

HOME WIRING ESSENTIALS

NBN
READY



smartwired®



Age & Assisted Living



Appliances



Digital Home Health



EV Charging



Energy Management



Entertainment



EES System Battery



Information & Communications



Intelligent Lighting & Power



Security & Safety



Solar

CODE OF PRACTICE

2021 EDITION

 International Copper Association Australia
Copper Alliance

This document is proudly supported by:



PREFACE

The objective of this Code of Practice is to describe the minimum wiring infrastructure to support the provisioning of the residential services listed in this document. Compliance with minimum requirements as specified in this Code of Practice enables the use of symbols that indicates the installed wiring infrastructure is sufficient to support the provisioning of a service to a minimal level. A customer may choose to increase the amount of infrastructure to exceed the minimum level proposed and can still use the symbols.

The following residential services are covered by this Code of Practice:

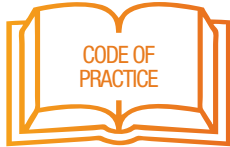
- Age & Assisted Living
- Appliances
- Digital Home Health
- Electric Vehicle Charging
- Energy Management
- Entertainment
- EES systems (Batteries)
- Information & Communications
- Intelligent Lighting & Power
- Security & Safety
- Solar

This is a technical Code of Practice and does not cover potential consumer protection against issues that may arise in the implementation of this material.

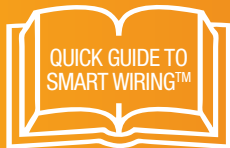
This Code of Practice is intended for:

- Architects
- Builders
- Building consultants
- Engineers
- Electrical and Communications Contractors
- Electronic systems professionals
- Home owners
- Installers
- Wiring contractors

HOME WIRING ESSENTIALS COMPRISES THREE DOCUMENTS:



This document sets out the standard to be complied with to support the residential systems listed in these documents.



This document is designed for the consumer to easily communicate to the installer the services they want without the need to have detailed knowledge of each technology area.



This document provides details to the installer of the cabling infrastructure required to meet the consumer expectations and comply with the standards and the Code of Practice for Home Wiring.

This is one in a series of three documents all of which are available from www.registeredcable.com.au/smart-wiring/

CONTRIBUTORS

The following organisations have contributed to the development of this Code of Practice.



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1. SCOPE AND GENERAL

1.1 SCOPE

The objective of this Code of Practice is to describe the recommended minimum wiring infrastructure requirements necessary to support residential services. Compliance with the minimum requirements specified in this Code enables the use of symbols to indicate that the wiring infrastructure is sufficient to provide a minimal level of a given service. Specifications listed in this document are the **minimum requirements** – installations may be subject to other standards not shown in this document.

This document is distinct from, but is compliant with, ISO/IEC 7498-1:1994(E), which provides a common basis for the coordination of standards for the purpose of information systems interconnection.

This Code of Practice applies to all domestic residences including Single Dwelling Unit (SDU) and Multiple Dwelling Unit (MDU) (separate, semi-detached, row and terrace homes, flats, units and apartments). It does not provide details of cabling through common areas.

1.2 TRADEMARKS AND SYMBOLS

Subject to an industry licensing agreement, companies that install home wiring in compliance with this Code of Practice are permitted to use the individual Smart Wired™ symbols given in this document. For details of the licensing conditions please see www.registeredcable.com.au/home-wiring-essentials/.

1.3 TERMS AND DEFINITIONS

For the purpose of this document the following terms and definitions apply.

1.3.1 Appliance

A device or system that provides a service with the use of electromotive power. Examples include air conditioners, water heaters, swimming pool pump units and electric vehicles. For the purpose of demand management, embedded generators are also called appliances. This includes all elements required for normal operation and which are generally supplied or installed with the product, such as thermostats or user-operated remote controls.

1.3.2 Demand response

The automated alteration of an appliance's normal mode of operation in response to an initiating signal originating from or defined remotely of the residence – usually by an electrical utility. The user may be able to choose whether to take part in a demand response program and may participate in activating, configuring or deactivating demand response capability.

1.3.3 DRED

Demand response enabling device as described in AS4755.

1.3.4 Electrical Energy Storage System (EES system) - batteries

Systems that are used for storing energy, which may include interfaces and control solutions to best manage energy storage and to integrate with energy services and strategies employed throughout the home. A battery may form part of an EES.

1.3.5 Economic cable sizing (ECS)

Selecting cables based on minimising the cost of cable losses see AS/NZS3008 and referenced document that provided a more detailed explanation see the referenced document which is available on the ICA website www.copper.com.au/about/projects/principles-of-economic-and-energy-efficient-cable-sizing/

1.3.6 Gateway

A system or device designed to provide interfacing between networks that use different protocols. Gateways provide system interoperability by operating as protocol converters between any layer of the OSI model – they are used for impedance matching and as rate converters, fault isolators, and signal translators.

1.3.7 Home Area Network (HAN)

A home network or home area network (HAN) is a residential local area network (LAN). It is used for communication between digital devices deployed in the home including personal computers, printers, mobile computing devices, security and safety systems and smart appliances.

1.3.8 Home Cinema

Home entertainment arrangements designed to reproduce a commercial movie theatre experience and mood with video and audio equipment.

1.3.9 Home energy gateway; or Energy services interface (ESI)

A device that provides a secure interface between the grid and/or communications services, and home area networks, appliances, in-home displays and other products and services. Apart from energy management functions it can incorporate additional management functions for security, health and assisted living.

1.3.10 Human Interface Device (HID)

The term “HID” most commonly refers to the USB-HID specification. The HID protocol is comprised of a “host” and a “device”. The device directly interacts with a person, such as a keyboard, mouse or touch screen display. The host communicates with the device and receives input data from the device on actions performed by a person. Output data flows from the host to the device and then to the person. Examples of a host are computers, mobile phones and personal digital assistants.

1.3.11 Local Area Network (LAN)

A local area network (LAN) is a computer network within a small geographic area such as a home or commercial building.

1.3.12 Media Centre

A Media Centre is typically a dedicated computer used to store all media content, photos, music and videos that is interconnected to other computers, audio and video systems through the network so everyone can share the content.

1.3.13 Power Line Carrier (PLC)

Power Line Carrier (PLC), also known as Power Line Digital Subscriber Line (PDSL), mains communication, Power Line Telecom (PLT), Power Line Networking (PLN), or Broadband over Power Lines (BPL) are systems for carrying data on a power cable.

1.3.14 Technology

The devices and components that comprise the platform. Includes controllable (Intelligent/Smart) appliances.

1.3.15 Server

A computer system that provides essential services across a network. Typically servers provide web, print and database functionality. They include: media centre servers; home servers; power servers that are network servers with sufficient capacity to handle the high data rates required for multimedia applications and they are able to handle multiple video streaming signals simultaneously; and, head-end servers for TV distribution of multiple sources e.g. FTA, PAY-TV, DVDS etc. (all the equipment such as DVD players demodulators, modulators are considered the head end).

1.3.16 Smart/Intelligent Appliance

An appliance with an inbuilt and openly accessible capacity for remote control of its electrical energy use and functionality.

1.3.17 Smart/Intelligent Grid

An electrical network with integrated communications and electrical energy delivery systems.

1.3.18 Smart Meter

An electrical power meter able to record and remotely report energy consumption over discrete periods. Smart meters also enable other functions such as the remote control of supply into the home. Some have the capability to display energy use within the home. A Smart Meter should not be confused with a time-of-use-meter (ToU) Meter, which is able to record energy use over discreet periods (15 or 30 minutes) and is used to charge consumers different tariffs at different times of the day but has no further function.

1.3.19 User

A person, organisation or entity who directly benefits from the service provided by an appliance, who normally regulates the operation of that appliance and who is able to enter into agreements for the provision of services.

1.3.20 Wide Area Network (WAN)

A wide area network (WAN) is a communications network across large areas such as campuses, cities, regions, nations or many nations.

2 FRAMEWORK

2.1 GENERAL

This section describes a framework that enables systems professionals and customers to place into context the relationship between the platforms and the systems that are required to provide key residential services. Whilst the wiring infrastructure is the focus of this code, this framework covers all common technologies and systems available to the residential home.

The Services covered by this Code of Practice are:

- Age & Assisted Living
- Appliances
- Digital Home Health
- Electric Vehicle Charging
- Energy Management
- Entertainment
- EES systems (Batteries)
- Information & Communications
- Intelligent Lighting & Power
- Security & Safety
- Solar

Examples of Capabilities and Functionalities that enable those systems are:

- Integrated home control
- Load control
- Display of energy use and price
- Playing movies
- Seeking medical services
- Back to base security
- Using web services – e.g. banking
- Making telephone calls
- Others

Examples of Platforms and Systems that support those Capabilities and Functionalities are:

- LAN, WAN
- Wired
- Wireless
- Power line carrier (PLC)
- Fibre in home
- Others

Examples of Technologies that support the Platforms are:

- Human interface devices (HID)
- Servers: power, media centre, head-end, or home server
- Internet gateway
- Smart appliances
- Communications: e.g. telephone.

The hierarchical nature of the systems that provision an Energy Management Service is illustrated in Figure 1. It is the intention of this Code of Practice to list a minimal set of standards and handbooks that are required to design and implement a wiring system to provision service.

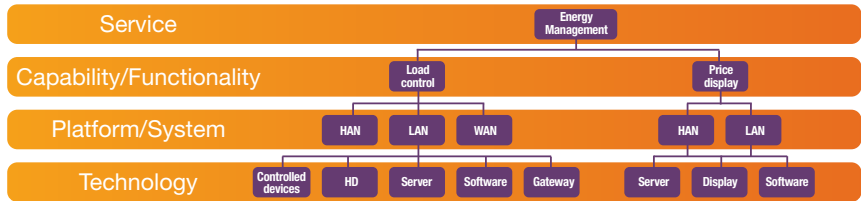


Figure 1. Example of some of the systems that support an Energy Management service.

The central role of the Smart Wired™ program in the provision of services is indicated in the diagram below. Details of each symbol are given in the following sections. **It is important to recognise that the use of these symbols does not preclude the use of wireless or power line carrier technology, which may be used to augment the wired infrastructure.** The use of the symbols indicates the presence of a minimum level of infrastructure that has been provisioned in accordance with the Code of Practice that will allow a minimum level of a given service to be delivered.



Figure 2. The central role of the Smart Wired™ program to the provision of services is illustrated in this diagram. The meaning of each symbol and terms of use are described in this document.

2.2 SERVICE SYMBOLS

The presence of a symbol indicates:

- a minimal level of wiring is provided to carry that service capability
- the wiring complies with specific requirements.

Service Designation	Service	Capability and Function
S1	 [®] Age & Assisted Living	<ul style="list-style-type: none"> • Safety alerts (falls, no activity, abnormal use of appliance, etc) • Security – protection against intruders – includes panic buttons etc
S2	 Appliances	<ul style="list-style-type: none"> • Monitoring all major appliances from hot water system to refrigeration and washing machine • Smart grid interoperability • Demand response
S3	 [®] Digital Home Health	<ul style="list-style-type: none"> • Online medical diagnostics • Video conferencing with medical practitioners
S4	 Electric Vehicle Charging	<ul style="list-style-type: none"> • Charging of Electric Vehicles (EVs) • Smart grid interoperability • Demand response • Monitor power use (specific to charging of EVs)
S5	 [®] Energy Management	<ul style="list-style-type: none"> • Monitor power usage of major appliances such as Hot Water, Air Conditioning, Pool Pumps and Refrigeration, EES and Solar systems. • Implement Economic Cable Sizing to all major appliances
S6	 [®] Entertainment	<ul style="list-style-type: none"> • Distributed audio and video • Free to air TV and High definition (HDTV) content • Home theatre • Pay TV
S7	 EES systems (battery)	<p>Electrical Energy Storage systems (batteries)</p> <ul style="list-style-type: none"> • Charging/discharging of Batteries • Smart grid interoperability • Demand response • Monitor power use (specific to batteries)





Service Designation	Service	Capability and Function
S8 	Information & Communications	<ul style="list-style-type: none"> • Internet access • Home video conferencing • Intercoms • Telephony
S9 	Intelligent Lighting & Power	Control a range of systems in the lived in environment to improve amenity and sustainability through the integration of lighting, power, communications and monitoring
S10 	Security & Safety	<ul style="list-style-type: none"> • Automatic access control • Electronic monitoring • Fire safety
S11 	Solar	<ul style="list-style-type: none"> • Use of Rooftop Solar (PV) • Smart grid interoperability • Monitor power use (specific to PV)

Table 1. The display of each of these symbols indicates that a minimum level of infrastructure has been provisioned for the service that symbol represents.

3 REQUIREMENTS FOR ALL FIXED INFRASTRUCTURE

3.1 GENERAL

This Section lists the requirements that apply for all wiring.

3.1.1 Acts and regulations

The installation, use and maintenance of batteries is subject to a number of acts and regulations, for example:

- Electricity Supply (General) Regulation 2014 (NSW)
- Electricity Supply (Safety and Network Management) Regulation 2014
- Work Health and Safety Act 2011 and Regulation 2011

3.1.2 Australian Building Code Compliance

In cases where the Australian Building Code requirements conflict with the recommendations or requirements of this Code of Practice, the Australian Building Code requirements shall be followed.

3.1.3 General Standards and handbooks

The supply and installation of infrastructure for any of the 11 services listed in table 1 shall comply with the following standard and in addition the standards listed in section 4.

3.1.4 Substitution of standards

Where the standard ISO/IEC 1454.3.3 (Part 1-6) Communications Layers – Network based control is called for, it may be substituted by a proprietary solution where it is deemed by the customer to meet their needs.

STANDARD/HANDBOOK	
AS/CA S009	Installation requirements for customer cabling (Wiring Rules)
AS/NZS 3000	Electrical installations (known as the Australian/ New Zealand Wiring Rules). This Standard sets out requirements for the design, construction and verification of electrical installations, including the selection and installation of electrical equipment forming part of such electrical installations.
AS/NZS 3008	Electrical installations - Selection of cables - Cables for alternating voltages up to and including 0.6/1 kV - Typical Australian installation conditions
AS/NZS11801.1	Information technology - Generic cabling for customer premises General requirements (ISO/IEC 11801-1:2017, MOD)
AS11801.4	Information technology - Generic cabling for customer premises Single-tenant homes (ISO/IEC 11801-4:2017, MOD)
Home Wiring Essentials suite	1. Consumer handbook - "Quick Guide to Smart Wiring™" 2. Installer handbook for home wiring

Table 2. General standards and handbooks.

4 SPECIFIC COMPLIANCE REQUIREMENTS FOR SERVICES

4.0 GENERAL

This Section lists the standards and handbooks that are required to be adhered to in addition to those listed under general requirements to be followed for the provision of systems that are compliant with this Code of Practice for:

- Age & Assisted Living
- Appliances
- Digital Home Health
- Electric Vehicle Charging
- Energy Management
- Entertainment
- ESS systems (Batteries)
- Information & Communications
- Intelligent Lighting & Power
- Security & Safety
- Solar

Specifications listed in this document are the minimum requirements; installations may be subject to other Standards not shown in this document.



4.1 AGE & ASSISTED LIVING

4.1.1 Symbol

This symbol indicates that the Age & Assisted Living wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.1.2 Scope

The Age & Assisted Living System is provisioned by:

Capabilities and Functions

- Safety alerts (falls, no activity, abnormal use of appliance, etc)
- Safety – medical alert (falls etc)

Platforms

- Wiring (twisted pair)
- Fibre
- Lighting and power – lighting of railings and ramps to get to the bathroom at night etc

Technologies

- Alarms – warning devices
- PC
- Sensors (detectors)
- Camera
- Phone

4.1.3 Compliance

The wiring required for Age & Assisted Living Systems shall be provisioned according to the standards and handbooks below and in addition to those standards and handbooks listed under the section titled “General standards and Handbooks”.

STANDARD/HANDBOOK

AS 4607

Personal response systems

Table 3. Age & Assisted Living System standards and handbooks.



4.2

APPLIANCES

Appliances cover cooking ranges, swimming pool pumps, air conditioners and hot water systems. They also include products that consume less electricity such as refrigerators, washing machine, driers etc.”

4.2.1 Symbol

This symbol indicates that the appliance wiring infrastructure meets the minimum requirements of this Code of Practice.

3.7.2 Scope

The appliance system is provisioned by:

Capabilities and Functions

- Control
- Smart grid interoperability
- Manage loads and generation and storage
- Demand response - AS4755 enabled
- Monitor power use

Platforms

- Demand Management capability
- Energy management system
- Fibre
- HAN/LAN
- Wiring (twisted pair)
- HAN/LAN

Technologies

- In-home display
- Smart grids
- Batteries, inverters, HAN
- DRED Smart meters

4.2.3 Compliance

The wiring required for appliances shall meet all the requirements of energy management section and shall be provisioned according to the following standards and handbooks where applicable in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK

AS/NZS 4755.3.1	Interaction of demand response enabling devices and electrical products—Operational instructions and connections for air conditioners (published as AS4755.3.1, 2008)
AS/NZS 4755.3.2	Interaction of demand response enabling devices and electrical products—Operational instructions and connections for swimming pool pump-unit controllers
AS/NZS 4755.3.3	Interaction of demand response enabling devices and electrical products—Operational instructions and connections for electric and electric-boosted water heaters
AS/SNZ TS ISO/IEC 14543 (parts 1-6)	Communication Layers – Network based control.



4.3

DIGITAL HOME HEALTH

4.3.1 Symbol

This symbol indicates that the Digital Home Health wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.3.2 Scope

The Digital Home Health service is provisioned by:

Capabilities and Functions

- Online medical diagnostics
- Video conferencing with medical practitioners

Platforms

- Computer
- HAN/LAN
- Wiring (twisted pair)
- Fibre

Technologies

- Camera
- PC
- Phone

4.3.3 Compliance

The wiring required for Digital Home Health shall be provisioned according to the standards listed in the section titled “General standards and handbooks”.

* It is a condition of the trade mark registration that, in use, the cross device contained within the trade mark will be rendered in colours other than red on a white or silver background, or white on a silver or red background.



4.4 ELECTRIC VEHICLE (EV) CHARGING

4.4.1 Symbol

This symbol indicates that the Electric Vehicle (EV) Charging wiring infrastructure meets the minimum requirements of this Code of Practice.

4.4.2 Scope

The EV Charging system is provisioned by:

Capabilities and Functions

- Charging of Electric Vehicles (EVs)
- Smart grid interoperability
- Demand response
- Demand response – AS 4755 enabled
- Monitor power use (specific to charging of EVs)

Mode of EV charging as defined in IEC 61851-1:2001 Electric vehicle conductive charging system – Part 1: General requirements.

Platforms

- EV Charging management system
- Demand management capability
- HAN/LAN

Technologies

- Electric Vehicles (EVs)
- EV Supply Equipment (EVSE)

4.4.3 Compliance

The wiring required for Intelligent Electric Vehicle charging facility shall meet all the requirements of energy management section and be provisioned according to the standards and handbooks given below in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK

AS/NZS 4755.3.4	Interaction demand response enabling devices and electrical products – Operational instructions and connections for grid-connected charge/discharge controllers for electric vehicles.
AS/NZS 4777	Grid connection for energy systems via inverters parts 1 and 2
AS/SNZ TS ISO/IEC 14543 (parts 1-6)	Communication Layers – Network based control

Table 5. Electric Vehicle (EV) Charging System standards and handbooks.



4.5

ENERGY MANAGEMENT

4.5.1 Symbol

This symbol indicates that the Energy Management wiring infrastructure meets the minimum requirements of this Code of Practice.

This symbol covers the general requirements of:

- Appliances
- EES (batteries) & solar
- Electric Transport
- Heating & cooling
- Home automation
- Home entertainment & office equipment
- Hot water service
- Lighting
- Smart meters and displays

4.5.2 Scope

The Energy Management System is provisioned by:

Capabilities and Functions

- Smart grid interoperability
- Demand response
- Manage appliances (HW, AC, pool pump-unit, electric vehicle)
- Demand response enabled
- Monitor power use

Platforms

- Demand Management capability
- HAN/LAN
- Pool energy management system
- Wiring (twisted pair)
- Fibre

Technologies

- In-home display
- Smart and/or controllable appliances
- Smart grids
- Smart meters
- Solar panels, hot water
- DRED

4.5.3 Compliance

The wiring required for Energy Management systems shall be provisioned according to the following standards and handbooks below in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK	
AS/NZS 4509.1	Stand-alone power systems - Safety and installation. This Standard sets out safety and installation requirements for stand-alone power systems used for the supply of extra-low (ELV) and/or low voltage (LV) electric power to a single load, or an electrical installation in a single residence or building, or a group of residences or buildings and associated items with switchboards to AS/NZS 3000 requirements.
AS/NZS 4755.1	Framework for demand response capabilities and supporting technologies for electrical products, and requirements for demand response enabling devices Section 1: Architecture of demand response systems Section 2: Requirements for demand response enabling devices
AS4755	Framework for demand response capabilities and supporting technologies for electrical products
AS/NZS 4755.3.2	Grid connection of energy systems via inverters – Inverter Requirements Scope. This Standard specifies the requirements for inverters, with ratings up to 10 kVA for singlephase units or up to 30 kVA for three-phase units, for the injection of electric power through an electrical installation to the electricity distribution network. NOTE: Although this Standard does not apply to larger systems, similar principles can be used for the design of such systems.
AS/SNZ TS ISO/IEC 14543 (parts 1-6)	Communication Layers – Network based control

Table 6. Energy management standards and handbooks.



4.6

ENTERTAINMENT

4.6.1 Symbol

This symbol indicates that the Entertainment wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.6.2 Scope

The Entertainment system is provisioned by:

Capabilities and Functions

- Distributed Audio
- Free to Air TV
- High definition (HDTV) content
- On-demand movie and video content over internet
- Distributed Video
- Gaming
- Home Theatre
- Pay TV

Platforms

- IP reticulation
- RF reticulation
- Fibre
- Pay TV
- Wiring (coaxial and twisted pair)

Technologies

- DVD device
- Home Theatre
- Set top box
- Gaming consoles
- Media centre
- Gaming
- Media Server
- TV
- High Definition video distribution
- Storing and sharing movies

4.6.3 Compliance

The wiring required for Entertainment systems shall be provisioned according to the following standards and handbooks given below in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK

AS/NZS 1367

Coaxial cable and optical fibre systems for the RF distribution of digital television, radio and in-house analog television signals in single and multiple dwelling installations

Table 7. Entertainment standards and handbooks.



4.7

ELECTRICAL ENERGY STORAGE SYSTEM (BATTERIES)

Installation requirements for power and communications and control systems include consideration of: electric shock hazard, grid Integration wiring/cabling/protection energy hazard, inverter, earthing requirements, enclosure - design, location of battery, ventilation, earthing, inverter, wiring/cabling/protection.

4.7.1 Symbol

This symbol indicates that the battery wiring infrastructure meets the minimum requirements of this Code of Practice.

4.7.2 Scope

The EES battery System is provisioned by:

Capabilities and Functions

- Control
- Smart grid interoperability
- Manage loads and generation and storage
- Demand response - AS4755 enabled
- Monitor power use

Platforms

- Demand Management capability
- Energy management system
- Fibre
- HAN/LAN
- Wiring (twisted pair)

Technologies

- In-home display
- Smart grids
- Batteries, inverters, HAN
- Smart meters

4.7.3 Compliance

The wiring required for ESS shall meet all the requirements of energy management section and shall be provisioned according to the following standards and handbooks in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK

AS/NZS 4755.3.5	Interaction of demand response enabling devices and electrical products - Operational instructions and connections for grid-connected controllers for energy storage devices and inverter energy systems
AS/NZS 4509.2	<p>Stand-alone power systems - System design This Standard sets out requirements and guidance for the design of stand-alone power systems with energy storage at extra-low voltage used for the supply of extra-low and low voltage electric power in a domestic situation. Equipment up to the system output terminals is covered.</p> <p>The principles in this Standard are equally applicable to other systems including commercial and industrial applications and should be considered in the design of those systems.</p> <p>Optimization of system design considering time of energy use is not covered by this Standard.</p>
AS/NZS 4755.3.5	Demand response capabilities and supporting technologies for electrical products - Interaction of demand response enabling devices and electrical products - Operational instructions and connections for grid-connected electrical energy storage (EES) systems. Specifies a set of operational instructions to control the demand response of electrical energy storage systems and methods for connecting the demand response interface to the DRED. Includes methods of testing to verify compliance.
AS/SNZ TS ISO/IEC 14543 (parts 1-6)	Communication Layers – Network based control

Table 8. EES system (Batteries) standards and handbooks.



4.8

INFORMATION & COMMUNICATIONS

4.8.1 Symbol

This symbol indicates that the Information & Communications wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.8.2 Scope

The Information & Communications service is provisioned by:

Capabilities and Functions

- Internet access
- Intercoms
- Home Video Conferencing
- Telephony

Platforms

- Home Area Network (HAN)
- Wiring (twisted pair)
- Local Area Network (LAN)
- Fibre

Technologies

- Ethernet
- Network devices such as printers
- Customer-premises equipment (CPE)
- Ethernet enabled phones for VOIP

4.8.3 Compliance

The wiring required for Information & Communications systems shall be provisioned according to those listed in the section titled “General standards and hndbooks”.



4.9

INTELLIGENT LIGHTING & POWER

4.9.1 Symbol

This symbol indicates that the Intelligent Lighting & Power wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice. For the purposes of this Code of Practice, Intelligent Lighting & Power System refers to the integrated control of a range of discrete systems using detectors and actuators.

4.9.2 Scope

The Intelligent Lighting & Power System is provisioned by:

Capabilities and Functions

Integrated control of:

- Air conditioning
- Heating
- Lighting
- Appliances
- Hot water
- Irrigation (etc...)

Platforms

- HAN, LAN
- Refrigeration
- Wiring
- Plumbing
- Water service

Technologies

- Controllable
 - Power outlets
 - Fluorescent and LED lights
 - Appliances (including smart appliances)
- Control panel
- Electronic processor
- Sensors (detectors)
- Telephony

4.9.3 Compliance

The wiring required for Intelligent Lighting & Power Systems shall be provisioned according to the standards and handbooks in addition to those listed in the section titled “General standards and handbooks”.

STANDARD/HANDBOOK

AS/SNZ TS ISO/IEC 14543 Communication Layers – Network based control (parts 1-6)

Table 9. Intelligent Lighting & Power System standards and handbooks.



4.10 SECURITY & SAFETY

4.10.1 Symbol

This symbol indicates that the Security & Safety wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.10.2 Scope

The Security & Safety system is provisioned by:

Capabilities and Functions

- Automatic access control
- Fire safety
- Electronic monitoring

Platforms

- Back to base alarm system
- Interlinked smoke alarms
- Wiring (twisted pair)
- HAN/LAN
- Lighting control system
- Fibre

Technologies

- Automatic gates and doors
- Ethernet
- Motion sensors
- Security system
- Motion sensors
- Surveillance cameras
- Controllable lights
- HID
- Phone line
- Sensors: Smoke, thermal and motion
- Phone line
- Video door phone

4.10.3 Compliance

The wiring required for Security systems shall be provisioned according to the standards and handbooks in addition to those listed in the section titled “General standards and handbooks”

STANDARD/HANDBOOK	
AS/NZS 2201.1	Intruder alarm systems Part 1: Client's premises - Design, installation, commissioning and maintenance
Smart Wired™ Home Wiring Essentials	Information technology – Home Electronic System (HES) Application Model – Part 4: Security System for HES

Table 10. Security standards and handbooks.



4.11 SOLAR

4.11.1 Symbol

This symbol indicates that Solar wiring infrastructure meets or exceeds the minimum requirements of this Code of Practice.

4.11.2 Scope

The Solar System is provisioned by:

Capabilities and Functions

- Control
- Smart grid interoperability
- Monitor power use
- Demand response enable integration
- Manage loads and generation and storage)

Platforms

- Demand Management capability
- Energy management system
- Fibre
- HAN/LAN
- Wiring (twisted pair)

Technologies

- In-home display
- Smart grids
- Batteries, inverters, HAN
- Smart and/or controllable appliances
- Smart meters
- Panels

4.11.3 Compliance

The wiring required for Security systems shall be provisioned according to the standards and handbooks in addition to those listed in the section titled “General standards and handbooks”

STANDARD/HANDBOOK	
IEC 61277:1995	Terrestrial photovoltaic (PV) power generating systems – General and guide
IEC 60364-7-712:2002	Electrical installations of buildings – Part 7-712: Requirements for special installations or locations – Solar photovoltaic (PV) power supply systems
IEC 62446, 2009	Ed 1 Grid connected photovoltaic systems – Minimum requirements for system documentation, commissioning tests and inspection. Defines the information and documentation required to be handed over to a customer following the installation of a grid connected PV system.
IEC 62548, Ed 1:2016.	Installation and Safety Requirements for Photovoltaic (PV) Generators; publish 4Q 2011. Sets out design requirements for photovoltaic (PV) arrays including DC array wiring, electrical protection devices, switching and earthing provisions. The scope includes all parts of the PV array up to but not including energy storage devices, power conversion equipment or loads.
AS/SNZ TS ISO/IEC 14543 (parts 1-6)	Communication Layers – Network based control

Table 11. Solar standards and handbooks.



This document lays out the minimum levels of cabling for your home to meet the Smart Wiring™ standard. It prepares your house for Communications, Entertainment, Energy Management, Security, Digital Home Health, Age & Assisted Living, Intelligent Lighting & Power and Electric Vehicle (EV) Charging.

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