Absolute system surveillance
Voltmeters and ammeters with alarm relays

Power and productivity
for a better world™

The evolution of the species
New ABB control and precision digital instruments

ABB widens its range of voltmeters and ammeters for distribution switchboards and on-board equipment.
The ABB digital instrument range ensures measurement precision and ease of use.
With the ABB digital measurement instruments you can automatically control switchboard power supply, measure total system consumption, monitor motor loads:
a range of applications that, whether every day or in emergency situations, usually require the operator's control of the instrument.

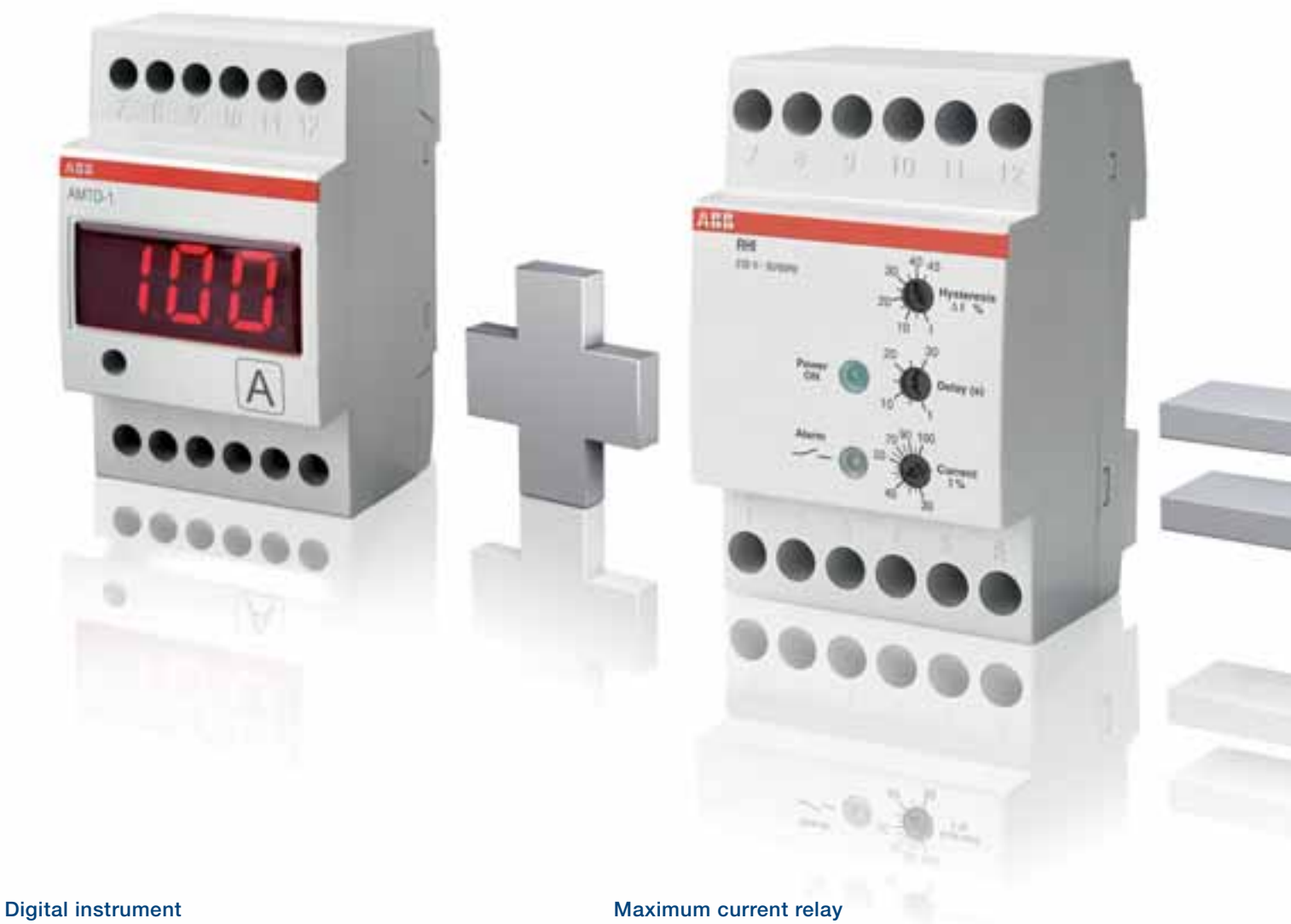
With the new range of ABB digital instruments you can count on uninterrupted surveillance and the instrument itself will alert the operator when an event requiring attention occurs.
This is enabled by a programmable alarm contact and the storage of peak values.

The strength of simplicity
Effectiveness and ease of use in any situation. At a low cost.

The power of programming
Solving a problem in short time. In a few steps.

The instrument alarm contact signals when a threshold is exceeded for a quantity that normally fluctuates irregularly.
Thanks to simple programming, ABB instruments can manage signalling activation delay and hysteresis value in terminating the alarm condition.

The benefits of integration
The features of measurement instruments and monitoring relays in a single product



Digital instrument
- Electrical parameter display
- Accurate measurement with 0.5% accuracy class
- Current transformer ratio setting
- User setting storage

Maximum current relay
- Monitoring and alarm on quantities
- Tripping time adjustment
- Integrated alarm relay
- Visual signalling of the alarm

Safety above all

The ABB measurement instruments offer maximum alarm signalling safety, even in the event of a power failure. By setting the relay as normally closed (positive safety function), the alarm condition will be signalled even in the event of power supply outage.

Instrument status	Relay setting	
	NO (default)	NC Positive safety
Not powered		
Powered not in alarm		
Powered in alarm		

The benefits
of the new range

- Max and min peak value display
- Wide measurement range, thanks to the power supply separated from the measuring circuit
- Compact front panel instruments: only 50mm deep into the panel
- Selectable positive safety contact
- Complete and detailed programming of the alarm condition
- Alarm tripping time adjustment
- Loads can be controlled directly through the 16A relay
- Visual signalling of the alarm
- Monitoring of direct current loads

From ABB experience the new range
of voltmeters and ammeters with alarm relays:
uninterrupted system control
and operating accuracy in a single instrument

The value of flexibility
The versatility of a digital instrument, its endless applications

Process and machining cycle status signalling

Electric hoist battery recharge remote indication

The recharge time of an electric hoist battery varies depending on the battery status and the expected full recharge time cannot be determined when a common timer is used. By using the direct current ammeter with AMTD-2-R P alarm relay to measure the battery charging current, once the end-of-charge current threshold has been reached, you can determine the recharge time to notify an operator or control the disconnection of the contactor powering the battery charger outlet.
(See diagram figure 1, page 8)

Monitoring of undervoltage inside a switchboard

Control of contactor coil power supply voltage

Voltage monitoring is extremely important when the switchboard contains many contactors for controlling the lighting system. If the power supply voltage drops and remains below the coil tolerance value, the risk of contactor battery overheating is very high.
By monitoring voltage and setting an appropriate undervoltage alarm, failures and overheating can be prevented and fire hazard can be reduced.
(See diagram figure 2, page 8)

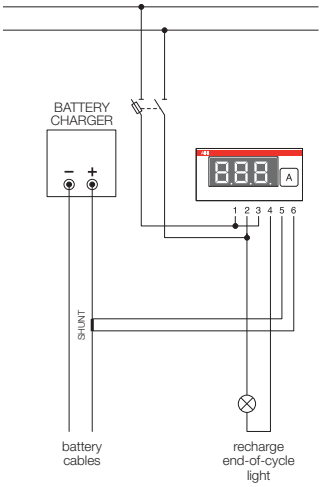
Automating small everyday operations

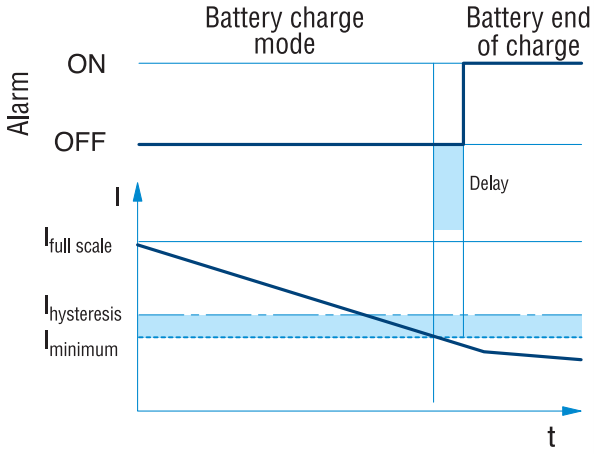
Automatic activation of the exhaust hood when switching on electric hotplates

In busy kitchens and cooking counters of restaurants and fast food chains, operators often forget to activate exhaust systems: with the AMTD-1-R a.c. ammeter with alarm contact their activation may be automated based on the current absorbed by the outlets that power the plates, with no need to make complex control circuits. The instrument alarm contact will be used for controlling the exhauster motor contactor: when the current absorbed by the outlets exceeds the threshold for longer than the set delay, the exhaust system will switch on automatically.
So the cook just needs to think about switching on the plates and cook.
(See diagram figure 3, page 8)

Diagrams of the applications described in the previous pages

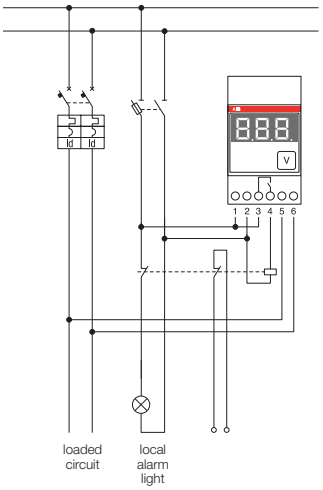
Figure 1

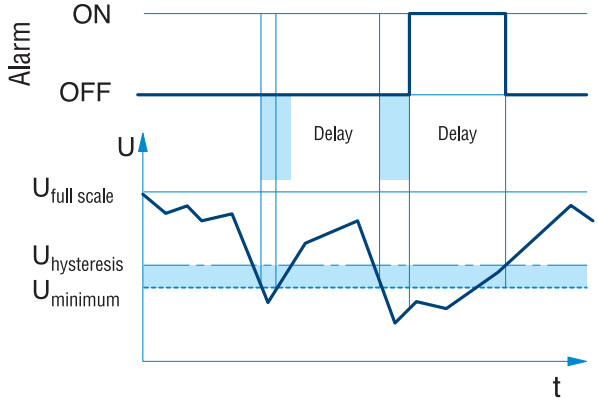




AMTD-2-R P

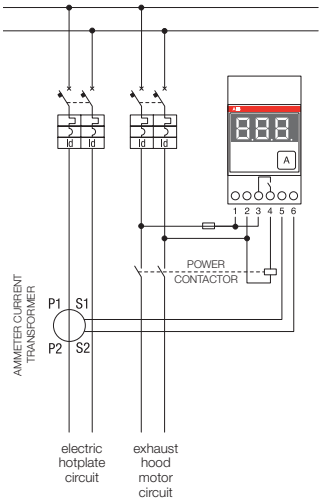
Figure 2

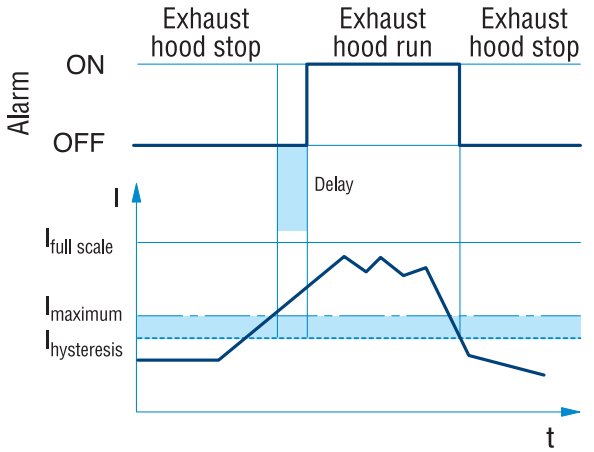




VLMD-1-2-R

Figure 3





AMTD-1-R

Technical features

Digital measurement instruments with relays

Power supply voltage		[V]	230 a.c. ±10%
Power supply frequency		[Hz]	50÷60
Max input signal value			
	VLMD-1-2, VLMD-1-2-R, VLMD P, VLMD-R P	[V]	600 a.c./d.c.
	AMTD-1, AMTD-1-R, AMTD-1 P, AMTD-1-R P	[A]	5 a.c.
	AMTD-2, AMTD-2-R, AMTD-2 P, AMTD-2-R P	[mV]	60 d.c.
Adjustable full scale values			
	AMTD-1, AMTD-1-R, AMTD-1 P, AMTD-1-R P	[A]	Indirect connection through CT .../5A 15 20 25 40 60 100 150 200 250 400 600 999
	AMTD-2, AMTD-2-R, AMTD-2 P, AMTD-2-R P	[A]	Indirect connection through shunt .../60mV 15 20 25 40 60 100 150 200 250 400 600 999
Measurement range			
	VLMD-1-2, VLMD-1-2-R, VLMD P, VLMD-R P	[V]	0÷600 a.c./d.c.
	AMTD-1, AMTD-1-R, AMTD-1 P, AMTD-1-R P	[A]	0÷999 a.c.
	AMTD-2, AMTD-2-R, AMTD-2 P, AMTD-2-R P	[A]	0÷999 d.c.
Accuracy class		[%]	0,5 F.S. ± 1 digit
Memory			EEprom
Power consumption		[VA]	4
Relay output characteristics			
	Contact configuration		NO
	Rated voltage	[V]	230 a.c.
	Rated load	[A]	AC1 16A; AC15 3A
	Contact setting		NO the relay closes in alarm status NC the relay opens in alarm status, Positive Safety
Programmable tripping delay		[s]	1, 5, 10, 20, 30
Alarm cleared hysteresis		[%]	5, 10, 20, 30, 40
Display			3 digit LED
Storage temperature		[°C]	-40÷70
Operating temperature		[°C]	-10÷55
Protection degree			IP20
Overall dimensions of front panel instruments		[mm]	36x72x60
Modules			3
Standards			IEC EN 61010-1

Order codes

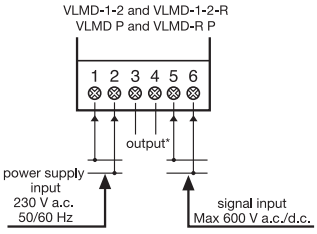
Modular digital measurement instruments

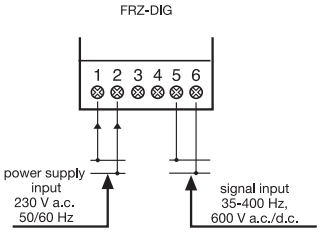
Version	Description Type	ABB code	Bbn 8012542 EAN
a.c./d.c. digital voltmeter	VLMD-1-2	2CSM110000R1011	620402
a.c. digital ammeter	AMTD-1	2CSM320000R1011	620501
d.c. digital ammeter	AMTD-2	2CSM420000R1011	620600
frequency meter	FRZ-DIG	2CSM710000R1011	620709
a.c./d.c. digital voltmeter with relay	VLMD-1-2-R	2CSM274693R1011	746935
a.c. digital ammeter with relay	AMTD-1-R	2CSM274773R1011	747734
d.c. digital ammeter with relay	AMTD-2-R	2CSM261073R1011	610731

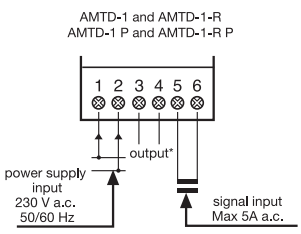
Front panel digital measurement instruments

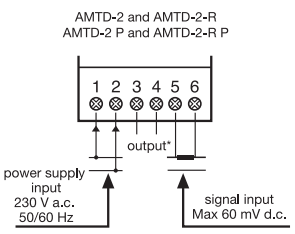
Version	Description Type	ABB code	Bbn 8012542 EAN
a.c./d.c. voltmeter	VLMD P	2CSG213605R4011	136057
a.c. ammeter	AMTD-1 P	2CSG213615R4011	136156
d.c. ammeter	AMTD-2 P	2CSG213625R4011	136255
a.c./d.c. voltmeter with relay	VLMD-R P	2CSG213635R4011	136354
a.c. ammeter with relay	AMTD-1-R P	2CSG213645R4011	136453
d.c. ammeter with relay	AMTD-2-R P	2CSG213655R4011	136552

Connection diagrams









* Code with alarm output only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