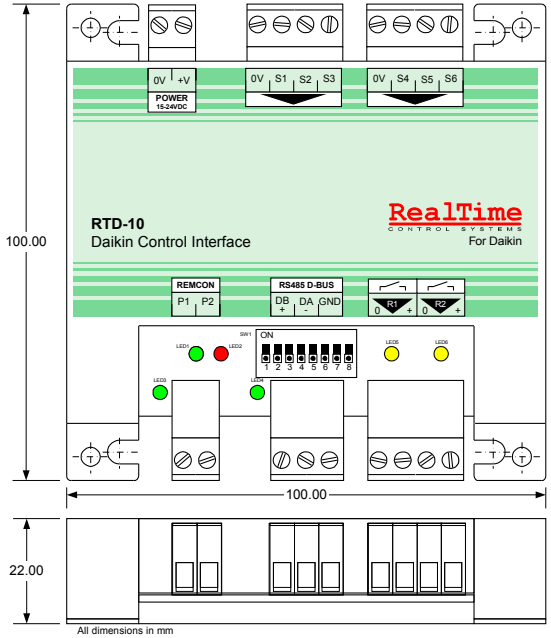
RTD-10 Control Interface

VAM Unit Control Datasheet



RTD-10 Description

The RTD-10 is a monitoring and control interface for Daikin VRV and Skyair ranges of air-conditioners*; and VAM and VKM ventilation units. The interface is compatible with all units that have a P1,P2 remote controller network connection and allows control of upto 16 units in a single group.

Control Functions

HARDWIRED CONTROL. Unit control can be achieved through resistance inputs using resistor, potentiometer and volt-free contact inputs.

BMS INTEGRATION. Unit control can be achieved through 1-10V voltage inputs integrated with BMS control outputs.

HEATING INTERLOCK. Units can be interlocked with external heating systems.

DUTY/STANDBY. Multiple groups can be operated with rotating duty/standby with fault and high temperature alarming.

MODBUS CONTROL. The RTD supports the Modbus Protocol for network control and monitoring.

CUSTOM CONTROL. RTD interfaces can be supplied in custom configurations to suit specific applications.

**Not compatible with units fitted with BRC4 and BRC7 Infrared adaptors.*

Warnings and Cautions

Do not exceed the specified fault relay ratings

Observe precautions for handling Electrostatic Sensitive Devices

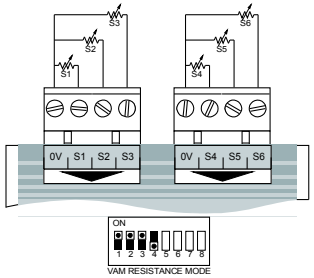
VAM Unit Control

The RTD-10 supports VAM and VKM Unit control in resistance and voltage mode using the following settings. The control is similar to the RTD-10 standard control modes, with Louvre operation replaced with VAM damper position. In addition the fanspeed setting is applied to the VAM unit fanspeed as well as any indoor units on the same control network.

Unit Setpoint settings are not used by VAM units. If there are other A/C units on the P1,P2 network the Setpoint and Mode values will be used for A/C unit control.

VAM Control: Resistance

In Resistance Control Mode the RTD-10 Inputs allow individual control of a/c unit operating parameters using resistance values. Each input corresponds to a specific unit setting shown in the table below If an input is left unconnected then the corresponding setting will remain at the default value.



Input	Name	Range (default)
S1	Setpoint	0..10kΩ : 16..32°C (**22**)
S2	VAM Fanspeed	Low<=1.1kΩ, **High**=2.2kΩ, HighHigh*=3.3kΩ
S3	Mode	**Auto**<=1.1kΩ, Heat=2.2kΩ, Fan=3.3kΩ, Cool=4.7kΩ, Dry=6.8kΩ,
S4	VAM Damper	**Auto**<=1.1kΩ, Heat Recovery=2.2kΩ, Bypass=3.3kΩ
S5	On/off	On = Closed Circuit, **Off** = Open Circuit
S6	Unlock	Lock All<=1.1kΩ, Lock Mode,On/Off=2.2kΩ, Lock On/Off=3.3kΩ, Local=4.7kΩ, **Unlock**=6.8kΩ,

*HighHigh fanspeed operates if available, otherwise selects High fanspeed

Setpoint	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
S1 kΩ	0.3	0.9	1.5	2.1	2.6	3.2	3.8	4.4	5.0	5.6	6.2	6.8	7.4	7.9	8.5	9.1	9.7

Output	Name	Operation
R1	Run	Run: Closed when unit switched ON
R2	Fault	Closed on any unit fault

Caution: Relays rated for maximum 1A, 24VAC/30VDC

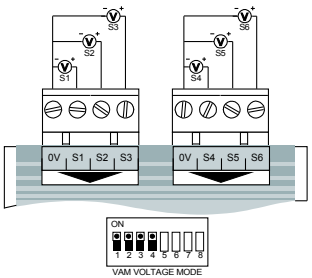
Resistances should be within +/-250 ohms of the quoted value. Open circuit is R>200kΩ.
S1 in resistance mode is designed to be operated using a *linear* 10kΩ variable resistance.

It is recommended that volt-free contacts or switch mechanisms have gold plated contacts to ensure a low resistance circuit when the switch is made.

S1 to S6 cables should be 0.5 to 1.0 mm^2 multi-stranded screened twisted pair. The screen should be earthed at one end only. The maximum distance from the RTD-10 to the input source is 200m.

VAM Control: Voltage

In Voltage Control Mode the RTD-10 Inputs allow individual control of a/c unit operating parameters using voltages. Each input corresponds to a specific unit setting shown in the table below If an input is left unconnected or is set to 0 Volts then the corresponding setting will remain at the default value.



Input	Name	Range (default / 0V value)
S1	Setpoint	1..10V : 16..32°C (**22**)
S2	VAM Fanspeed	Low=1.75V, **High**=3.25V, HighHigh*=4.75V
S3	Mode	**Auto**=1.75V, Heat=3.25V, Fan=4.75V, Cool=6.25V, Dry=7.75V,
S4	VAM Damper	**Auto**=1.75V, Heat Recovery=3.25V, Bypass=4.75V
S5	On/off	On >=5V, **Off** = 0V
S6	Unlock	Lock All=1.75V, Lock Setpoint, Mode, On/Off=3.25V, Lock Mode, On/Off=4.75V, Lock On/Off=6.25V, Local=7.75V, **Unlock**=10.0V

*HighHigh fanspeed operates if available, otherwise selects High fanspeed

Setpoint	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
S1 Volts	1.3	1.8	2.3	2.9	3.4	3.9	4.4	5.0	5.5	6	6.6	7.1	7.6	8.1	8.7	9.2	9.7

Output	Name	Operation
R1	Run	Run: Closed when unit switched ON
R2	Fault	Closed on any unit fault

Caution: Relays rated for maximum 1A, 24VAC/30VDC

Voltages should be within +/- 0.25V of the quoted value. Open circuit for V<1V.

MODBUS VAM CONTROL

VAM and VKM units can be switched on and off using the On/off holding register `H0005`. Control of VAM and VKM unit fanspeed and damper position are possible using the VAM control registers `H0030` for damper position control and `H0031` for VAM fanspeed.

Holding Register	Name	Range
0030	Damper Control	0: Auto, 1: Cross Flow / Heat Recovery, 2: Bypass
0031	VAM Fanspeed	1..2 (1:Low, 2:High)

VAM units appear as standard indoor units without a return air temperature. VKM units will generate a return air temperature for the VKM unit address.

More detailed Modbus engineering instructions and fault code tables are available from ***http://www.realtime-controls.co.uk/rtd***

