

Electrical safety and protection devices



RCD PROTECTION

The easy, economical way to safeguard yourself when working with electricity.

RCDs are specifically designed to minimise the risk of a fatal electric shock when working with electricity around the home or on a building site. It is an electronic sensing device which constantly monitors the balance of current flow to ensure that, should even a minute leakage occur, an RCD will switch off the power in less than the time of a single heartbeat. That could mean the difference between life and death.

In the workshop and outdoors, many factors, such as dampness, faulty wiring, frayed cords and other hazards, can contribute to a potentially lethal situation when using power tools, extension leads, electric barbeques, electric lawnmowers, temporary party lighting, pool vacuums, filters, spas, pool lights and any other outdoor electrical equipment. RCDs offer personal protection against electrocution from live to earth faults.

There's no doubt that, from time to time, we are all subconsciously careless around electricity. It must be pointed out that RCD devices do not protect against all causes of electric shock, such as those caused by contacting both Live and Neutral of the electrical circuit – its use should not be taken as a substitute for safe electrical practices or for electrical maintenance.

An RCD can save your life!

The body is normally driven by minute electrical signals which control muscles and heart. If an electrical current from the mains passes through the body, normal body function will be disrupted. The effect of this disruption, called ventricular fibrillation, depends on the severity of the shock and the length of time the person is subjected to it.

RCDs provide protection by switching the current off immediately. When electrical leakage to earth exceeds as little as 10mA (10 thousandths of one Amp) or 30mA (30 thousandths of one Amp), the PDL Powerguard will switch off the current within 30 milliseconds (30 thousandths of a second). Schneider Electric's commitment to research and development has ensured that Powerguard and M9 protection devices have been engineered to meet the latest international standards in RCD technology.



How an RCD works

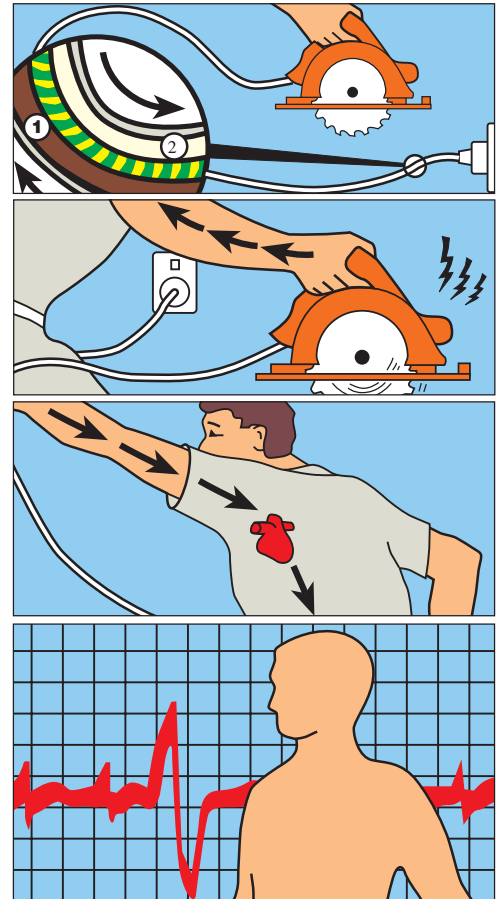
When properly connected, an electrical current flows through the live wire (fig.1) on its way to the appliance and returns via the neutral wire (fig.2).

If, for some reason, the current “leaks” (through dampness, frayed wire, faulty connection etc.), it will take the most direct path to earth – often through a person’s body. If that power is not cut off instantly, there is a strong possibility that person will die.

The path taken by the current also contributes to the shock’s severity. A shock which flows from the hand through the arms and chest will affect both breathing and heartbeat.

The time that a person is exposed to the shock is the greatest factor in the severity of the accident. An RCD cuts off the power in 30 thousandths of a second – that’s less than the time of a single heartbeat!

A leakage as little as 10mA (10 thousandths of one Amp) or 30mA (30 thousandths of one Amp) is sufficient to trip the RCD and cut off the power to the appliance – that’s a minute amount of current when you consider that many appliances use as much as 10 Amps.



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Residual current
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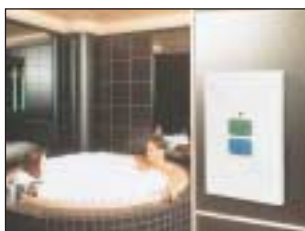
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REWIREABLE RCDs



The PDL Powerguard rewirable RCDs can be attached to any appliance, flexible cord or socket to accommodate the specific earth-fault protection needs of the user. Cat 952 and 955RW are as easy to wire as any conventional plug.



Rewireable RCD plug, 10A

Cat 952

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 10A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP3X
Type Tested to: AS3190:1997
AS3100:1994



Rewireable inline RCD, 30mA

Cat 955RW

Rated Voltage: 230-240V a.c.
Rated Current: 16A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP56
Type Tested to: AS/NZS:3175/1:1994
EN61008-1:1984 & AZad A11
EN61008-2-1:1994

CORDSETS



PDL Powerguard Cordsets come in a range of cord lengths from 2-25m. Various plug and socket options are also available to meet the requirements of most applications providing safer alternatives to standard extension cords.



RCD cordset, 10A

Cat 955-2M, 10M, 25M

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 10A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP33
Cord Length: 2m, 10m, 25m
Type Tested to: AS3190:1997
AS3100:1994



RCD extension cord, 10A

Cat 957-2M

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 10A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP33
Cord Length: 2m
Type Tested to: AS3190:1997
AS3100:1994



RCD cordset, 10A, IP56

Cat 956

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 10A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP56
Cord Length: 2m
Type Tested to: AS3190:1997
AS3100:1994
IEC529:1989



RCD protected cordset, 10A, IP44

Cat 954

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 10A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP56 RCD enclosure and socket, IP44 - plug
Cord Length: 10m
Type Tested to: AS3190:1997
AS/NZS3112:1993
BS4343:1968 (Plug Specification)

PLATE MOUNTED RCDs



PDL Powerguard plate mounted RCDs are available in a 20A version to protect a number of standard socket outlets, or permanently wired appliances on the same circuit. These units feature double pole switching to protect the appliance user even in the situation where active and neutral have been reversed. Additionally the Cat 596/56RCD offers IP56 environmental protection.



Vertical/horizontal flush plate mounted RCD

Cat 696RCD

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 20A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Mounting Centres: 84mm
Type Tested to: AS3190:1997
AS3100:1994



Vertical/horizontal flush plate mounted RCD

Cat 596RCD

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 20A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Mounting Centres: 84mm
Type Tested to: AS3190:1997
AS3100:1994



Vertical/horizontal flush plate mounted RCD, IP56 Cat 596/56RCD

Rated Voltage: 230-240V a.c., 50Hz
Rated Current: 20A
Rated Tripping Current: 30mA
Average Tripping Time: 30ms
Environmental Protection: IP56
Mounting Centres: 84mm
Type Tested to: AS3190:1997
AS3100:1994
IEC 529:1989

PROTECTED SOCKET OUTLETS



PDL Powerguard protected socket outlets provide an earth fault protected power source and can be wired to provide protection to other socket outlets downstream on the same circuit. Contacts remain closed in the event of loss of supply voltage ensuring immediate protection when supply is resumed. PDL Powerguard protected socket outlets are available in single and double versions as well as with shaver socket outlet.



10mA or 30mA, 10A outlet, 20A RCD protected circuit **Cat 691RCD**

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet, 20A – Protected Circuit
 Rated Tripping Current: 10mA or 30mA versions available
 Average Tripping Time: 30ms
 Mounting Centres: 84mm
 Type Tested to: AS3190:1997 and AS/NZS 3112:1993



10mA or 30mA, 10A outlet, 20A RCD protected circuit **Cat 695RCD**

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet, 20A – Protected Circuit
 Rated Tripping Current: 10mA or 30mA versions available
 Average Tripping Time: 30ms
 Mounting Centres: 84mm
 Type Tested to: AS3190:1997 and AS/NZS 3112:1993



Shaver socket/RCD protected socket outlet **Cat 675HRCD**

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet, 20A – Protected Circuit
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Mounting Centres: 145mm
 Type Tested to: AS3190:1997
 AS3194:1993



Shaver socket/RCD protected socket outlet **Cat 575VARCD**

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet, 20A – Protected Circuit
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Mounting Centres: 145mm
 Type Tested to: AS3190:1997
 AS3194:1993

IP66 INDUSTRIAL SWITCHGEAR



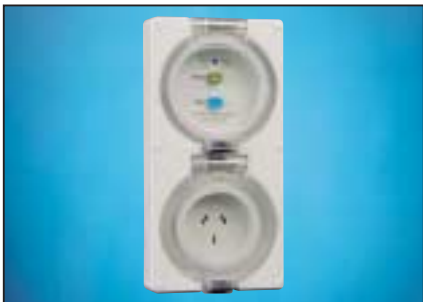
56 Series RCDs are designed to protect users against potential earth faults. 56 Series RCDs feature double pole switching and respond to earth faults in pulsating DC applications. These products are available with both latching and non-latching RCD modules. To order a non-latching product specify 'A' in the description (ie. 56ARCD20 or 56C310ARCD). To order latching product refer to the descriptions below.



56 Series plate, 20A, IP66

Cat 56RCD20-30

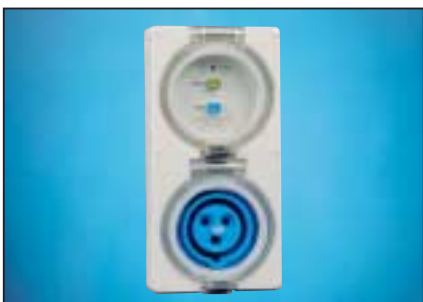
Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 20A
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66
 Dimensions: 100 x 100 x 75mm
 Type Tested to: AS3190:1994
 AS3100:1994
 IEC529:1989



RCD protected socket outlet, 10A, IP66

Cat 56C310RCD-30

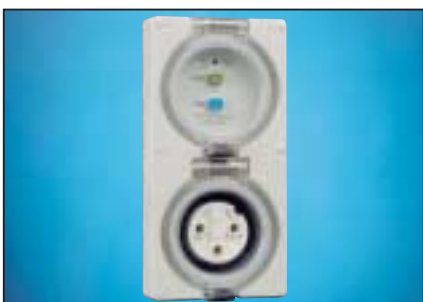
Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet, 20A – RCD Protected Circuit
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC529:1989
 AS/NZS3112 : 1993



RCD protected socket outlet, 16A, IP66

Cat 56C316RCD-30

Rated Voltage: 250V a.c., 50Hz
 Rated Current: 16A – Socket Outlet, 20A – RCD Protected Circuit
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66 when flaps are closed, IP44 with plug fitted
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC309:1988
 IEC529:1989



RCD protected socket outlet, 20A, IP66

Cat 56C320RCD-30

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 20A – Socket Outlet, 20A – RCD Protected Circuit
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC529:1989
 AS3123:1987

IP66 INDUSTRIAL SWITCHGEAR - ELCBs



56 Series ELCBs feature double pole switching and respond to earth faults in pulsating DC applications. 56 Series ELCBs are available in 10, 16 and 20 Amp versions both stand alone or integrated with a socket outlet. Over current operating characteristics curves are available on request.



RCD with overload protection

Rated Voltage: 120-240V a.c., 50Hz
 Rated Current: 10A (556C310ELCB), 16A (56C316ECLB),
 20A (56C320ELCB)

Cat 56ELCB10

Cat 56ELCB16

Cat 56ELCB20

Rated Tripping Current: 30mA
 Average Tripping Time: 100ms
 Environmental Protection: IP66
 Dimensions: 100 x 100 x 75mm
 Type Tested to: AS3190:1994
 AS3100:1994
 IEC529:1989



RCD protected socket outlet, 10A, IP66

Cat 56C310ELCB

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 10A – Socket Outlet with overload protection
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC529:1989
 AS/NZS3112 : 1993



RCD protected socket outlet, 16A, IP66

Cat 56C316ELCB

Rated Voltage: 250V a.c., 50Hz
 Rated Current: 16A – Socket Outlet with overload protection
 Rated Tripping Current: 30mA
 Average Tripping Time: 30ms
 Environmental Protection: IP66 when flaps are closed, IP44 with plug fitted
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC309:1988
 IEC529:1989



RCD protected socket outlet, 20A, IP66

Cat 56C320ELCB

Rated Voltage: 230-240V a.c., 50Hz
 Rated Current: 20A – Socket Outlet with overload protection
 Average Tripping Time: 30ms
 Environmental Protection: IP66
 Dimensions: 200 x 100 x 75mm
 Type Tested to: AS3190:1994
 IEC529:1989
 AS3123:1987

RESIDUAL CURRENT BREAKERS WITH OVERCURRENT PROTECTION – RCBOs

The DPN Vigi self-contained residual current device carries out complete protection of final circuits (overcurrents and insulation faults).

- protection of persons against indirect contact (30 mA)
- additional protection of persons against direct contact (30 mA)

The 30 mA version is selective with the ID or Vigi 300 mA S selective residual current devices installed upstream.

It is immune to nuisance tripping due to transient overvoltages (lightning, switchgear switching on the network, etc.) Δ .

Technical data

- voltage rating: 240 V AC
- breaking capacity:
 - EN 60.898/EN 61.009:
 - rated breaking capacity (I_{cn}): 6 kA
 - rated residual breaking and making capacity (phase/earth): 6 kA
 - fast closing
 - positive contact indication
 - earth fault visualised on front face
- durability (O-C cycle):
 - mechanical: 20 000
 - electrical:
 - ≤ 20 A: 20 000
 - 25 A: 15 000
 - 32 A: 10 000
- environment:
 - tropicalisation: treatment 2 (relative humidity: 95 % at 55 °C)
- complies to AS 3190
- weight: 190 g
- connection: tunnel terminals for 10mm² flexible or 16mm² rigid cables

C Curve

- tripping curve: the magnetic trip units operate between 5 and 10 In.



- 1 Pole + Neutral, 6A
- 1 Pole + Neutral, 10A
- 1 Pole + Neutral, 16A
- 1 Pole + Neutral, 20A
- 1 Pole + Neutral, 25A
- 1 Pole + Neutral, 32A
- 1 Pole + Neutral, 40A

- Cat No. 19541**
- Cat No. 19542**
- Cat No. 19543**
- Cat No. 19544**
- Cat No. 19545**
- Cat No. 19546**
- Cat No. 19547**


RESIDUAL CURRENT CIRCUIT BREAKERS – RCCBs

Merlin Gerin's range of residual current circuit breakers (RCCBs) constantly monitor the balance of current flow between phase and neutral.

All sockets connected downstream in the same circuit as the RCCB are protected against a fault between Phase and Earth or Neutral and Earth.

The RCCBs are tested to and comply with AS3190. They are type A for detecting alternating and pulsating direct ground fault currents.

Technical data

Rated Tripping Current $I_{\Delta n}$:	30mA
Rated Short Circuit Capacity:	10kA
Type:	A 
Standards Complying to:	AS3190
Terminals Accommodate Up to	35mm ² flexible cables 50mm ² rigid cables



2 Pole, 40A, 240V
4 Pole, 40A, 415V

Cat No. 23358
Cat No. 23382

2 Pole, 63A, 240V
4 Pole, 63A, 415V

Cat No. 23362
Cat No. 23386



FINE SURGE PROTECTION



Fine surge and transient protection can be achieved by using PDL's surge protected switched socket (Cat 695SP). The unit protects computers and other valuable electronic equipment and appliances from surges (excluding direct lightning strikes) occurring inside or outside the building.

All sockets on the same circuit as the 695SP are protected against power surges upstream and downstream. Cat 695SP features double pole switching to provide additional protection for isolated appliances. Shrouded terminals are clearly labelled for ease of wiring.

Surge protection status is indicated by visual and audible means. When the amber neon stops glowing, it is time to replace the surge protection module (Cat 600SPM). A buzzer also sounds to alert the homeowner when the module is no longer operating.

The front-fitting surge protection module can be replaced easily and safely, and there is provision for tamper proofing. The device's response time is less than 25 nanoseconds, and it clamps and limits the voltage to 710V @ 50A.

The 695SP features the style and design excellence of the PDL 600 Designer Series and complies with Standards: AS/NZS 3112:2000 and AS/NZS 3100:1997.

For added surge protection, PDL recommends that medium surge protection is fitted to the switchboard.



695SP surge protected switch socket

Protection Type	3 – Metal Oxide Varistors (MOV)	Normal Operating Voltage	Un 230-240V a.c., 50Hz
Protection	Active to Neutral Active to Earth Neutral to Earth	Maximum Discharge Current (once, 8/20µSec)	I _{max} 6kA
Maximum Continuous Operating Voltage	Uc 275V a.c., 50Hz	Nominal Clamp Voltage	710V @ 50A



600SPM replacement module for 695SP

Maximum Protection Level	Impulse Amps (Is)	Residual Voltage (Ur)	Response Time	<25nS
	@ 6000A	1200V (Up)	Capacitance Operating	C _{typ} 320pF
	@ 1000A	900V	Temperature Range	-40° to +80°C
	@ 500A	820V		
	@ 50A	710V		

VOLTAGE SURGE PROTECTORS

ST surge arrestors are designed to protect equipment on energy networks using TN-S, TN-C and MEN earthing systems. They are not recommended on TT systems and are forbidden on IT systems. Each surge arrester in the range has a specific use:

- incomer end protection:
 - the STM is recommended for a medium to high risk level
- secondary protection:
 - the STD ensures secondary protection of loads to be protected and is placed in a cascading configuration with surge arrestors at the incomer end.

Common technical data

- frequency: 50...60 Hz
- U_c : 275 V
- operation indication by means of a mechanical indicator:
 - white: normal operation
 - red: surge arrester must be immediately replaced
- disconnection of the short-circuited surge arrester to be conducted with a circuit-breaker
- permissible internal short-circuit current for STD: 10 kA
- permissible internal short-circuit current for STM and STH:
 - 1P: 10 kA
- upstream and downstream terminal connection:
 - flexible cable: 2.5 to 16mm²

- rigid cable: 2.5 to 25mm²
- flexible or rigid cable ≥ 10 mm² if installation with lightning conductor
- operating temperature:
 - 25 °C, +60 °C
- storage temperature:
 - 40 °C, +70 °C
- protection class:
 - IP20 at terminals
 - IP40 on front panel
- weight (g):
 - 1P: 60
 - 1P+N: 106
 - 3P: 220
 - 3P+N: 250.

Standard

- IEC 61643-11 class 2 test.

Specific technical data

STM

- common mode protection:
 - I_{max} (8/20 μ s): 40 kA
 - I_n (8/20 μ s): 15 kA
 - U_p : 1.2 kV.

STD

- common mode protection:
 - I_{max} (8/20 μ s): 10 kA
 - I_n (8/20 μ s): 5 kA
 - U_p : 1.2 kV
- differential mode protection:
 - I_{max} (8/20 μ s): 10 kA
 - I_n (8/20 μ s): 3 kA
 - U_p : 1 kV.

Auxiliaries

- adaptable remote indication modules, EM/RM.



STD

I_n : Rated Discharge Current (20 times 8/20 wave):

I_{max} : Maximum Discharge (once) Current 8/20 wave/max:

Cat No. 16600

5kA

10kA

STM

I_n : Rated Discharge Current (20 times 8/20 wave):

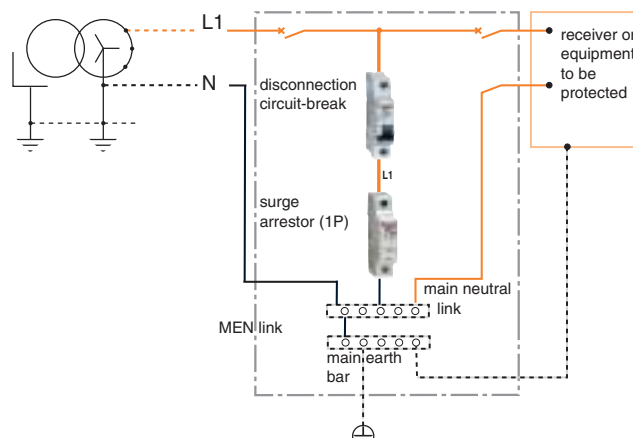
I_{max} : Maximum Discharge (once) Current 8/20 wave/max:

Cat No. 16604

10kA

40kA

MEN earthing system 1 Phase



Chemical resistance...
now there's a **choice** of
orange or **white***



PDL's orange 56 series is proven to offer chemical resistance in tough industrial situations.

Now there's a white version for clean, clinical environments.

Here are some good reasons to choose PDL 56 Series orange or white:

- Chemically-resistant
- Rated IP66
- Fully modular assembly for total versatility
- Proven in the field
- PVC compatibility
- Fully compliant with AS/NZ standards
- Made in New Zealand

* Plugs and connectors are available in orange only





PDL products are privileged to reside in almost every New Zealand home and office. People touch PDL products millions of times across the country, every day.

PDL is also a significant exporter, earning foreign exchange for New Zealand by shipping industry-best value-added product around the globe.

The PDL Electrical Products range (largely made in Christchurch) offers an extensive range of switch and wiring accessories. The PDL Electronics range (made in Napier) involves high-tech electronic solutions for industrial applications.

In just over six decades, PDL has stamped its indelible hallmark of quality and innovation on the domestic, commercial and industrial markets in everything from electrical accessories to industrial switchgear, AC variable speed drives to home automation.

Plastic & Die Casting Ltd, founded in 1947 was purchased by the then Bob Stewart in 1957 and renamed PDL Industries Ltd. It was Sir Robertson Stewart's acumen which created the vehicle which allowed PDL to grow and thrive for the balance of the 20th century. PDL grew from 12 staff and sales of NZ\$5000 per annum, to 2000 staff and NZ\$350m sales across 3 continents – in 60 years.

Schneider Electric acquired the PDL Group in 2001. Schneider Electric's world-wide distribution network now offers the PDL brand to a wider global market.

PDL products continue to be designed and engineered by New Zealanders, from independent PDL manufacturing facilities in Christchurch and Napier. PDL is a Kiwi brand and we take genuine pride in that.

PDL is part of Schneider Electric's family of leading electrical brands. As with Merlin Gerin, Square D and Telemecanique – PDL products are marketed locally by Schneider Electric New Zealand.



P D L



Merlin Gerin

PDL and Merlin Gerin electrical products are available through electrical wholesalers New Zealand wide.

PDL and Merlin Gerin electrical products are designed and engineered to ISO 9001.

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Owing to changes in standards and equipment, the characteristics given in the text and images in this document are not binding until they have been confirmed with us.