GIGABIT AND BEYOND!

Seems like yesterday Gigabit Ethernet showed up, who would have imagined 1000Mbp/s network data communications not only in large offices, but now even standard in home computers. Ramsey stayed ahead of each of these advancements, with the current STEGBE4590 Gigabit PoE Ethernet interface as well as the STEGBE4591 Gigabit 8-Line Ethernet Interface. Whether you needed advanced PoE functionality or 8 transparent data lines at Gigabit Ethernet speed, we were there, and provided >90 dB RF isolation!

Then it happened, with the incredible popularity of our Gigabit interface, we started receiving calls for 2.5GBASE-T and 5GBASE-T Ethernet I/O interfaces. Looking into the newest standards we saw that 10GBASE-T was the latest upcoming standard that would provide a blazing 10,000Mbp/s over standard CAT6A or CAT7A copper 4-pair cable. Simply amazing. So once again, working with our large OEM customers, we put our engineering team to work, to come up with the impossible task of not one, but two fully functional 10GBASE-T Ethernet I/O interfaces. Our goals were difficult, but we met them all:

✔ Like our Gigabit interfaces, RF insertion loss greater than 90 dB down, all the way down to cover the 700 MHz LTE bands
✔ Completely passive and free of self-induced emissions and noise
✔ True end-to-end 10GBASE-T transparency
✔ Backwards compatible with 10BASE-T/100BASE-T/1000BASE-T, 2.5GBASE-T, 5GBASE-T, and of course full speed 10GBASE-T
✔ One version, similar to our Gigabit PoE Interface, transparent PoE detection and pass-through meeting full 802.3af and 802.3at standards, as well as non-standard PoE power inserters (STE10GBE)
✔ A second version, less the automatic PoE functions, for a true 8-line universal data interface (STE10GBE1)
✔ Identical, compact, RF-tight, easy to install form factor as our other data interfaces for easy upgrading
✔ Built-in port protection and cable strain relief for continuous duty use as well as over-tensioned cables

The Ramsey Electronics® STE10GBE Ethernet Interface represents the latest introduction into the future of Ethernet intercommunications into your RF Shielded Test Enclosure. 10Gbp/s data over a CAT7 patch cable... faster than the average HDD can read and write! Faster than USB3.0. In our 10GBASE-T test bed, we equipped a few new computers with Intel X540-T2 PCIe NICs. We started transferring large blocks of data between network shares on the computers using standard CAT7 patch cables and a 10GBASE-T network switch, each through one of our STE10GBE interfaces. 5GB HD video files transferred in a blink of an eye. 100GB blocks of data in a matter of seconds. Again, it's simply amazing to see.

THE ULTIMATE 8-LINE UNIVERSAL DATA SOLUTION!

Why two versions? Because there are some data applications that do not follow strict Ethernet configuration standards, we also designed a non-PoE version of the interface to be fully transparent on all 8 data lines for these custom applications. For applications such as I2C, TTL, RS422, and RS485, among others, the STE10GBE1 is your perfect interface to provide 8 independent data lines that have an RF isolation greater than 90 dB! It still continues as a great Gigabit Ethernet interface, with the only difference being the lack of automatic PoE power and mode detection. For upgrade/downgrade considerations, both the STE10GBE and STE10GBE1 have an identical form factor, and are field interchangeable.
SIMPLE RF-TIGHT INSTALLATION... ANYWHERE!

RF leakage must be kept in check with any RF isolation environment interface, and shielding becomes paramount. Therefore, just like we did with our USB and Gigabit Ethernet Interfaces, the STE10GBE1 Ethernet and data interface is designed inside a solid finely milled block of aluminum and then machined it around a single-hole mount! The entire interface can be installed on your RF Test Enclosure, or your screen room I/O panel with one single 1.25” hole. And to make field upgrades from Gigabit to 10GbE Ethernet a breeze, we even maintained the same dimensions and mounting hole parameters between models.

With the provided flange nut, lockwasher, and mesh EMI gasket, the interface is 100% bonded to your mounting surface. That, along with precision gasketing, assures a radiated RF isolation greater than 100 dB. Then we added integral solid milled tension surrounds on both sides, and a threaded cable strain relief post on the front side, to accommodate the duty cycle of repetitive lab insertions and connections as well as accidental cable over-tensions. This puts an end to broken Ethernet I/O ports and connectors! It simply doesn’t get any better than that.

It should be noted that per the standards set forth for the 10GBASE-T protocol, for Ethernet use, you must use either CAT6A or CAT7 Ethernet cables specified to 500 MHz, and to maintain proper RF isolation, they must also be well shielded. Realizing that this may be your first entry into the 10GBASE-T world of ultra fast Ethernet, we even include 2 double shielded CAT7 Ethernet patch cables!

NOISELESS TRULY TRANSPARENT PASS-THROUGH!

That’s a simple statement, but it goes deep in definition. In a perfect world, the goal for you to test your DUT is to emulate the same direct connection you would have during normal operation. Technically, that means maintaining a very low insertion loss, maintaining sharp signal edges, maintaining phase integrity and impedance, and to be transparent well beyond the 3rd harmonics.

The interface consists of 8 data lines making up 4 impedance-matched balanced pairs, minimizing signal reflection and ringing, and making it transparent to Ethernet equipment. Each channel passes bidirectional data up to 2,500 Mbps to exacting Ethernet specifications to allow a total throughput of 10,000 Mbps, or “10GbE Ethernet”. In short, the perfect Ethernet interface needs to emulate a short length of CAT6A or CAT7 cable... but with >90 dB of isolation. Likewise for your non-Ethernet applications, the interface is truly transparent on all 8 lines, just crimp on an RJ45 to match your connections, and you have up to 8 clean control and data lines, up to 450 MHz (or 2,500 Mbps for 10GBASE-T) all >90 dB RF isolation!

RF ISOLATION... CAN ONLY BE AS EFFECTIVE AS YOUR WORST I/O!

100pF DB9’s provide less than 43 dB insertion loss at your reject bands. 10pF’s are even worse at less than 9 dB! In today’s crowded RF spectrum, with high power WAPs literally everywhere, that just doesn’t cut it. Check out our full line of high performance RF isolated interfaces, where we typically keep you >90 dB down from USB3.1 to 4K video, and everywhere in-between!

![Solid milled RJ45 port protection!](image1)

![Solid milled strain relief!](image2)

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**SPECIFICATIONS**

**GENERAL**
- Product Part Number: STE10GBE1
- UPC: 871183005348
- Outside Dimensions: 3.4” H x 3.25” W x 1.1” D (86.36mmH x 82.55mmW x 27.94mmD)
- Weight: .75 lbs (.3kg) with nut, and RF gasket
- Construction: Milled aluminum
- Mounting: Single 1.25” OD hole with provided EMI collar gasket, and 1.25-18 UNF flange nut (.625”/15.9mm max panel thickness)
- External Connection: RJ45 shielded female
- Internal Connection: RJ45 shielded female
- CAT7 Ethernet Cable Provided: 2ea 7” double shielded stranded superflex CAT7 patch cable

**TECHNICAL**
- Ethernet Standards: 10/100/1000/2.5G/5G/10GBASE-T
- Data Lines: 8
- Impedance: 100 ohm
- DC Resistance: <1.5 ohm per data line
- DC Current Limit: .5A per data line
- Effective Radiated RF Isolation: >100 dB, 700 MHz to 8 GHz
- Insertion Loss, DC - 100 MHz: <.6 dB per data line
- Insertion Loss, 200 MHz: <1.9 dB per data line
- Insertion Loss, 450 MHz: <1.9 dB per data line
- Insertion Loss, 600 MHz: >56 dB per data line
- Insertion Loss, 700 MHz - 8 GHz: >90 dB per data line
- Ethernet PoE Power Pass-Through: Passive, between PSE and PD
- Availability: In-stock for immediate delivery
- Available Versions: STE RF Test Enclosure installed option

**ISOLATION PERFORMANCE 300 MHz to 8 GHz**

![Graph showing isolation performance](image3)

**Note:** Specifications are average achieved and certified final test measurement values. Subject to change and revisions. Not responsible for typographical errors and omissions.