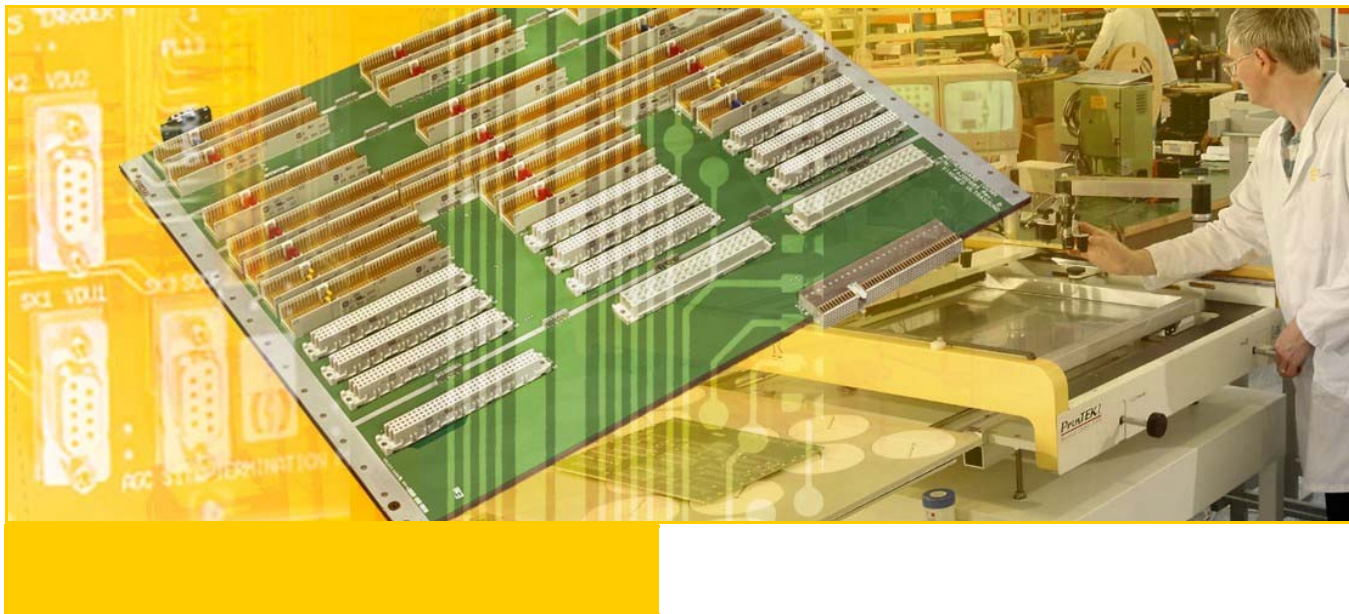


HARTING Integrated Solutions Ltd



Backplanes and Integrated Systems

- Manufacturing on Three Continents
- Local HARTING Support Throughout the World
- The Manufacturing 'Global Footprint'
- The Complete 'Value Chain' of Services

HARTING Integrated Solutions ~ The Manufacturing Global Footprint



European Headquarters Northampton, England

2,000 sq metres
Static Safe environment
ISO9001:2000
IPC 610 Class 3 Assembly standards



Americas Headquarters Elgin, Chicago, USA

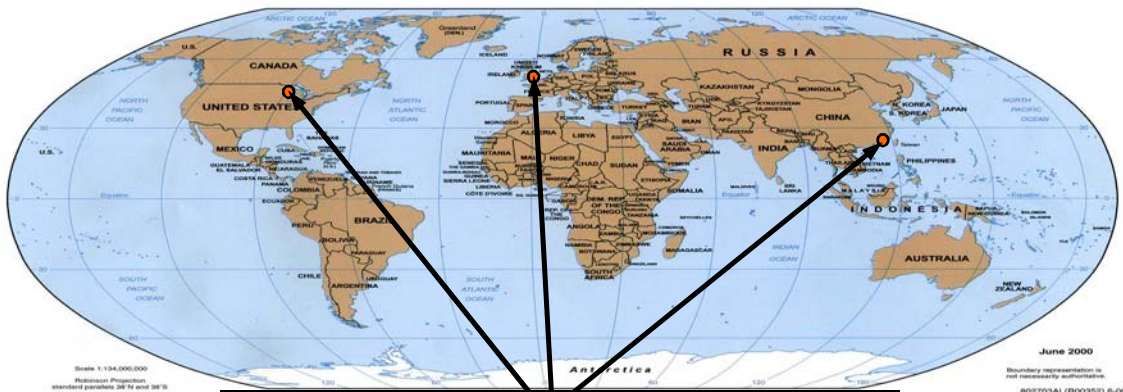
2,500 sq metres
Static Safe environment
ISO9001:2000
IPC 610 Class 3 Assembly standards



Asia Headquarters Zhuhai, China

3,000 sq metres
Static Safe environment
ISO9001:2000
IPC 610 Class 3 Assembly standards

- Clear focus on Backplanes and Backplane-based Systems
- Common Assembly and Test Equipment
- Transferable tooling
- Common Manufacturing and Quality Standards
- Co-ordinated Global Management
- Global SAP Business Management System



Three Factories ~ One Uniform Manufacturing Footprint

HARTING Integrated Solutions ~ The Value Chain of Services



HARTING Integrated Solutions, part of the HARTING Technology Group, offers a nine-stage 'Value Chain' of services in the area of Backplane and Backplane Systems, from interconnect design through to delivered assemblies.



Contact us with your requirements ~ see back cover for details of your local HARTING office

At HARTING Integrated Solutions, we specialise in the design and manufacture of backplanes, electronic sub-assemblies and systems.



At HARTING Integrated Solutions we understand that offering a flexible, reactive and friendly service is vitally important in ensuring that you receive the assembly you want, when you need it.

Manufacturing in Europe, Asia and the USA, our factories operate using the same equipment, control procedures and tooling, making our service unique in the arena of backplane systems.

With HARTING Integrated Solutions, you get the same local support in your own Country for HARTING backplane products as you do for our world-renowned range of quality connectors.

At all our facilities, production is carried out in a fully static-safe environment, utilising state-of-the-art plant and equipment and IPC610 class 3 standards, providing best-in-class manufacturing for your backplane systems build.

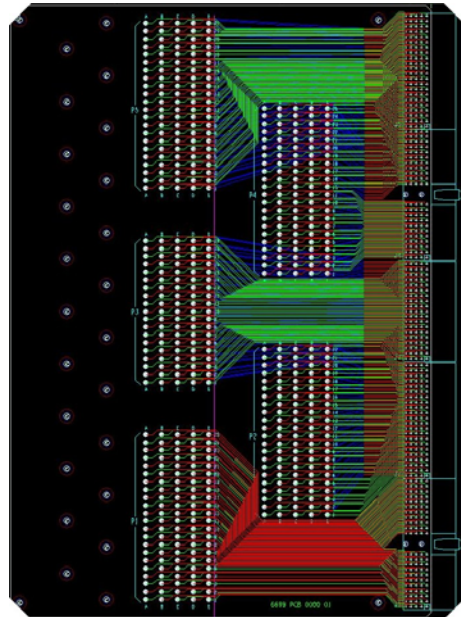
Call us to arrange a visit to one of our facilities to find out for yourself.



BACKPLANE DESIGN

The HARTING Integrated Solutions backplane design services uses Cadence Allegro Software for fast, reliable PCB designs. We can work with you from the early stages of your project, ensuring you get the performance you require from your equipment. Wherever you are in the world our pro-active, mobile designers will work closely with you right through the design process, giving your project the attention it deserves.

All custom backplane designs are controlled and monitored by you, and the finished Gerber files are owned by you.



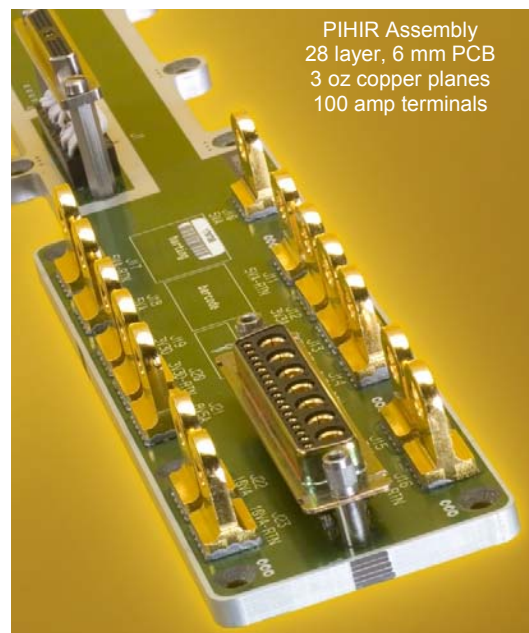
SURFACE MOUNT

With the migration of passive components from daughter cards to the backplane, many of them surface mount, in-house surface mount lines are available, specifically designed to handle large backplanes with rapid and simple change-over times for maximum efficiency.



PIN-IN-HOLE INTRUSIVE REFLOW (PIHIR)

With HARTING's ever-growing range of high-temperature, SMC (surface-mount compatible) connectors, PIHIR allows through-hole components to be reflowed in the same operation as surface-mounting, thereby saving valuable production time.



PIHIR Assembly
28 layer, 6 mm PCB
3 oz copper planes
100 amp terminals

Contact us with your requirements ~ see back cover for details of your local HARTING office

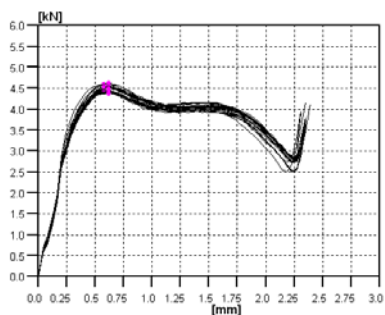


PRESSFIT

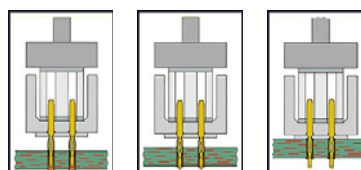
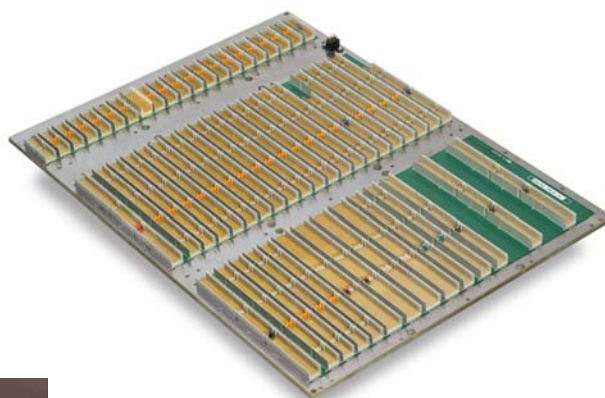
HARTING Integrated Solutions utilise HARTING's own range of presses for accurate, reliable and repeatable assembly of press-fit backplanes.

The CPM 2001/s and Prestige semi-automatic presses and the CPM 2001/a automatic press combine to provide a speedy solution to backplane assembly.

Every insertion stroke is measured and recorded for insertion depth and pressure, ensuring that the last assembly in a batch is completely within specification and therefore exactly the same as the first.



Connector insertion graph
Available from all HARTING CPM presses



WAVE SOLDER

Traditional wave solder assembly completes the range of backplane manufacturing methods at HARTING Integrated Solutions. The Electrovert Astrapack is fully programmable and rapidly adjustable for varying board sizes.





CARD FRAMES ~ ENCLOSURES

Whether using standard components or fully customised metalwork, we are able to design and produce the purpose-built sub-rack and enclosure you require.

Custom designed sheet metal card frames have many advantages, with added cost-saving features such as formed card-guides, and often the removal of expensive extrusions.



INTEGRATION AND PROJECT MANAGEMENT

With the combination of the local HARTING office in your Country and the specialist teams of Design, Application and Project Engineers at our manufacturing plants, HARTING Integrated Solutions is ideally placed to offer a fully co-ordinated Project Management Service for your integrated system build. We will co-ordinate all aspects of your project from start to finish, from design and prototypes through to manufacture and test, delivered to your door, ready to go.



STANDARD PLATFORMS

HARTING Integrated Solutions also offers Standard solutions with MicroTCA and AdvancedTCA platforms. High-speed pressfit connector footprints are qualified and released by our Central Laboratory and approved by PICMG.



Backplanes and Enclosures can be designed to suit your application, in conjunction with your Engineering team.

Call us today for further information.



Contact us with your requirements ~ see back cover for details of your local HARTING office

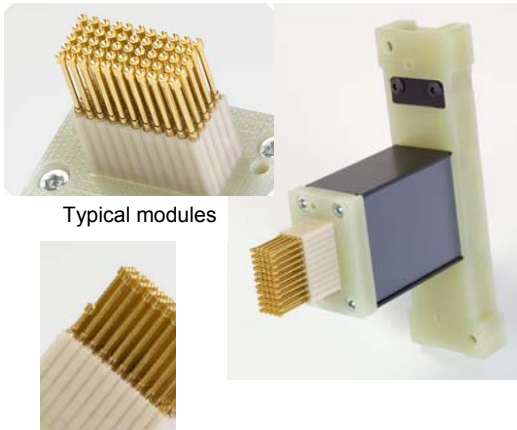


TEST ~ THE RoBAT

As part of the production process, all HARTING products are fully tested, including functional and safety tests on integrated systems.

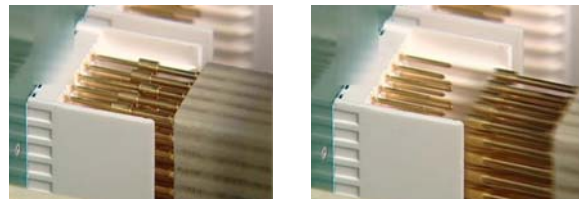
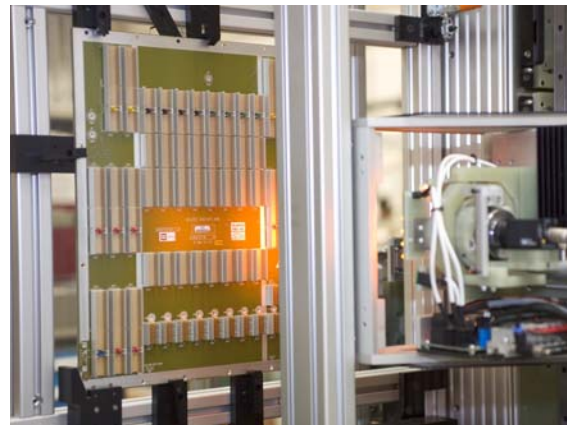
The RoBAT fully automatic double-sided backplane tester is utilised for large pin field, high density backplanes, for full electrical testing.

RoBAT testers are in use at all three HARTING Integrated Solutions manufacturing locations, with shared tooling for maximum flexibility and minimum cost.



Typical modules

The RoBAT also provides automatic optical inspection and three-dimensional co-ordinate measurement for leading and lagging pin configurations. Versatile, interchangeable head modules ensure full compatibility with differing component and connector configurations.



Modules in action, carrying out electrical test and confirming the correct pin height and position



TEST ~ LINX SYSTEM

In addition, further test stations are available, each with 'intelligent module' 65k node backplane testers where all connectors are mated, also testing the mechanical integrity of the contacts. Our extensive test areas ensure the free flow of product at all times and ensure the supply of known-good products to the customer.

ASSEMBLY STANDARDS

All our assembly is carried out to the standards of the IPC 610, class 3 (the highest standard)

HARTING Integrated Solutions have fully qualified, in-house IPC Trainers, who maintain a continuous programme of in-house skill improvements to ensure that every aspect of your assembly meets the high standards you demand.



BUILD PROCEDURES

Every Project for custom assemblies is carefully planned and NPI (new product introduction) is supervised by a full team of experienced Engineers and Operators.

Process Instruction Sheets are compiled using step-by-step written and visual procedures to ensure continuity of the build.



INSPECTION

All assemblies are subject to inspection at key stages of the production process, as well as at completion.

Automatic optical inspection machinery with colour recognition is used, verifying component placement, polarity and value.



QUALITY & BUSINESS IMPROVEMENT

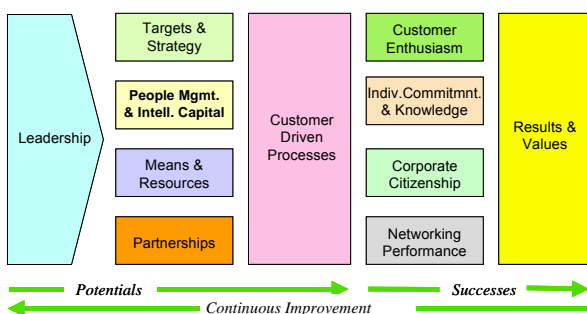
Certified to ISO 9001:2000 and dedicated to The HARTING Way - our world-wide continuous improvement programme to achieve Business Excellence (based on the EFQM model)

Our Business Improvement team are constantly monitoring and improving our processes, including the use of six-sigma techniques, to increase efficiency and maintain the highest levels of customer service and satisfaction.



Now IRIS approved for Railway Applications

the HARTING Way



Our Company Goals. We want to....

- Increase customer benefit by implementing technological change and progress.
- Focus our business on growth markets.
- Design and manage efficient and sustainable processes.
- Act in accordance with "How we treat one another".
- Remain an independent, family-owned company.

Contact us with your requirements ~ see back cover for details of your local HARTING office

Central Technology Services



Corporate Technology Services (CTS) is HARTING's Test Laboratory. It is independently accredited according to the quality standard for testing laboratories of DIN EN ISO/IEC 17025 for tests on electro-mechanical components and electrical transmission systems. The test spectrum includes climatic and environmental test, electrical and mechanical tests, fibre optics, ElectroMagnetic Compatibility (EMC) and high frequency examinations

TEST SPECTRUM

CLIMATIC AND ENVIRONMENTAL TESTS

- Corrosion
- Climatic
- Degrees of Protection



Climatic and environmental stress

ELECTRICAL, MECHANICAL TESTS

- Vibration and mechanical shock
- Material analysis and microscopic examinations
- Full range of electrical tests
- Insertion and removal forces



Insertion and withdrawal forces

ELECTROMAGNETIC COMPATIBILITY (EMC)

- Interference Measurements
 - ~ Radiated
 - ~ Conducted
- Susceptibility Tests

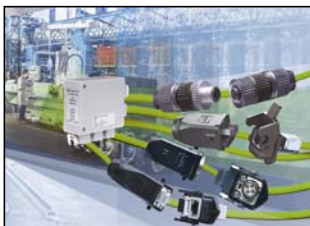


FIBRE OPTICS

- Characterization of active & passive components

HIGH FREQUENCY EXAMINATIONS

- Signal Integrity analysis in Time Domain and Frequency Domain



Recent activities at CTS include the qualification and release of HARTING's AMC for MicroTCA and Ethernet connectors

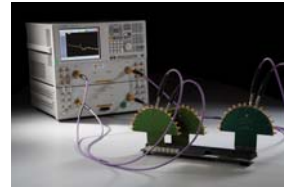
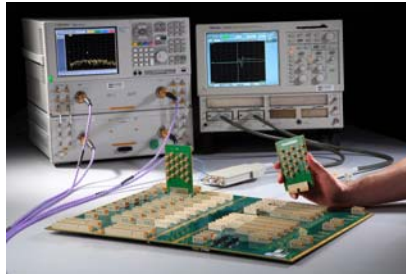
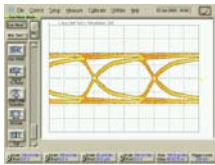
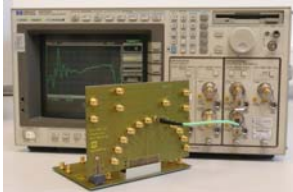


For further information on CTS, contact your local HARTING office or visit the website ~
<http://www.harting.com/english/unternehmen/research/index.html>

Signal Integrity

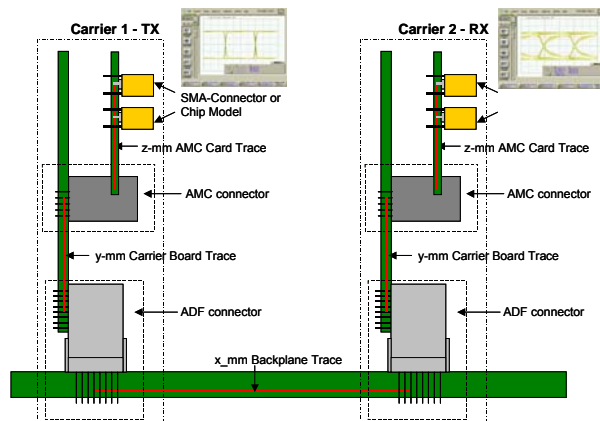
A major requirement of today's high-speed backplane is design simulation and verification of the finished assembly. HARTING's Signal Integrity Group offers a wide range of services for characterisation, simulation and measurement to ensure you get the product you want from HARTING Integrated Solutions.

CHARACTERISATION OF ELECTRONIC COMPONENTS AND BACKPLANES

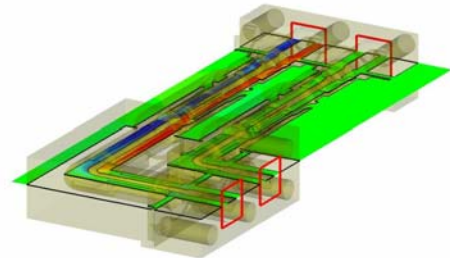


Independent qualification of signal integrity and backplane designs for your applications

SIMULATION AND MODELLING



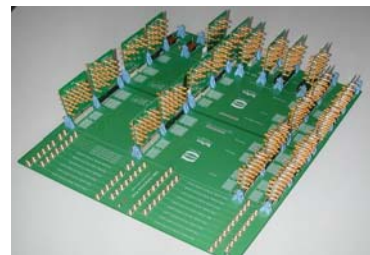
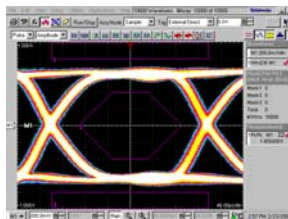
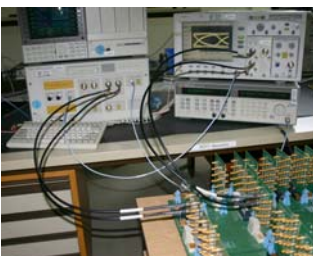
Dynamic 3D FEM-Simulation
SPICE ~ IBIS ~ S-Parameter
Model Simulation of multi-point and high speed point-to-point bus systems



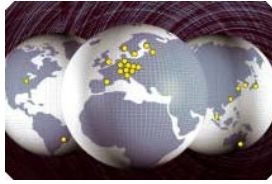
MEASUREMENT AND VERIFICATION

Measurements Include ~

Time Domain ~ Characteristic impedance ~ Reflection ~ Rise time
4-Port S-Parameter analysis up to 40GHz, Return loss, Attenuation, Crosstalk
Eye-Diagram ~ Compliance tests with chip vendor evaluation modules



Contact us with your requirements ~ see back cover for details of your local HARTING office



HARTING Integrated Solutions Ltd

Global Manufacturing ~ Local Support



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