

**CARLO GAVAZZI**  
Automation Components



# Monitoring Controls Providing Unparalleled Application Solutions



Control

## When Technology and Experience Exceed Your Expectations



*The standard high-performance DIN-rail housings*

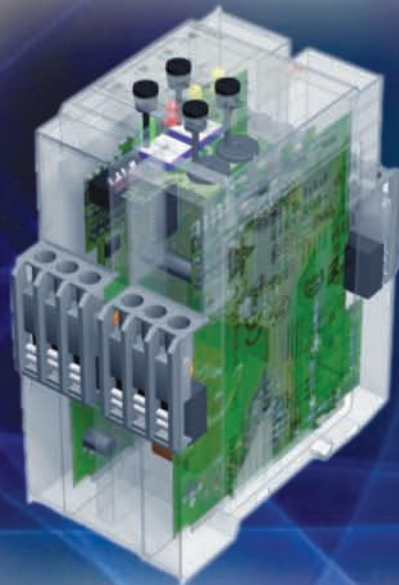
*Plug-in versions for maximum flexibility*

*The new compact DIN-rail mount housings require minimal panel space*

Monitoring is **the art of knowledge**.

If the electrical parameters of the system are in control, everything runs correctly, reducing down time and maintenance costs. Our people at Carlo Gavazzi learned this fundamental lesson through our thirty years experience designing and manufacturing monitoring relays. The most sophisticated measuring techniques, together with the highest attention to make the unit really easy to set up, make Carlo Gavazzi Monitoring Relays the optimum solution wherever electrical parameters have to be measured.

The family is available with the same functions in **three different housings**: the standard DIN-rail, mount types, perfect for industrial panels, the Plug-in housing to allow fast and safe replacement (without rewiring), and the new Mini-D housings for DIN-rail mounting, which can be mounted in electrical panels as well as in smaller panels for special industrial or non-industrial applications.





## Not all Applications are the Same... So We are Always Looking for New Solutions

Our way of developing products always starts from listening. We begin from the final application, meeting people to understand the critical issues. We design the products so that they fulfill or exceed the monitoring needs, The final result is outstanding performance.



## A Guarantee of Reliability by our Specialized Manufacturing Centers

Our monitoring relays are manufactured in accordance to the latest and most reliable techniques and are 100% tested to assure that when the unit is mounted in the final application it will provide a real sense of confidence for the user.



## Certified Quality

The **high quality** of production is guaranteed by the ISO9001 certification of our factory, as well as continuously testing and improving the production processes. CE tests, UL and CSA approvals, mean various independent bodies have tested and approved the units, a testament to the level of development and production of our products. Some of them are also provided with other specific and high demanding approvals, such as Germanischer Lloyd.



## Monitoring Solutions for Water and Pump Applications



### Your Automation Challenge

What happens if my pump runs dry? What if the phase sequence is not correct or one phase fails?



**DWB01**

**DIB71**

**DPA51**

### Our Product Proposal

- **DPA01, PPA01, DPA51**: 3-Phase sequence and loss monitoring relays
- **DWB01, PWB01**: 3-Phase cosφ monitoring relays
- **DWB02, PWB02**: 3-Phase active power monitoring relays
- **DIB01, PIB01, DIB71**: Current relays

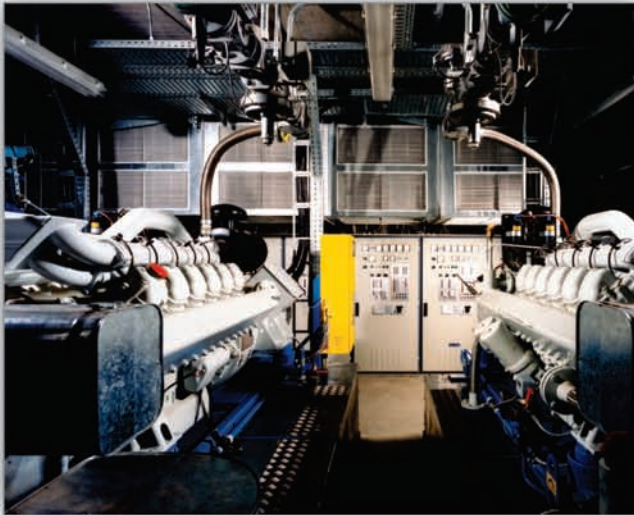
### Our Solution

Since it very seldom happens that there is human surveillance of pumps, minor failures may occur as incorrect phase sequence cause major problems such as flooding. The **DPA01, PPA01** and **DPA51** detect for the correct phase sequence and phase loss along with the voltage regenerated by the pump's motor; this means that the maintenance department can easily and promptly be notified before a system failure occurs.

It is also possible to monitor the load of the pump, detecting if it is dry or blocked by some material just by monitoring its electrical values. The **DIB01, PIB01** or **DIB71** can be a solution to simply monitor for overloads. For dry running and overload protection, the **DWB01, PWB01, DWB02** and **PWB02** offer full protection.



## Monitoring Solutions for Energy Generation Applications



### Your Automation Challenge

With an increased use of generators in many applications, it's absolutely necessary that the mains from the generator are of high quality to prevent damage to the connected load(s).



**DPC02**

**DPC01**

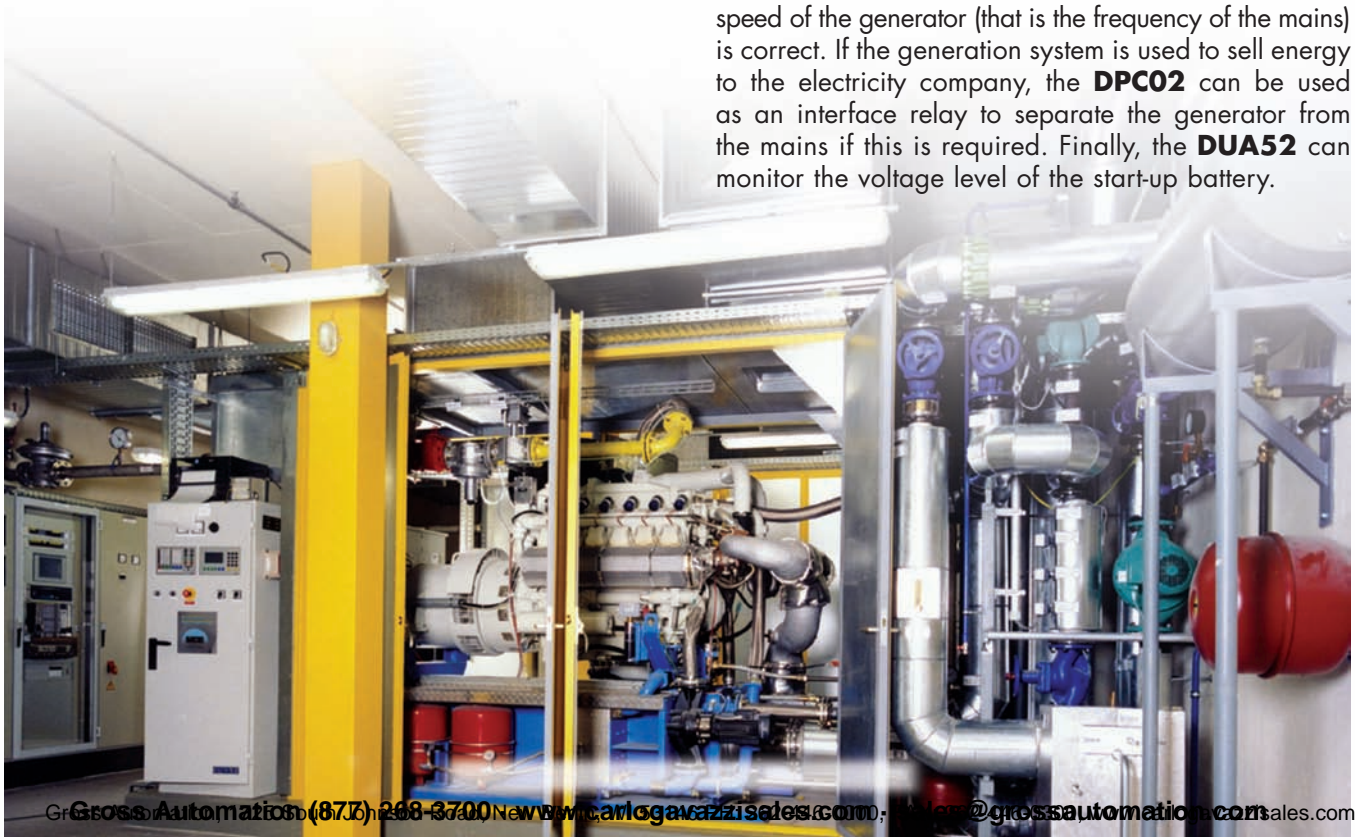
**DUA52**

### Our Product Proposal

- **DPC01, PPC01**: 3-phase mains quality relay
- **DPC02**: 3-phase voltage and frequency monitoring relay
- **DUA52**: Battery level monitoring relay

### Our Solution

Carlo Gavazzi's 3-phase monitoring relays, the **DPC01** and **PPC01**, can guarantee that the voltage level of all the phases (even the phase-neutral voltages) are correct. With the **DPC02** the user also knows if the speed of the generator (that is the frequency of the mains) is correct. If the generation system is used to sell energy to the electricity company, the **DPC02** can be used as an interface relay to separate the generator from the mains if this is required. Finally, the **DUA52** can monitor the voltage level of the start-up battery.



## Monitoring Solutions for: Material Handling Applications

### Your Automation Challenge

All industrial applications where sophisticated mechanical machines are used to manufacture, package, mix, etc. Require high quality mains. A faulty system can cause poor product quality.



**DPB01**

**DIA01**

**DIA53**

### Our Solution

Carlo Gavazzi's **DPB01**, **DPB71** or **PPB01** keep the mains fully monitored, thus preventing dangerous working situations. Furthermore, the most important amperages of the process can easily be monitored by means of the **DIA53** (with transistor output) or the **DIB01** (with relay output). These DIN rail mount devices with their built-in, 12mm current monitoring through-hole, are capable of measuring up to 100 Amps.

### Our Product Proposal

- **DIA53** and **DIB01**: Over current relays
- **DIA01** and **PIA01**: Over current relays
- **DPB01** and **PPB01**, **DPB71**: 3-phase over and under voltage relays



## Packaging Applications

### Your Automation Challenge

Industrial facilities using advanced technological machines to optimize the productivity level and the quality of the end product often need to monitor the quality of the mains.



**DPB01**

**PPB01**

**DPB71**

### Our Solution

Using the **DPB01/PPB01** or the new **DPB71** (new mini DIN-rail mount housing) it is possible to monitor phase sequence-loss and over-under voltage of the mains to set up a window comparator system for the mains. It's also possible to set an on-delay alarm from 0.1 - 30 sec. to avoid nuisance tripping and stopping of the machine.

### Our Product Proposal

- **DPB01**, **PPB01** or **DPB71**: 3-phase over and under voltage relays



## Monitoring Solutions for: Elevator/Escalator Applications

### Your Automation Challenge

For elevators, escalators and all people moving equipment, the direction of the motion must be 100% correct. Phase sequence relays are a fast, reliable and easy to maintain solution. Additionally with an overload, the motor temperature can damage and eventually destroy the motor itself.



**DTA01**

**DPA51**

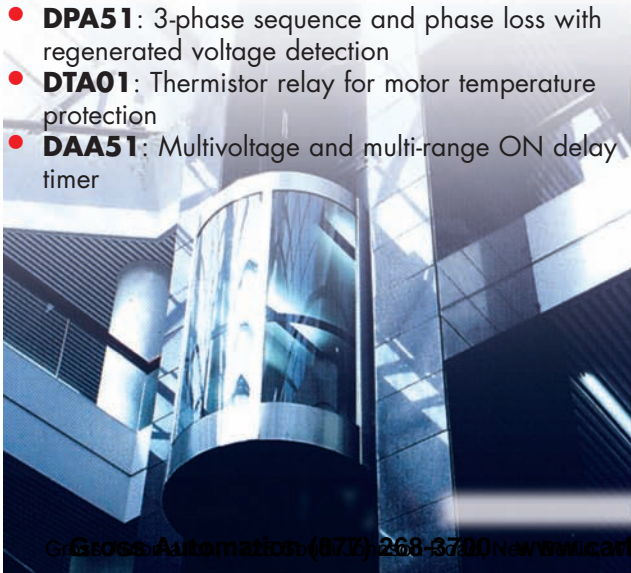
**DAA51**

### Our Solution

In addition to phase sequence, the **DPA51** can detect the voltage regenerated by the motor in case of phase loss, which isn't always detected by less expensive units. This means that you'll reduce the risk that your motor won't overheat, burn up or cause danger to people. The **DTA01**, **DTA02**, **PTA01** and **PTA02** thermistor relays measure the temperature inside of the motor, allowing prompt disconnection in case of overheating.

### Our Product Proposal

- **DPA51**: 3-phase sequence and phase loss with regenerated voltage detection
- **DTA01**: Thermistor relay for motor temperature protection
- **DAA51**: Multivoltage and multi-range ON delay timer



## HVAC Applications

### Your Automation Challenge

Correct direction means higher efficiency of the compressor (in some cases incorrect rotation means immediate breakdown). Furthermore, starting more than one compressor at the same time can cause a high inrush current with several problems like EMC noise or low mains voltage.



**DAC51**

**DPA51**

**DPA53**

### Our Solution

A **DAA51** timer is the most flexible solution for the end user to set the delay times of the compressors. Our smallest multivoltage phase sequence and loss relay, the **DPA51**, prevents an incorrect rotation direction as well as from single phasing, while the **DPA53**, with an undervoltage setpoint, can let the compressor work at its best. Finally, **DAC51**, (the smallest star-delta timer on the market), helps reduce the required panel space.

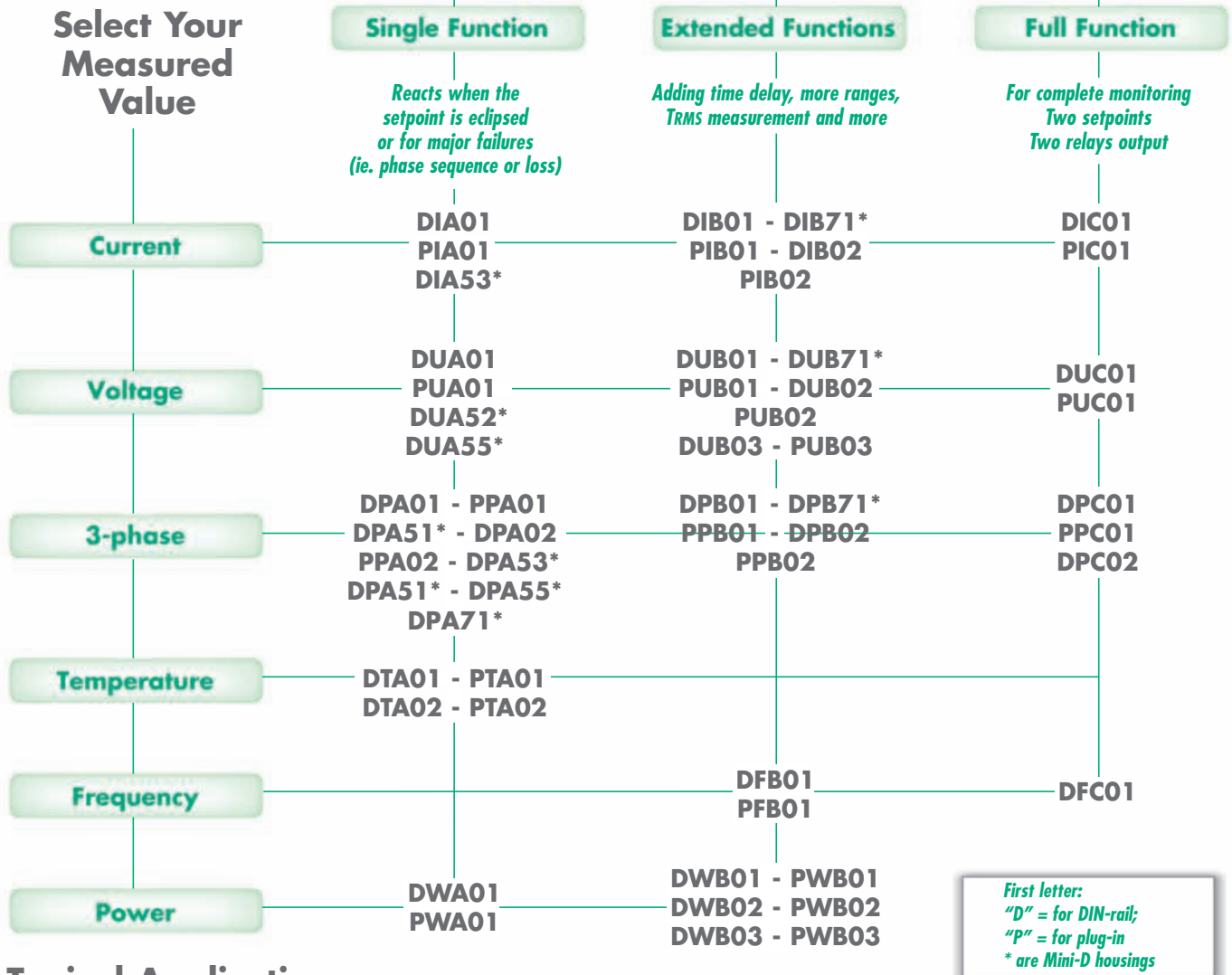
### Our Product Proposal

- **DPA51**: 3-Phase sequence and loss monitoring relay
- **DPA53**: 3-Phase sequence and loss monitoring relay with undervoltage detection
- **DAA01**, **PAA01**, **DAA51**: Delay on operate timers
- **DAC01**, **PAC01**, **DAC51**: Star-delta timers



## The Easy Way to Find Your Solution

### Select your Function Level



### Typical Applications



#### Single Function

Correct motor rotation direction, ON/OFF current monitoring, motor overtemperature



#### Extended Functions

Monitoring mains quality, motor overload, generator speed, pump dry running



#### Full Function

Full mains monitoring, sophisticated current and voltage monitoring, full generator parameters





## Some Useful Information to Specify Your Part Number:

### How to Determine the Complete Code of the Monitoring Relay You Need

A full part number listing is shown on the next page

#### If you need a current or voltage relay add...

##### The output - add the code:

C	SPDT relay
D	DPDT relay or 2xSPDT relays
S	solid state

##### The power supply - add the code:

724	24 VDC
748	48 VDC
B48	24 & 48 VAC
B23	115 & 230 VAC

##### The range - add the code:

5MA	1, 2 & 5 mA AC/DC
50MA	10, 20 & 50 mA AC/DC
500MA	100, 200 & 500 mA AC/DC
5A	1, 2 & 5 A AC/DC
10A	10 A AC/DC
20A	20 A AC (DIA53 only)
50A	50 A AC (DIA53 only)
100A	100 A AC (DIA53, DIB01)
150MV	60 & 150 mV (DIB02, PIB02)
10V	1, 2, 5 & 10 V AC/DC
500V	20, 50, 200 & 500 V AC/DC
AV0	combined ranges

**Example: DIA53 S 724 100A**

#### If you need a 3-phase voltage relay or a power relay add...

##### The output - add the code:

C	SPDT relay
D	DPDT relay or 2xSPDT relays

##### The power supply - add the code:

M44	208 to 480 VAC
M23	208 to 240 VAC
M48	380 to 480 VAC
M60	400 to 600 VAC
M69	600 to 690 VAC

##### The current range (power relays only) - add the code:

5A	5 AAC
10A	5 & 10AAC

**Example: DPA53 C M48**

#### If you need a frequency relay add...

##### The output - add the code:

C	SPDT relay
D	2xSPDT relays

##### The power supply - add the code:

M24	24 to 240 VAC
B48	24 & 48 VAC
B23	115 & 230 VAC

**Example: DFB01 C M24**

#### If you need a motor temperature relay add...

##### The output - add the code:

C	SPST relay 2xSPDT relays
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##### The power supply - add the code:

724	24 VDC
024	24 VAC
115	115 VAC
230	230 VAC

**Example: DTA01 C 115**



## Our Monitoring Relays Portfolio

### Current

DIA01C7245A	DIB71CB485MA
DIA01C7485A	DIB71CB4850MA
DIA01CB485A	DIB71CB48500MA
DIA01CB235A	DIC01D724AV0
DIA53S72420A	DIC01D748AV0
DIA53S72420AF	DIC01DB48AV0
DIA53S72450A	DIC01DB23AV0
DIA53S72450AF	PIA01C7245A
DIA53S724100A	PIA01C7485A
DIA53S724100AF	PIA01CB485A
DIB01C7245MA	PIA01CB235A
DIB01C7485MA	PIA53S72420A
DIB01CB485MA	PIB01C7245MA
DIB01CB235MA	PIB01C7485MA
DIB01C72450MA	PIB01CB485MA
DIB01C74850MA	PIB01CB235MA
DIB01CB4850MA	PIB01C72450MA
DIB01CB2350MA	PIB01C74850MA
DIB01C724500MA	PIB01CB4850MA
DIB01C748500MA	PIB01CB2350MA
DIB01CB48500MA	PIB01C724500MA
DIB01CB23500MA	PIB01C748500MA
DIB01C7245A	PIB01CB48500MA
DIB01C7485A	PIB01CB23500MA
DIB01CB485A	PIB01C7245A
DIB01CB235A	PB01C7485A
DIB01C72410A	PIB01CB485A
DIB01C74810A	PIB01CB235A
DIB01CB4810A	PIB01C72410A
DIB01CB2310A	PIB01C74810A
DIB02C724150MV	PIB01CB4810A
DIB02C748150MV	PIB01CB2310A
DIB02CB48150MV	PIB02C724150MV
DIB02CB23150MV	PIB02C748150MV
DIB71CB235A	PIB02CB48150MV
DIB71CB235MA	PIB02CB23150MV
DIB01CM24100A	PIC01C724AV0
DIB71CB2350MA	PIC01C748AV0
DIB71CB23500MA	PIC01CB48AV0
DIB71CB485A	PIC01CB23AV0

### Voltage

DUA01C724500V
DUA01C748500V
DUA01CB48500V
DUA01CB23500V
DUA52C724
DUA52C748
DUA55CM44
DUB01C72410V
DUB01C74810V
DUB01CB4810V
DUB01CB2310V
DUB01C724500V
DUB01C748500V
DUB01CB48500V
DUB01CB23500V
DUB03CW24
DUB71CB4810V
DUB71CB2310V
DUB71CB48500V
DUB71CB23500V
DUB02CT23
DUC01D724500V
DUC01D748500V
DUC01DB48500V
DUC01DB23500V
PUA01C724500V
PUA01C748500V
PUA01CB48500V
PUA01CB23500V
PUB01C72410V
PUB01C74810V
PUB01CB4810V
PUB01CB2310V
PUB01C724500V
PUB01C748500V
PUB01CB48500V
PUB01CB23500V
PUB02CT23
PUB03CW24
PUC01C724500V
PUC01C748500V
PUC01CB48500V

### 3-phase

DPA01CM44
DPA01CM60
DPA01DM23
DPA01DM48
DPA02CM23
DPA02CM40
DPA51CM44
DPA53CM23
DPA53CM48
DPA55CM44
DPA71DM23
DPA71DM48
DPB01CM23
DPB01CM48
DPB02CM23
DPB02CM48
DPB71CM23
DPB71CM48
DPC01DM23
DPC01DM48
DPC01DM69
DPC01DM23400HZ
DPC01DM48400HZ
DPC01DM49400HZ
DPC01DM69400HZ
DPC02DM23
DPC02DM48
DPC02DM49
DPC02DM69
PPA01CM44
PPA01CM60
PPA01DM23
PPA01DM48
PPA02CM23
PPA02CM40
PPB01CM23
PPB01CM48
PPB02CM23
PPB02CM48
PPC01DM23
PPC01DM48
PPC01DM69

### Power

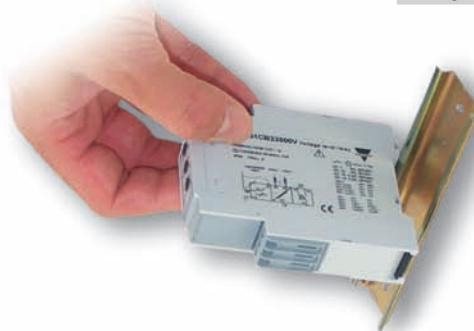
DWA01CM235A
DWA01CM485A
DWB01CM2310A
DB01CM4810A
DWB01CM6910A
DWB02CM2310A
DWB02CM4810A
DWB02CM6910A
DWB03CM2310A
DWB03CM4810A
DWB03CM6910A
PWA01CM235A
PWA01CM485A
PWB01CM2310A
PWB01CM4810A
PWB01CM6910A
PWB02CM2310A
PWB02CM4810A
PWB02CM6910A
PWB03CM2310A
PWB03CM4810A

### Frequency

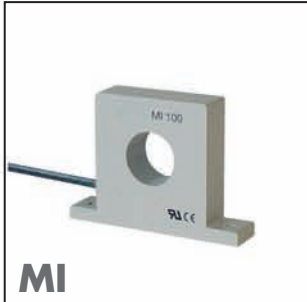
DFB01CM24
DFC01DB48
DFC01DB23
PFB01CM24

### Temperature

DTA01C024
DTA01C724
DTA01C115
DTA01C230
DTA02C024
DTA02C724
DTA02C115
DTA02C230
PTA01C024
PTA01C724
PTA01C115
PTA01C230
PTA02C024
PTA02C724
PTA02C115
PTA02C230



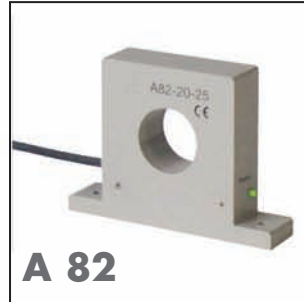
## Accessories: Current Transformers, Shunts, Sockets



AC current transformers for 5, 20, 100, 500 AAC. Output voltage (0.4-4 Vp) is proportional to the measured current. To be used with: DUA01/PUA01, DIB02/PIB02, DIC01/PIC01, DWA01/PWA01, DWB01/PWB01, DWB02/PWB02.



3-phase transformers for 5, 20, 100 or 500 AAC. Output voltage (0.4-4 Vp) is proportional to the highest measured current. To be used with: DUA01/PUA01, DIB02/PIB02, DIC01/PIC01.



AC current metering transformer for 25, 50, 100, 250 or 500 AAC. Output current from the transformer is 0-20 mADC or 4-20 mADC in accordance with IEC 60381. Power supply ON is indicated by a green LED on the side of the housing. To be used with: DIB01/PIB01, DIC01/PIC01 or directly connected to a PLC.



AC current metering transformer with 3 knob selectable ranges. Output from the transformer is 4-20 mADC in accordance with IEC 60381. Power supply ON is indicated by a green LED. 12 mm hole for insulated current carrying wire makes it suitable for most applications. For mounting on DIN-rail or directly to a back panel with screws.



Cable/bus-bar type current transformers with DIN-rail/ bus-bar and panel mounting facilities. Rated primary current from 40A to 4,000A. To be used with: DIA01/PIA01, DIB01/PIB01, DWA01/PWA01, DWB01/PWB01, DWB02/PWB02.



Shunts for DC current in accordance with DIN-Standard. Ranges from 1A - 10,000A. To be used with: DIB02/PIB02.



Socket for mounting on DIN-rail (DIN EN 0022).



1-phase transformers with DIN-rail and panel mounting facilities. Rated primary current from 1A to 250A. To be used with: DIA01/PIA01, DIB01/PIB01, DWA01/PWA01, DWB01/PWB01, DWB02/PWB02.

