Copper Tough Tap

Keysight Industrial Solutions

Problem: Cybersecurity and ICS/OT

When Operational Technology (OT) networks and traditional Information Technology (IT) infrastructures converge, they become prime targets for bad actors seeking to access privileged data or centralized resources. The inability to see what's lurking inside your network, makes securing your network all that more challenging.

The first stage before any security forensic takes place is to be able to get access to the packets in the OT network, often in remote places where temperatures and humidity might be extreme. How can you collect operational information and make them reach smart security analytics devices to identify and protect against cyber-attacks?

Solution: Bridging the OT/IT Security Gap

As communication between OT and IT networks grows, you can no longer ignore the inherent risks. Organizations need to think about establishing the proper network visibility through a sound, all-inclusive cybersecurity practice. For most utilities and industrial organizations, this involves extending the OT/IT infrastructure, and improving network visibility. Intelligent network visibility starts with network taps to capture and copy traffic from any IT or OT network — at each layer and every site.



KEYSIGHT

Highlights

- Copper 10/100/1000Mbps
- Air gapped monitor ports
- Power over Ethernet (PoE) pass through support
- Auto Speed Negotiation
- Secure monitoring—no IP address
- Silent operation
- Operates in harsh environments
- DIN Rail Mountable
- Fan less
- TAA Compliant
- IEEE-1613 Compliant

Copper Tough Tap – Built for Harsh Environments

Keysight's Industrial Copper Tough Taps are built from the ground up to meet your requirements for a first layer of packet visibility infrastructure compatible with harsh environment. Designed to withstand the industrial grade environments, Keysight taps provide out of band (OOB) monitoring for security and performance tools, duplicating all packets for full visibility.

The Copper Tough Tap, TPAT2-CU3-T 10/100/1000Mbps is a secure Tap device which can operate as a simple tap, 2:2 packet replication (breakout on aggregation mode) or 2:1 packet replication (aggregation mode).



Figure 1. TPAT2-CU3-T

Breakout or Aggregation mode

When operating in breakout mode, Monitor Port A will transmit traffic received on Network Port A, and Monitor Port B will transmit traffic received on Network Port B. In non-aggregation mode, the Copper Tough Tap, TPAT2-CU3-T operates at full line rate.

When operating in aggregation Mode, the Copper Tough Tap sends copies of the aggregated traffic through two monitoring ports, allowing for a primary and secondary tool. The Copper Tough Tap scans incoming traffic from the network ports on a first-in-first-out basis. The scan rate is optimized to ensure that no packets are dropped, as long as the sum of data rates on the network ports does not exceed the monitoring port capacity of 1 Gbps.

The Copper Tough Tap supports Power over Ethernet (PoE) pass through.

For extra uptime protection, the Copper Tough Tap is supplied with redundant terminal block power connectors. Should the primary power source fail, the Tap automatically switches to the backup power source. Should both input power sources fail or be removed, the Copper Tough Tap will still pass traffic between its network ports (fail-open).

Accessories

Tough TAP rack mount

Keysight Tough Tap DIN Rack Mount can support up to 8 Copper Tough Taps. It is 19’’ 4RU and has space for cabling inside because the Taps only occupy 3RU (vertical mount design).

The Tough Tap rack mount is TAA compliant.



Figure 2. 3RU vertical rack mount

Power Rack for Copper Tough Taps

A Power Rack for Tough Taps is used to power up to 16 copper tough taps with fully redundant power source supply (dual-redundant). It can support 48V DC or 100-240V AC input power to up to 32 x 5V power supplies. Power supply convertors are purchased separately:

Function	Description
100-240V AC Powered	To support 8 Copper Tough Taps or less Qty 2, DPX6048S05 Qty 2, DPP120-48-1 Qty 2, Power cords To support 9 to 16 Copper Tough Taps Qty 4, DPX6048S05 Qty 2, DPP120-48-1 Qty 2, Power cords
48V DC Powered	To support 8 Copper Tough Taps or less Qty 2, DPX6048S05 To support 9 to 16 Copper Tough Taps Qty 4, DPX6048S05

Specifications

Copper Tough Tap TPAT2-CU3-T

Specification	Description
Mechanical	Industrial Aluminum Custom Extrusion Housing Integral DIN Mount
Dimensions	H" x D" x L": 5.25" x 6" x 1.875" 134mm x 152.4mm x 47.7mm
Weight	1.9lbs / 860g
Environmental	IEEE 1613 Operating Temperature Range: -40C to +85C Storage Temperature Range: -50C to +85C Operating Relative Humidity: 5% to 95% (non-condensing)
Ports	Network: Two 10/100/10000 Mbps Network Ports (RJ45) Monitor: Two 10/100/1000 Mbps Monitor Ports (RJ45) Power: terminal block connector (Redundant Power)
Electrical	Input: 5-12V at 7W
Dip Switch	Rear Dip Switch Position 1: Aggregation (on/off) Position 2: Link Fault Detect (on/off)
MTBF	1,170,878 hours at 50C 573,912 hours at 85C
TAA Compliance	TAA Compliant
Safety	UL 62368-1, CAN/CSA C22.2 No.62368-1, IEC/EN 62368-1,
EMC	FCC Part 15B Class A, ICES-003, EN 55032, EN 55035, EN 61000-3-2, EN 61000-3-3 EN 50121-4, EN 61000-6-2, EN 61000-6-4
All Applications	Use CAT6 STP (Shielded Twisted Pairs) Ethernet Cables

Specifications

RKTT-19IN-DIN-RAIL-T

Specification	Description
Compatible Taps	TPAT2-CU3-T (up to 16 taps supported)
Operating Temperature	-40 to +70°C
Environment	Storage Temperature: -40C - +70C Humidity: 20 - 95% RH (noncondensing)
Dimensions	H" x D" x L": 5.25" x 11.25" x 19.25" 134mm x 285.8mm x 489mm Weight: 1.9lbs – 860g
Connectors	Terminal block connectors for use with TPAT2-CU3-T
Electrical	AC Version Input: 93-264 VAC / Output: +5VDC at 40amps DC Version Input: 36-75 VDC / Output: +5VDC at 40amps
Certification	Immunity: IEC 61000-4-2, -3, 4, -5, -6. -8, -11, Vibration: IEC 60068-2-6 (Mounting by rail: Random wave, 10-500 Hz, 2G, ea. along X, Y, Z axes 10 min/cycle, 60 min)
EMC	Conducted and Radiated EMI: EN55022 class B
Safety	UL508 Listed, UL60950-1, EN 60950-1, CE
Compliance	TAA Compliant

Ordering Information

Part number	Description
TPAT2-CU3-T	Keysight, TAA compliant, Copper Tough Tap - Industrial 10/100/1000mbps Copper tap port aggregator with switchable aggregation mode with LFD and auto speed negotiation, 5VDC/12VDC. Power not included. Optional: RKTT-19IN-DIN-RAIL-T and optional DIN mount power supplies for AC or DC power. Compatible rack mount: RK-TPAT-8TAP-T (955-0167)
RK-TPAT-8TAP-T	Keysight, TAA compliant, Tough Tap Rackmount - Industrial, 19 5RU Rackmount with DIN Rail. Compatible Tough Taps: TPAT2-CU3-T (Copper Tough Tap), TPT-MM-LC-OM5-70-4-T (Flex Tough Tap OM5), TPT-MM-LC-OM1-70-4-T (Flex Tough Tap OM1); holds up to 8 taps, sold separately. (955-0168)
RKTT-19IN-DIN-RAIL-T	Keysight, TAA compliant, Extended Temp 19” 4RU Rack Mount Assembly Kit for DIN mount PSUs. Kit includes: 19” 4RU rack mount with DIN Rail, leads to connect up to 6 PSUs, and 32 power cords with stripped/tinned ends to support up to 16 TPAT2-CU3-T taps (dual redundant). Taps and PSUs sold separately. Power Supply requirements for 16 TPAT2-CU3-T taps as follows: (a) For AC power order: qty2 DPP120-48-1 plus qty4 DPX6048S05. (b) For DC power: qty4 DPX6048S05. (RKT-19IN-DIN-RAIL-T) (955-8089)
DPP120-48-1	Keysight, TAA compliant TDK-Lambda AC/DC Converter 115/230VAC to 48VDC, 120W, 2.5A, DIN, extended temperature. For use with RKT-19IN-DIN-RAIL (to power TPA2-CU3-T) or RKTT-19IN-DIN-RAIL-T (to power TPAT2-CU3-T, Copper Tough Tap) rackmounts, also requires two DPX6048S05 per each DPP120-48-1; racks, taps and other power converters sold separately.
DPX6048S05	Keysight, TAA compliant TDK-Lambda PWR SPLY, 48VDC-5VDC, 12A, DC/DC CONVERTER, DIN mountable, extended temperature. For use with RKT-19IN-DIN-RAIL-T (to power TPA2-CU3-T) or RKTT-19IN-DIN-RAIL-T (to power TPAT2-CU3-T, Copper Tough Tap) rackmounts, sold separately.

Keysight enables innovators to push the boundaries of engineering by quickly solving design, emulation, and test challenges to create the best product experiences. Start your innovation journey at www.keysight.com.

KEYSIGHT

This information is subject to change without notice. © Keysight Technologies, 2021 – 2023, Published in USA, July 13, 2023, 3121-1119.EN