



A division of **NESS**  
CORPORATION

*“The Signal Conditioning Specialists”*



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## Short Form Catalogue 2022

[www.apcs.net.au](http://www.apcs.net.au)

**APCS is a leading Australian designer and supplier of high quality and competitively priced signal conditioning modules.**

Demand for APCS product over 40 years of successful operation has enabled development of a growing range of over 200 individual products including:

- Signal isolators / Splitters
- Transmitters
- Process alarms
- Power supplies
- Electrical transducers

**Available inputs include:**

- 4-20mA
- AC or DC current and voltage
- pH and conductivity
- RTD and thermocouple temperature sensors
- Frequency and speed measurement
- Strain gauge sensors

Power supply configurations include isolated, output loop powered or input signal powered. Most products are conveniently housed in industry standard DIN-rail enclosures. APCS also designs and manufactures OEM products, specials and complete systems.

**APCS products are used in varied industries:**

Chemical and petrochemical  
Water supplies  
Metal smelting and steel making  
Mining / Glass manufacture  
Oil and gas / Cement manufacture  
Utilities and power generation  
Agriculture / Paper manufacture  
Building management  
Food and beverage processing  
Waste water and sewage treatment  
Research and development  
Transport and Marine

**Digital advance**

Recent advancements in digital technology have allowed APCS to develop one simple alternative to traditional instrumentation.

The Universal Signal Conditioner USC701 covers over 80% of all signal conditioning applications, has capability for digital communications including field bus and can be easily programmed via PC, Internet or unique access module.

**Service**

A well-trusted Australian owned manufacturer of instrumentation, APCS prides itself on exceeding customer's expectations for quality, short lead time and customer service with an emphasis on technical support.

APCS' specialised team of engineers offers superior expertise in the field of signal conditioning and instrumentation.

**Quality**

All APCS products are manufactured in the Ness manufacturing which is accredited to the internationally recognised ISO9001/2000 quality standard.

Meticulous adherence to this standard and our financial commitment to our multi-million dollar manufacturing facility at Seven Hills, NSW is indicative of our commitment to quality and excellence in manufacturing.

**Distribution**

International and Australian wide comprehensive distribution networks have been established to provide the best local back-up and system application assistance. Our representatives are appointed only after they have proven themselves to be capable of properly supporting our customers.



[www.apcs.net.au](http://www.apcs.net.au)

APCS Distributors can be found in most major and regional cities in AUSTRALIA.

- Sydney • Melbourne • Brisbane • Perth • Adelaide • Newcastle • Wollongong • Bathurst • Albury
- Geelong • Gippsland • Gladstone • Townsville • Hobart • Devonport • Darwin

**INTERNATIONAL**

- USA: Los Angeles, California: Libertyville; Illinois • SWEDEN: Vollsjo • SINGAPORE: Singapore City
- SOUTH AFRICA: Raindburg • NEW ZEALAND: Christchurch



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		AC TRANSDUCER	ALARM	ISOLATOR 2-WIRE
INPUT TYPE	4-20mA		DTA137, STA138, TRA173	SI231, SI239
	4-20mA Input Powered			SPI232
	ac A	CM270	DTA137, STA138, DCA218	
	ac Power	AWT190, ART191, AVAT192, APT193		
	ac V	VPR271	DTA137, STA138	SI239
	Conductivity		DTA137, STA138, LLD207	
	dc A		DCA218	
	dc mA/V		DTA137, STA138, TRA173	SI231, SI239
	mV			SI239
	pH/REDOX		DTA137, STA138	
	Potentiometer		DTA137, STA138	
	Resistance		DTA137, STA138	
	RTD		DTA137, STA138	
	Speed/ Frequency/ Pulse		DTA137, STA138	
	Strain Gauge		DTA137, STA138	
	Thermocouple		DTA137, STA138	
	Cable		PCM177	



FUNCTION				
ISOLATOR 4-WIRE	TRANSMITTER 2-WIRE	TRANSMITTER 4-WIRE	BIPOLAR & HIGH DRIVE	PULSE/ FREQUENCY OUT
SL332, SL335, SL339, SSP235		HVI237	BSI234, BSC133, BSI134	APC258
	ACT241	ACT284, ACT141, DCT247, SL345	BSC133	APC258
	AVT245	SL350, ACT284, AVT145, SL345	BSC133	APC258
	CDT228	CDT128		
		DCT247, SL345		APC258
SL332, SL335, SL339, SSP235		HVI237, SL345	BSI234, BSC133, BSI134	APC258
SSP235	MVT223	SL340	BSI234	APC258
	PHT229	PHT129		APC258
	SWT240	SL340	BSI234, BSC133, BSI134	APC258
	RT243	SL340	BSC133	APC258
	RTDT225	SL340	BSC133	APC258
	FRT250	SL350	BSC133	PLS257, APC258
	WT227	SL340, WT127		
	TCT226	SL340	BSC133	



# AC TRANSDUCER MODULES

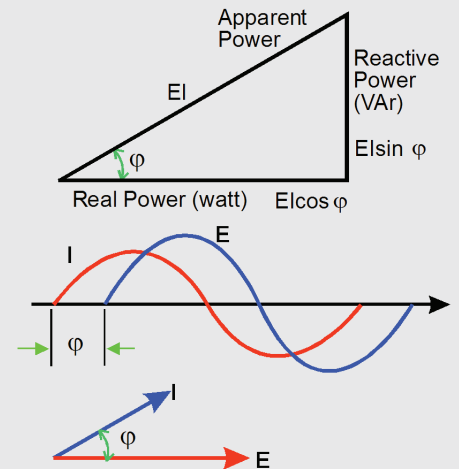


An ac transducer is used to change an electrical quantity such as voltage, current, power or frequency into a proportional dc output.

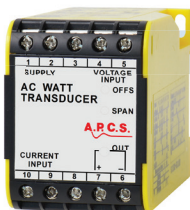
Complex electrical quantities, such as watts, can be measured at a convenient location and converted into a load independent dc current signal for transmission over two wires over any distance for display, recording or control.

For remote indication of watts or vars, a transducer can reduce the number of signal wires to be laid between source and indicator from as many as nine to two.

Transducer output wires need only be insulated for low voltage and have small cross sectional area. Such lines are easily run and effect savings in terms of cable costs and space occupied on cable trays and the connecting and terminating elements required.



PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
AWT190	100	Ac Active Power Transducer	Measure power of a single or 3 phase (3 or 4 wire) balanced load system into a process signal.
ART191	100	Ac Active VAR Transducer	Measure VAR of single or 3 phase 3 or 4 wire balanced load system into a process signal.
AVAT192	100	ac Active VA Transducer	Measure VA of single or 3 phase 3 or 4 wire balanced load system into a process signal.
APT193	100	Ac Active Phase Angle Trans.	Measure Phase Angle of single or 3 phase 3 or 4 wire balanced load system into a process signal.
CM270	200	Current Monitor	Monitor AC current and provide a 3-state isolated alarm output.
VPR271	200	Voltage Presence Relay	The VPR271 monitors 3-phase voltage up to 700V phase to phase with two relay outputs



## 100 Series

Dimensions  
(W x H x D mm)  
52 x 70 x 110  
DIN Rail Mount



## 200 Series

Dimensions  
(W x H x D mm)  
23.5 x 71.5 x 109  
DIN Rail Mount



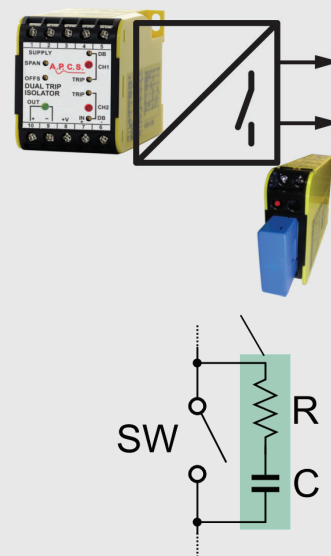
The alarm module measures the process variable using the appropriate input circuit for the probe or signal type and compares it with a trip point value to determine when to switch (See Transmitter for additional functional details).

Main factors to consider when choosing an alarm module are;

- Power supply used to power the module.
- Input measurement from probe, sensor, voltage, current or process signal.
- Trip action. A direct trip action direct or reverse, relay to energised above or below the trip-point.
- Contact rating and type, normally open (NO), normally closed (NC) and change over(CO).
- Dead band is used to set a window around the set-point to prevent the relay from continuously switching when close to the set-point.
- Switching delay.

Relay outputs or contacts have the advantage of being mechanically isolated from the measuring device and usually have higher voltage ratings than solid state devices however the number of switching operations over a lifetime is lower.

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PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
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## ALARM MODULES

STA138	100	Single Trip Alarm	The STA138 has a relay output with adjustable set-point for a wide range of process and industrial probe inputs.
TRA173	100	Triple Trip Alarm	Three relay output with adjustable set-point for a range of voltage and current inputs.
DTA137	100	Dual Trip Alarm	Dual relay output with adjustable set-point, wide range of process and industrial probe inputs.
LLD207	200	Liquid Level Detector	Relay output for liquid level detection using AC sensor excitation to probe.
DCA218	200	dc Current Alarm	Relay output for monitoring of DC and true RMS AC currents from 5 to 6000A.
FRA251	200	Frequency Alarm	Pulse, contact and frequency signals are converted a DC signal and relay contact output.
HVR272	200	High Voltage Relay	Monitor critical voltage levels up to 700Vac/dc.
PM276	200	Pressure Monitor	Measure air pressure, 2kPa to 200kPa to an analogue output and provides a relay contact.
PM277	200	Differential Pressure Monitor	Measure differential air pressure, 2kPa to 200kPa to an analogue output and provides a relay contact.

## ALARM & TRANSMITTER MODULES

DTI135	100	Dual Trip-point Isolator	Wide range of signals, provide isolated process output plus two relays with set-point.
STI136	100	Single Trip-point Isolator	Wide range of input signals, provides isolated process output plus relay with set-point.



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# ISOLATOR MODULES

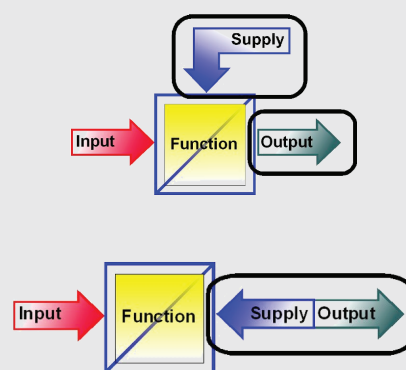
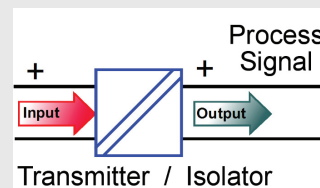


Modules listed in this section are primarily designed for process (mA/ V < 20) signal in and process signal out.

Isolation is one of the most critical issues in process control. It is used to prevent unwanted current loops, ground loops, protection of delicate equipment and ensuring the safety of human operators when high common mode voltages are to be expected.

Loop powered or 2-Wire isolators are connected in series with all instruments driven by the same signal or current loop. Loop powered transmitters and isolators must have a live zero output signal (4mA) as the power to operate the transmitter is taken from the output signal. This is achieved by tolerating a voltage drop of up to 12V across the output of the transmitter.

4-Wire isolators transmitters have two wires the power the isolator and two wires to connect the output signal. The energy to drive the 4-20mA output signal comes from the separate power wires. Please refer to section dc mA/V 4-Wire Output for further details of 4-Wire transmitters.



PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
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## ISOLATOR MODULES 2-WIRE

SI231	200	Signal Isolator	Isolated loop-powered signal output for common process input signals.
SPI232	200	Signal Powered Isolator	Two independent isolators powered by 4-20mA input signal, provides galvanic isolation to two outputs.
SI239	200	Signal Isolator	Isolated loop-powered output for DC current or voltage input signals.

## ISOLATOR MODULES 4-WIRE

SSP235	200	Signal Splitter	Produce two independent process outputs from one process input signal, 4 way isolation.
SL332	3 SL	Signal Isolator	Isolating converter for standard process signals. In/out ranges set using two 16 position switches. 3-way isolation.
SL335	3 SL	Signal Splitter	Produce two independent process outputs from one process input signal, 4 way isolation. In/out ranges set using three 16 position switches.
SL339	3 SL	Signal Isolator	The SL339 is a isolating converter providing true 3-way galvanic isolation up to 2500Vrms for standard process signals. Input and output range are set using SL300 s/w



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DIN Rail Mount



### 3SL 'Smart Line' Series

Dimensions  
(W x H x D mm)  
12.4 x 113 x 108  
DIN Rail Mount





The PCM177 pilot cable monitor is an earth continuity relay which provides earth continuity protection in accordance with AS/NZS 2081 ensuring the earth connection through a trailing/reeling cable is maintained.

A pilot cable is connected to earth via a diode, the PCM 177 detects open and short circuits between the pilot and earth conductors of the trailing cables.

An Earth Continuity Relay is designed to provide earth continuity protection. The method used is called pilot earth loop or earth continuity monitoring, where an additional core pilot cable is included with the power and earth cores in the trailing or reeling cables, which supply power to the machines.

The Relay monitors the return path resistance between pilot and earth of the cable. The maximum allowable loop resistance is 45 ohms with underground mining operations. Higher resistance values may be used for long cable runs used in surface mining operations.



PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
PCM177	100	Pilot Cable Monitor	Earth continuity protection.



100 Series

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DIN Rail Mount

# TRANSMITTERS 2 WIRE & 4 WIRE (OUTPUT)



The signal transmitter converts a low level signal from any sensing device into a standardised process signal. These transmitters sometimes incorporate electromechanical devices such as strain gauges for measurement of physical values: pressure, flow, level, etc. Most APCS transmitters also provide input to output isolation.

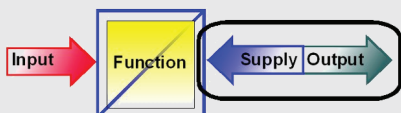
Signal transmitters can:

- Convert one specific type of signal into another type of signal.
- Input: Thermocouple type J0 800°C
- Output: 4~20mA
- May provide galvanic isolation from one signal (input) to another (output).

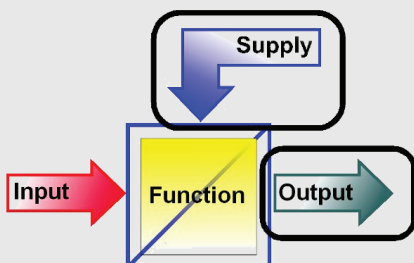
Note that APCS defines a Signal Isolator as a transmitter with isolation.

When choosing a transmitter please consider the following;

- a) Input signal or measurement.
- b) Output and what powers the signal conditioning module are a major determining factor when choosing a transmitter.
- c) Is isolation required?



**LOOP POWERED OR 2 WIRE TRANSMITTERS** are connected in series with all instruments driven by the same signal or current loop. Loop powered transmitters and isolators must have a live zero output signal (4mA) as the power to operate the transmitter is taken from the output signal. This is achieved by tolerating a voltage drop of up to 12V across the output of the transmitter.



**4 WIRE TRANSMITTERS** have two wires the power the unit and two wires to connect the output signal. The energy to drive the 4 20mA output signal comes from the separate power wires.



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# TRANSMITTERS 2-WIRE & 4-WIRE (OUTPUT)

PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
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## TRANSMITTERS 2-WIRE

MVT223	200	Millivolt Transmitter	Convert DC mV signals into an isolated 4-20mA 2-wire output.
RTDT225	200	RTD Temperature Transmitter	Convert RTD (Pt100) temperature sensors into an isolated 4-20mA 2-wire output.
TCT226	200	Thermocouple Transmitter	Convert thermocouple temperature input into an isolated 4-20mA 2-wire output.
WT227	200	Strain Gauge Transmitter	Convert full bridge strain gauge into an isolated 4-20mA 2-wire output.
CDT228	200	Conductivity Transmitter	Convert conductivity probe into an isolated 4-20mA loop powered output.
PHT229	200	pH / Redox Transmitter	Convert pH/Redox to an isolated 4-20mA loop powered output.
SWT240	200	Resistance Transmitter	Convert slidewire / potentiometer input into an isolated 4-20mA loop powered output, zero suppression up to 50% of range.
ACT241	200	ac Current Transducer	Directly connect AC current from 0.5 to 10Aac, converts to an isolated 4-20mA loop powered output.
RT243	200	Resistance Transmitter	Measure 2-wire resistance up to 10k, convert to an isolated 4-20mA process signal output.
AVT245	200	ac Voltage Transducer	Measure acV from 100mVac to 500Vac and convert to an isolated 4-20mA process signal output.
PIC246	200	Pressure to Current Converter	Pressure up to 200kPa and convert to an isolated 4-20mA process signal output. Gauge, differential or absolute available.
FRT250	200	Frequency Transmitter	Convert pulse and contact signals from 5Hz up to 5kHz to an isolated 4-20mA process signal output.

## TRANSMITTERS 4-WIRE

WT127	100	Strain Gauge Transmitter	Full bridge strain gauge such as load cells or piezoelectric sensors into an isolated DC current or voltage output.
CDT128	100	Conductivity Transmitter	Conductivity probe input, isolated DC current or voltage output.
PHT129	100	pH / Redox Transmitter	pH/Redox probe input, an isolated DC current or voltage output.
ACT141	100	ac Current Transducer	AC current from 0.5 to 10Aac input, isolated DC current or voltage output.
AVT145	100	Ac Voltage Transmitter	AC voltage from 10Vac to 500Vac input, isolated DC current or voltage output.
PIC176	100	Pressure To Current Converter	Air / gas pressure input, isolated DC current or voltage output.
TPT194	100	Tap Position Transducer	Tap position resistors (position of Tap Changer) input, isolated DC current or voltage output.
HVI237	200	5KV Isolator	Isolating converter providing 4-way galvanic isolation up to 5kVrms and two DC current or voltage outputs.
DCT247	200	Dc Current Transducer	Measure DC and true RMS AC currents from 5 to 6000A and provides an isolated process output.
ACT284	200	ac Transducer	Measure ac voltage or current up to 1000V or 10A and converts into an isolated mA or V process output.
TCT286	200	Thermocouple Transmitter	Isolating transmitter that converts a thermocouple signal to a standard process signal that represents temperature.
SL345	3 SL	AC and Bipolar Isolator	Measures bipolar and ac voltage and current with 38 input and 8 output ranges with input shape control, signal limits and zero offsets. Ac ranges use multiple readings and zero crossing to calculate result over a wide frequency range.
SL340	3 SL	Universal Transmitter	Isolating transmitter/converter for use with industrial probes and millivolt signals. Input and output set using SL300 programmer.
SL350	3 SL	Pulse Frequency Transmitter	Isolating pulse input (0.1Hz to 180kHz span) to process signal output. Wide variety of sensors and input types. Input trigger from 50mV to 200V.

# TRANSMITTERS BIPOLAR & HIGH DRIVE



High drive modules have an output capability greater than 50mA.

Most hi drive modules require an external power supply and a side or externally mounted heat sink.

Products with a bipolar output can drive the output in the positive or negative direction.

PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
PD121	100	Power Driver	4-wire signal converter with high current output. One terminal of the load is connected to supply and input negative. Models with output > 500mA use separate heat-sink.
PD122	100	Power Driver	4-wire signal converter with high drive output. Input is isolated. Load is not isolated from supply. Models with output > 500mA use separate heat-sink.
BSC133	100	Bipolar Signal Converter	The BSC133 converts measured input into a high drive bipolar output signal.
BSI134	100	Bipolar Signal Isolator	The BSI134 converts and isolates input signals and produces a bipolar output signal
BSI234	200	Bipolar Signal Isolator	The BSI234 converts and isolates input signals and produces a bipolar output signal



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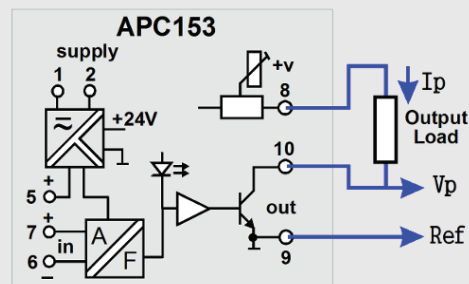


## Pulse/ Frequency Out Modules

This includes analogue to pulse conversion and pulse decision and buffering. The block diagram of an APC153 shows an output collector output transistor. The output voltage at  $V_p$  will not change unless a pull up is connected, the pull up may be part of the receiving device.

All APCS pulse products provide isolation between input and output.

The new APC258 provides two isolated outputs (4 way isolation) that can be ordered as source drive or sink outputs.



PART NO.	HOUSING SERIES	PRODUCT	DESCRIPTION
PWM157	100	Analog To PWM	Analog to pulse width modulator. Output frequency set between 10Hz and 3kHz.
PLS257	200	Pulse Splitter	One pulse input is isolated, re-powered and repeated on two separate outputs, 4 way isolation.
APC258	200	Analogue to Pulse Converter	One process or probe input signal. Two independent pulse outputs, 4 way isolation.



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DIN Rail Mount



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#### SECURITY PRODUCTS

Designed and made in Australia by Ness, our quality alarm control panels and motion detectors are built to world standards and in fact are exported to USA, Asia and Europe.



#### CCTV

Ness CCTV provides solutions for all IP video surveillance needs from major brands including HIKVISION, BOSCH, TRUVISION, DIGITAL WATCHDOG, NX WITNESS, DVRs, cameras & Video Management Systems.



#### INNOVATION

Winner of Best New Product at the Security2015 Exhibition, Ness MEZZO is set to revolutionise the home with advanced security and automation technology.



#### INTEGRATION

The Ness M1 integrates security, automation, access, lighting, HVAC, CCTV, entertainment, & other electrical devices. User interfaces: keypads, iPad/iPhone/iPod interface, PC, wireless key fobs, prox fobs/cards.



#### ACCESS CONTROL

Ness IP range of Access controllers and full range of Card readers, Biometric Readers, Keypads and door hardware. From a single door control through to full High Rise, High Security systems.



#### WIRELESS SECURITY PRODUCTS

Ness manufactures Australia's widest range of high quality supervised & encrypted wireless security products including Radio Keys, Radio PIRs, Radio Reed Switches, Radio Smoke Detectors and more.



#### INTERCOMS

Now including the new M200 Compact Master, iCentral music and video intercom systems are your quality solution for • Front door answering with video • Room to room intercom • Piped music • Video monitoring.



#### INDUSTRIAL SIGNAL CONDITIONING

Ness APCS is the trusted global name in process control and signal conditioning. We take pride in our quality and reliability, flexibility in customisation, factory training, expert technical support and fast delivery.



#### ELECTRONIC MANUFACTURING

Nesstronics quality contract manufacturing with 100% product guarantee, Lean Manufacturing on SMT board loading, AOI and FPT inline, RF testing, Multiple shifts, FIA or Turnkey, Open Book, Lead free, no-clean process and Rapid prototyping capability.



#### AGED CARE & NURSECALL

Ness SmartLink is the Australian leader in Aged Care solutions providing you with advanced health care products to meet the needs of this ever growing market.

### Ness Corporation Diversity

The company has approximately 10 divisions and 15 major product groups.

The numerous product lines include Security Products, Wireless Security, Monitored Systems, CCTV, Integrated Systems, Innovation and Development, Access Control, Automation, IP Intercoms, Structured Cabling, Central Vacuum and Video Intercoms, Industrial Signal Conditioners and Isolators, Distributed A/V, Medical Alarms, Aged Care and Electronic Manufacturing.

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