



## COMMANDO CopperX 1000BASE-T SFP-UTP-1G Data Sheet



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## Product Overview

COMMANDO CopperX 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.

## 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°C to 70°C
- Applications: 1.25 Gigabit Ethernet

## 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 <sup>-12</sup>	-	-
Storage Temperature	TSTO	-40	-	85	°C	3
Supply Current	ICC	-	370	420	mA	-
Input Voltage	VCC	3.14	3.3	3.46	V	-
Maximum Voltage	VMAX	-	-	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

## High Speed Electrical Interface Host-SFP

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
Single ended Input swing	V <sub>IN PP</sub>	250	-	1200	mV	-
Single ended output swing	V <sub>OUT PP</sub>	275	-	800	mV	-
Rise Time /Fall Time (20%-80%)	t <sub>r</sub> /t <sub>f</sub>	-	175	-	ps	-
Tx Input impedance	Z <sub>IN</sub>	-	50	-	ohm	1
Rx Output impedance	Z <sub>OUT</sub>	-	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 <sub>OUT TX</sub>	-	100	-	Ohm	2
Rx Input Impedance Differential	Z <sub>IN RX</sub>	-	100	-	Ohm	2

### Notes:

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

## Low Speed Electrical Signal

Parameter	Symbol	Min	Typ	Max	Unit	Remarks
SFP Output Low	V <sub>OL</sub>	0	-	0.5	V	1
SFP Output High	V <sub>OH</sub>	Host_V <sub>CC</sub> -0.5	-	Host_V <sub>CC</sub> +0.3	V	1
SFP Input Low	V <sub>IL</sub>	0	-	0.8	V	1
SFP Input High	V <sub>IH</sub>	2	-	V <sub>CC</sub> +0.3	V	1

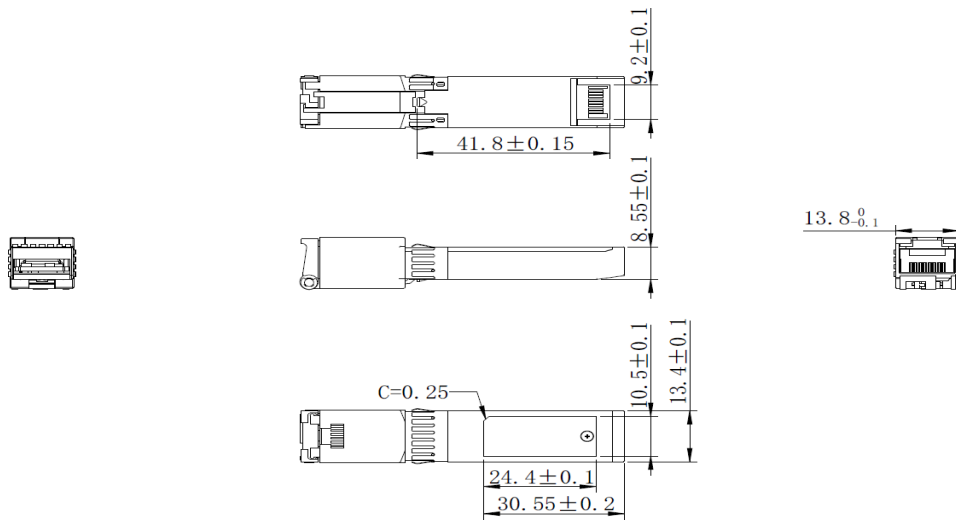
### Notes:

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

## Product Weight

Weight: 24.5g

## Dimensions:



All dimensions are  $\pm 0.2$ mm unless specified otherwise

Unit: mm

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



## 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)

Table 1 COMMANDO CopperX SFP Hardware Specifications Comparison

Product Code	Form Factor	Transmission 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~-0.5dBm	<-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
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	-8.4~2.4dBm	<-10.3dBm
QSFP-LR4-100G	QSFP28	103.125Gbps	100GBASE-LR4	LC duplex	-4.3~-4.5dBm	<-10.6dBm

## 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
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

## Included in the bundle/box

All COMMANDO CopperX 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

## 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

**Table 3. Support and Warranty**

Warranty and Support	
Products covered	COMMANDO CopperX 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 <a href="http://commandonetworks.com">commandonetworks.com</a> for all available technical queries.

## Ordering Information

Ordering information for the COMMANDO CopperX SFP-UTP-1G, SFP, to place an order, please contact your local reseller/distributor or COMMANDO Sales Representative at

[www.commandonetworks.com/ordering](http://www.commandonetworks.com/ordering)

**Table 4. Ordering Information**

<b>Product Code</b>	<b>Description</b>
SFP-EPON	COMMANDO FiberX EPON SFP Class PX20++++, 1.25Gbps, 1490nm/1310nm, DDM, 20km
SFP-GPON	COMMANDO FiberX GPON SFP Class C++++, 2.5G/1.25G, 1490nm/1310nm, DDM, 20km
SFP-XPON	COMMANDO FiberX XPON SFP, 1.25G/2.5G, 1490nm/1310nm, DDM, 20km
SFP-XGSPON	COMMANDO FiberX XGSPON 10G SFP+, 1577nm/1270nm, DDM, 20km
SFP-SM-1G	COMMANDO FiberX 1000BASE-LX/LH, SFP, 1310nm, 20km, SMF, DDM
SFP-MM-1G	COMMANDO FiberX 1000BASE-SX, SFP, 850nm, 550m, MMF, DDM
SFP-UTP-1G	COMMANDO CopperX 1000BASE-T SFP, RJ45, 100m, Standard
SFP-SR-10G	COMMANDO FiberX 10GBASE-SR, SFP+, 850nm, 300m, MMF, DDM
SFP-LR-10G	COMMANDO FiberX 10GBASE-LR, SFP+, 1310nm, 10km, SMF, DDM, Multi-brand
SFP-ER-10G	COMMANDO FiberX 10GBASE-ER, SFP+, 1550nm, 40km, SMF, DDM
SFP-ZR-10G	COMMANDO FiberX 10GBASE-ZR/ZW, SFP+, 1550nm, 80km, SMF, DDM
SFP-UTP-10G	COMMANDO CopperX 10GBASE-T RJ45, SFP+, 30m, Cat 6a/7, Multi-brand
SFP-LR-10G-20K	COMMANDO FiberX 10GBASE-LR, SFP+, 1310nm, 20km, SMF, DDM, Multi-brand
SFP-UTP-10G-80M	COMMANDO CopperX 10GBASE-T RJ45, SFP+, 80m, Ultra-long, Cat 6a/7, Multi-brand
SFP-SR-25G	COMMANDO FiberX 25GBASE-SR, SFP28, 850nm, 70/100m, OM3/4 MMF, DDM, Multi-brand
SFP-LR-25G	COMMANDO FiberX 10/25GBASE-LR, SFP28, 1310nm, 10km, SMF, DDM, Multi-brand
QSFP-SR4-40G	COMMANDO FiberX 40GBASE-SR4, QSFP+, 850nm, 100m, MMF, DDM
QSFP-LR4-40G	COMMANDO FiberX 40GBASE-LR4, QSFP+, 1310nm, 10km, SMF, DDM
QSFP-SR4-100G	COMMANDO FiberX 100GBASE-SR4, QSFP28+, 850nm, 100m, MTP/MPO-12, MMF, DDM
QSFP-LR4-100G	COMMANDO FiberX 100GBASE-LR4, QSFP28+, 1310nm, 10km, SMF, DDM

## Document History

Release	New or Revision	Described in	Date
Release 1	First Release	First Release	March 24, 2021
Release 2	Second Release	Multi-brand compatibility improvement and model adjustment	November 9, 2022