0	-83.0
16QAM	-83.5	-83.0	-83.0	-82.0	-81.5	-83.0	-82.0	-81.5	-81.5	-81.0	-80.5	-80.5
32QAM	-80.0	-79.5	-79.5	-78.5	-78.0	-79.5	-78.5	-78.0	-78.0	-77.5	-77.0	-77.0
64QAM	-77.0	-76.5	-76.5	-75.5	-75.0	-76.5	-75.5	-75.0	-75.0	-74.5	-74.0	-74.0
128QAM	-74.0	-73.0	-73.0	-72.5	-72.0	-73.0	-72.0	-72.0	-71.5	-71.5	-71.0	-71.0
256QAM	-71.0	-70.0	-70.0	-69.5	-69.0	-70.0	-69.0	-69.0	-68.5	-68.5	-68.0	-68.0
512QAM	-68.5	-67.5	-67.5	-67.0	-66.5	-67.5	-67.0	-66.5	-66.0	-66.0	-65.5	-65.5
1024QAM	-65.5	-65.0	-65.0	-64.0	-63.5	-65.0	-64.0	-63.5	-63.5	-63.0	-62.5	-62.5

Receiver sensitivity (dBm @ BER 10⁻⁶) for channel bandwidth of 28 MHz

Frequency	6	7	8	11 20 MHz	13	15	18	23	26	28	32	38	42
LinkProtect	-95.0	-94.5	-94.5	-94.0	-94.0	-93.0	-94.5	-93.5	-93.0	-93.0	-92.5	-92.0	-92.0
QPSK	-87.5	-87.0	-87.0	-87.5	-86.5	-85.5	-87.0	-86.0	-85.5	-85.5	-85.0	-85.0	-85.0
8QAM	-83.0	-82.5	-82.5	-83.0	-82.0	-81.0	-82.5	-81.5	-81.0	-81.0	-80.5	-80.5	-80.5
16QAM	-81.0	-80.5	-80.5	-81.0	-79.5	-79.0	-80.5	-79.5	-79.0	-79.0	-78.5	-78.0	-78.0
32QAM	-77.5	-77.0	-77.0	-77.5	-76.0	-75.5	-77.0	-76.0	-75.5	-75.5	-75.0	-74.5	-74.5
64QAM	-74.5	-74.0	-74.0	-74.5	-73.0	-72.5	-74.0	-73.0	-72.5	-72.5	-72.0	-71.5	-71.5
128QAM	-71.5	-70.5	-70.5	-71.0	-70.0	-69.5	-70.5	-69.5	-69.5	-69.0	-69.0	-68.5	-68.5
256QAM	-68.5	-67.5	-67.5	-68.0	-67.0	-66.5	-67.5	-66.5	-66.5	-66.0	-66.0	-65.5	-65.5
512QAM	-66.0	-65.0	-65.0	-66.0	-64.5	-64.0	-65.0	-64.5	-64.0	-63.5	-63.5	-63.0	-63.0
1024QAM	-63.0	-62.5	-62.5	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-60.5	-60.0	-60.0

Receiver sensitivity (dBm @ BER 10⁻⁶) for channel bandwidth of 56 MHz

Frequency	6	7	8	11 40 MHz	13	15	18	23	26	28	32	38	42
LinkProtect	-95.0	-94.5	-94.5	-94.0	-94.0	-93.0	-94.5	-93.5	-93.0	-93.0	-92.5	-92.0	-92.0
QPSK	-84.0	-83.5	-83.5	-84.0	-83.0	-82.0	-83.5	-82.0	-82.0	-82.0	-81.5	-81.5	-81.5
8QAM	-80.0	-79.5	-79.5	-80.0	-79.0	-78.0	-79.5	-78.5	-78.0	-78.0	-77.5	-77.5	-77.5
16QAM	-77.5	-77.0	-77.0	-77.5	-76.5	-75.5	-77.0	-76.0	-75.5	-75.5	-75.0	-75.0	-75.0
32QAM	-74.5	-73.5	-73.5	-74.0	-73.0	-72.5	-73.5	-72.5	-72.5	-72.0	-72.0	-71.5	-71.5
64QAM	-71.0	-70.5	-70.5	-71.0	-70.0	-69.0	-70.5	-69.5	-69.0	-69.0	-68.5	-68.5	-68.5
128QAM	-68.5	-67.5	-67.5	-68.0	-67.0	-66.5	-67.5	-66.5	-66.5	-66.0	-66.0	-65.5	-65.5
256QAM	-65.0	-64.5	-64.5	-65.0	-64.0	-63.0	-64.5	-63.5	-63.0	-63.0	-62.5	-62.5	-62.5
512QAM	-63.0	-62.5	-62.5	-63.0	-61.5	-61.0	-62.5	-61.5	-61.0	-61.0	-60.5	-60.0	-60.0
1024QAM	-58.5	-58.0	-58.0	-59.5	-58.5	-57.5	-59.0	-58.0	-57.5	-57.5	-57.0	-57.0	-57.0



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