



Air Handling Unit Controller Instructions

RBC-AHU1

Notes :

Cooling & Heating output figures are based on calculations and 'general' test data. All figures are to be taken as approximations. The properties of the DX coils (by others) will have an affect on the performance of the outdoor units.

Toshiba Standard warranty is applicable to all air handling unit applications. Extended warranty terms DO NOT APPLY to the products used for AHU applications.

All data shown in this brochure is based on Toshiba Nominal Conditions :

Nominal capacities are based on Eurovent conditions :

Cooling : indoor air temperature 27°C db / 19°C wb, outdoor air temperature 35°C db / 24°C wb
Heating : indoor air temperature 20°C db, outdoor air temperature 7°C db

Minimum Coil Air on Temp : 18°C

The sound pressure levels are based on :

Outdoor units at 1m distance

The annual power consumption is based on 500 operating hours.

The maximum running current is based on 240V (or 400V) in the cooling mode.

The controller is designed to allow the connection of a third party air handling unit to a Toshiba Digital Inverter / Super Digital Inverter outdoor unit.

Kit contents:

Controller

2 x Coil sensors

1 x TA Sensor

1 x Fixed TA Sensor

1 x Coil sensor fixing kits



The controller is designed for two mounting options.

Option 1

The controller is contained in a weather proof enclosure, which facilitates mounted on or close to the AHU. The cables should be gladded through the removable plate on the base of the controller to maintain waterproof integrity.



Option 2

Should there be a requirement to install the controller in a third party panel, it is possible to remove the base plate from the enclosure.



Electrical Connections

The controller is connected to the outdoor unit via a three core and earth interconnecting cable. The control option is selected depending upon the wider AHU control strategy. A wiring diagram showing the connection and control options is shown on page 6

Coil Sensor Locations

There are two coil sensors, which require attaching to the AHU coil. It is essential that the sensors are correctly located to ensure efficient system performance.

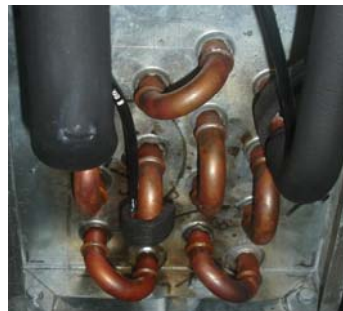
TC Sensor 1 (TCJ)

This sensor is fitted to the coil inlet pipe (liquid). Please see the picture below.



TC Sensor 2 (TC)

This sensor should be installed approximately two thirds of the way through the coil.



Fitting the Coils sensors I

It is essential that the sensors are securely attached and insulated to give best system performance.



1. Fix to pipe or U bend
with two cable ties



2. Fit the insulation over
the sensor

TA Sensor

Several temperature sensing options are available, however these fall into two main categories. These will be a fixed resistance or a standard TA sensor.

Fixed TA Sensor

A fixed resistance can be used, which will allow maximum system operation on receipt of an enable signal.

Actual TA Sensor

A Standard TA sensor could be used as the temperature control point for the AHU Controller in this case the TA sensor should be placed in the return air duct.

Remote Sensor

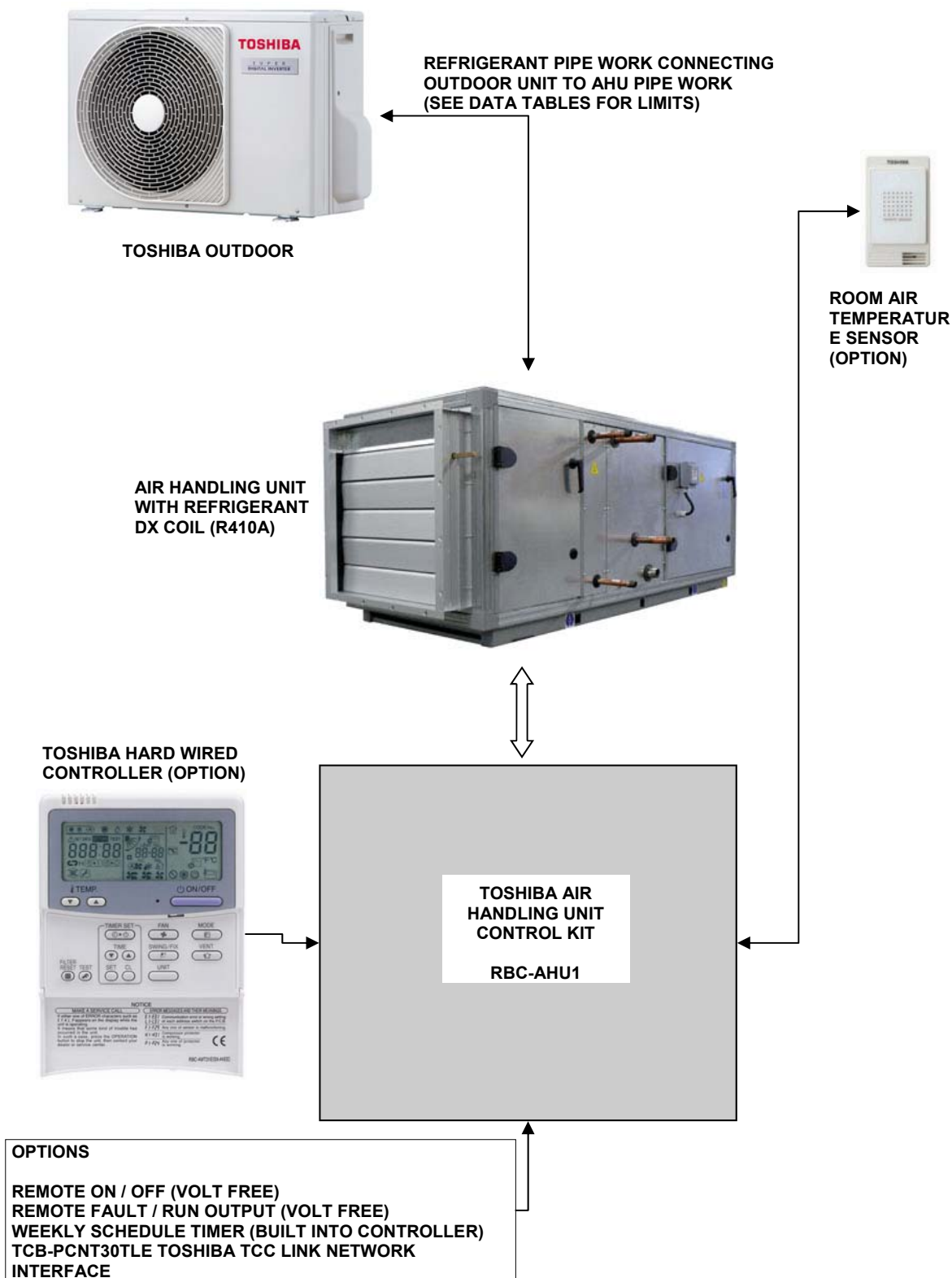
The remote temperature sensing kit TCB-TC21LE2 is fully compatible with the controller and should be mounted in conditioned space.

Remote Controller Sensor

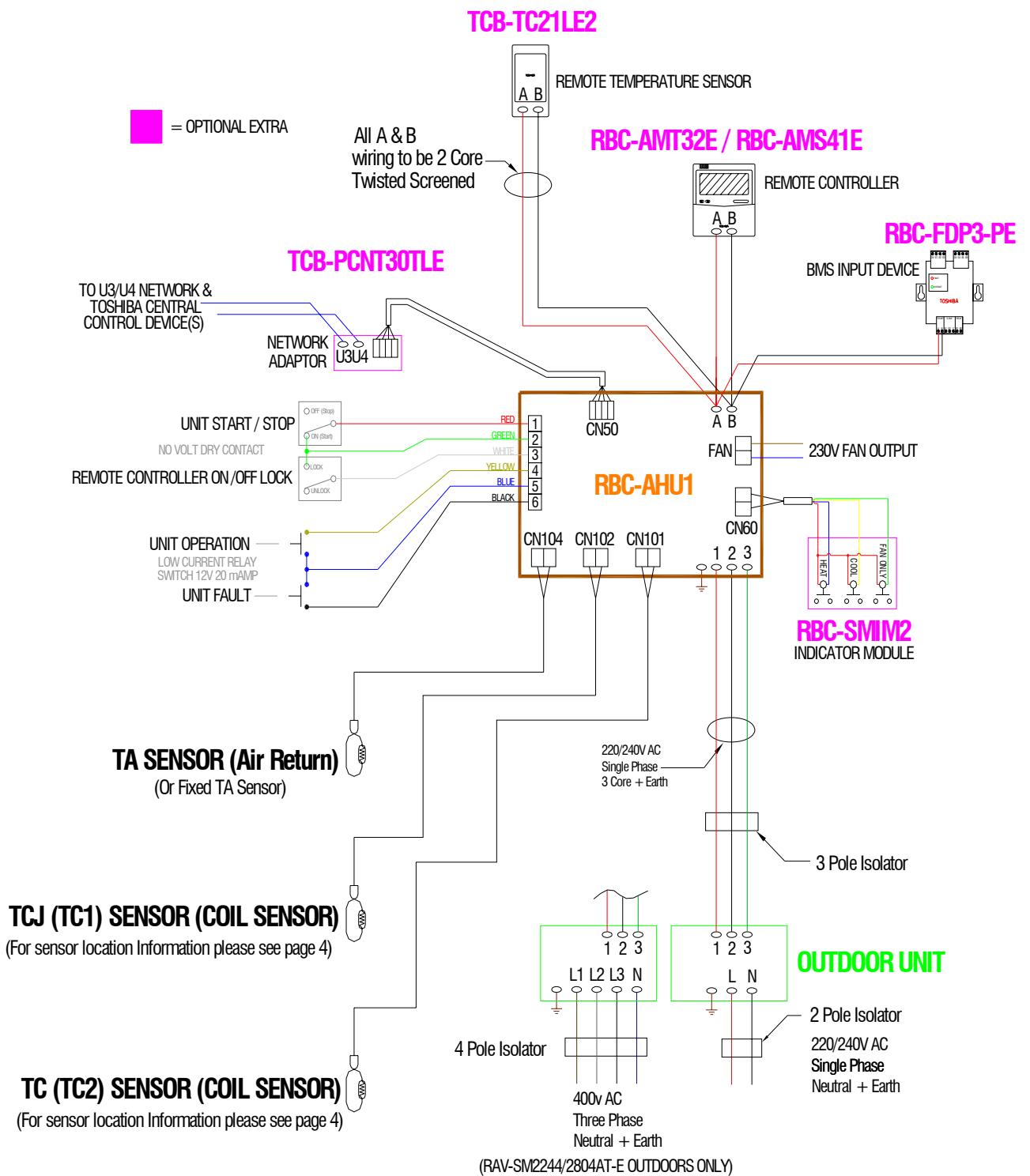
It is also possible to configure the system to use the temperature sensor located in the RBC-AMT32E / AMS41E remote controllers.

Control Options

1. Standard Toshiba RBC-AMT32E / AMS41E controllers are compatible.
2. Remote enable signal from a third party source. Operation and fault signals can also be obtained as standard from the controller.
3. Advanced control options are available on contact with Toshiba Technical Support



Air Handling Unit Instructions ~ Toshiba Controls



Digital Inverter Heat Pumps

Model	RAV	SM563AT-E	SM803AT-E	SM1103AT-E	SM1403AT-E
System Data	Cooling Capacity (kW)	1.5-5.6	1.5-7.4	3.0-11.2	3.0-13.2
	Heating Capacity (kW)	1.5-6.3	1.5-9.0	3.0-13.0	3.0-16.0
	HEX Air Volume (m ³ /hr)	780-1050	810-1230	1170-2010	1230-2100
	HEX Coil Volume (cm ³)	500-1450	600-1850	1000-3000	1250-3750
	HEX Coil Diameter (mm / in)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
	HEX Paths	4-6	6-8	6-10	8-12
	EX. Piping limits (m)	5-30	5-30	5-50	5-50
	EX. Pipe Diameter (mm)	12.7/6.4	15.9/9.5	15.9/9.5	15.9/9.5
	Replacement Technology	YES	YES	YES	YES
	Outdoor Unit Power Supply	1 phase	1 phase	1 phase	1 phase

Model	RAV	SM1603AT-E	SM2244AT8-E	SM2804AT8-E
System Data	Cooling Capacity (kW)	3.0-16.0	9.8-22.4	9.8-27.0
	Heating Capacity (kW)	3.0-16.0	9.8-25.0	9.8-31.5
	HEX Air Volume (m ³ /hr)	1260-2130	1170-2010	1230-2100
	HEX Coil Volume (cm ³)	1450-4250	2000-6000	2550-7500
	HEX Coil Diameter (mm / in)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
	HEX Paths	8-12	10-12	10-12
	EX. Piping limits (m)	5-50	5-75	5-75
	EX. Pipe Diameter (mm)	15.9/9.5	19.1/12.7	19.1/12.7
	Replacement Technology	YES	YES	YES
	Outdoor Unit Power Supply	1 phase	3 phase	3 phase

Super Digital Inverter Heat Pumps

Model	RAV	SP564AT-E	SP804AT-E	SP1104AT-E	SP1404AT-E
System Data	Cooling Capacity (kW)	1.2-5.6	1.9-8.0	2.6-12	2.6-14.0
	Heating Capacity (kW)	0.9-8.1	1.3-11.3	2.4-13	2.4-16.5
	HEX Air Volume (m ³ /hr)	780-1050	810-1230	1170-2010	1230-2100
	HEX Coil Volume (cm ³)	500-1450	600-1850	1000-3000	1250-3750
	HEX Coil Diameter (mm / in)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)	9.52 (3/8)
	HEX Paths	4-6	6-8	6-10	8-12
	EX. Piping limits (m)	5-50	5-50	3-75	3-75
	EX. Pipe Diameter (mm)	12.7/6.4	15.9/9.5	15.9/9.5	15.9/9.5
	Replacement Technology	YES	YES	YES	YES
	Outdoor Unit Power Supply	1 phase	1 phase	1 phase	1 phase

1. Ensure all connections are correctly made and the sensors have been suitably located.

2. Confirm the integrity of the power supply at the outdoor unit and between terminals 1 & 2 at the controller input terminals.

3. It is necessary to set the system capacity via the RBC-AMT32E / AMS41E . The configuration menu is accessed by pressing SET + TEST + CL for 4 seconds the value in menu item 11 and set according to the table below.

Digital Inverter

Unit	SM563AT-E	SM803AT-E	SM1103AT-E	SM1403AT-E	SM1603AT-E	SM2244AT8-E	SM2804AT8-E
Value	9	12	15	17	18	21	23

Super Digital Inverter

Unit	SP564AT-E	SP804AT-E	SP1104AT-E	SP1404AT-E
Value	9	12	15	17

Sensor Connection Confirmation

It is possible to read data from the sensors by accessing the data retrieval menu, (TEST an CL for 4 Seconds) and retrieve the data as shown in the table below.

Item	Description
02	TA Sensor Value
03	TC Sensor
04	TCJ Sensor

The minimum 'air on' temperature that Toshiba recommend for our AHU applications is 18°C

Cooling Mode

Air temperatures flowing across the coil below this level, can in some circumstances, cause icing and freezing issues with the coil and eventually forcing the system to shut down and also be detrimental to the outdoor unit itself.

Heating Mode

In the reverse cycle mode when the outdoor unit is producing hot gas, the coil in the AHU is effectively the condenser. Air temperatures flowing across the coil below this level, can cause over condensing of the refrigerant. This can result in liquid being returned to the compressor which will cause a mechanical failure of the outdoor unit. Low air temperatures will also cause the unit to use it's defrost mode more often.

We cannot guarantee operation of the systems for applications with 'air on' temperatures below 18°C or with coil details outside of those published in the installation manual. Operation outside of these parameters may invalidate your warranty.

Toshiba Air Conditioning
United Technologies House
Guildford Road
Leatherhead
Surrey
KT22 9UT

Tel : 01372 220240
Fax : 01372 220241

www.toshiba-aircon.co.uk

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