



Other Emona Industrial Electrical Products

• Electrical Safety & OHS Testing.

Manual Testing and Tagging, Wireless Automated Testing and Tagging, Asset Management Software, RCD Testers, Isolation Transformer, Microwave Oven Leakage

• Installation & Electrical Testing.

Installation Tester & Reporting System, Insulation, Earth Resistance, Loop Impedance, RCD Testers, Multimeters, Clamp Meters, Phase Rotation.

• Cable Locating & Faults Testing.

Underground Cable Locators, Cable Tracing, Wire Map Tester, Structured Cabling Tester, CAT6 Lan Analyser, Digital TDR Fault Locator, Graphical TDR Fault Locators.

• Mains Energy & Power Testing.

Handheld Watt Meters, 3 Phase Power Quality Meters, Handheld True RMS Power Meter, Portable Energy Analysers, Plug-In Voltage Logger.

About Emona Instruments

Established in 1979, Emona Instruments has grown to become one of Australia's leading suppliers of electrical and electronic test and measuring instruments. We offer NATA traceable calibration facilities and full after sales support.

EMONA Notes — electrical compliance testing series

EMONA Instruments Pty Ltd

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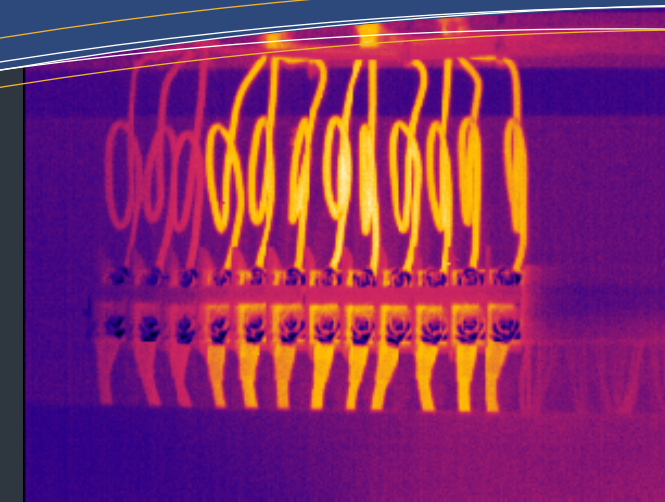
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APPLICATION
NOTES FOR
ELECTRICAL
CONTRACTORS

EMONA Notes



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electrical compliance testing
— thermal imaging
to AS/NZS3000 Wiring Rules

Switchboard Thermal Surveys ... an open door for electrical contractors.

As the price of thermal imaging cameras drops to a level where the equipment cost is comparable to the cost of other electrical test equipment, electrical contractors are finding that they can grow their business by offering new services like switchboard thermal surveys to their existing clients and to attract new clients.

Switchboard thermal surveys are required when carrying out routine inspection and testing of electrical installations under AS/NZS3000:2007 Wiring Rules. Meanwhile, more and more business owners are required to provide thermal switchboard survey reports to insurance companies as part of their commercial premises fire risk assessment. Switchboard thermal survey reports have become a valuable business document that can lower insurance premiums and help businesses save money.

Australia's switchboard thermal survey business is growing and is no longer the exclusive domain of thermography consultants using high priced

equipment and charging clients up to \$1,500 per day. Today, switchboard surveys are a routine inspection carried out by electrical contractors armed with a modestly priced new generation piece of test equipment and appropriate training under their belt.

Switchboard Inspections & The Wiring Rules

The testing, measurement, and result recording procedures for switchboard thermal surveys are described in the testing and inspection provisions of AS/NZS3000:2007 Wiring Rules through their alignment with AS/NZS3019:2007 Electrical installations—Periodic verification.

Under Section 5 "Verification by visual inspection and full testing of an electrical installation", clause 5.8 "Integrity of switchboard connections" states: "With normal operating loads being supplied for at least 30 minutes, the temperature of switchboard components shall be measured and compared to the ambient temperature to ensure that there is no excessive rise in temperature.

NOTE — This test should be carried out with a

"Procedures for switchboard thermal surveys are described in the testing and inspection provisions of AS/NZS3000:2007"

“Electrical contractors have a competitive advantage over traditional thermography consultants.”

a thermal imaging device; however, use of an infrared thermometer is acceptable. For each switchboard, both the ambient temperature and the maximum temperature measured should be recorded and any items whose temperature is significantly above the ambient noted.”

Switchboard thermal surveys are a routine visual inspection under AS/NZS3019 and are carried out by a licensed electrician. The Wiring Rules do not require operators to have any other specialized qualifications or employ the services of specialist consultants.

An Open Door for Electrical Contractors

Regulations, Standards and Codes of Practice in Australia specify that any work on an electrical installation (defined as any fixed appliances, wires, fittings, apparatus or other electrical equipment used for conveyance, control and use of electricity in a particular place) must be carried out by a licensed electrical contractor.

Thermography consultants carrying out switchboard thermal surveys must be accompanied by a licensed electrical contractor because only licensed electrical contractors are competent to open the switchboard cover on a live electrical installation.

Electrical contractors have a competitive advantage over traditional thermography consultants. Electricians can provide a lower cost service to their customers because of the reduced manpower required to carry out the switchboard surveys.

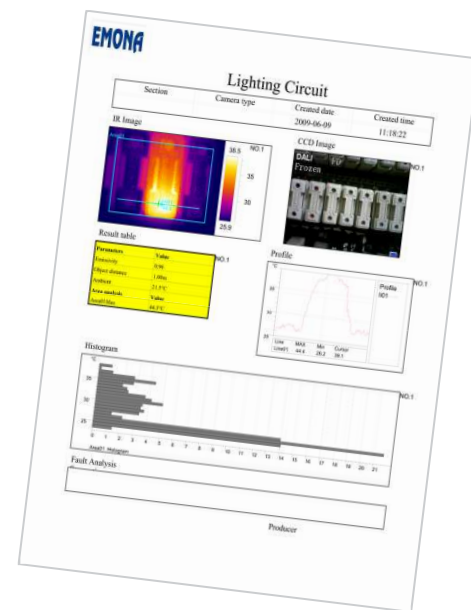
The Switchboard Thermal Survey System

When evaluating thermal survey systems, users

should be aware of camera resolution and frame rate. An effective switchboard thermal survey system requires a minimum of 160 x 120 image resolution and should have a 50Hz frame rate, otherwise images will be blurry and poorly defined. Fault interpretation is much more time consuming with poorly defined thermal images.

Imagine trying to make sense of a blurred thermal image consisting of numerous rows of tightly mounted circuit breakers or fuses. A sharper image will save you time and the report will look more professional to your client.

Optional lenses are also essential for an effective switchboard thermal survey system, particularly a wide angle lens. Switchboards can be located in tight spaces, limiting the camera viewing angle. Large commercial switchboards require many images to complete the survey.



Dali Report Writer generates multi-page reports

A wide angle lens reduces the number of images required, saving time in the field and in the office when generating the survey report.

Traditional thermal imaging cameras also have

a fixed LCD display. Today’s modern cameras offer a more ergonomic design with a rotating LCD display. Users don’t have to hold the camera high or low, just rotate the LCD display for the optimal viewing angle and wrist position.

Additional features such visible light image camera, voice recording, laser pointer and multi-page reporting software also make the survey system more efficient. But this functionality does not need to command a high price, with such systems starting from as little as \$6,599 ex GST.

Thermal Switchboard Survey Reports

All inspection and verification procedures must be backed up by a professional reporting system. Switchboard thermal survey reports are important both as a maintenance tool and for insurance purposes as part of a commercial premises fire risk assessment.

Reports should include inspection details such as description, date and time, thermal image results summary and a fault analysis. The inclusion of a visible light image is also regarded as an essential part of the Switchboard Survey Report. It serves as evidence that the switchboard was inspected and helps to identify faulty components when carrying out remedial work.

Also important in the accountability of the survey reports is how the inspection data was collected and collated. Paper based recording of inspection notes and comments is prone to human error and should be avoided.



Dali TEI-P Switchboard Thermal Inspection System

A switchboard survey system should offer a voice recording feature. This allows the operator to speak into the thermal imaging camera and the voice notes are linked to the thermal image. When the report is generated off-site, the operator is able to listen to the recorded voice notes and transcribe them accurately into the survey report. Voice recording guarantees the accuracy and accountability of survey reports.

The Dali TEI-P Inspection System

An example of a switchboard thermal survey system that meets requirements outlined in this application note is the Dali TEI-P Switchboard Inspection System.

The system is supplied as a complete solution, covering the TEI-P thermal imaging camera, Dali Report multi-page reporting software and Emona on-site user training. The system price is \$6,599 ex GST giving electrical contractors an affordable solution to grow their business and expand their customer base. Contact Emona now for an on-site demonstration.

“But this functionality does not need to command a high price, with such systems starting from as little as \$6,599 ex GST.”