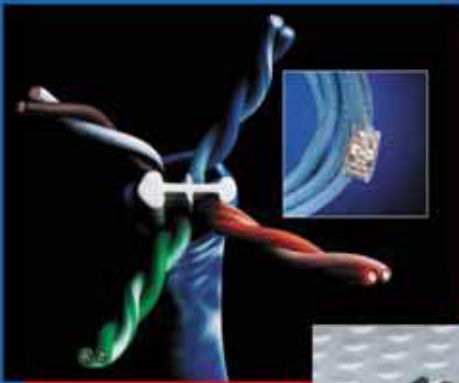


10GE

Copper Ten™



A Revolution in Network Solution



Physikalische Sicherheitslösungen
für EDV Hardware.
IT Sicherheitszellen / Serverräume

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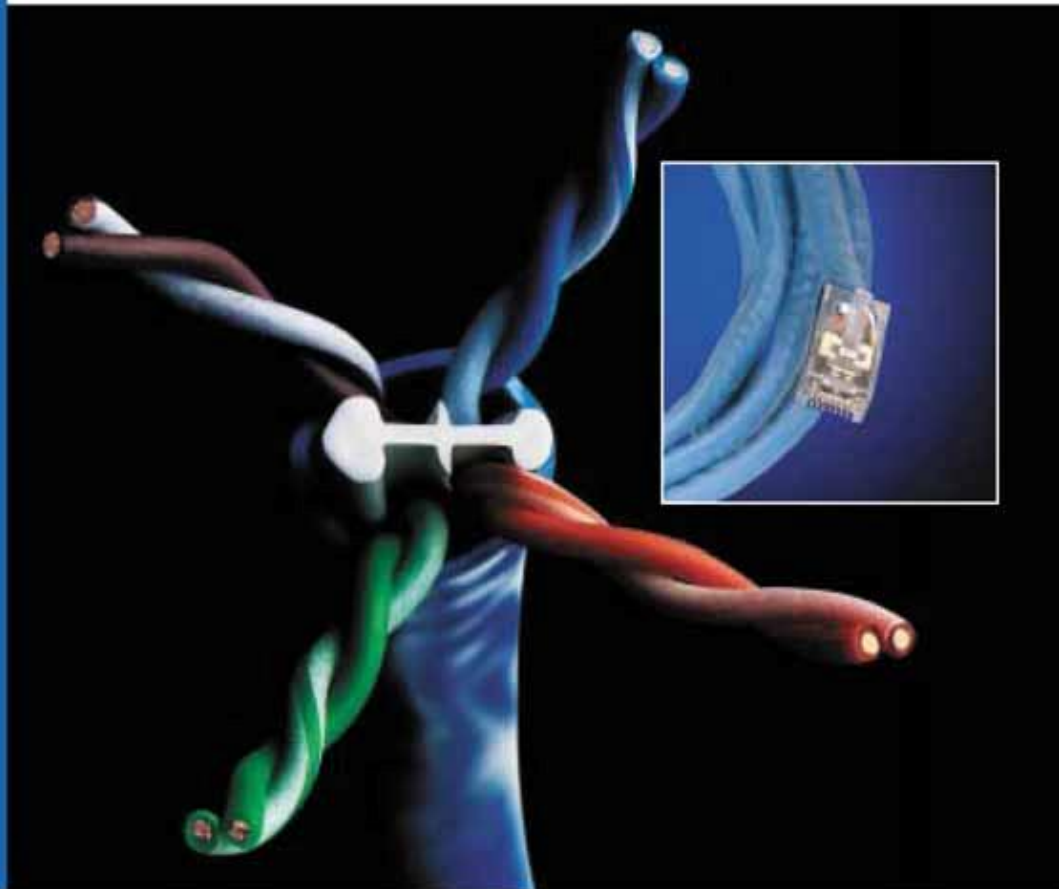
Daniel Etter-Strasse 2
A - 5303 Thalgau
Telefon: +43 (0) 6235/20 354
Fax : +43 (0) 6235/20 355
e-Mail : info@brodinger.at

www.brodinger.at

PremisNET®

CopperTen™ Cable and Patch Cords

Innovative patented
design to deliver a
unique Cabling
Solution



- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Guaranteed channel capacity that is equal to or greater than 18-Gigabits per second - the capacity identified by the IEEE as the minimum requirement for operation of 10GBase-T
- Unique patented oblique optical offset filler to minimise alien crosstalk and insertion loss
- Fully interoperable and backwards compatible with component compliant Category 5e / Class D and Category 6 / Class E systems
- Third party certification at a component level to Category 6, the highest performing ratified standard, for complete peace of mind



KRONE



Figure 1: Insertion loss and ANEXT

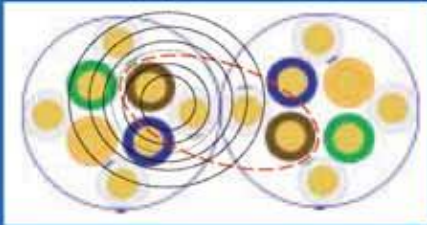


Figure 2: ANEXT greatly disrupts transmissions

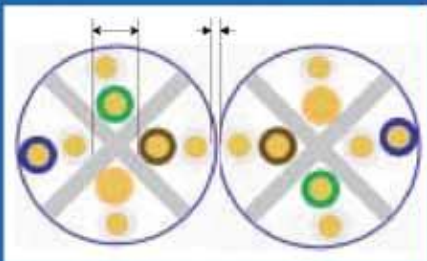


Figure 3: Pairs between cables can be close

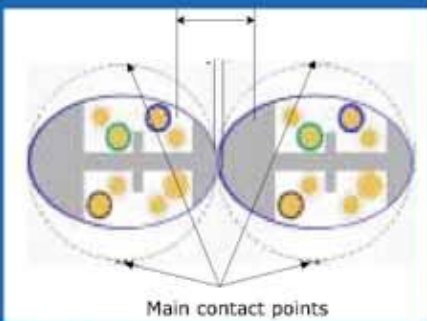
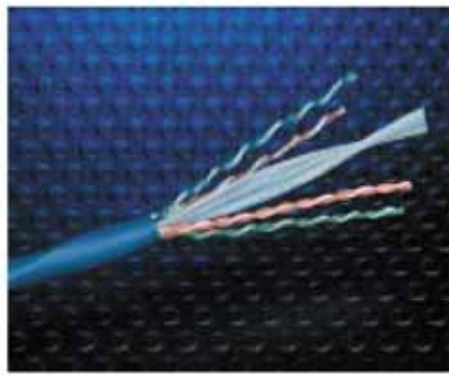


Figure 4: Innovative design distances pairs



Unshielded (UTP) cabling systems are the most prolific type of enterprise network cabling in the world as they are easier to install and typically more economical than shielded or fibre-optic based networks.

However, at higher frequencies these cabling systems are hindered by the technical combination of (figure 1) insertion loss and alien crosstalk (ANEXT).

ANEXT greatly disrupts transmission and high-speed data communications (figure 2). The CopperTen Solution incorporates patented designs and manufacturing processes that enable the products to overcome these challenges.

When cables lie next to one another, (figure 3) the fields from each of the pairs

inside one cable affect pairs within the adjacent cable. If the pairs in both cables happen to be the same twist rate, then the effect is increased greatly.

Whilst the distance between the different twist rate pairs within a single cable is maintained well, the distance between the same twist rate pairs within adjacent cables is still greatly reduced in the bundle.

The star filler is elliptical and offset (figure 4). The filler keeps distance between the pairs in adjacent cables. The cable ellipse rotates along its length, creating a larger air footprint.

The distance between the same twist rate pairs is now maintained instead of the pairs lying too closely to one another.

Testing requirements of connection technology according to ISO/IEC 11801 2nd Edition, ANSI/TIA/EIA-568-B.2-1 and EN50173-1:2002 and channel testing to the IEEE 802.3an D1.0 channel requirements.

Electrical Data	
DC Resistance at 20°C (max)	9.38Ω / 100m
DC Resistance Unbalance (max)	2%
Mutual Capacitance at 20°C (max)	5.6nF / 100m
Operating Voltage (max)	300 V DC
Worst Case Cable Skew	25 ns / 100m
Nominal Velocity of Propagation	65%
Mechanical Data	
Conductor	23 AWG solid bare copper
Insulation	100% Polyolefin
Separator	100% Polyolefin
Jacket	Low Smoke Zero Halogen
Nominal Outside Diameter	7.0mm - 6.4mm x 7.6mm
Environmental	
Operating Temperatures (max)	+75°C
Compliances	
IEC 60332-1 Flame Test; IEC 61034 Smoke Density; IEC 60754-1 Acid Gas; IEC 60754-2 pH; TIA/EIA 568-B.2-1 Category 6 Horizontal Cable Requirements; ISO/IEC 11801 2 nd Edition Category 6 Horizontal Cable Requirements; Fire Load: 716 KJ/m (.20 kWh/m); IEEE 802.3an D1.0 Channel Requirements	

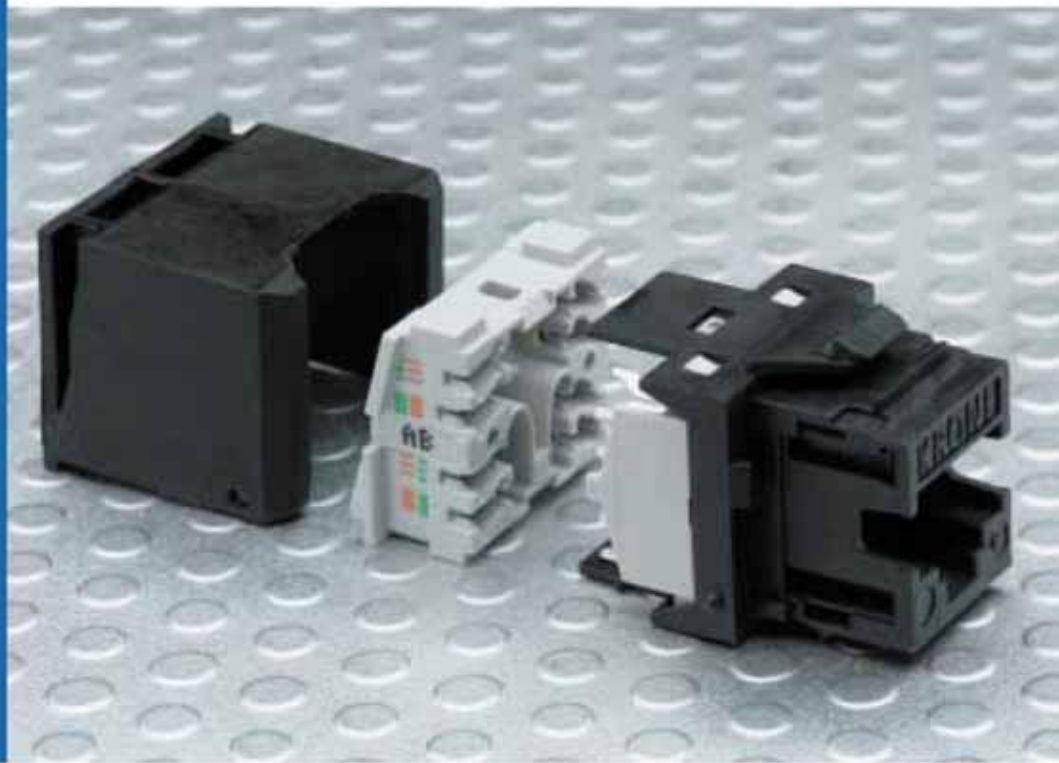
Ordering Information

CopperTen Cable	Item Number
305m CopperTen Blue LSZH Reel	10G-A6Z1-BL02
CopperTen Patch Cords	
1m CopperTen Blue LSZH	6645 2 827-04
2m CopperTen Blue LSZH	6645 2 827-07
3m CopperTen Blue LSZH	6645 2 827-10
5m CopperTen Blue LSZH	6645 2 827-15

PremisNET®

CopperTen™ Unshielded Jack

Leading edge
performance
CopperTen
unshielded jack for
all 10 Gigabit
Ethernet installations



- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Guaranteed channel capacity that is equal to or greater than 18-Gigabits per second - the capacity identified by the IEEE as the minimum requirement for operation of 10GBase-T
- Jack performance is maximised using the innovative cable management to minimise alien crosstalk
- Fully interoperable and backwards compatible with component compliant Category 5e / Class D and Category 6 / Class E systems
- Compatible with a comprehensive range of adapters, faceplates and patch panels
- Third party certification at a component level to Category 6, the highest performing ratified standard, for complete peace of mind



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CopperTen Unshielded Jack

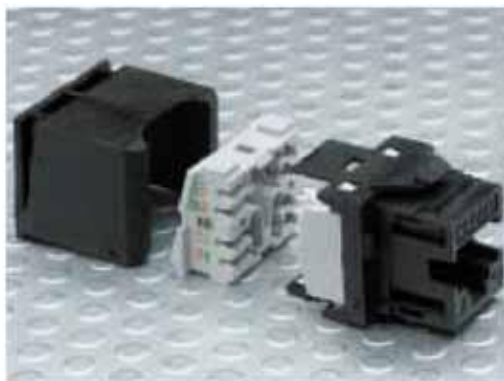
The CopperTen UTP Jack is a core component of the CopperTen Solution and when used with the CopperTen Cable, 10 Gigabit Ethernet performance is achieved over a full 100m.

The key to delivering a high performing jack is to reduce the insertion loss and alien crosstalk measurements that are prevalent at high frequencies associated with 10 Gigabit Ethernet. Utilising the unique design of the component compliant Category 6 KM8 Jack, together with the introduction of a carbon cap to act as a shield, has produced a leading edge component necessary to deliver the high performance demanded.

The CopperTen Jack can be used in a range of accessories from floor boxes to patch panels and outlets offering complete flexibility depending upon the installation requirement.

All CopperTen components including the CopperTen Jack are fully interoperable and backwards compatible with existing Category 5e and Category 6 based cabling, components and systems.

As with all KRONE jacks, the CopperTen Jack uses the LSA-PLUS® Quick Connection technique, a highly reliable gas tight wire termination method.



Electrical Data	
Insulation Resistance at +60°C and 93% RH	≥ 1GOhm
Dielectric Strength	Contact / contact ≥ 1.0kV DC Contact / shield ≥ 1.0kV DC
Current Carrying Capacity	≥ 1A
Typical Plug / Jack Contact Resistance	≤ 20mΩ
Terminations	
Typical IDC Contact Resistance	≤ 10mΩ
Conductor Terminations of LSA-PLUS® Contacts	≥ 200
Conductor Diameter	0.5-0.65mm (AWG 24-22)
Insulation Diameter	0.7-1.6mm
Mechanical Data	
Plug / Jack Mating Cycles	≥ 750 (IEC / EN60603-7)
Plug / Jack Insertion / Withdrawal Force	≤ 20N (IEC / EN60603-7)
Environmental	
Operating Temperature Range	-10° to +60°C
Operating Humidity Range	≤ 95% R.H. Non Condensing

Testing requirements of connection technology according to ISO/IEC 11801 2nd Edition, ANSI/TIA/EIA-568-B.2-1 and EN50173-1:2002 and channel testing to the IEEE 802.3an D1.0 channel requirements.

Ordering Information

Jacks	Item Number
CopperTen UTP Jack	6830 1 875-04
UTP Double Outlet	6540 1 812-11
UTP Quad Outlet	6540 1 812-12
Wall Outlets (Including Adapters and Faceplates)	
LJ6C Adapter	6830 2 402-00
25x50mm 45° Adapter	6538 4 111-05
UK Style 50x50 Double Faceplate (w/o Jacks)	6540 1 812-04
UK Style 100x50 Quad Faceplate (w/o Jacks)	6540 1 812-05
LJ6C Single Faceplate (w/o Jacks)	6540 1 804-00
LJ6C Double Faceplate (w/o Jacks)	6540 1 803-01
LJ6C Quad Faceplate (w/o Jacks)	6540 1 805-00

PremisNET®

CopperTen™ Patch Panels, Outlets and Accessories

Unique patch panels, outlets and accessories to deliver 10 Gigabit Ethernet for all installations



- Supports 10 Gigabit Ethernet over unshielded copper to a full 100m up to 500MHz
- Guaranteed channel capacity that is equal to or greater than 18-Gigabits per second - the capacity identified by the IEEE as the minimum requirement for operation of 10GBase-T
- Unique patented staggered patch panel to minimise alien crosstalk
- Fully interoperable and backwards compatible with component compliant Category 5e / Class D and Category 6 / Class E systems
- Range of faceplate mounting options offering flexibility to meet the most demanding installation requirements
- Third party certification at a component level to Category 6, the highest performing ratified standard, for complete peace of mind



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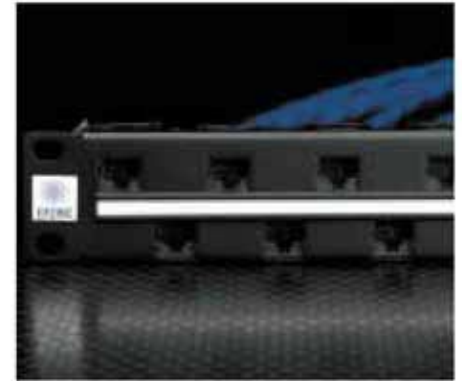
CopperTen Unshielded Patch Panels, Outlets and Accessories

As with all products that make up the CopperTen Solution, it is critical that the insertion loss and alien crosstalk (interference from adjacent cables and referred to as ANEXT) issues that are prevalent at high frequencies are addressed.

With CopperTen supporting 10 Gigabit Ethernet over copper to a full 100m up to 500MHz, changes to the patch panel had to be introduced.

Whilst electrical changes were required on the panel, the most noticeable change involves the metalwork and the layout of the jacks: The CopperTen 24 way Patch Panel has a unique and innovative staggered design to ensure 10 Gigabit Ethernet performance within the 1U design.

Mechanical and electrical changes to the CopperTen Jack has ensured that the comprehensive range of faceplate options associated with the Category 5e and Category 6 Solutions can be used with CopperTen too. The options include double and quad outlets together with flush and angled 25x50mm adapters.



Ordering Information

Patch Panel	Item Number
CopperTen 24 way Unshielded Patch Panel	6527 1 726-00
Wall Outlets (including Adapters and Faceplates)	
CopperTen UTP Jack	6830 1 875-04
UTP Double Outlet	6540 1 812-11
UTP Quad Outlet	6540 1 812-12
LJ6C Adapter	6830 2 402-00
25x50mm 45° Adapter	6538 4 111-05
UK Style 50x50 Double Faceplate (w/o Jacks)	6540 1 812-04
UK Style 100x50 Quad Faceplate (w/o Jacks)	6540 1 812-05
LJ6C Single Faceplate (w/o Jacks)	6540 1 804-00
LJ6C Double Faceplate (w/o Jacks)	6540 1 803-01
LJ6C Quad Faceplate (w/o Jacks)	6540 1 805-00
Accessories	
CopperTen Jack Termination Tool	6830 1 490-00
1U 19" Plastic Ring Jumper Bars	6527 1 006-01
1U 19" Blanking Plate	6527 1 007-01
Advanced Patching Frame II (APFII)	6420 1 500-00
Details of the full Advanced Patching Frame portfolio can be found in the PremisNET product catalogue	

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