



NHP Switchboard System

One of the most highly test verified systems in the world in compliance with AS/NZS 61439

POWER DISTRIBUTION AND PROTECTION



SINCE 1968, NHP HAS BEEN AN INDEPENDENT AUSTRALIAN OWNED COMPANY PASSIONATE ABOUT PROVIDING OUR CUSTOMERS WITH LOCAL CHOICE POWERED BY GLOBAL PARTNERS.

With 50 years of electrical and engineering industry excellence and over 22 locations across Australia and New Zealand, at NHP it is our local people and footprint that helps us understand your specific project needs, no matter how big or small.

While we go to market with over 15,000 stocked items, we are much more than a product supplier. Together with our extensive network of global partners, we offer choice in product, choice in technology, choice in service, choice in support and ultimately choice in how you deal with us – whether that be in person or online, where and when you need us.

This enables NHP to customise integrated solutions and bring to life smart and secure technologies that automate production, control power and manage energy.

When it comes to finding a local partner with a global network for your next project, choosing NHP will unlock a world of expertise, knowledge and experience across electrical and automation products, systems and solutions.

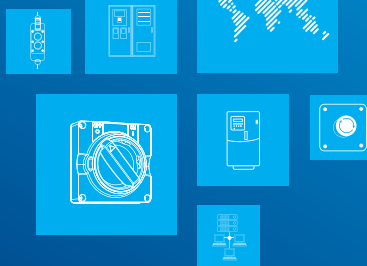
THE NHP DIFFERENCE

WHAT MAKES NHP DIFFERENT FROM OUR COMPETITORS ARE THESE THREE DISTINCT PROMISES.



THE POWER OF LOCAL

In your local community, city and industry, we understand your specific project needs.



THE POWER OF CHOICE

Choice in product, technology, service, and support enabling you to customise and push boundaries.



THE POWER OF GLOBAL PARTNERS

With a global network of suppliers, we bring the world's best products and knowledge to your doorstep.

The NHP Switchboard Solution

The switchboard is the heart of any industrial site or building so a quality, robust switchboard solution is essential to guarantee a continual power supply.

The NHP CUBIC Modular System is based on the concept of efficiently using standard parts to construct a tailored switchboard to achieve your individual project requirements.

The system is independently tested for verification to IEC 61439 and hence all documentation is directly applicable to AS/NZS 61439 'Original Manufacturer' verification requirements without the need for expensive local testing.

NHP train, accredit and technically support all CUBIC assembly manufacturing partners through a dedicated CUBIC Global Training Program ensuring a high and uniform quality for CUBIC switchboards worldwide.



A compliant switchboard system for all your applications

Industry

Oil and gas, mining, food and beverage, utility

Infrastructure

Tunnel, railway, airport, ports

Building

Commercial, residential, government

Critical Building

Data centre, banking and insurance, healthcare buildings

Energy

Solar, Wind, Hydro, battery banks

OEMs

Genset manufacturer, portable switchrooms

Forming the structure of NHP's Smarter Power Distribution Solution

Your performance guarantee

- AS/NZS 61439 Test Verified LV solutions
- Unmatched circuit breaker protection performance
- Integrated temperature health monitoring of critical assets

High levels of safety

- Arc flash containment design and integrated arc flash mitigation technology
- Remote open / close control of air circuit breakers (ACBs)
- Live line visual indicators

Business analytics and environmental awareness

- Integrated energy metering and branch circuit monitoring
- Rockwell Automation connectivity of key data to communication network

Maximum Power Availability

- Open and closed transition transfer switch technologies
- Easy maintenance with minimal downtime of critical switchgear



NHP Smarter MV Solutions



NHP Smarter LV Switchboard Systems and Transfer Switches



NHP Smarter Distribution Boards



Assembly Manufacturers- Switchboard Builders

High quality, cost competitive modular switchboards to help you win more business

- AS/NZS 61439 ready for projects up to 6300A and 120kAs-1
 - Meet customer's expectations with reduced labour and fast turnaround from design to dispatch
 - Intuitive 3D design software solution – GALAXY 3
 - Choice of external colour - RAL7035 light grey or RAL2000 orange
 - Choice of five major switchgear brands including Terasaki and Socomec with package project pricing from NHP
- 5 day System Builder training provides the knowledge to design and construct a switchboard giving confidence to cover responsibilities as prescribed in AS/NZS 61439
 - Total back-up support from two long standing, trusted brands in the market - NHP and CUBIC
 - NHP stocks and supplies parts flat pack to customers from our local warehouses in Australia and New Zealand



Consultants

Provide a quality solution that represents your company through a reputable brand with a safe and reliable history

- Compliant to AS/NZS 61439 for power distribution and motor control centers up to 6300A
- Minimised time auditing design verification with the CUBIC Overall IEC 61439 Verification Certificate
- Minimise the risk by only dealing with NHP trained and accredited Assembly Manufacturers
- Flexibility to modify the design during and after a build
- Short delivery time
- Peace of mind with product backing and reliable technical support from NHP and CUBIC



End Users

Long term peace of mind (sustainable solution) from a world-wide system with a proven track record and continual product development since 1973

- Independently tested for AS/NZ 61439 providing non-biased verification
- Assembled from high-quality mass-produced parts
- Maximised onsite health and safety with arc fault containment and fully insulated busbar options
- Minimised downtime by using demountable or fully withdrawable options
- Robust design for longevity - tested for seismic zone and high vibration installations
- Rapid retrofits and upgrades without the need of cutting or welding. Future modifications will always be possible thanks to no parts obsolescence
- Choice of accredited Assembly Manufacturers whilst maintaining a site standard



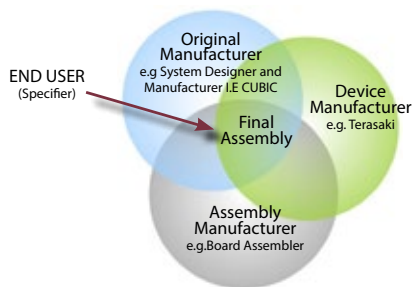
A high-performance system suitable for all levels of project

Local project references include:

- Royal Hobart Hospital – Tasmania
- Parliament House – Canberra
- Kirkland Lake Gold – Northern Territory
- Boyne Smelter – Central Queensland
- Pilgangoora Lithium Mining – Western Australia
- GMHBA Stadium– Geelong, Victoria
- Red Stag Timber – New Zealand
- Offshore Patrol Vessel HMNZS Otago – New Zealand

International projects include:

- Fiji Water – Fiji
 - South Eastern Asia LNG hub - Singapore
 - Oilfield MCC Switchboard - Iran
 - Charles de Gaulle Airport Paris - France
 - Data Centres - England
 - Råberga water treatment plant - Sweden
 - Mochovce Nuclear Power Station – Czech Republic
 - La Muela - Hydroelectric Power Plant - Spain
- (see www.cubic.eu/references for future international references)



Highly test verified system in compliance with AS/NZS 61439

CUBIC possess a deep knowledge of the new IEC 61439 standard thanks to its representation on the IEC committee as the only switchboard company independent from a switchgear brand. All CUBIC IEC 61439 testing has been independently conducted by DEKRA Laboratories for non-biased verification.

CUBIC Overall IEC 61439 Test Verification Certificate (directly applicable to AS/NZS 61439)

This certificate and 31 page report summarises all test data and simplifies the AS/NZS 61439 design verification process for CUBIC Assembly Manufacturers, End Users and Consultants when doing the subsequent document auditing.

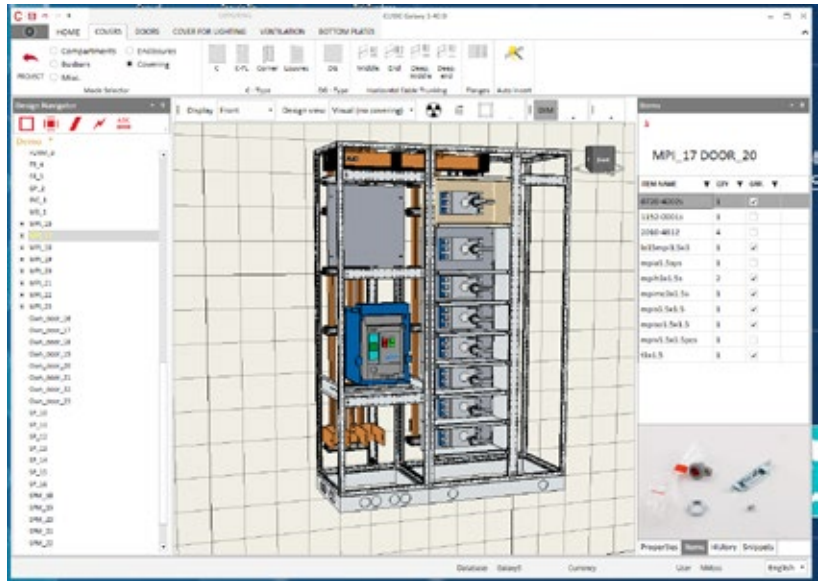


CUBIC Galaxy 3

The CUBIC Galaxy 3 software was specially created by CUBIC for their CUBIC Partners as an intuitive, time-saving solution to optimise resources when designing electrical switchboards.

For speed and accuracy, components are inserted in groups - no need to enter items individually.

Heat rise calculation report to IEC TR 60890 and electronic purchase orders of the bill of materials can be easily created.



CUBIC global training Programme - 5 days

The 5-day 'System Builder' course is the main training course for Assembly Manufacturers. This is run by NHP in Australia and New Zealand by CUBIC qualified trainers which enables the accredited personnel to design, purchase and supervise the construction of a CUBIC switchboard including the CUBIC tested busbar systems.

The advantage for Assembly Manufacturers

- Fast and smooth transition from previous systems
- Confidence from day one
- A high degree of trustworthiness and seriousness in the market
- Utilisation of CUBIC's experience of optimised design and efficient work flow
- Knowledge of responsibilities as per AS/NZS 61439

The advantage for Consultants and End Users

- Confidence in the ability of CUBIC Assembly Manufacturers
- Uniform documentation and quality of end product
- Peace of mind having overall back up from NHP and CUBIC



All switchboards are consistently high quality

Standardisation of parts allows for mass production providing uniformly high-quality components with the associated cost benefits.

The intuitive assembly instructions provide rapid assembly with minimal engineering required.



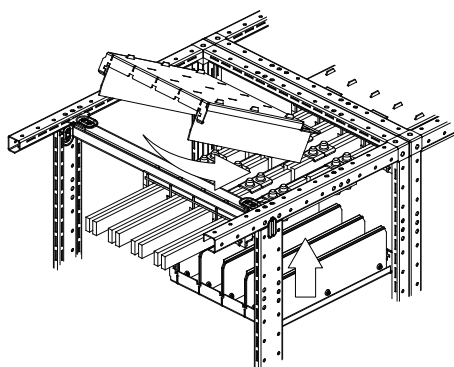
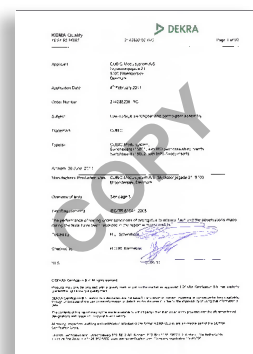
Shock and Seismic resistant

The CUBIC Modular System is built based on a robustly engineered frame design. The system has passed tests for shocks up to 30G for 12.5ms, and Seismic simulation at 1G horizontal and 0.8G vertical directions which is an important factor when considering transport from the workshop to site.

Arc fault containment tested up to 100kA

For maximum personnel safety and operational dependability the CUBIC System has passed arc fault containment testing for AS/NZS 61439 Annex ZD and the more demanding IEC/TR 61641.

Should an arc fault occur within the switchboard, these tests demonstrate how the dangerous gases, pressure and heat are vented out the top or rear of the board away from personnel.



Fully Insulated busbar option

A 'click in' fully insulated busbar system is available which eliminates the potential for an arc fault to occur on the busbar, providing the maximum level of safety.

Mounting Options

Multi-Purpose Insert (MPI)-fixed mounting

CUBIC's standard inserts are easily assembled for up to Form 4B segregation.

Tested connections are ensured through the use of Cu-flex, CUBIC's patented flexible copper conductors.



Multi Drawer (MD) – fully withdrawable

MD is a system where electrical components are mounted in exchangeable drawer units, which can be operated and removed without disconnecting the main supply of the switchboard.

The MD has 4 positions:

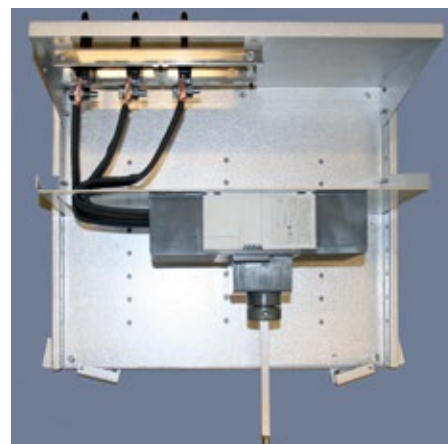
- 1) Fully inserted with all circuits connected. The external handle locks the drawer in place with the circuit breaker switched on
- 2) Test position – Pulled out one position which discounts the line and load bus plugs, but the control plugs remain connected for testing
- 3) Disconnected positions – All circuits disconnected but the drawer remains
- 4) Fully removed - Shutters cover the busbar

MD comes in sizes from 16A to 630A and using the smallest size up to 27 units can be installed per tier.

Plug-in (PI) and Plug in Plus (PI+) - demountable

A withdrawable option of high specification, maintains the live discount function of a MD panel with the economy of a fixed pattern solution.

Inserted behind a standard door, the drawer has a bus plug connection on the line side and the option of another bus plug or to manual disconnection from the load side.





Design verification

In accordance with AS/NZS 61439-2	Verified by
<p>Strength of material and parts</p> <p>Tested for corrosion, thermal stability, resistance of insulating materials to normal heat, resistance to abnormal heat and fire due to internal electric effects.</p> <p>Lifting tests performed for assembly sections up to 1750 kg.</p>	KEMA / DEKRA
<p>Degree of protection</p> <p>The CUBIC Modular System has in its standard version been tested at different IP ratings up to IP54.</p>	KEMA / DEKRA
<p>Clearances</p> <p>Clearances tested for rated impulse withstand voltage U_{imp} maximum 12 kV to 14 mm, depending on the used components.</p>	KEMA / DEKRA
<p>Creepage distances</p> <p>Creepage distance tested for rated insulating voltage U_i maximum 1000 V, pollution degree 3, material group II to 14 mm, depending on the used components.</p>	KEMA / DEKRA
<p>Protection against electric shock</p> <p>Protection against electric shock and integrity of protective circuits:</p> <ul style="list-style-type: none"> • Effective continuity between the exposed conductive parts of the ASSEMBLY and the protective circuit. Measured below the maximum of 0.1 Ω • Effectiveness of the assembly for external faults. Tested for I_{cw} 72 kA for 100 ms, 158.4 kA peak. 	KEMA / DEKRA
<p>Incorporation of switching devices and components</p> <p>Inspection made and found in accordance with the standard.</p>	KEMA / DEKRA
<p>Internal electric circuits and connections</p> <p>Inspection made and found in accordance with the standard.</p>	KEMA / DEKRA
<p>Terminals for external conductors</p> <p>Inspection made and found in accordance with the standard.</p>	KEMA / DEKRA
<p>Dielectric properties:</p> <p>Power-frequency withstand voltage:</p> <ul style="list-style-type: none"> • Tested with maximum 3.5 kV depending on the used components without any disruptive discharge. • Impulse withstand voltage: • Tested with up to maximum 12 kV for each polarity without any disruptive discharge depending on the used components. 	KEMA / DEKRA
<p>Temperature-rise limits</p> <p>Complete ASSEMBLIES up to 6300 A including incoming ACB and outgoing units up to 1440 A.</p> <p>Horizontal main busbars up to 6000 A.</p> <p>Vertical distribution busbars up to 2000 A.</p>	KEMA / DEKRA
<p>Short circuit withstand strength</p> <p>Incoming unit including main busbars up to I_{cw} 120 kA, 264 kA peak, I_{cc} 120 kA prospective.</p> <p>Neutral tested to 60% of above.</p> <p>Outgoing units, type MD and MPI are tested with different brands of components up to 1600 A for I_{cc} up to 120 kA.</p>	KEMA / DEKRA
<p>EMC</p> <p>Verification of the EMC is done in conformity with AS/NZS 61439-2, clause 10.12.</p> <p>According to these clauses it is verified that EMC sensitive parts are applied in accordance with manufacturer's recommendation and the guidelines of the IEC 61000-5-2 - Technical Report Type 3.</p>	KEMA / DEKRA
<p>Mechanical operation</p> <p>Tested for 200 times without impair of the structure.</p>	KEMA / DEKRA

Technical Data	
Material	Electro-galvanised / iron-phosphated steel plate
Colour	Light grey - RAL 7035 / Orange RAL2000. Powder lacquered 60-80 µm
Busbar systems	System 225, 800, 2000 and 7000
Supply systems	TN-C, TN-S, TN-C-S, TT and IT up to 6300A
Internal separation	FORM 1, 2a, 2b, 3a, 3b, 4a, 4b and FORM 4, type 1-7
Multi Drawer	Up to 630 Amps Icc up to 120 kA
Electro-magnetic compatibility	EMC environment A and B
Rated current	Up to 6300 Amps
Dielectric properties	Up to 3.5 kV
Rated short-time withstand current	Up to 120 kA
Rated peak withstand current	Up to 264 kA
Rated voltage, insulation	1000V AC
Rated operational voltage	Up to 1000V, 50 Hz
Degree of protection	Up to IP54
Vibration test	2 G in frequency area 2.5-500 Hz in three directions
Shock test	30 G in 12.5 ms in six directions
Seismic test	Earthquake test carried out with biaxial horizontal and vertical multi-frequency movements
Arcing test	IEC/TR 61641 as well as to AS/NZS 61439.1 Annex ZD
Surface treatment	Class C2 high, according to ISO 12944
Tropical test	ISO 6270

Also compliant to UL standards In accordance with UL 67, UL 508 A, UL 845 and UL 891

Test stations and approvals include

- KEMA / DEKRA
- Parkside Laboratories (Australia)
- Det Norske Veritas (DNV)
- Germanischer Lloyd
- Elektronikcentralen
- Russian Maritime Register of Shipping.
- Sveriges Provnings- och Forsknings-institut
- Teknos Schou Laboratory
- Canadian Standards
- Underwriters Laboratories Inc.

For further information please contact your local NHP Sales Office or email CUBIC-Solutions@nhp.com.au

AUSTRALIA

nhp.com.au

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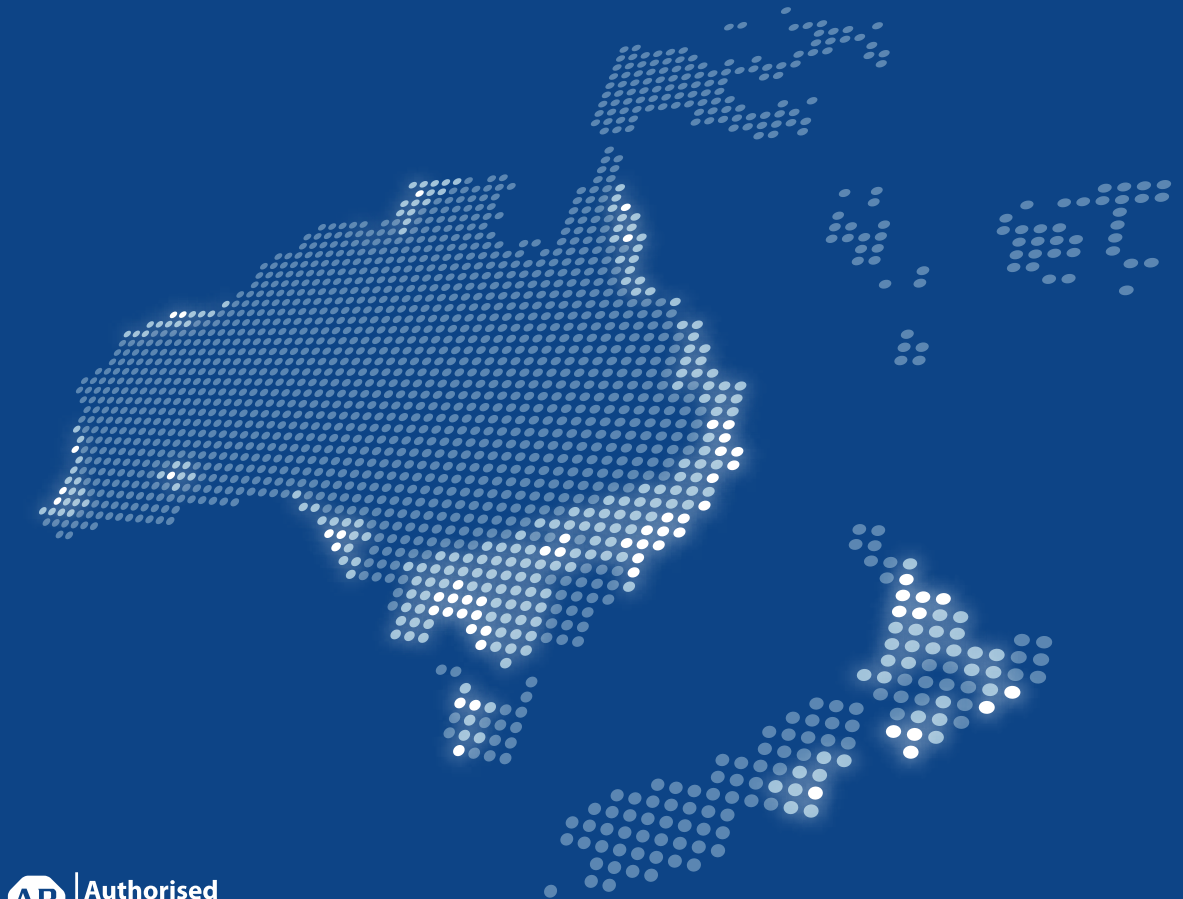
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