

TWEED SHIRE COUNCIL

**ELECTRICAL
DESIGN
SPECIFICATION**

EL02

ELECTRICAL EQUIPMENT DESIGNATION

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ELECTRICAL EQUIPMENT DESIGNATION

1 CITATION

This document is named "Tweed Shire Council, Electrical Design Specification E01 – Electrical Equipment Designation"

2 ORIGIN OF DOCUMENT, COPYRIGHT

This document was originally produced for Tweed Shire Council. This document is copyright to Tweed Shire Council.

3 VERSIONS

VERSION	AMENDMENT DETAILS	CLAUSES AMENDED	DATE ISSUED (The new version takes effect from this date)	Authorised by the Director of Engineering Services
1.1	Original version		22 February 2006	

4 SCOPE

Design guidelines setting out the identification techniques used in the preparation of diagrams for electrical and process control equipment.

5 AUSTRALIAN STANDARDS

AS 3702 Item designation in Electrotechnology describes the establishment of item designations.

6 IDENTIFICATION OF ELECTRICAL AND PROCESS CONTROL EQUIPMENT

6.1 General

The 'Higher Level Assignment' designation shall be used to identify process functions in an installation. They shall be known as the system or function designation and will be used to identify different systems within a plant such as raw sewage, primary treatment, air supplied, instrument loops, etc.

6.2 Equipment numbers

The plant or equipment number for electrical and process control plant and cubicles shall comprise a combination of letters and numbers to indicate:

- the plant/area/building in which the equipment is located
 - the category of the equipment
 - the type of equipment
-

- the serial number for the category of equipment

6.2.1 Area or Building

This section shall comprise a number of characters to indicate the geographical location of the equipment in the plant.

- The first character shall be a number referring to the functional area.
- The second character shall be a number referring to a structure or building within the functional area.
- The third character shall be a number or letter referring to a floor, zone, room within a structure or building. Letters shall be used for ground and below ground floors commencing at 'A' for the ground floor.

Numbers commencing at '1' are used above ground.

In small installations this section of the plant number is simplified or deleted altogether.

6.2.2 Category of Equipment

The category of equipment shall be identified as follows:

- X For Electrical Equipment without a defined bus
- Y For Process Control Equipment
- Z For Electrical Equipment with a defined bus, e.g., motor load centres, switchboards, distribution boards, etc.

6.2.3 Type of Equipment

The type of equipment shall be identified as follows:

- For 'X' and 'Y' categories: the letter code corresponding to the "kind of item" in accordance with the tables in the APPENDIX e.g., a transformer would be 'XT'.
- For 'Z' categories: the bus reference letter and letters for the equipment.

Within an area, identification of the switchboards shall commence at the highest voltage and progress to the lowest voltage. In large projects where there will be more than 23 electrical equipments within a Z category, two or more bus reference letters may be used. In these situations H, M, L and D may be used as prefixes for High Voltage, Medium Voltage, Low Voltage (Light and Power) and D.C. boards.

6.2.4 Serial Numbers

The digits of the serial number shall commence at 01 as follows:

For 'X' and 'Y' categories, a serial number commencing at '01' for each item in the 'X' and 'Y' category in an area or building.

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Acceptable	Unacceptable
XT01	XT01
XT02	XT02
XA03	XA01
YS01	YS01
YS02	YS02
YA03	YA01

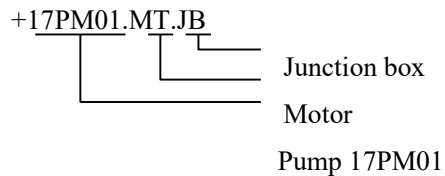
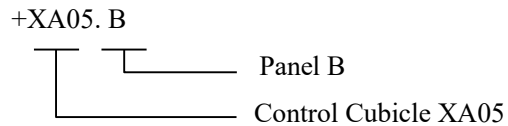
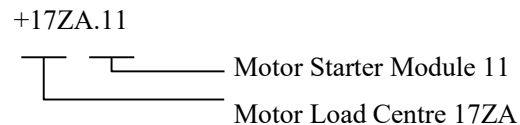
For 'Z' categories, each circuit from a bus shall be numbered commencing at '01'. When there is a bus tie switch even numbers shall be on the right and odd numbers on the left of the tie. The bus tie and coupler shall number from '99' down.

Should it be necessary to refer to a cell or module in a switchboard the cell number is appended to the switch board reference as follows: cell in 17 in Switchboard ZC is referred to as 'ZC.17'. When reference is made to a complete assembly or equipment, this shall be by the first two characters only, e.g., 'ZC'.

6.2.5 Parts of Equipment or Plant

For some equipment it is necessary to identify part or parts of the equipment.

In these instances the part identified is separated by a point (.) from the plant number as follows:



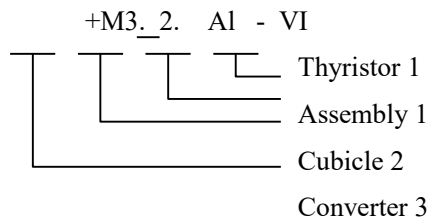
6.3 Qualifying symbols**6.3.1 General**

Qualifying symbols for the various designations shall be used on circuit diagrams to distinguish designations for item, location, terminal and higher level assignment. Other diagrams generally do not require the use of qualifying symbols.

6.3.2 Item Designation

Each item on a circuit diagram shall be identified by an item designation which has the qualifying symbol "-" as a prefix. Circuit diagrams which do not require any other qualifying symbols do not require the qualifying symbol.

Items which are sub-assemblies (such as printed circuit boards, solenoids on a circuit breaker, or thyristor cards in a converter) shall have an item designation for each of the components of the sub-assemblies. To designate an item of equipment which forms part of a sub-assembly, the item designations are joined together with principal item first as follows:

**6.3.3 Location Designation**

The mechanical and electrical plant number used as a location designation for a circuit diagram shall be identified by the qualifying symbol "+" preceding the plant number, i.e., switchgear module ZA17, shall be shown as +ZA.17.

Where a large number of items in a circuit diagram are in one location the location designation is shown once below the circuit title or in the reference table.

Location designations shall be shown adjacent to the item designation. Zones to locate equipment may be created by using chain lines. In these cases the location designation shall be shown once inside the zone.

6.4 Process or function designation**6.4.1 Instrument Loop Numbers**

Loop numbers for process control equipment shall be treated as system functions and identified accordingly.

Each loop shall have the format ABC where:

A Is a number which identifies the area or structure where the primary element is located (in small plants the area or structure number 1 Is not used);

B Is a letter which Identifies the type of quantity being measured determined from the first column of the Table for instrument identification in the APPENDIX table 11.4

C Is a serial number commencing at 01 for all the loops originating in the structure identified by A.

6.5 Terminal designations

When shown on drawings, terminal marking for all items except terminal strips, shall be those provided by the manufacturer of the item.

The individual terminal blocks in a terminal strip shall be allocated a number or letter as **set out in Section 2.8.**

6.5.1 Process or Function Designation

Where process or function designations are used they shall be distinguished by using the qualifying symbol "=" as a prefix.

6.5.2 Terminal Markings

(a) Items other than Terminal Strips

Terminal markings on or adjacent to items of equipment, and detached contacts do not require qualifying symbols.

(b) Terminal Strips

(i) One strip per location - The terminal block number, within the terminal strip, shall be used to label the termination symbol using the qualifying symbol ":" as a prefix. The item designation -X for the terminal block may be deleted; the terminal number for the terminal being :6

(ii) Two strips or more per location - The terminal strip item designation shall have the qualifying symbol ":" as a suffix, followed by the terminal number within the terminal strip, i.e., terminal 6 in terminal block X2 shall be labelled - X2:6.

6.5.3 Instruments

The identifying code for instrument functions set out in the APPENDIX, shall be used to derive 'item designations' or 'tag numbers' for instruments.

Where it is necessary to avoid confusion with electrical items of equipment, item designations for process control items of equipment may be distinguished from item designation for electrical equipment by using the reserved letter code prefix 'J' from APPENDIXx, as a prefix to process control 'tag numbers'.

7 WIRE IDENTIFICATION SYSTEM

7.1 Introduction

These guidelines apply to power, control and instrumentation circuits, but do not apply to lighting and general purpose power subcircuits.

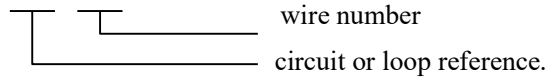
7.2 Format

The wire number allocated to a wire shall consist of two parts:

- the circuit or loop reference
-

- the wire number the general format shall be as follows:

C13 / 732

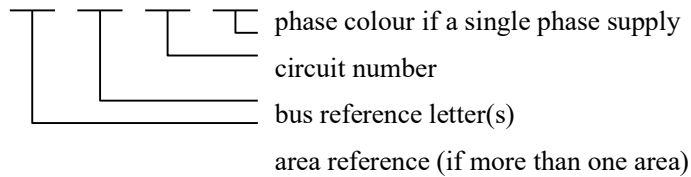


7.3 Identifier

7.3.1 Circuit Reference

The circuit reference for a power or control circuit shall be determined by using the identification number of the power supply circuit as follows:

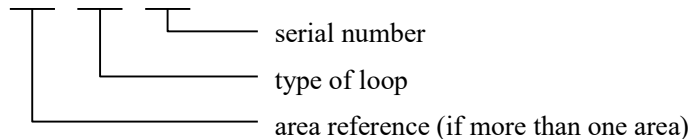
17 C 11 W



7.3.2 Loop Reference

The loop reference shall be the instrument loop number determined in APPENDIX which takes the following form.

52 L 01



7.3.2.1 Hydraulic Plant Reference

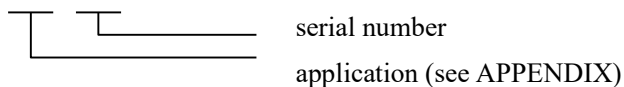
Where hydraulic plant does not have a direct circuit or loop reference (because the plant does not have an exclusive power supply) the hydraulic plant number is to be used as the circuit prefix ie. HOL 601: valve 601 is the hydraulic oil system.

7.4 Wire numbers

7.4.1 Control and Instrumentation Circuits

All wires shall be identified at each termination by a wire number comprising a numerical code to identify the application, and a serial number of the wire for the application as follows:

7 32



Serial numbers for each control circuit shall commence at 00. Should the serial number reach 99, the series is extended by inserting a numeral commencing at 1 at the beginning of the serial number ie 7100, 7101 etc. follow 799.

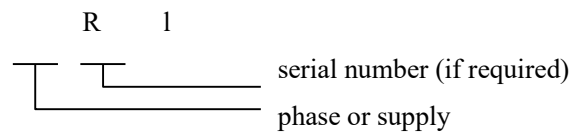
Neutral conductors in circuits shall be allocated a wire number. Identical circuits shall have identical wire numbers.

All items in a circuit, connected by the one conductor shall have the same wire number. Common control circuits may vary in accordance with [Section 3.4.3](#).

Where it is necessary to differentiate between different earth conductors (eg. in low voltage signalling systems) they shall be allocated wire numbers. The 'O' series should be used in these circumstances.

7.4.2 Power Circuits

Power circuit wires shall be identified by a wire denoting the phase or pole of the supply and a serial number as follows:



CODE	PHASE/POLE	REMARKS
R, W, B, N	AC Circuits	(busbars, power circuits) (for distribution boards)
P, N	DC Circuits	(transformers and motors)

Power circuit wiring connection between motors, isolators, starters, etc is identified by adding a serial number to the code commencing at 1 i.e. R1, W1,

B1, for circuit breaker to starter R, Z, W2, B2, between starter and isolator and R3, W3, B3 between isolator and motor.

7.4.3 Wire Numbering for Common Control Circuits

The wire numbers for the common control circuits shall be determined by allocating codes and serial numbers in accordance with [Section 3.4.1](#) except for equipment which is located in unit control cabinets or modules. This equipment shall have its wiring numbered in accordance with the serial numbers allocated for the various applications within the unit circuit. (This will ensure that the change from the wire numbers derived from the common control circuit to each unit control system will have identical wire numbers). Those derived from the unit control circuits shall take place at the terminal block in the unit control cabinet or module.

7.5 Application of wire numbers

The following rules are to be followed in relation to the use of wire numbers,

7.5.1 Cubicle Wiring

- (a) Wiring terminations in enclosures which house only one circuit and interposing ELV common control circuits do not require a circuit or loop prefix.
 - (b) Wiring terminations in enclosures housing equipment with multiple circuit references shall have circuit and loop prefixes.
-

7.5.2 Cable Terminations

- (a) Cable terminations in junction boxes shall have circuit and loop prefixes and wire numbers on each cable core.
- (b) Cable terminations for single circuit enclosures (see [Section 3.5.1](#)) require a wire number only on the cable core.
- (c) Cable terminations for multiple circuit enclosures shall have the circuit and loop prefix and wire number on the cable core.

8 IDENTIFICATION OF CABLES

8.1 Introduction

Cable shall be identified by the following parameters.

- a circuit, loop plant or area reference
- a cable function reference letter
- a serial number related to the cable function

The format shall be as follows:

17C11_P 11



circuit loop plant or area plant reference

8.2 Circuit, loop plant or area reference

8.2.1 Circuit Reference

The circuit reference for any electrical or control circuit shall be as determined in [Section 4](#).

8.2.2 Loop Reference

The loop reference shall be as determined for a loop number in [Section 2.6.2](#).

The loop reference shall be preceded by the letter J to differentiate from circuit references, e.g.

- JL01 where area numbers are not used
- J17L01 where area numbers are used

8.2.3 Plant Reference

Cables which are associated with plant which does not have a power supply or loop which will provide an exclusive reference, shall use the plant number as a cable prefix eg. 2ME01 cooling tower.

8.2.4 Area References

Cable which cannot be allocated a circuit or loop reference because of a mixture of circuits and loops shall be allocated an area number, generally selected on the basis of the origin of the information. Where area numbers are not used a zero shall be used as the reference.

8.3 Cable function

Each cable shall be allocated a reference letter taken from the table of cable function codes (see APPENDIX).

The following general rule applies:

Cables for a power control or instrumentation circuit can include wiring for alarm circuits which are directly associated with the circuit. In these cases the cable shall be identified by the principal cable function. This practice is generally confined to field cabling between equipment, motor control equipment and the central control panel.

8.4 Serial number

A serial number shall be allocated commencing at 1 for each cable function related to a circuit loop or area reference, i.e. P1, A1

8.5 Application rules

The following rules shall be followed when determining cable numbers.

- (a) Additional cables required by site works shall commence numbering at 50 unless more than 50 cables have been used where upon the next tens number shall be used.
- (b) Cables which connect areas shall have an area prefix number. The number shall be the field end area number.

8.6 General purpose light and power

When the cabling for general purpose light and power installations is not designed, but left to qualified electricians to determine on site in accordance with the wiring rules, the cabling does not need numbering.

For cabling that has to be designed due to special requirements, such as large power outlets, these shall have cable numbers.

All switches and power circuits shall have the circuit reference engraved on the cover plate.

8.7 Cable core numbering

The wire number for each cable core shall be identified at each terminal block by a wire numbering ferrule which shows the complete circuit or loop wire number comprising the circuit reference and circuit wire number.

9 COLOURS FOR WIRES AND CABLES

9.1 Colours for wire insulation

The insulation of wires used for wiring cubicles and panels shall be coloured in accordance with the table in the APPENDIX.

9.2 Colours for cables

The colours of sheaths and conductor insulation for cables used to interconnect items of plant, cubicles and junction boxes shall be in accordance with the table in the APPENDIX.

10 NUMBERING OF CABLE ROUTE ELEMENTS

10.1 Definitions

In describing cable routes, the following definitions are used:

- (a) **Cable Route**
The route taken by a cable which comprises a number of cable route elements to connect one location to another.
- (b) **Cable Route Elements**
A tray, duct, trench, rack or Item used for the installation of cables.
- (c) **Cable Tails**
The end of a cable that goes from a cable route element to an individual device or piece of equipment for termination on the device or equipment.

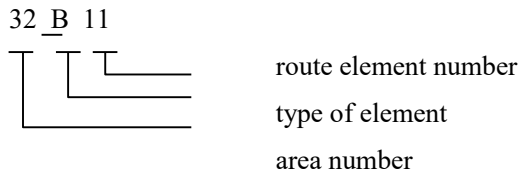
10.2 Identification

All sections of a cable route system within an area are to be separately identified by a number between 1 and 999 together with a prefix letter to indicate the type of cable route section. Where cable routes for several areas mix, these shall have an area prefix.

The characters to identify the types of cable route element are:

- B Buried
- D Duct Bank or Trenches with covers inside buildings
- T Trays or racks
- C Conduit
- O Other

The cable tails are not required to be identified. The designation for a buried cable route element number O11 in area 32 would be:



Route element numbers shall not be repeated in an area regardless of the type of element.

The area prefix is not used in minor or medium sized projects.

Where a new tray or rack is added to a cable route installation and it is not possible to revise the element numbers the parts of the divided elements shall be identified by a number added to the route element identifier as stated in clauses 10.3 and 10.4:

10.3 T Junctions or crosses

Cable route elements are to change numbers at T Junctions or crosses.

10.4 Blockouts

Where cable routes pass through blockouts in walls and floors and carry on with the same type of cable route element on the other side of the blockouts, elements do not require to be re-numbered.

11 APPENDIX

11.1 Cable route elements

CODE	ROUTE TYPE
B	Buried
C	Conduit
D	Duct
T	Tray or ladder rack

11.2 Equipment Numbers Mechanical plant

CODE	PLANT
AC	Air compressor
AU	Air conditioning unit
BG	Shaft bearing (separate)
BL	Blower
CC	Cooling coil
EF	Exhaust fan
EG	Engine generator unit
GC	Gas compressor
GE	Generator
HC	Heating oil
HE	Heat exchanger
ME	Misc. Mechanical equipment
PP	Pump
SN	Screen
SF	Supply fan
TB	Turbine (steam or water)
TF	Transfer fan
TK	Tank, accumulator or vessel

11.3 Equipment Numbers Fluid system

CODE	FLUID SYSTEM
CAI	Compressed air instrumentation
CAS	Compressed air service
DRG	Drainage (gravity)
DRP	Drainage pump
DRS	Drainage sanitary
FFW	Fire fighting water
FOR	Fuel oil return
FOS	Fuel oil supply
HCL	Hydrochloric acid
HOH	Hydraulic oil - high pressure
HOL	Hydraulic oil - low pressure
HOM	Hydraulic oil - medium pressure
HWS	Hot water supply domestic
LOP	Lubricating oil – pumped
LOR	Lubricating oil – return
NCL	Sodium chloride (brine)
NCO	Sodium carbonate
NOH	Sodium hydroxide
NWA	Non potable water - system a
NWB	Non potable water - system b
NWC	Non potable water - system c
OCL	Sodium hypochlorite
PBW	Potable water
RWL	Rain water leader
RWS	Raw sewage
STD	Storm water leader
VNT	Vent

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11.4 Equipment Numbers Fluid system plant - type of valve

CODE	Valve
CG –	Gates - automatically operated gates or penstocks
CV –	Valves - all actuator operated valves other than solenoid
FG –	Flame traps, arresters, strainers, filters & other special inline
GT –	Flap, diversion, slide, penstock. Dropboard
MV –	Non-actuator operated plug, ball, gate, check, diaphragm,
SV –	

11.5 Equipment Numbers Electrical plant - switchboards

CODE	ITEM
'AA'	AC Switchboards Use a combination of two letters, except
D*	DC Switchboards * insert letter except D, I, 0

11.6 Equipment Numbers Electrical plant type codes

CODE	PLANT
Z	Switchboard
X	Electrical plant
Y	Process control plant

11.7 Equipment Numbers Electrical plant other electrical plant - plant type designation

CODE	PLANT
DC	Direct current
AC	Alternating current
ELV	Extra low voltage
LV	Low voltage
MV	Medium voltage
HV	High voltage

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11.8 Equipment Numbers Auxiliary electrical plant codes

CODE	ITEM
CC	Local control cabinet
CG	Control gate
CR	Crane rail
CS	Control station
CV	Control valve
DM	Damper
EB	Earth bar
ES	Local emergency stop
FE	Flow element
FI	Flow indicator
FIT	Flow indicating transmitter
FS	Flow switch
FT	Flow transmitter
GE	Position element
GS	Position switch
GT	Position transmitter
HT	Heater
IB	Local instrument box
JB	Junction box
LI	Level indicator
LIT	Level indicating transmitter
LS	Level switch
LT	Level transmitter
MS	Moisture switch
MT	Motor
NB	Neutral bar
NE	Negative (fuse)
PE	Positive (fuse)
PI	Pressure indicator
PIT	Pressure indicator transmitter
PO	Power outlet
PS	Pressure switch
PT	Ptc thermistor
SE	Speed element
SV	Solenoid valve
SW	Local isolator
TB	Local electrical terminal box
TE	Temperature element
TI	Temperature indicator
TIT	Temperature indicating transmitter
TS	Temperature switch
TT	Temperature transmitter
XC	Capacitor
XL	Inductor
ZE	Position element
ZS	Position switch
ZT	Position transmitter

11.9 Circuit prefix electrical phase or polarity

CODE	PHASE OR POLARITY
R	Red Phase
W	White Phase
B	Blue Phase

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G	Earth
N	Neutral
P	Positive
N	Negative

11.10 Identification letters for instrument functions (refer AS 1101.6)

L E T T E R	FIRST LETTER (MEASURED OR INITIATING VARIABLE)	MODIFIER (b)	SUCCEEDING LETTERS (DISPLAY OUTPUT FUNCTION)
A	Analysis (a)	-	Alarm
B	Burner Flame	-	State or Status display
C	-	-	Control
D	Density	Difference	-
E	All electrical variables (b)	-	Sensing element
F	Flow Rate	Ratio	-
G	Gauging (Position or length)	-	Glass
H	Hand (Manually Initiated) Operated	-	High (Alarm)
I	-	-	Indicating
J	-	Scan	-
K	Time or Time Schedule	-	Barrier
L	Level	-	Low (Alarm)
M	Moisture or Humidity	-	User's Choice
N	User's Choice	-	User's Choice
O	User's Choice	User's Choice	-
P	Pressure or Vacuum	-	Point Test connection
Q	-	Integrate or Totalize	Integrating or summing
R	Radioactivity	-	Recording
S	Speed or Frequency	-	Switching
T	Temperature	-	Transmit
U	Multivariable	-	Multifunction Unit
V	Vibration	-	Valve, Damper, Louvre, actuating element. unspecified correcting unit
W	Weight or Force	-	Well
X	Unclassified eg TV Camera	-	Cathode Ray Tube
Y	User's Choice	-	Relay or Compute

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Z	-	-	Emergency or safe acting
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This table applies only to the functional identification of instruments

(a) The variable being measured shall be shown adjacent to the symbol AI_{pH}

(b) Modifiers can be lower case if understanding is increased.

11.11 Letter codes for designation of kind of item

L E T T E R C O D E	KIND OF ITEM	EXAMPLES
A	Assemblies, subassemblies	Amplifier using discrete components magnetic amplifier, laser, maser printed circuit boards.
B	Transducers, from non-electrical quantity to electrical quantity or vice-versa	Thermoelectric sensor, thermoelectric cell, photoelectric cell, dynamometer, crystal transducer, microphone, pickup, loudspeaker, synchros, resolvers, earphone.
C	Capacitors	Static and synchronous capacitors, capacitor-resistor unit.
D	Binary elements, delay devices storage devices	Digital integrated circuit devices Delay lines, bistable elements, monostable elements, core storage, register, magnetic tape recorder, disc recorder.
E	Miscellaneous	Lighting devices, heating devices devices not specified elsewhere in this Table.
F	Protective devices	Fuse, overvoltage discharge device, arrester.
G	Generators, power supplies	Rotating generator, rotating frequency converter, battery, supply device, oscillator.
J	Signalling devices	Optical and acoustical indicators, light emitting diode, buzzer, bell
K	Relays, contactors	
L	Inductors, reactors	Induction coil, line trap, reactors (Shunt and series)
M	Motors	
N	Analogue integrated circuits	Operational amplifier, digital to analogue converters, voltage regulators
P	Measuring equipment, testing equipment	Indicating, recording and integrating measuring devices; signal generator, clocks, counters
Q	Mechanical switching devices for power circuits	Circuit breaker, isolator, moulded case-circuit breakers, reclosers, fault throwers, earthing switch
R	Resistors	Adjustable resistor, potentiometer, rheostat, shunt, thermistor.
S	Switches, selectors	Switches, control switch, pushbuttons limit switch, selector, dial contact, connecting stage

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L E T T E R C O D E	KIND OF ITEM	EXAMPLES
T U	Transformers, voltage regulators (power) Modulators, changers	Voltage transformer, current transformer power transformer, power voltage regulators (transformer and induction types), potentiometer, discriminator, demodulator, frequency changer, coder, inverter, converter, telegraph translator, modem
V	Tubes, semiconductors (discrete)	Electronic tube, gas-discharge tube, diode, transistor, thyristor, optoisolator, silicon diode
W	Transmission paths, waveguides, aerials	Conductor, cable, busbar, waveguide, waveguide directional coupler, dipole, parabolic aerial
X	Terminals, plugs, sockets, links, joints	Disconnecting plug and socket, jack, terminal board, soldering terminal strip, link, cable sealing ends and joints
Y	Electrically operated mechanical devices	Brake, clutch, pneumatic valve
Z	Network, hybrid transformers, filters, equalizers, limiters	Cable balancing network, compandor, crystal filter

11.12 Cable function

CODE	FUNCTION
A	Alarm
B	PTC thermistors, thermocouples, RTD, etc.
C	Control: low and medium voltage (Includes power where power consuming devices need ≤ 2.5 mm conductor).
D	Power [DC]
E	Control ELY AC or DC
F	Fire Alarm System
G	Earth
H	High Voltage Power
J	Instrumentation, analogue or digital pulse signal
K	Clock system
L	Serial links for I/O racks, data highways or local area network
N	Pneumatic
P	Power: low and medium voltage (AC)
R	Security Systems
S	Signalling systems, distributed control
T	Telephone and communication systems (PABX, sound, etc.)
X	Current transformer
Y	Paging and Code Signal
Z	Miscellaneous and empty conduits

ELECTRICAL EQUIPMENT DESIGNATION

11.13 Terminal designations

CODE	TERMINAL
X	All terminals

11.14 Wire numbers

APPLICATION	REMARKS
-	Used for special purposes as required for a project.
LV and above Control (See code 4), protection, metering c.t. and v.t. circuits, indications (see code 5), and power supplies	
ELV	(instrumentation, alarms, telemetering and computers.)
Instrumentation Except for power supply inputs. Includes analogue inputs into telemetry or computer equipment.	
Motor Starters	Water Supply Circuits.
Indications	Where separate indication circuits are used.
Alarms	Except power supply inputs to alarm systems.
Computer or telemetry inputs	State, alarm, on-off, and analogue Inputs where telemetry inputs converters for telemetry or computer signal Is in field (see code 3).
Computer or telemetry inputs	Controls, digital on-off, train of pulses telemetry outputs analogue i.e. 4-20 mA.

11.15 Alphabetical list of items and their letter codes

Item code	Letter	Item	Letter
		Artificial line	Z
		Assembly	A
Access point	X	Attenuator	Z
Accumulator	G	Battery	O
Aerial	W	Beacon	H
Acoustic indicator	H	Bell	H
Alternator	G	Binary element	D
Amplifier	A	Brake	Y
Amplifier magnetic	A	Breaking or isolating jack	X
Amplifier operational	N	Busbar	W
Ammeter	P	Butt-connector	X
Ampere-hour meter	P	Buzzer	H
Analogue elements	N	Cable	W
Analogue integrated circuit	N	Cable sealing ends	X
Antenna	W	Cable sealing joints	X
Appliance, heating/lighting	E	Cable balancing network	Z
Arrester	F		

ELECTRICAL EQUIPMENT DESIGNATION

Capacitor	C	Diode	V
Capacitor-synchronous	C	Dipole	W
Capacitor-resistor unit	C	Disc drive	D
Cell, dry or wet	G	Discharge lamp	E
Changer	U	Disconnecting plug	X
Choke	L	Discriminator	U
Circuit breaker	Q	Distortion corrector	Z
Clamper	Z	Dynamometer	B
Clip	X	Earphone	B
Clipper	Z	Earth bar	X
Clock	P	Earthing electrode	X
Clutch	Y	Earthing switch	Q
Coder	U	Electrical appliances	E
Co-efficient scaler	N	Equaliser	Z
Coil	L	Expander	Z
Compandor (compressor/expander)	Z	Fader	Z
Compressor	Z	Fan	E
Conductor	W	Fault thrower	Q
Connecting stage	S	Ferrite bead (inductor assembly)	L
Connector	X	Filament lamp	E
Contacto	K	Filter	Z
Controlgear assembly	A	Fluorescent lamp	E
Control switch	S	Frequency changer	U
Controller, amplitude	Z	Fuse	F
Converter, general	U	Fuse switch	F
Converter—digital to analogue (I.C.)	N	Galvanometer	P
Converter—analogue to digital	N	Gas discharge tube	V
Cooling device	E	Generator, non-rotating	P
Core storage	D	Generator, rotating	G
Corrector, distortion	Z	Generator, signal	P
Counter	P	Gyrator, ideal/current/voltage	G
Coupler, wavelength	W	Hall generator	P
Crystal filter	Z	Head-phones	B
Crystal oscillator	G	Heater	E
Crystal transducer	B	Horn	H
Current transformer	T	Hybrid transformer	Z
Delay devices	D	Hydraulic valve	Y
Delay line	D	Indicator, acoustic	H
Delay network	D	Indicator, measuring	P
Demodulator	U	Indicator, optical	H
Detector	B	Induction coil	L
Detector, radiation	P	Inductor	L
Dial, contact	S	Instrument, measuring	P
Dial, telephone	S	Integrated circuit, analogue	N
Digital integrated circuits	D	Integrated circuit, digital	D
Dimmer	S	Inverter	U
		Isolating jack	X
		Isolator	Q

ELECTRICAL EQUIPMENT DESIGNATION

Jack (telephone)	X	Phase changer	U
Jack, test	X	Phase meter	P
Jack, isolating	X	Phase modulator	U
Joint	X	Photoelectric cell	B
Jumper (connection)	X	Photocoupler	B
Key (see switch)	S	Pickup	B
Key-operated switch	S	Plug	X
Lamp, discharge	E	Pneumatic valve	Y
Lamp, signal	H	Potentiometer	R
Lamps, luminaires	E	Power factor meter	P
Laser	A	Power supply	G
Light-emitting diode	V	Printed board assembly	A
Light-operated devices	V	Programmable logic controller	A
Lighting device	E	Protective device	F
Lightning arrester	E	Pulse meter	P
Limit switch	S	Pulse modulator	U
Limiter	Z	Push button switch	S
Line trap	L	Pyrometer	P
Link	X	Radiation detector	P
Loudspeaker	B	Radiation detector tube	V
Luminaire	B	Radio receiver	U
Machine	Y	Reactor	L
Magnetic tape recorder	D	Receiver translator (changer)	U
Maser	A	Recloser	Q
Measuring equipment	P	Recorder, magnetic	D
Mechanical device, electrically operated	Y	Recorder, measuring	P
Mechanical switching device for power circuits		Recorder (reproducer) Q	D
Mercury arc rectifier	V	Rectifier	U
Meter	P	Rectifier tube	V
Microphone	B	Reed relay	K
Microwave tube	V	Register	D
Miscellaneous device	E	Regulator, induction	L
Modem	U	Regulator, transformer	T
Modulator	U	Regulator, voltage (I.C.)	N
Motor	M	Regulator, voltage-power	T
Motor generator	G	Relay	K
Network	Z	Relay, measuring	K
Network, cable balancing	Z	Resistor	R
Network, terminating	Z	Resolver	B
Ohmmeter	P	Rheostat	R
Operational amplifier	N	Rotating frequency converter	R
Optical fibre	W	Rotating generator	G
Optical indicator	H	Salinity meter	P
Opto-isolator	V	Selector switch	S
Oscillator	G	Semiconductor	V
Oscilloscope	P	Sensor, thermoelectric	B
Overvoltage discharge device	F	Shunt resistor	R
Pad	Z		

ELECTRICAL EQUIPMENT DESIGNATION

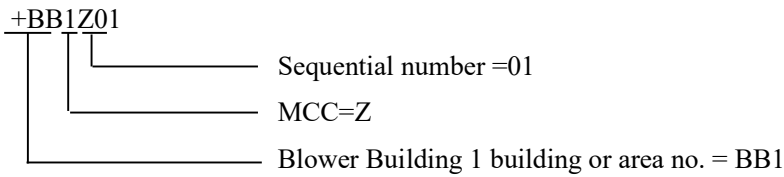
Signal generator	P	Thermostat	S
Signal lamp	H	Threshold device	Z
Signal path	W	Thyristor	V
Signal translator	U	Time switch	S
Signalling device	H	Transducer	B
Siren	H	Transductor	L
Socket (jack)	X	Transformer	T
Socket-outlet	X	Transformer, current	T
Solar cell	G	Transformer, hybrid	Z
Solenoid	Y	Transformer, power	T
Solid state relay	K	Transformer, voltage	T
Solion diode	V	Translator telegraph	U
Spark gap	F	Transistor	V
Starter (motor)	A	Translator (transmitter)	U
Static capacitor	C	Transmission path	W
Storage device	D	Transmitter	U
Subassembly	A	Tube	V
Supply device	G	U point (connector)	X
Surge diverter	F	Valve, electrically-operated	Y
Switch	S	Variable resistor	R
Switchboard	A	Var-hour meter	P
Switchgear assembly	A	Varistor	V
Switching devices for control	S	Varmeter	P
Switching devices, power	Q	Voltage divider, inductive	L
Synchro	B	Voltage divider, resistive	R
Synchronous capacitor	C	Voltage regulator	T
Synchroscope	P	Voltage regulator-integrated circuit	N
Tachometer	P	Voltage regulator, analogue	N
Tape recorder	D	Voltage regulator, power	P
Telegraph translator	U	Voltage transformer	T
Telemetering instrument	P	Voltmeter	P
Telephone jack, socket	X	Watt-hour meter	P
Television camera tube	V	Wattmeter	P
Television picture tube	V	Waveguide	W
Television receiver	U	Wavemeter	P
Terminal	X	Winding (inductor)	L
Terminal board or strip	X	Winding (transformer)	T
Terminating set or network	Z	X-ray tube	V
Termination, resistive	Z	Zener diode	V
Test jack	X		
Test point	X		
Testing equipment	P		
Thermocouple	B		
Thermoelectric sensor	B		
Thermionic tube	V		
Thermistor	R		

11.16 Examples of equipment

11.16.1 Example 1

415 v MCC in Blower Building 1

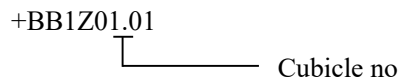
This is considered to be a Higher level assignment



11.16.2 Example 2

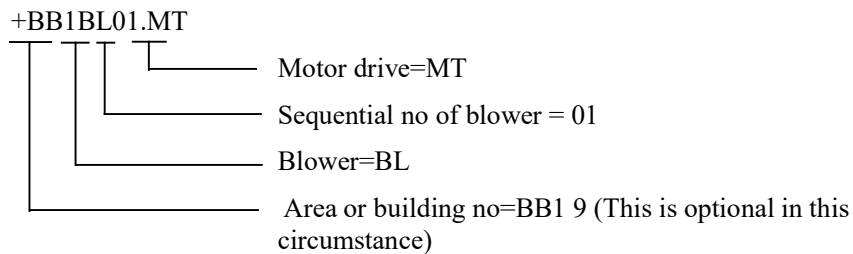
415 v MCC in Blower Building 1 incoming cubicle

This example is for a component or item of the main assembly



11.16.3 Example 3

No 1 Blower motor which is installed in the blower building 1



11.16.4 Example 4

Air compressor no. 1 in the inlet works which has been nominated as area 100

+100CP01
