COMMANDO LightningCOPPER 1000BASE-T

SFP-UTP-1G Data Sheet



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Product Overview

COMMANDO LightningCOPPER SFP-UTP-1G is a 1.25 Gigabit Ethernet 1000BASE-T SFP (Small Form Pluggable) Copper Transceiver, hot-swappable RJ45 electrical port module, compliant with Gigabit Ethernet standards and SFP Multi-Source Agreement (MSA) standards, supporting 10M/100M/1000M transmission rate. CAT5 class network cable transmission distance of up to 100 meters, good electromagnetic compatibility, compatible with various brands of hosts, widely used in data centers and enterprise networks.

The module is designed to offer multi-vendor compatibility offering users flexibility, scalability without incurring additional overhead and increasing interoperability.

It is compliant to IEEE 802.3i, 802.3u and 802.3ab Gigabit Ethernet standards which make it ideally suited for data communications. It supports distances up to 100meters. It offers customers copper-based Gigabit Ethernet connectivity to multi-vendor equipment's like routers, switches, server, NICs of data center, enterprise wiring closet, and service provider transport applications. It is ideal for Internet Service Provider (ISP) Gigabit Ethernet communication links, Enterprise LAN & SAN Networks, Data Center LAN & SAN networks, and other copper-based links. It can be used as uplinks for 1 Gigabit Ethernet Small Form-Factor Pluggable (SFP) for Copper Network Module for delivering robust performance and Cloud networking needs of growing businesses, data centers and high-end campus networks.

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Product Highlights

- Multi-vendor platform compatible
- Supports up to 1.25Gb/s bi-directional data links
- Data transmission distance up to 100m
- Hot-pluggable SFP to maximize uptime and simplify serviceability
- Compliant with IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab
- Support 10/100/1000BASE-T operation in host systems with SGMII interface
- Auto-sense MDI/MDIX
- RJ-45 Connector
- Built-in Digital Diagnostic Monitoring (DDM) functions
- Single power supply 3.3V and TTL Logic Interface
- Standard and compact size, fully metallic enclosure for Low EMI
- Low Power Dissipation (1.05W Typical)
- Compliant with SFP MSA
- RoHS Compliant
- Operating temperature range: 0℃ to 70℃
- Applications: 1.25 Gigabit Ethernet

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Features and Benefits

Easy to Use

COMMANDO transceiver module supports copper distance up to 100m i.e., link lengths over a copper connection via a RJ-45 connector. It is easy to use with a simple and hassle-free setup. Its compact and standard size makes it ideal for all top brand devices along with COMMANDO products. Easy Installation, Plug-and-play installation with no configuration required.

1 Gigabit speed with Reliable performance

It provides and offers 1G speed with backward compatibility. These SFP are well built and rigorously tested and can sustain in very rough environment to provide reliable performance.

Dust proof Enclosure

It has a resilient dust proof enclosure protects against harsh outdoor condition with no ingress of dust.

Support uninterrupted critical network infrastructure

It is protected from any hardware failures with Extra Long operational life. With this feature protect on cost and the impact to your business by losing these network devices and thus the users/servers connected to them.

Cost Efficient

State of art quality product that can serve with world's top brand products along with COMMANDO devices on real time high-speed Performance, highly reliable, conformance to international open standards, durable, serviceable, aesthetics, perceived quality, enhanced performance leads to value to money.

Green Technology

It automatically adjusts power consumption according to the link status to limit the carbon footprint of your network. It also complies with RoHS, prohibiting the use of

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certain hazardous materials. Moreover, most of the packaging material can be recycled and reused.

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Hardware

High Performance

- Low power consumption <1W typically, saving power
- 100us typical latency, MTBF over 1 million hours
- SFP Multi source Agreement (MSA) Compliant

Extra Long operational life

- Stainless steel material
- Anti-corrosion and salt spray resistance
- Storage Relative Humidity: 5% to 95%
- Exceptional Performance in Harsh Outdoor Climates with dust proof enclosure ensuring it can withstand harsh outdoor and indoor environments.

Operating temperature range

- Commercial temperature range: 0 to 70°C (32 to 158°F)
- Storage temperature range: -40 to 85°C (-40 to 185°F)

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Table 1 COMMANDO LightningCOPPER SFP Hardware Specifications Comparison

Product Code	Form Factor	Maximum Speed	IEEE Standard Compliance	Connector Type	TX Power (dBm)	Receiver Sensitivity (dBm)
SFP-SM-1G	SFP	1000Mbps	1000BASE-LX/LH	LC duplex	-9.5 ~ -3dBm	< -23dBm
SFP-MM-1G	SFP	1000Mbps	1000BASE-SX	LC duplex	-9.5 ~ -3dBm	< -17dBm
SFP-UTP-1G	GBIC-T, SFP	1000Mbps	1000BASE-T	RJ-45	Standard	<1W
SFP-SR-10G	SFP+	10.3125Gbps	10GBASE-SR	LC Duplex	-7.3~-1dBm	< -11.1dBm
SFP-LR-10G	SFP+	10.3125Gbps	10GBASE-LR	LC Duplex	-8.2~0.5 dBm	<-14.4dBm
SFP-ER-10G	SFP+	10.3125Gbps	10GBASE-ER	LC Duplex	-7.3~-1dBm	< -11.1dBm
SFP-ZR-10G	SFP+	11.3Gbps	10GBASE-ZR	LC Duplex	0~5dBm	<-23dBm
SFP-UTP-10G	10GBASE-T, SFP+	10Gbps	10GBASE-T	Copper CAT 6a/7	Standard	<1W
SFP-SR-25G	SFP28	25.78Gbps	25GBASE-SR	LC Duplex	-9.40 --3.40	–10.3dBm
SFP-LR-25G	SFP28	26.5Gbps	25GBASE-LR	LC Duplex	-7.97--2.8	14.4/-13.3dBm
QSFP-SR4-40G	QSFP+	41.2Gbps	40GBASE-SR4	MTP/MPO-12 Male	-7.6~1dBm	<-11.1dBm
QSFP -LR4-40G	QSFP+	44.6Gbps	40GBASE-LR4	LC duplex	-7~2.3dBm	<-11.5dBm
QSFP-SR4-100G	QSFP28	103.1 Gbps	100GBASE-SR4	MTP/MPO-12	-8.4~2.4 dBm	<-10.3dBm
QSFP-LR4-100G	QSFP28	103.125Gbps	100GBASE-LR4	LC duplex	-4.3~4.5 dBm	<-10.6dBm

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Specifications

COMMANDO SFP-UTP-1G, SFP is used for speed 1 Gigabit Ethernet copper speed up to 100m and It is a compact, hot-swappable device that plugs into a physical port of a network device.

Table 2. COMMANDO SFP Model Comparison

Product Code	Center Wavelength (nm)	Media Type	Max Transmission Distance	Digital Diagnostics Monitoring Supported
SFP-SM-1G	GBIC-LX/LH, 1310nm	MMF/SMF	550m/20km	DDM
SFP-MM-1G	GBIC-SX, 850nm	MMF	550m	DDM
SFP-UTP-1G	GBIC-T, RJ-45	Copper	100m	Standard
SFP-SR-10G	10GBASE-SR, 850nm	MMF	300m	DDM
SFP-LR-10G	10GBASE-LR, 1310nm	SMF	20km	DDM
SFP-ER-10G	10GBASE-ER, 1550nm	SMF	40km	DDM
SFP-ZR-10G	10GBASE-ZR/ZW, 1550nm	SMF	80km	DDM
SFP-UTP-10G	10GBASE-T RJ-45	Copper CAT 6a/7	80m	Standard
SFP-SR-25G	25GBASE-SR, 850nm	MMF	70/100m	DDM
SFP-LR-25G	10GBASE-LR/25GBASE-LR, 1310nm	SMF	10km	DDM

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QSFP-SR4-40G	40GBASE-SR4, 850nm	MMF	100m	DDM
QSFP-LR4-40G	40GBASE-LR4, 1310nm	SMF	10km	DDM
QSFP-SR4-100G	100GBASE-SR4, 850nm	MTP/MPO-12, MMF	100m	DDM
QSFP-LR4-100G	100GBASE-LR4, 1310nm	LC Duplex, SMF	10km	DDM

General Specifications

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Data Rate	DR	10	-	1000	Mb/sec	1
Cable Length	CL	-	-	100	m	2
Bit Error Rate	BER	-	-	10^{-12}	-	-
Storage Temperature	T_{STO}	-40	-	85	°C	3
Supply Current	I_{CC}	-	370	420	mA	-
Input Voltage	V_{CC}	3.14	3.3	3.46	V	-
Maximum Voltage	V_{MAX}	-	-	4	V	-
Power Consumption	P	-	1.22	1.38	W	-

Notes:

1. IEEE 802.3i, IEEE 802.3u, IEEE 802.3ab compatible
2. Category 5 UTP
3. Ambient temperature

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High Speed Electrical Interface Host-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended Input swing	$V_{IN\ PP}$	250	-	1200	mV	-
Single ended output swing	$V_{OUT\ PP}$	275	-	800	mV	-
Rise Time /Fall Time (20%-80%)	t_r/t_f	-	175	-	ps	-
Tx Input impedance	Z_{IN}	-	50	-	ohm	1
Rx Output impedance	Z_{OUT}	-	50	-	ohm	1

Notes:

1. Single ended

High Speed Electrical Interface Transmission Line-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Line Frequency	F_L	-	125	-	MHz	1
Tx Output Impedance Differential	$Z_{OUT\ TX}$	-	100	-	Ohm	2
Rx Input Impedance Differential	$Z_{IN\ RX}$	-	100	-	Ohm	2

Notes:

1. 5-level encoding
2. For all frequencies between 1MHz and 125MHz

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Low Speed Electrical Signal

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
SFP Output Low	VOL	0	-	0.5	V	1
SFP Output High	VOH	Host_V_{CC}-0.5	-	Host_V_{CC}+0.3	V	1
SFP Input Low	VIL	0	-	0.8	V	1
SFP Input High	VIH	2	-	V_{CC}+0.3	V	1

Notes:

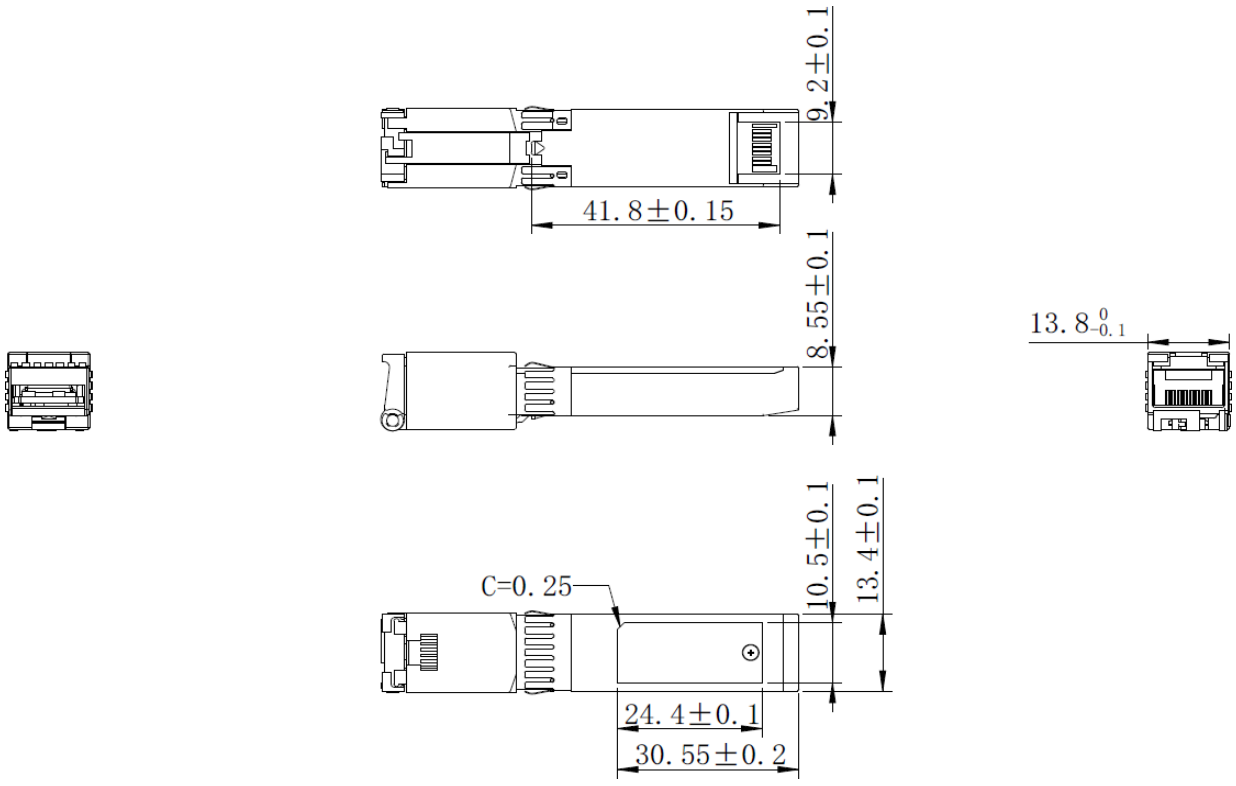
1. External 4.7-10k ohm pull-up resistor required

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Product Weight

Weight: 24.5g

Dimensions:



All dimensions are ±0.2mm unless specified otherwise
Unit: mm

Included in the bundle/box

All COMMANDO LightningCOPPER 1000BASE-T SFP-UTP-1G, SFP made available for use globally along with accessory used to facilitate or enhance operations. All COMMANDO SFP-UTP-1G, SFP Transceivers Comes with following Accessories.

1x (COMMANDO 1G UTP Transceiver Module) SFP-UTP-1G

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Support and Warranty

- Same-day assistance.
- Comprehensive 24-hour support using common communication/chat platforms, Email and Telephone.
- Provide FAQs and troubleshooting help online (self-service) through cloud-based solutions.
- Highly technical and trained representatives to resolve issues.
- One-year default warranty with option of warranty extension up to 3 years

COMMANDO WarrantyX Program available on: www.commandonetworks.com/warranty

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Table 3. Support and Warranty

Warranty and Support	
Products covered	COMMANDO LightningCOPPER 1000BASE-T SFP, Copper, RJ-45, 100m, Standard (SFP-UTP-1G)
Warranty duration	One Year RTB (Return To Base) replacement warranty – optionally extendable up to 3 years.
Hardware replacement	COMMANDO, its resellers, or its service center will use commercially reasonable efforts to replace the product subject to stock availability. Otherwise, a replacement will be arranged within 15 working days after receipt of the Return Materials Authorization (RMA) request.
End-of-life policy	In case of discontinuation of the product, support is limited to 3 years from announcement date.
Effective date	Hardware warranty commences from the date of shipment to customer (and in case of resale by a COMMANDO reseller, not more than 90 days after original shipment by COMMANDO).
Support duration	Lifetime support.
COMMANDO Care	COMMANDO will provide 24x7 support for basic configuration, diagnosis, and troubleshooting of device-level problems for up to one year from the date of shipment of the originally purchased product. This support does not include solution or network-level support beyond the specific device under consideration.
Online Portal Access	Warranty allows guest access to commandonetworks.com for all available technical queries.

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Ordering Information

Ordering information for the COMMANDO LightningCOPPER SFP-UTP-1G, SFP, to place an order, please contact your local reseller/distributor or COMMANDO Sales Representative at www.commandonetworks.com/catalog

Table 4. Ordering Information

Product Code	Description
SFP-SM-1G	COMMANDO LightningFIBER 1000BASE-LX/LH, SFP, 1310nm, 20km, SMF, DDM
SFP-MM-1G	COMMANDO LightningFIBER 1000BASE-SX, SFP, 850nm, 550m, MMF, DDM
SFP-UTP-1G	COMMANDO LightningCOPPER 1000BASE-T SFP, Copper, RJ-45, 100m, Standard
SFP-SR-10G	COMMANDO LightningFIBER 10GBASE-SR, SFP+, 850nm, 300m, MMF, DDM
SFP-LR-10G	COMMANDO LightningFIBER 10GBASE-LR, SFP+, 1310nm, 20km, SMF, DDM
SFP-ER-10G	COMMANDO LightningFIBER 10GBASE-ER, SFP+, 1550nm, 40km, SMF, DDM
SFP-ZR-10G	COMMANDO LightningFIBER 10GBASE-ZR/ZW, SFP+, 1550nm, 80km, SMF, DDM
SFP-UTP-10G	COMMANDO LightningCOPPER 10GBASE-T Copper RJ-45, SFP+, Up to 80m, CAT 6a/7
SFP-SR-25G	COMMANDO LightningFIBER 25GBASE-SR, SFP28, 850nm, 70/100m, OM3/4 MMF, DDM, Multi-vendor Compatible
SFP-LR-25G	COMMANDO LightningFIBER 10/25GBASE-LR, SFP28, 1310nm, 10km, SMF, DDM, Multi-vendor Compatible
QSFP-SR4-40G	COMMANDO LightningFIBER 40GBASE-SR4, QSFP+, 850nm, 100m, MMF, DDM
QSFP-LR4-40G	COMMANDO LightningFIBER 40GBASE-LR4, QSFP+, 1310nm, 10km, SMF, DDM
QSFP-SR4-100G	COMMANDO LightningFIBER 100GBASE-SR4, QSFP28+, 850nm, 100m, MTP/MPO-12, MMF, DDM
QSFP-LR4-100G	COMMANDO LightningFIBER 100GBASE-LR4, QSFP28+, 1310nm, 10km, SMF, DDM

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Document History

Release	What's new	Date
Release 1	First Release	March 24, 2021
Release 2	Multi-brand compatible model launch	November 9, 2022
Release 3	Model adjustment	September 18, 2023
Release 4	25G Model added	October 13, 2023

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