

Power^{IT} Power Factor Controller RVT

The ultimate Power Factor Controller



Industrial^{IT}
enabled™



RVT : The Ultimate Power Factor Controller

Measurements and Monitoring:

- Active power (kW)
- Apparent power (kVA)
- Reactive power (kvar)
- Reactive power (kvar) to reach the target cos φ
- Voltage (V)
- Current (A)
- Temperatures (°C or °F)
- Total Harmonic Distortion on Voltage : THD V (%)
- Total Harmonic Distortion on Current : THD I (%)
- Frequency (Hz)

Measurements:

- Cos φ
- Voltage Harmonics : U2 up to U49 (%-spectrum)
- Current Harmonics : I2 up to I49 (%-spectrum)
- Number of steps needed to reach the target cos φ
- Number of switching per output

Programmable parameters:

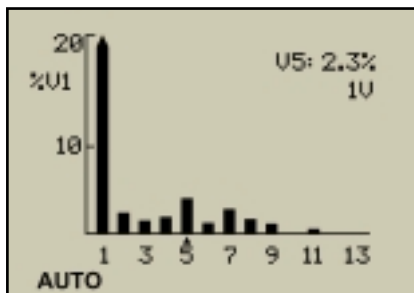
- Target cos φ (day/night)
- Target cos φ in regenerative mode
- Phase shift (for special C.T. connections)
- C/k (starting current)
- Switching sequence (customizable)
- Number of active outputs
- Switching delay times (on/off/reset)
- Switching strategy (linear or circular - normal or integral - direct or progressive)
- Alarm thresholds
- Single phase or three phase connection

Easy commissioning with automatic setting of:

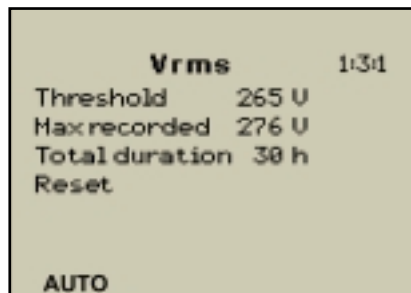
- Phase shift (for special connections)
- C/k (starting current)
- Number of outputs
- Switching sequence

Communication:

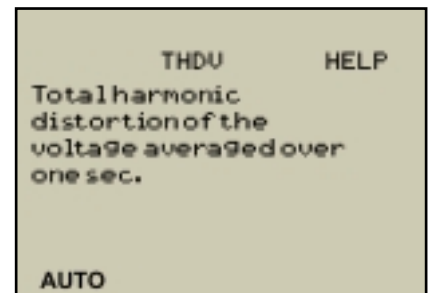
- Modbus (RS485)
- Printer connection
- Input: day/night cos φ
- Input: external alarm
- Output: alarm relay
- Output: fan relay



Voltage harmonics spectrum



Voltage monitoring



Help message

Powerful features

Full graphics display

With its large dimensions and the clear positioning of information, prompts and icons, the RVT graphics display offers a high level of readability and an unprecedented level of viewing comfort.

Menu navigation

The clever organization of menus and items makes the navigation easy and intuitive.

Communication

The RVT-Modbus can be linked to a supervision system through its Modbus adapter (RS485). All parameters settings and measurements are accessible remotely (see page 6).

HELP button

The Help button gives you an instant access to a comprehensive description of all RVT's features and functionality.



Network information and capacitor bank monitoring

The RVT computes and displays network and capacitor bank information such as voltage, current, harmonics spectra and much more.

Multi-language support

The RVT allows you to choose its working language between English, French, German and Spanish.

Protective transparent door

The keypad and display are protected by a transparent door.



Guided navigation and programming

Information and warning messages guide you all the way in the menu navigation and RVT programming.

Fully automatic set-up

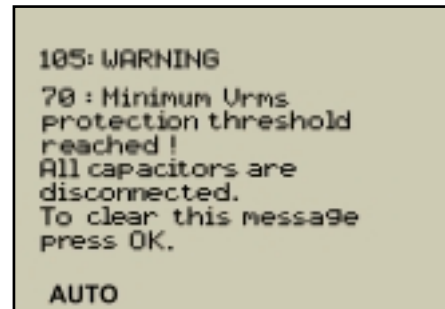
C/k, active outputs, switching sequence and phase shift may be automatically set-up.

Easy commissioning

The fully automatic set-up of the RVT makes the commissioning quick and easy.

Programmable protection thresholds

Programmable thresholds allow you to protect the capacitor bank against such event as over and undervoltage, overtemperature and excessive harmonic distortion.



High ambient temperature rating

The RVT is suitable for hot environments thanks to its maximum ambient temperature rating of 70°C.

Multi-voltage and multi-frequency

The RVT may be connected to voltages in the range 100-440Vac, 50 or 60Hz.

Works with 5A and 1A CT's

Both 5A and 1A CT's may be connected to the RVT.

Powerful features

Customizable measurements overview

The RVT allows you to sort your preferred data in such a way that they are viewed first on the graphics display.



Day - night target cos φ

The RVT allows the programming of two different target cos φ values.

Locking switch

Unauthorised use may be blocked by a switch at the back of the RVT.

Alarm logging

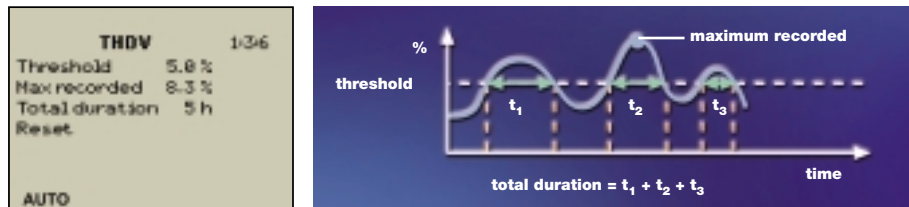
The last five alarm messages are recorded and may be consulted at any time.

Event logging

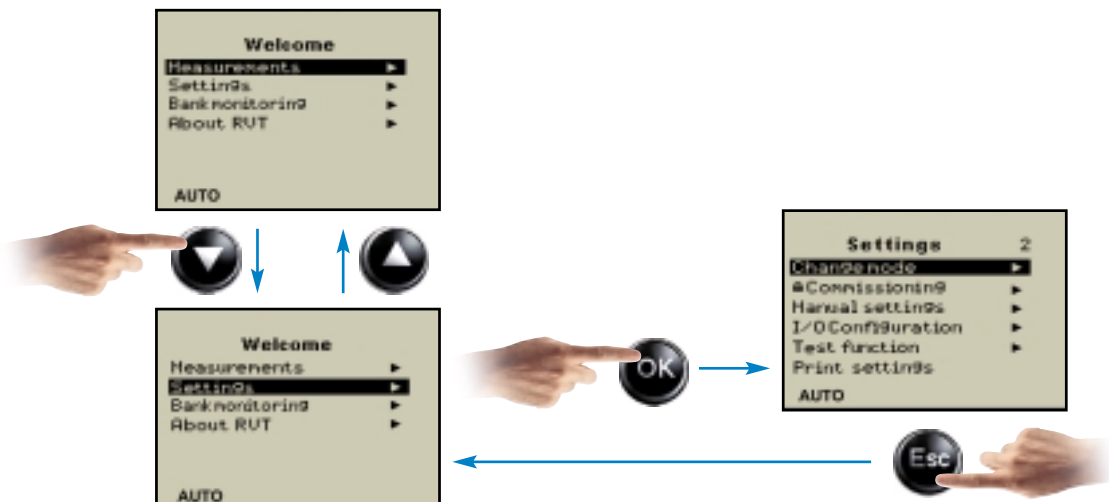
For selected measured parameters and according to the threshold set, the RVT records:

- the maximum value logged between two resets.
- the total duration during which the measured value has exceeded the threshold.

Example: event logging of Total Harmonic Distortion on Voltage



Menu navigation



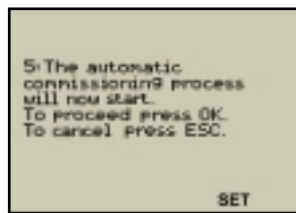
Easy Commissioning

A dedicated menu allows the commissioning of the RVT in only a few simple steps.

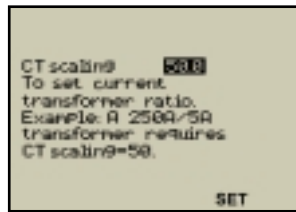
Select "Automatic" in the commissioning menu



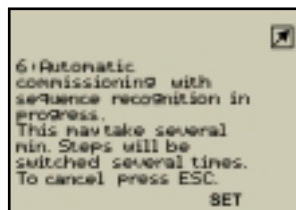
Validate automatic setting



Enter the Current Transformer scaling



Parameters are automatically set



Enter the target cos φ



RVT Modbus



Besides the RVT standard version, an RVT-Modbus version allows communication with a monitoring system. All RVT parameters are available (including harmonic spectrum and tables) through an RS485 Modbus adapter. All RVT parameters are accessible and locking parameters allows to limit their access through the Modbus communication only.

Optional accessories



External probes for temperature measurements

Two temperature probes may be connected to the RVT. The RVT will close the fan relay if a temperature threshold is exceeded. Information on temperature may be recorded with the event logging function.



Printer connection

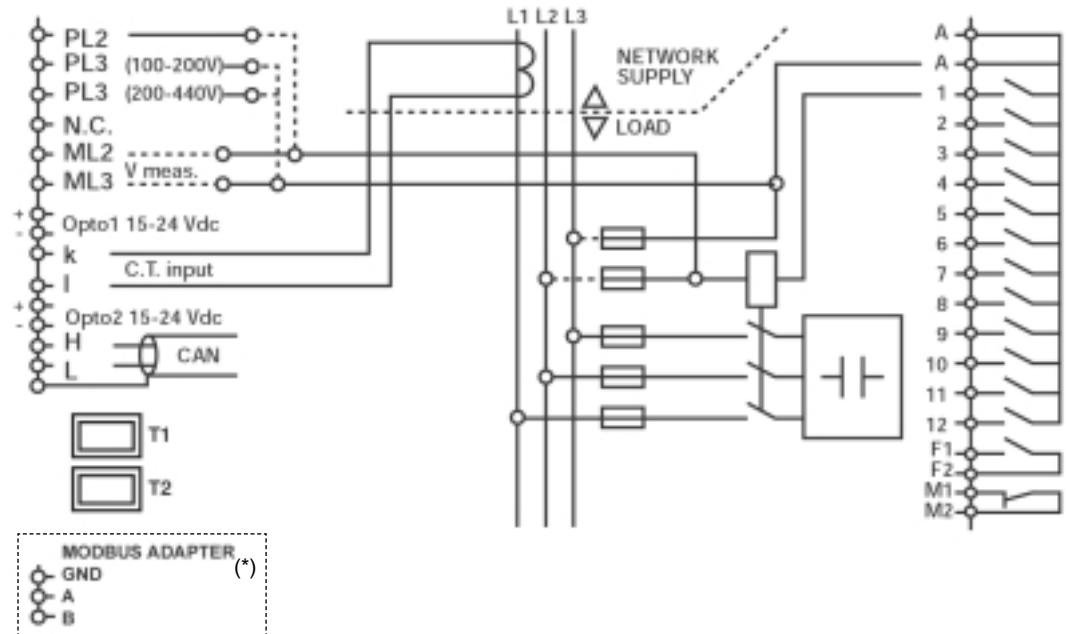
The RVT can be connected to a printer through the isolated RS-232 serial port. ABB printer cable is needed.



IP54

The RVT front plate offers an IP43 protection degree in standard version. The gasket accessory enhances the standard RVT protection degree to IP54.

Wiring diagram



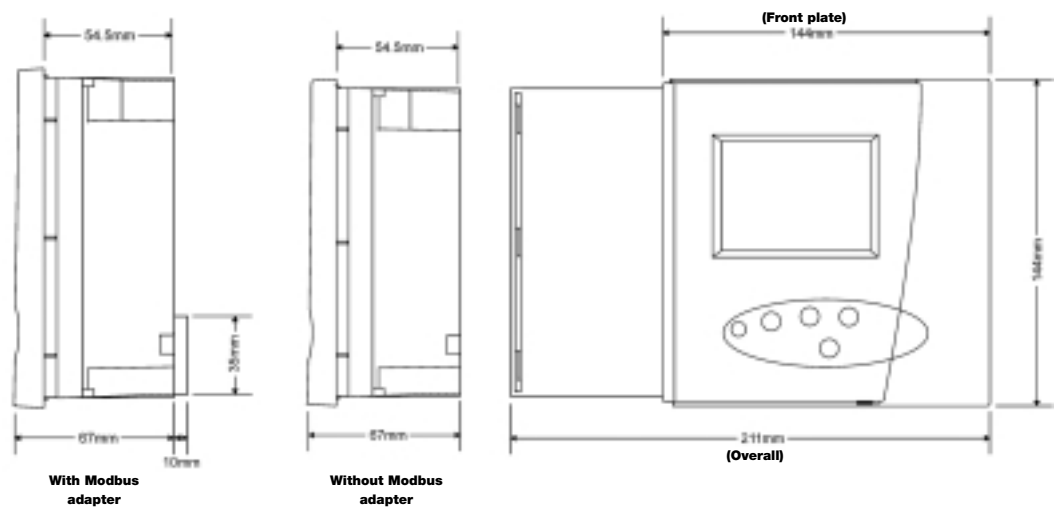
PL2, PL3 : power supply
ML2, ML3 : measurement
OPTO1 : day/night input
k, l : current transformer
OPTO2 : external alarm input
T1, T2 : temperature probe inputs
H, L : CAN : extension module

A, A : output relays' common source
1-12 : outputs
F1, F2 : output relay FAN
M1, M2 : output relay ALARM

MODBUS ADAPTER (*) :
A, B : Modbus (RS485)
GND : Ground

(*) for RVT-Modbus version only

Dimensions



Technical Specifications

Measuring system:

Micro-processor-based system for balanced three-phase networks or single-phase networks.

Supply voltage:

From 100Vac up to 440Vac.

Consumption:

15 VA max.

Connection type for measuring circuit and power supply:

Phase-phase or phase-neutral

Voltage tolerance:

+/- 10% on indicated supply voltages.

Voltage measurement:

Up to 690Vac or higher with voltage transformer.

Accuracy : 1% full scale.

Frequency range:

50 or 60 Hz +/- 5% (automatic adjustment to network frequency).

Current input:

5A or 1A (RMS) (class1 C.T.).

Current input impedance:

<0.1 Ohm.

Output contact rating:

-Max. continuous current: 1.5A (ac) – 0.3A (110V dc).

-Max. peak current: 8A.

-Max. voltage: 440 Vac.

-Terminal A-A are rated for a continuous current of 18A (9A/terminal).

Alarm contact rating (voltage free contact):

- Normally closed contact.

- Max. continuous current: 1.5A.

- Rated voltage: 250Vac (max. breaking voltage: 440Vac).

Fan contact rating (voltage free contact):

- Normally open contact.

- Max. continuous current: 1.5A.

- Rated voltage: 250Vac (max. breaking voltage: 440Vac).

Power factor setting:

From 0.7 inductive to 0.7 capacitive.

Starting current setting (C/k):

- 0.01 to 5A.

- automatic measurement of C/k.

Switching sequences:

1:1:1:1:1:.....:1 - 1:2:2:2:2:.....:2 - 1:2:4:4:4:.....:4 - 1:2:4:8:8:.....:8

1:1:2:2:2:.....:2 - 1:1:2:4:4:.....:4 - 1:1:2:4:8:.....:8 - 1:2:3:3:3:.....:3

1:2:3:6:6:.....:6 - 1:1:2:3:3:.....:3 - 1:1:2:3:6:.....:6

and any other customer programmable sequence.

Modbus baud rate (*):

110 - 300 - 600 - 1200 - 2400 - 4800 - 6900 - 19200 - 38400 - 57600

(* for RVT Modbus only)

Step configuration:

Automatic, fixed, disabled.

Full graphics display:

64 x 132 pixels with extra symbols.

Number of outputs:

RVT 6: programmable up to 6 outputs.

RVT 12: programmable up to 12 outputs.

Switching time between steps:

Programmable from 1s to 18h.

Saving-function:

All programmed parameters and modes are saved in a non-volatile memory.

Power outage release:

Automatic disconnection of all capacitors in case of a power outage longer than 20ms.

Automatic adaptation to the phase-rotation of the network and the CT-terminals.

Not affected by the harmonics.

Working with passive and regenerative loads (four-quadrant operation).

LCD contrast automatically compensated with temperature.

Operating temperature:

-20° C to 70° C.

Storage temperature:

- 30° C to 85° C.

Mounting position:

Vertical panel mounting.

Dimensions:

Front plate : 144 x 144 mm (h x w).

Overall : 144 x 211 x 67 mm (h x w x d).

Weight:

1.0 kg (unpacked).

Connector:

Cage clamp type (2.5mm² single core cable).

Front plate protection:

IP 43 (IP54: on request).

Relative humidity:

Maximum 95%, non-condensing.

CE Marked.

UL Recognized (file n° NKCR2.E163424).

CSA certified for use in 120Vac system voltage.

Article number for ordering:

RVT-6 2GCA28463A0050

RVT-12 2GCA284231A0050

RVT-6 Modbus 2GCA285994A0050

RVT-12 Modbus 2GCA285916A0050

This product has been tested and certified by ABB Group as **Industrial^{IT} Enabled™**. All product information is supplied in consistent electronic format, based on ABB Aspect Object™ technology. Plug and Produce™ installation and integration with other Industrial IT certified products is available through the ABB Aspect Integrator™ Platform.

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