



Absolute surveillance of the installation  
Voltmeters and ammeters  
with alarm relays

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



ABB is widening its range of voltmeters and ammeters for distribution switchboards and on-board equipment. The ABB offering of digital instruments ensures measurement precision and ease of use.

With the ABB digital measurement instruments you can automatically control power supply of a switchboard, measure the total consumption of a system, monitor the load of a motor: a range of applications that, whether every day or in emergency situations, typically require the control of the instrument by an operator.

With the new range of ABB digital instruments you can count on systematic surveillance and the instrument itself will alert the operator when an event requiring attention occurs. All this is possible through a programmable alarm contact and the storage of peak values.

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



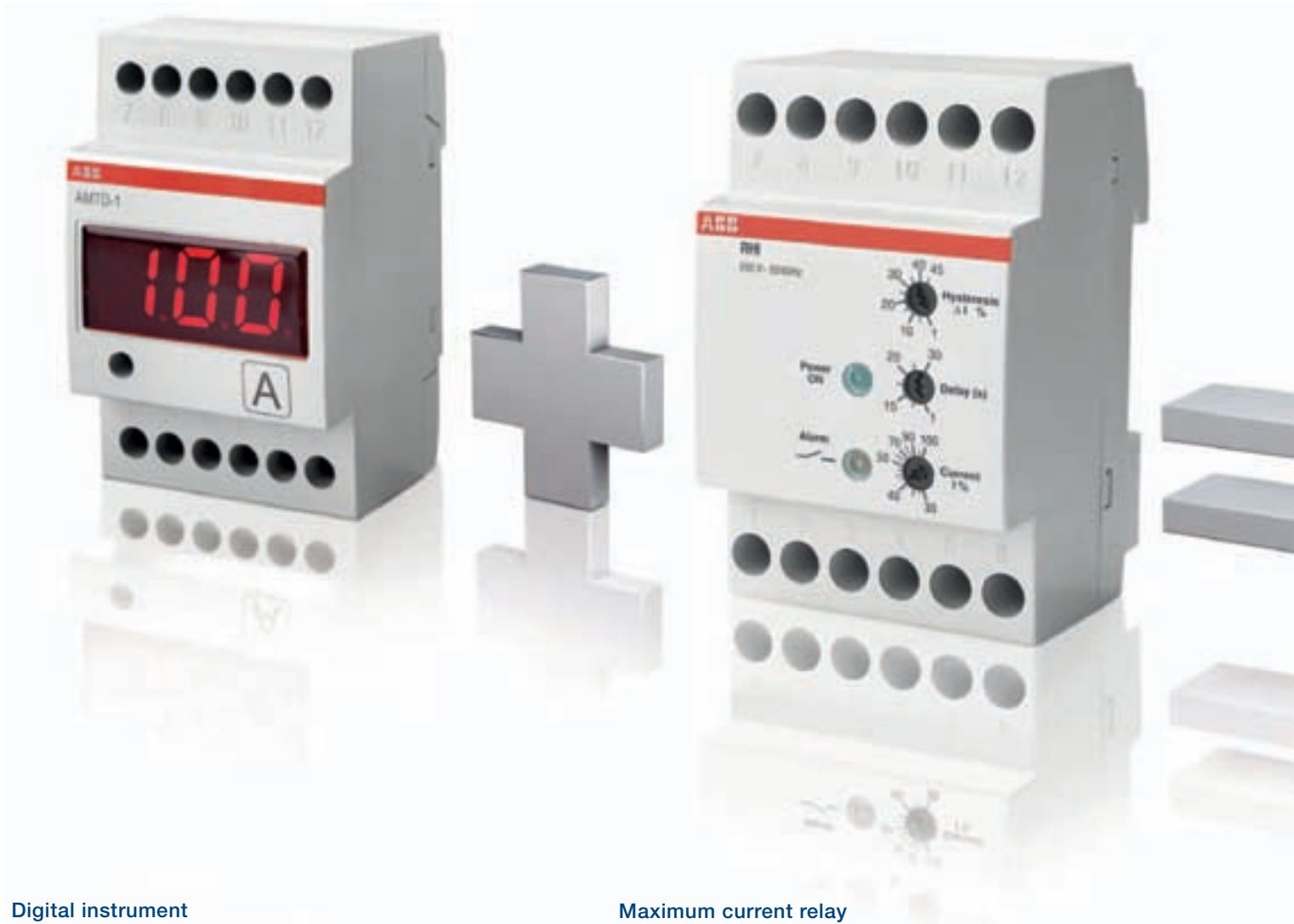
The power of programming  
Solving a problem in short time.  
In a few steps.

The instrument alarm contact signals when a threshold is exceeded for a quantity that normally fluctuates in an irregular way.

Thanks to their simple programming, ABB instruments can manage the delay in the activation of the signalling and the hysteresis value in the termination of the alarm condition.

# The benefits of integration

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



### Digital instrument

- Display of the electrical parameter
- Accurate measurement with 0.5% accuracy class
- Setting of the current transformer ratio
- Saving of the user setting

### 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 case of a power failure. By setting the relay as normally closed (positive safety function), the alarm condition will be signalled even in case of power supply outage.

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



## The benefits of the new range

- Space optimisation in the switchboard, thanks to compact size
- Wide measurement range, thanks to the power supply separated from the measuring circuit
- 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: systematic control of the installation 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

#### Remote signalling of the recharging process completion of an electric hoist battery

The duration of the recharging process of an electric hoist battery varies depending on the battery status and the expected completion time cannot be determined when a common timer is used.

By using the direct current ammeter with AMTD-2-R alarm relay to measure the battery charging current, you can determine, once the end-of-charge current threshold has been reached, the time of completion in order to notify an operator or to control the disjunction of the contactor powering the battery charger outlet. (See diagram figure 1, page 8)



### Monitoring of undervoltage inside a switchboard

#### Control of contactor coils 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)



### Small everyday operations automating

#### Automatic activation of the exhaust hood when switching on electric hotplates

In the busy kitchens and cooking counters of restaurants and fast food chains, operators often forget to activate exhaust systems: with the AMTD-1-R AC ammeter with alarm contact their activation can 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 a longer time than the set delay, the exhaust system will switch on automatically.

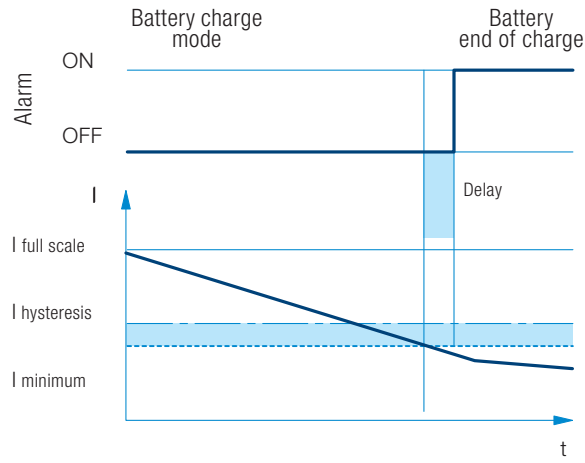
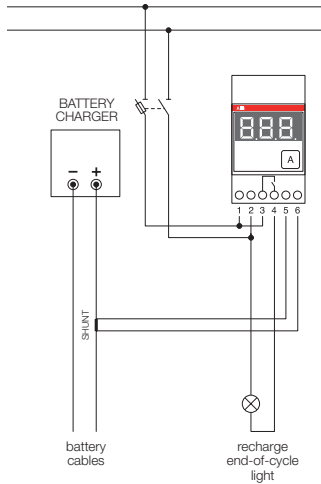
So the cook just needs to think about switching on the plates and cook.

(See diagram figure 3, page 8)



# Diagrams of the applications described in the previous pages

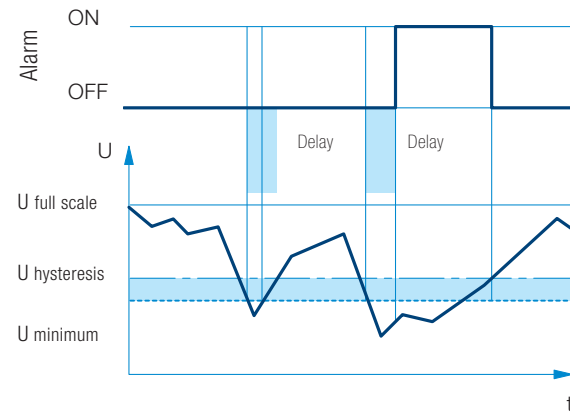
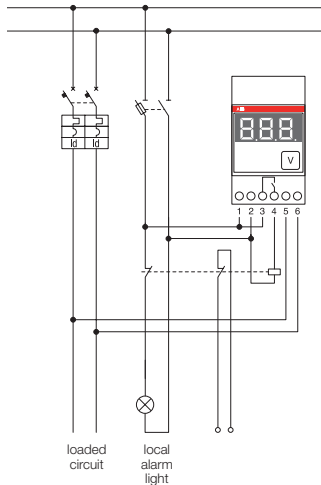
Figure 1



AMTD-2-R



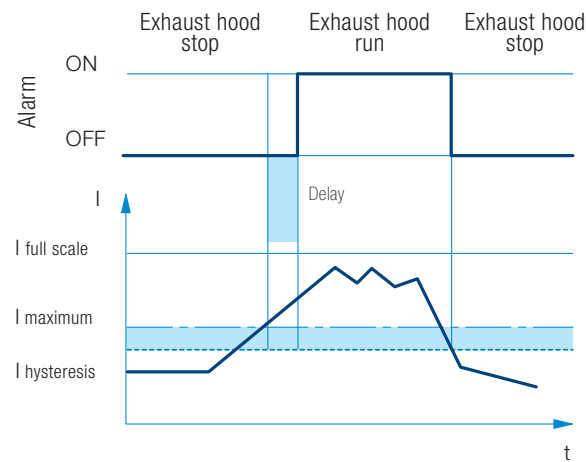
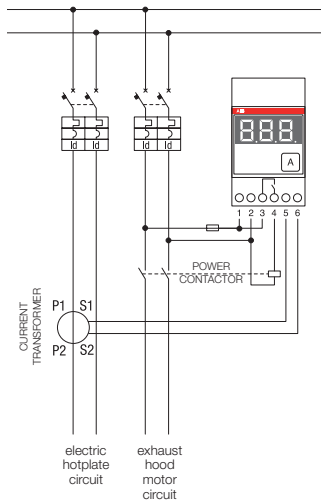
Figure 2



VLMD-1-2-R



Figure 3



AMTD-1-R



# Technical features

## Digital measurement instruments with relays

Power supply voltage		[V]	230 a.c. ±10%
Frequency		[Hz]	50÷60
Max input signal value			
	VLMD-1-2-R	[V]	600 a.c./d.c.
	AMTD-1-R	[A]	5 a.c.
	AMTD-2-R	[mV]	60 d.c.
Adjustable full scale values			
	AMTD-1-R	[A]	Indirect connection through CT .../5A 15 20 25 40 60 100 150 200 250 400 600 999
	AMTD-2-R	[A]	Indirect connection through shunt .../60mV 15 20 25 40 60 100 150 200 250 400 600 999
Measurement range			
	VLMD-1-2-R	[V]	0÷600 a.c./d.c.
	AMTD-1-R	[A]	0÷999 a.c.
	AMTD-2-R	[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]	16 AC1; 3 AC15
	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
Modules			3
Standards			IEC EN 61010-1

# Order code

## New measurement instruments with relays

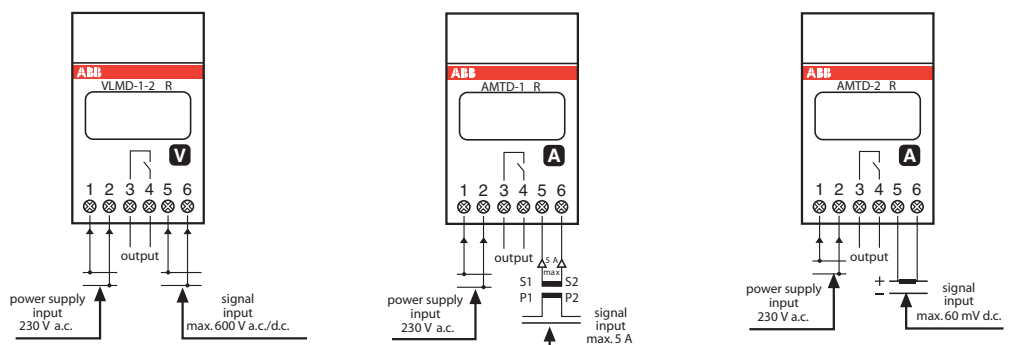


Description	ABB code	Bbn 8012542
Type		EAN
a.c./d.c. digital voltmeter with relay	VLMD-1-2-R	2CSM274693R1011
a.c. digital ammeter with relay	AMTD-1-R	2CSM274773R1011
d.c. digital ammeter with relay	AMTD-2-R	2CSM261073R1011

## To complete the range

Description	ABB code	Bbn 8012542
Type		EAN
a.c./d.c. digital voltmeter	VLMD-1-2	2CSM110000R1011
a.c. digital ammeter	AMTD-1	2CSM320000R1011
d.c. digital ammeter	AMTD-2	2CSM420000R1011
Frequency meter	FRZ-DIG	2CSM710000R1011

## Wiring diagrams VLMD-1-2-R, AMTD-1-R, AMTD-2-R





# Contact us

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