



Technology that works fast

TOSHIBA
AIR CONDITIONING

**Controls for
every need**



Toshiba Air Conditioning offer a number of local control options that can be used to control a single indoor unit, or up to 8 indoor units.

It is possible to install these local controllers up to 500m* from the connected indoor unit which allows greater flexibility when designing the installation. This also provides the opportunity to install the local controller in an area removed from the connected indoor unit, for example, common use areas where the indoor unit operation should not be changed by local users but may need to be monitored by a site engineer from a control room.

There are two different types of local remote controller currently available from Toshiba Air Conditioning, these are: The wired remote controller which is the standard local control device suitable for most applications, and the wireless remote controller which consists of a universal handset that can be purchased with a choice of 4 different wireless receiver units that are specifically designed to suit different indoor unit model types.



Wireless



Wired



The Local Network

There are three different methods that can be used to connect the local control device to the indoor unit, or to a group of indoor units:

1 to 1 connection

This method is for the connection of a single wired remote controller, or wireless receiver unit, to a single indoor unit.

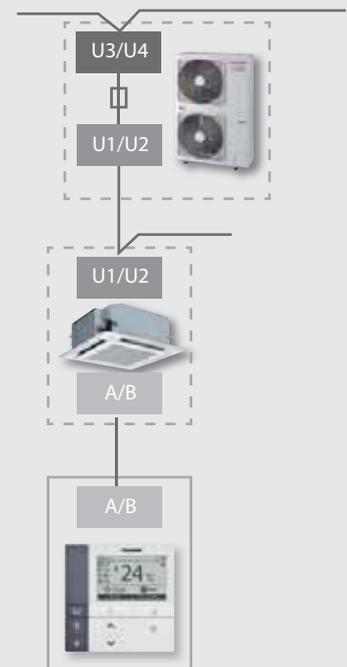
Group connection

This method enables the connection of up to 8 indoor units to a single wired remote controller, or wireless receiver unit. In this configuration, up to 8 indoor units can be controlled simultaneously (all indoor units follow the same setting parameters) from a single local control device.

Multiple controller connection

This method enables the connection of up to 2 local control devices (wireless receiver unit or wired remote controller) to a single indoor unit, or a group of up to 8 indoor units. In this configuration, main/sub settings must be configured for each of the connected local control devices.

1 TO 1 CONNECTION

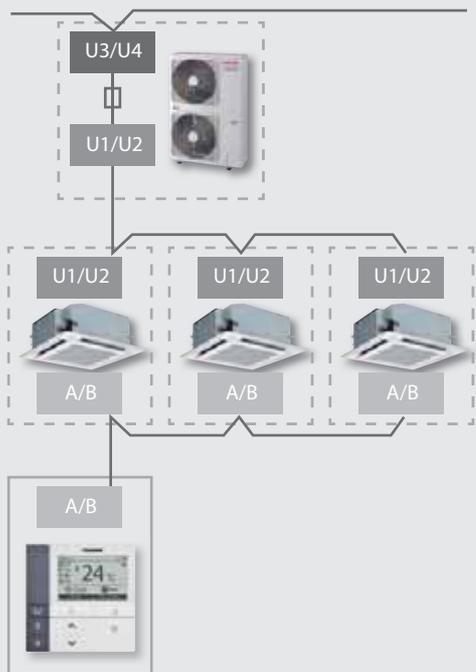


*Distances may vary depending on models and installation layout.



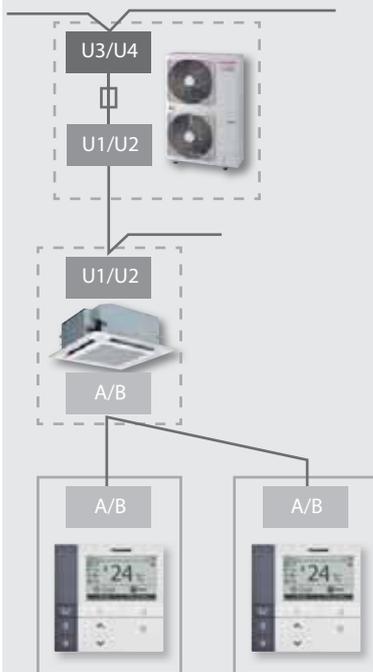
Local controls

GROUP CONNECTION

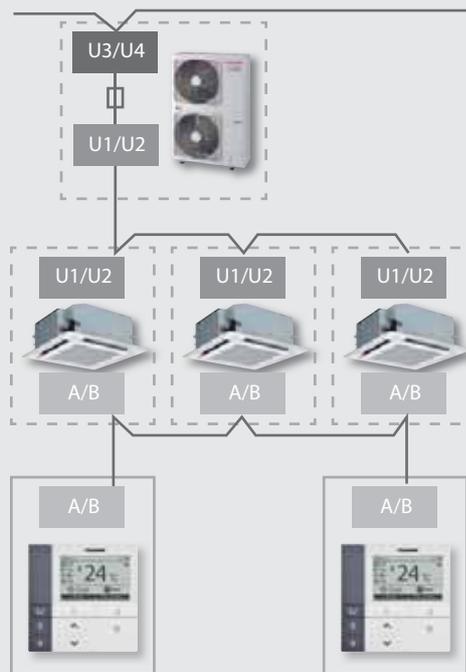


MULTIPLE CONTROLLER CONNECTION

Single indoor unit



Group of indoor units





Toshiba's wireless controllers provide an ideal solution for any installation where an exceptionally neat and professional finish is required, or where it is not possible to install a wired remote controller.

To achieve the high standards of finish required, Toshiba Air Conditioning have produced a series of different receivers units designs for installation on specific indoor units models.

Wireless Controls



Wireless Handset

Easy to use and compact button layout.

TCB-AX32E2

Wall or ceiling mountable receiver.



Remote control



Receiver



Indoor unit



To be used with: all the DI/SDI and VRF indoor units, more specifically targeted to ducted units.



Optional wired and wireless controller for high wall split systems

- Basic functionality of the wired remote is the same as the wireless remote.
- Wires can be hidden behind wall.
- Wired remote secured to the wall – never lose the controller again.
- Wired controller is ideal in cases where wireless controller may cause radio frequency interference.
- Ideal for use in both residential and commercial applications such as aged care, hospitals, hotels, schools and office buildings.

HANDSET MAIN FUNCTIONS

Function	Control	Monitor
Operation On/Off Setting	✓	✓
Operation Mode Setting	Auto, Heat, Cool, Dry, Fan Only	✓
Set Temperature	18-29°C	✓
Fan Speed Setting	Auto, Low, Medium, High	✓
Louver Setting	Swing, Fix	✓
Fault Code Indication	Reset	Flash LED on receiver unit
Schedule Functions	Countdown timer with ON, OFF & Repeat OFF settings	



TCB-AX32CE

Receiver mountable in the frame of cassette and underceiling unit.



Remote control

Receiver



To be used with: under ceiling units, 1-way cassette units.



RBC-AX32U(W*)-E RBC-AX32U(WS**)-E

Receiver mountable in the corner pocket of cassette unit.



Remote control

Receiver



To be used with: 4-way cassette units.

* W model is for white cassette panels

** WS model is for white/grey cassette panels



Toshiba's wired local controller solution can be connected to a single unit or a local network of up to 8 units and is available in multiple models to suit all applications, from a simplified device for hotel room applications to an advanced device with built-in 7-day schedule functions.

Energy Saving Mode *

This unique feature can be activated by a single button press on the local remote controller and can be used to reduce the capacity of the unit in order to reduce its energy consumption. This function can help to increase the energy efficiency of a building and to reduce its operating costs.

Frost Protection Feature *

The frost protection feature can be used to reduce the set temperature to 8°C in heating mode and is set with the simple button press on the local remote controller.

Wired Controller



RBC-AMT32E/RBC-AMS41E

This is the standard local controller and is suitable for all light-commercial and business applications.

It can be connected to a single indoor unit for control of that unit, or to a group of up to 8 indoor units for simultaneous control of those units (indoor units will operate as one).

This controller can be used to set all controllable parameters of the connected indoor unit(s) and shows the current settings of that unit in an easy to read display, including an intelligent hexadecimal check code.

In addition to these control functions, the RBC-AMT32E can also be used for service functions and has the ability to monitor real time system parameters and sensor data.

The RBC-AMS41E comes with a 7-day timer function built in to the controller and can be used to set multiple indoor unit perimeters.

Features

- Set temperature
- Room temperature sensor in controller body
- Energy saving mode*
- Frost protection mode*
- Countdown timer
- External ventilation control (allows the control of an external fan)
- Ceiling height compensation settings
- Individual louver settings*
- Can be used to monitor various sensor readings and system data throughout the connected system
- Self diagnosis function using the button "check" to display status code
- Can be used to make indoor unit configuration settings & system address setup (DN codes) ^*
- Weekly Timer Function with multiple programmable operations**
- Weekly Timer Mode also enables Night Setback operations**
- Programmable button restrictions**

MAIN FUNCTIONS

Function	Setting	Monitor	Timer
On/Off	✓	✓	✓
Mode	Auto, Heat, Cool, Dry, Fan Only	✓	✓
Set Point	18 – 29°C	✓	✓
Fan Speed	Auto, Low, Medium, High	✓	-
Louver	Swing, Fix	✓	-
Filter Display	Reset	✓	-
Fault Code	Reset	Hexadecimal fault code	-
Scheduled Tasks	Built in 7-Day timer with multiple setting features		

* Feature available on specific models and unit combinations only.

** only RBC-AMS41E

^* only RBC-AMT32E



RBC-AS21E2

This simplified controller is suitable for use with all VRF, DI and SDI systems.

This controller can be connected to a single indoor unit or a group of up to 8 indoor units and is used to set and display the operating parameters of the connected indoor unit, including fault codes.

The reduced function display and simplified button layout make this controller the ideal solution for applications where the indoor unit will be controlled by untrained staff or non-technical users, such as in hotel rooms or offices.

Features

- Reduced function local controller device that provides easy operation of connected air conditioner
- Reduced function display screen provides easy to read/understand layout
- 2 controllers can be used on the same indoor unit/group
- Test run operation for the air conditioner is still available from this control
- Room temperature sensor in controller body

MAIN FUNCTIONS

Function	Setting	Monitor
On/Off	✓	✓
Mode	Auto, Heat, Cool, Dry, Fan Only	✓
Set Point	18 – 29°C	✓
Fan Speed	Auto, Low, Medium, High	✓
Louver	Swing, Fix	✓
Filter Display	-	-
Fault Code	Reset	Hexadecimal fault code
Scheduled Tasks	Not Available	Not Available



RBC-AMS51E-EN

This is a local remote controller with built in 7 day timer featuring a multi-language LCD display, backlit energy saving option and a return back feature.

A maximum of 8 indoor units can be grouped together and controlled from this device.

The controller can be manually configured to display service provider company name and contact details in the event of system fault.

Features

- Wired controller
- Backlit display
- Energy saving function
- Quiet operation
- Set temperature range
- Off reminder function
- Key lock
- Large buttons
- Night operation
- Weekly schedule timer
- Several language options

MAIN FUNCTIONS

Function	Setting	Monitor	Timer
On/Off	✓	✓	✓
Mode	Auto, Heat, Cool, Dry, Fan Only	✓	✓
Set Point	18 – 29°C	✓	✓
Fan Speed	Auto, Low, Medium, High	✓	-
Louver	Swing, Fix	✓	-
Filter Display	Reset	✓	-
Fault Code	Reset	Hexadecimal fault code	-
Scheduled Tasks	Built in 7-day timer with multiple setting features		



Schedule Timer Solutions



TCB-EXS21TLE

The TCB-EXS21TLE is a schedule timer device for use with DI, SDI and VRF equipment and has two modes of operation.

1. WEEKLY TIMER MODE

In this mode, the schedule timer is connected to a local or central control device to provide simultaneous ON/OFF operation, based on timer programs, for all connected indoor units.

Features

- Up to 3 ON/OFF cycles can be programmed per day
- TCB-SC642TLE allows for additional local controller permit/prohibit functions to be set/reset based on timer input
- Timer functions can be switched ON/OFF without the need to delete the programmed operations
- Holiday settings available
- Day copy function

CONNECTABLE CONTROLLERS

Local Remote Controllers	Central Remote Controllers
RBC-AMT32E – Updated standard control	TCB-CC163TLE2 – 16-way on/off control
	TCB-SC642TLE2 – 64 way central control
	BMS-CM1280(F)TLE – Compliant manager

Holiday function

Operations programmed for a specific day of the week can be temporarily disabled using the holiday setting. Once over or disabled the program is resumed.



The schedule timer is an advanced control device that can be used to control indoor unit parameters based on a timed schedule, and has two possible modes of operation to choose from, these are:

Weekly Timer Mode

The timer is connected to an indoor unit via a local or central remote controller.

Schedule Timer Mode

The timer is connected directly to the TCC link central control network and can set timer functions for up to 64 indoor units in up to 8 programmable control groups.



2. SCHEDULE TIMER MODE

In this mode, the schedule timer is connected directly to the TCC-link central control network and can control operation ON/OFF and ON/OFF permit/prohibit functions for up to 64 indoor units based on control group settings.

Features

- Up to 8 programmable control group settings for indoor unit connection
- Up to 64 indoor units can be programmed into each control group
- Indoor units can be programmed into multiple control groups
- Up to 6 programmable operations per day
- Holiday & day copy functions available
- Programmable permit/prohibit functions



Schedule Timer Group Settings

When used in schedule timer mode, this device has the option of setting control groups (similar to the zone settings available on the TCB-SC642TLE2 64-way central remote controller device) in two different ways, fixed groups and manual groups.

An indoor unit can be programmed in to more than 1 group.

When **fixed setting** is used, the central control addresses are automatically set for each control group.

When **manual setting** is used there are up to 8 programmable groups that can contain up to 64 indoor units in each group.

Permit/Prohibit Operation selection

There are 8 different permit/prohibit patterns available for restriction of local remote controller functions, these are:

MAIN FUNCTIONS

Mode	Remote Control Disabled Items	64-Way Central Controller Indication
0	Enable/disable not used	No indication
1	On/off	Central 1
2	Operation mode	Central 4
3	Operation mode & on/off	Central
4	Temp. setting	Central
5	Temp. setting & on/off	Central
6	Temp. setting & on/off	Central 3
7	Temp. setting & on/off & mode	Central

Toshiba Air Conditioning offer a number of different central control solutions that can be used to control a large number of indoor units from a central location, such as a reception area, engineering room or office space.

These control devices are connected to the air conditioner side using Toshiba’s dedicated central control network, the TCC-link , which can be used to directly connect MiNi-SMMS, SHRMi, and SMMSi equipment.

The TCC-link also offers connection of light commercial split systems with the use of a specially designed low cost network adaptor (TCB-PCNT30TLE).



Standard Central Control



Advanced Central Control

The Central Control Network

Up to 64 groups of 8 DI/SDI units can be connected (total 512 indoor units)

The TCC-link central control network is used for communications from the outdoor units to indoor units in VRF systems, and for connection of Toshiba Air Conditioning Central Control devices to the air conditioner product.

U1/U2 connection

This is used for outdoor to indoor unit connection.

U3/U4 connection

This is used for outdoor unit to outdoor unit connection when multiple refrigerant circuits are connected to the same TCC-link network.

NOTE: Increased installation flexibility is achieved as the TCC-link allows central control devices to be connected to either the indoor unit side (U1/U2) or the outdoor unit side (U3/U4).

CONTROL WIRING SPECIFICATION

Connection devices	Type	Q'ty	Size	Length	Polarity	Others
Indoor to outdoor units	Shield wire	2 cores	1.5 mm ²	Max1000m	Non polarity	Procured locally
Central control devices	Shield wire	2 cores	2.0 mm ²	Max2000m	Non polarity	Procured locally

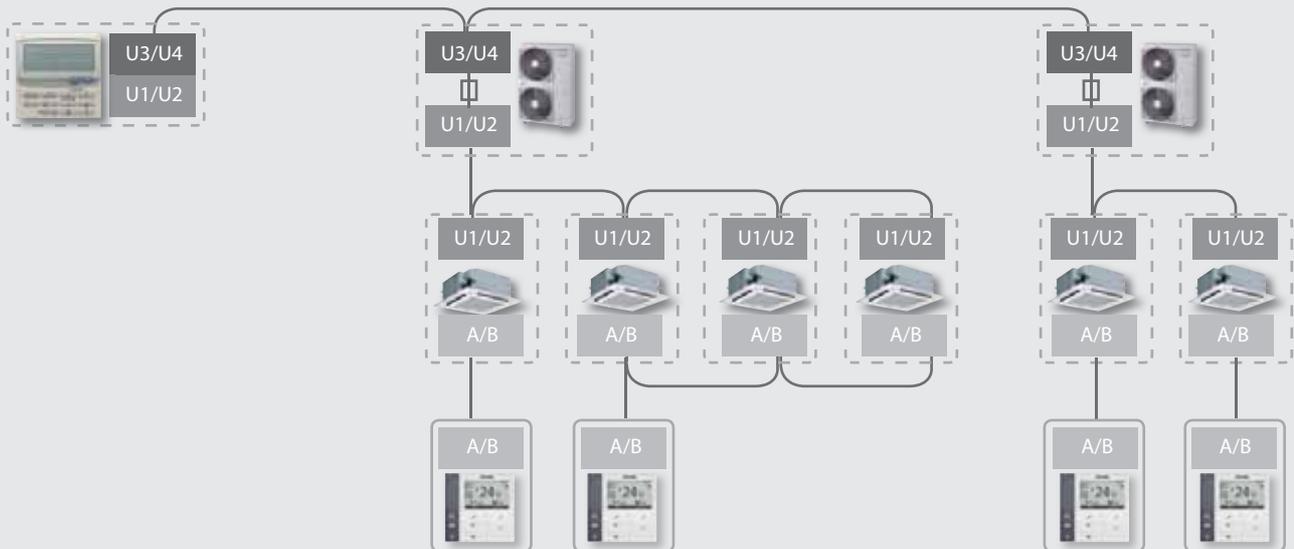
Maximum Connectable Indoor Units: 64**

Maximum Connectable Outdoor Systems: 16

** All indoor units in a group MUST be counted in total number in the case of VRF systems. In case of DI/SDI systems, follower units in a group are not counted in the total indoor unit quantity. This means that up to 64 groups of 8 DI/SDI units can be connected (total 512 indoor units).



Central controls

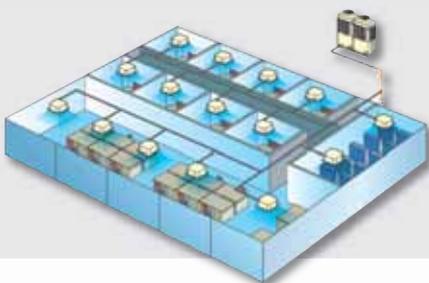




TCB-CC163TLE2

The TCB-CC163TLE2 is a 16-way ON/OFF controller for use with DI, SDI and VRF equipment. It is a simplified central control device that can be connected to up to 16 indoor units via the TCC-link central control network to provide simple 1 touch ON/OFF control for those connected indoor units.

This controller can be installed on any of the four fixed zone addresses by changing dip switch settings.



16 INDOOR UNITS

Zone address selection

This controller can be installed on the TCC-link central control network for control over a specified zone on that network.

Group inhibit selection

Up to 5 settings available to select which connected indoor units are controlled by the ALL ON, and the ALL OFF buttons on the controller.

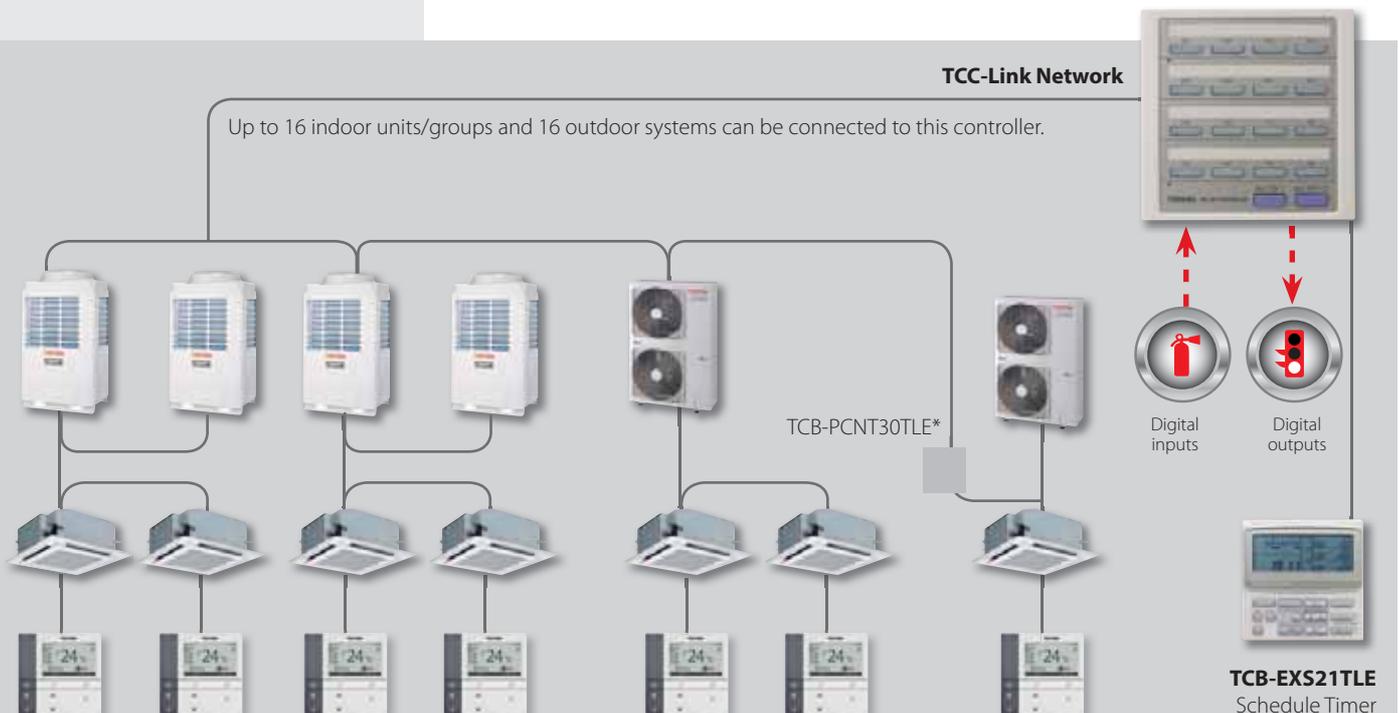
Features

- Can be connected to up to 16 indoor units and 16 refrigerant systems on the TCC-link central control network
- Schedule timer can be connected to enable 7-day timer functions for all connected indoor units
- Zone setting available for selection of control zone 1, 2, 3 or 4
- Simple 1 touch control for easy operation of individual indoor units ON/OFF command plus 1 touch control for all indoor units ON and all indoor units OFF command
- Main/sub settings on device allow multiple controllers to be installed on the same TCC-link central control network
- Central controller can be installed to the TCC-link network on the indoor or outdoor side
- External input/output connections for ON/OFF control and operation/alarm status output
- Simple and easy to use/monitor indoor units ON/OFF function and error output is ideal for reception use in hotel or office buildings

Alarm indication

Whenever an alarm signal is received, the button of the corresponding indoor unit flashes.

Up to 16 indoor units/groups and 16 outdoor systems can be connected to this controller.





TCB-SC642TLE2

The TCB-SC642TLE2 64-way central controller is Toshiba Air Conditioning's standard central control device for use with DI, SDI and VRF equipment and can be connected to up to 64 indoor units for individual, zone and all control.

In addition to the standard control functions, this central controller provides 4 levels of local controller permit/prohibit functions that can be used to restrict the available operations from a local controller.

Features

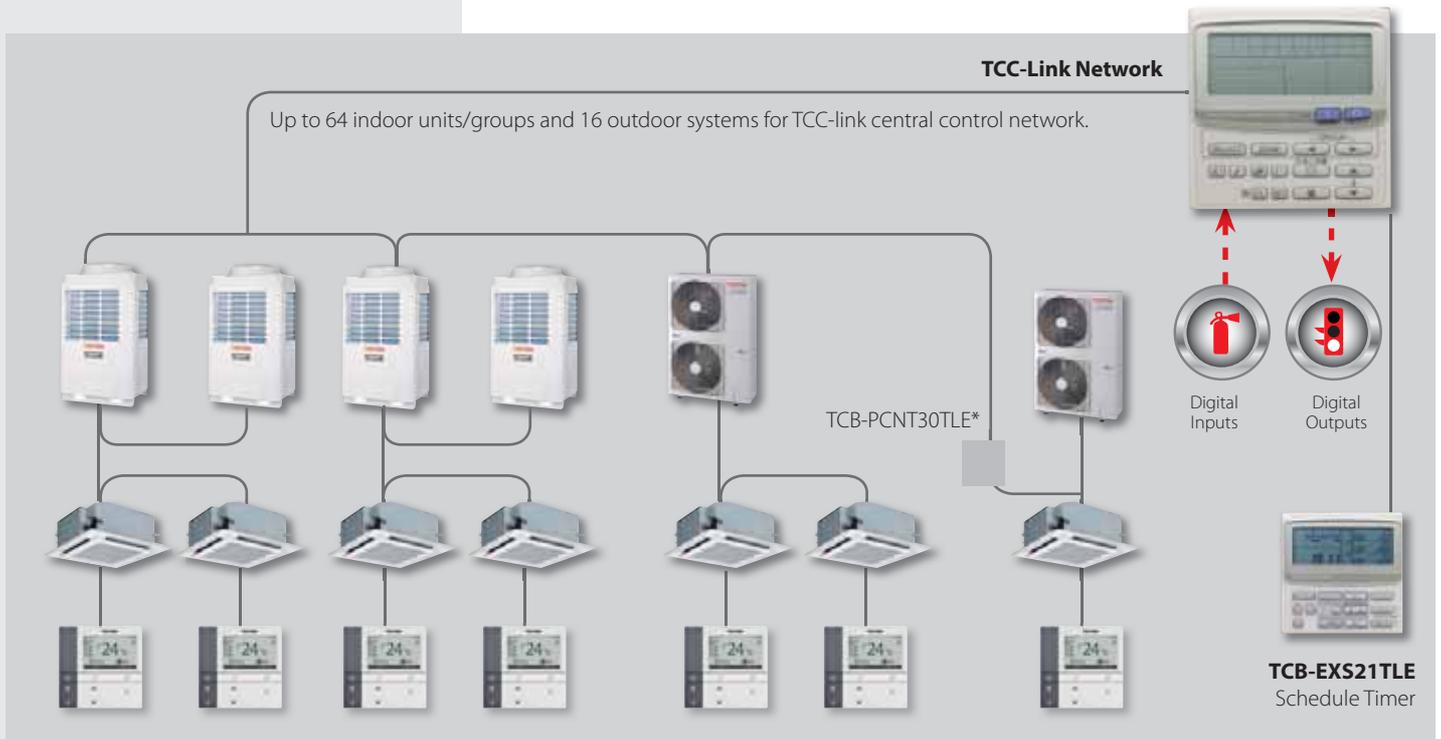
- Can be connected to up to 64 indoor units and 16 refrigerant systems on the TCC-link central control network
- Schedule timer can be connected for 7-day timer functions with selectable control characteristics (manage operations when timer ON/OFF signal is received)
- 4-zone controllable classification (4 fixed zones with possible setting to enable/disable control from central controller)
- 4-pattern permit/prohibit control for restriction of local remote controller setting functions
- Up to 10 central controllers can be connected to a single TCC-link line network for control of indoor units
- External digital input/output connections for ON/OFF control and operation and alarm status output
- Control of indoor units can be carried out separately, as all units in a zone, or as all units connected to the central controller
- External vent control button available



64 INDOOR UNITS

MAIN FUNCTIONS

Function	Setting	Monitor
On/off	✓	✓
Mode	Auto, heat, cool, dry, fan only	✓
Set point	18 – 29°C	✓
Fan speed	Auto, low, medium, high	✓
Louver	Swing, fix	✓
Filter display	Reset	✓
Fault code	Reset	Hexadecimal fault code
Scheduled tasks	Additional schedule timer required	
Permit/prohibit local control functions	4-pattern permit/prohibit settings	✓





Smart manager



BMS-SM1280HTLE / BMS-SM1280ETLE

The high-spec model has the same hardware control function as the standard version, but also has the ability of control from a local area network and, with the use of an additional Interface, is capable of energy monitoring and report creation functions.

This controller is ideal where advanced control, energy monitoring, advanced scheduling or access to individual air conditioners is required from networked computer systems.

Features

- Same hardware control features as the standard model version
- Can be connected to a single PC or LAN to allow advanced control functions via the web
- Energy monitoring and report creation functions available
- Advanced operation & master schedules can be set on a calendar
- Additional digital I/O device available
- Data analyser*
- Email alert to service team*
- Energy monitoring and graphical reports*

MAIN FUNCTIONS

Function	Setting	Monitor
On/Off	✓	✓
Mode	Auto, Heat, Cool, Dry, Fan Only	✓
Set Point	18 – 29°C	✓
Fan Speed	Auto, Low, Medium, High	✓
Louver	Swing, Fix	✓
Filter Display	Reset	✓
Fault Code	Reset	Hexadecimal fault code with unit number
Scheduled Tasks	Advanced timer available from web browser	

Additional devices

Model Name

BMS-IFDDO2E

Digital input/output relay interface

BMS-IFWH5E2

Energy monitoring relay interface

Power meter locally procured

Switching HUB and LAN cable locally procured

PC for web browser control & energy monitoring functions locally procured

*Only with BMS-SM1280ETLE

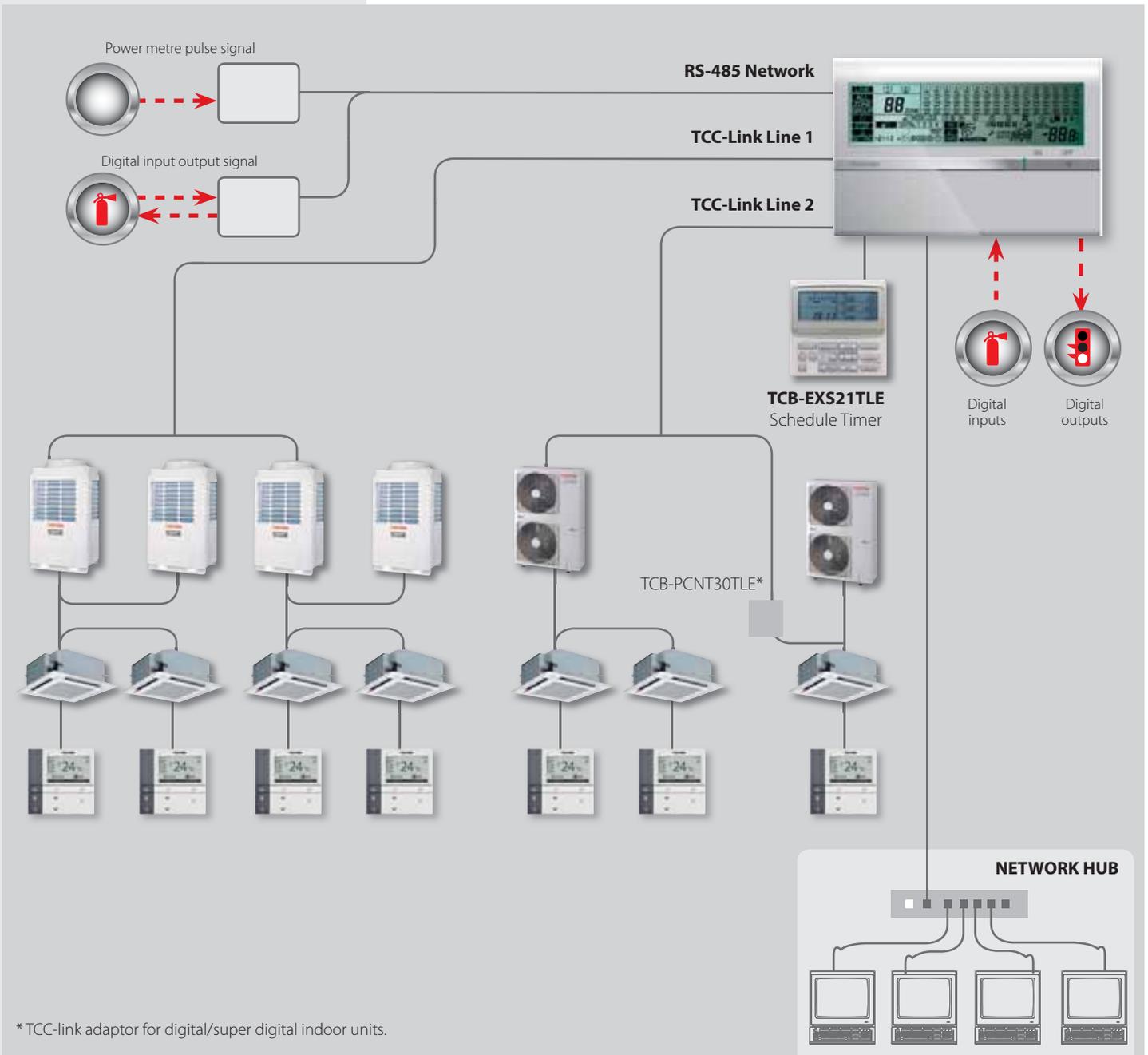


Web Browser Control Software

Layout can be selected in terms of area name, floor name or tenant name.

Features

- List view available - displays all indoor units from one screen
- Set view available – shows basic indoor unit settings on main screen
- Advanced operation and master schedule functions available
- Up to 4 concurrent users can be connected
- Up to 32 user accounts can be programmed with different levels of access (at least 1 must be administrator level)



* TCC-link adaptor for digital/super digital indoor units.

Up to 32 user accounts with a maximum of 4 concurrent users



NOTE: non energy monitoring models cannot be upgraded to allow energy monitoring functions



512 INDOOR UNITS

Touch Screen Controller

The touch screen controller can be connected to 64 or 512 indoor units depending on model and offers energy monitoring and schedule program functions.

This controller is ideally suited to any small or large installation where energy monitoring

functions are required, or where a professional and highly presentable finish is required.

Due to the appealing look of this controller it is usually installed in places of clear view in modern buildings, such as a reception area.

MODEL NAMES

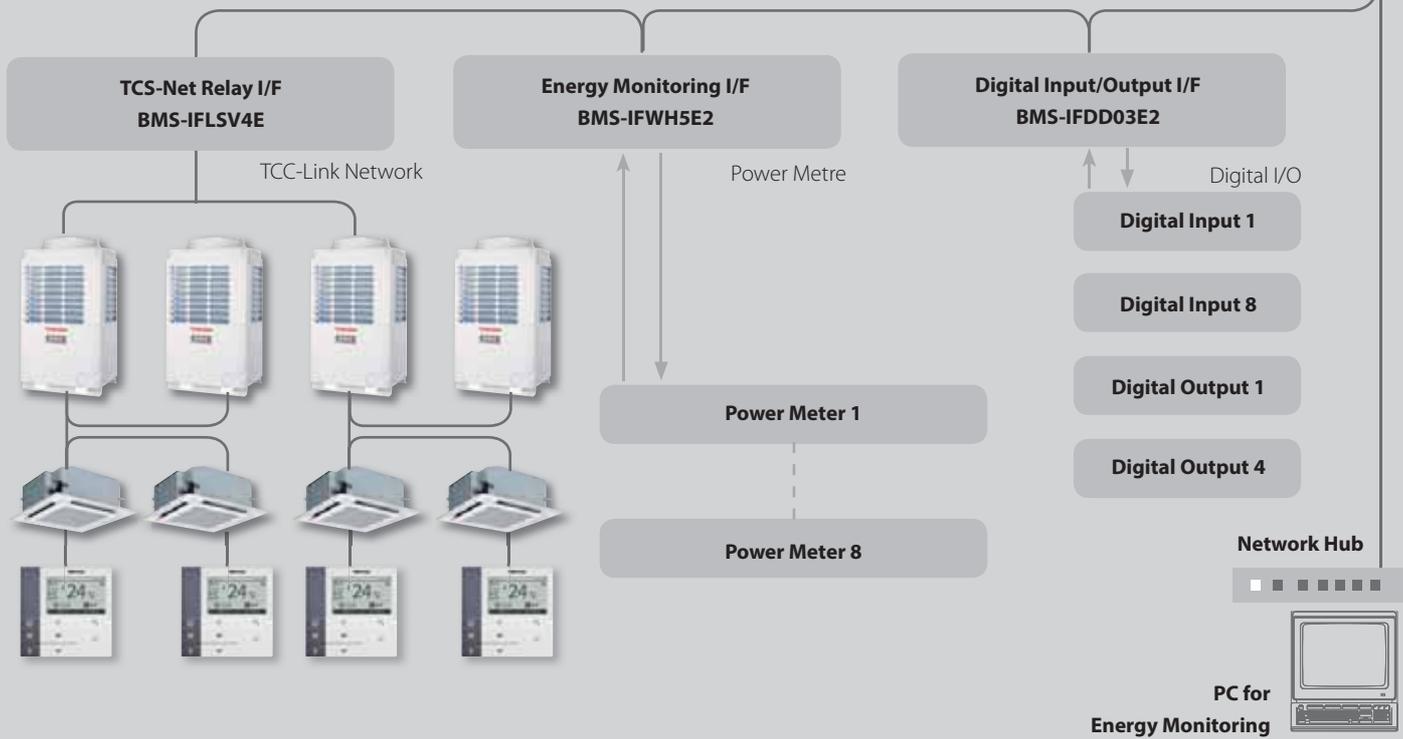
Model Number	Connectable Units	Description
BMS-TP0641ACE	Maximum 64 indoor units	No energy monitoring capability
BMS-TP5121ACE	Maximum 512 indoor units	No energy monitoring capability
BMS-TP0641PWE	Maximum 64 indoor units	With energy monitoring
BMS-TP5121PWE	Maximum 512 indoor units	With energy monitoring

Function	BMS-TP***1ACE	BMS-TP***1PWE
ON/OFF		✓
Mode	Auto, heat, cool, dry, fan only	
Set point	18 – 29°C	
Fan speed	Auto, low, medium, high	
Louver	Swing, fix	
Filter display	Reset	
Fault code	Intelligent fault description and alarm history storage	
Scheduled tasks	Advanced yearly scheduled setting for ON/OFF control	
Energy monitoring	-	✓
Digital I/O options	-	✓
Permit/prohibit functions	Available for ON/OFF, mode and temperature setting functions	

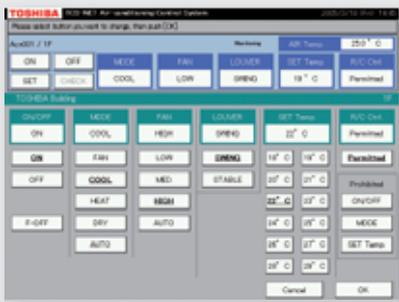
Additional devices

Model Name
BMS-IFLSV4E TCS-net relay interface
BMS-IFWH5E2 Energy monitoring relay interface
BMS-IFDD03E2 Digital input/output relay interface
Power Meter (Locally procured)
Switching HUB and LAN cable (Locally procured)
PC for Energy Monitoring (Locally procured)

CONTROL WIRING



Monitoring screen



Control Screen

Features

- Simple layout for easy control and monitoring of indoor units
- Area, tenant and indoor unit names can be assigned based on building layout
- Intelligent alarm code shows fault description, date/time and unit affected with an additional alarm history database.

- Day, week and month schedules can be set with 4 patterns of special day settings and no operation setting available
- Digital I/O and energy monitoring available with additional relay interface devices





BMS-WB2561PWE

Web Based Controller

The web based controller is an advanced central control device designed for use with large installations or where high-level control and/or energy monitoring functions are required. One major benefit of the web based controller over other central control systems is the ability to automatically retransmit system alarms to up to 8 programmable email addresses. It is also possible to specify which units will send alarms to each of the different email addresses.

Connection of up to 256 indoor units

A single web based controller can be connected to up to 256 indoor units on the TCC-link central control network via TCS-net relay interfaces.

Connection of up to 2048 indoor units

With the use of an additional web based controller master - BMS-WB01GTE - device it is possible to connect up to 2,048 indoor units into this control system.

This is carried out using the master device as a hub for up to 8 multiple web based controllers.

Features

- Maximum 64 indoor units/groups and 16 outdoor systems can be connected to each TCS-net relay I/F.
- Network adaptor TCB-PCNT30TLE required (1 per master indoor unit) for connection of DI/SDI indoor units.
- Energy monitoring available with additional relay interface.
- Advanced control available from standard web browser software on connected PC.
- Up to 256 user account available, and up to 8 concurrent users can be connected.

EQUIPMENT LIST – UP TO 256 INDOOR UNITS

Device	Number of pieces	Note
BMS-WB2561PWE	1 server unit	Maximum 256 connectable indoor units and up to 8 x relay interfaces.
BMS-IFLSV4E	Up to 8 boards	Maximum 64 indoor units per device/TCC-Link.
VRF indoor units	Up to 64 indoor units/groups	Maximum total 64 indoor units regardless of group settings.
RAV indoor units *	Up to 64 indoor units/groups	Maximum indoor units does not include follower indoor units. Total maximum can be up to 64 x 8-unit groups (512 indoor units).
BMS-IFWH5E2	Up to 4 boards	Interface for digital input & outputs. Can connect up to 8 power meters per board
BMS-IFDDO2E2	Up to 4 boards	Interface for power meter device. 4 x digital outputs & 8 digital inputs.

* Excludes DI flexi type indoor units.

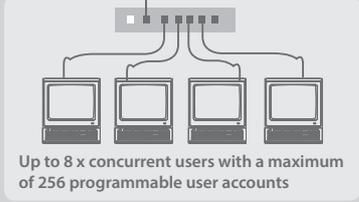
UP TO 2,048 INDOOR UNITS – EQUIPMENT LIST

Device	Number of pieces	Note
BMS-WB01GTE	1 master unit	Can connect up to 8 x web based controller server units.
BMS-WB2561PWE	Up to 8 x server units	Maximum 256 connectable indoor units and up to 8 x relay interfaces.
BMS-IFLSV4E	Up to 8 boards	Maximum total 64 indoor units regardless of group settings.
VRF Indoor Units	Up to 64 indoor units/groups	Maximum total 64 indoor units regardless of group settings.
RAV Indoor Units *	Up to 64 indoor units/groups	Maximum indoor units does not include follower indoor units. Total maximum can be up to 64 x 8-unit groups.
BMS-IFWH5E2	Up to 4 boards	Interface for power meter device. Can connect up to 8 power meters per board.
BMS-IFDDO2E2	Up to 4 boards	Interface for power meter device. 4 x digital outputs & 8 digital inputs.

BMS-WB01GTE



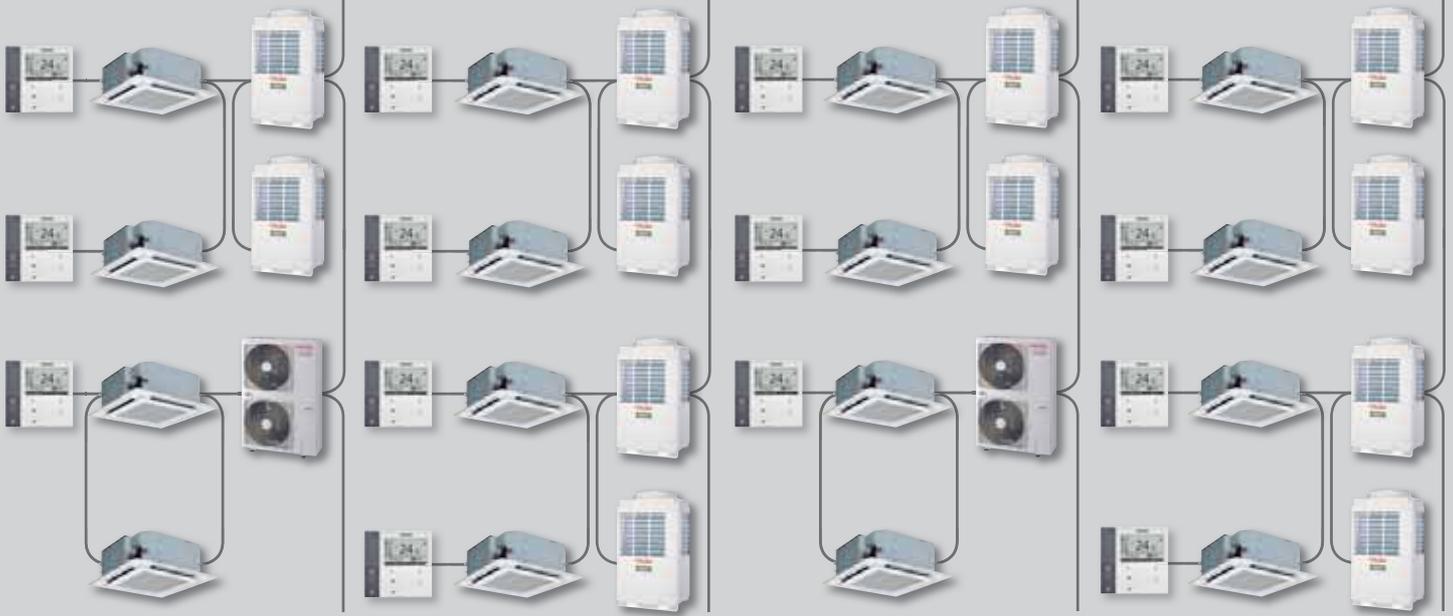
RS-485



BMS-WB2561PWE Maximum 8 devices



BMS-IFLSV4E Maximum 64 devices



Toshiba Air Conditioning offer a range of control interfaces that can be used to integrate the control of Toshiba Air Conditioners to local Building Management Systems.

Our building management controls currently offer easy integration with the following protocols:

- Lonworks®
- Modbus
- BACnet®
- Open ended system using digital analogue inputs & outputs



Building Management Systems

A Building Management System (BMS) is a computer based control system that is installed in buildings to control and monitor mechanical and electrical equipment, such as ventilation, lighting, power systems, fire systems and security for that building.

The core function of most BMS systems is to manage the environment within the building and can be used to control heating and cooling equipment and manage the systems that distribute treated air throughout the building.

What is Lonworks

Lonworks is a control system platform built on the LonTalk Communications Protocol created by the Echelon Corporation, and is used for the networking of equipment over media such as twisted pair, power lines, fibre optics and radio frequency.

The Lonworks platform has been adopted as the basis for product and service offers in many different industries including the building industry where it is widely used for control of lighting and HVAC systems.

What is Modbus?

Modbus is a serial communications protocol that was first published in 1979 for use with programmable logic controllers, and has now become the most commonly available means of connecting industrial electronic devices to a computer control system.

There are many different versions of Modbus currently used in building management systems including Modbus RTU, Modbus ASCII and Modbus TCP.

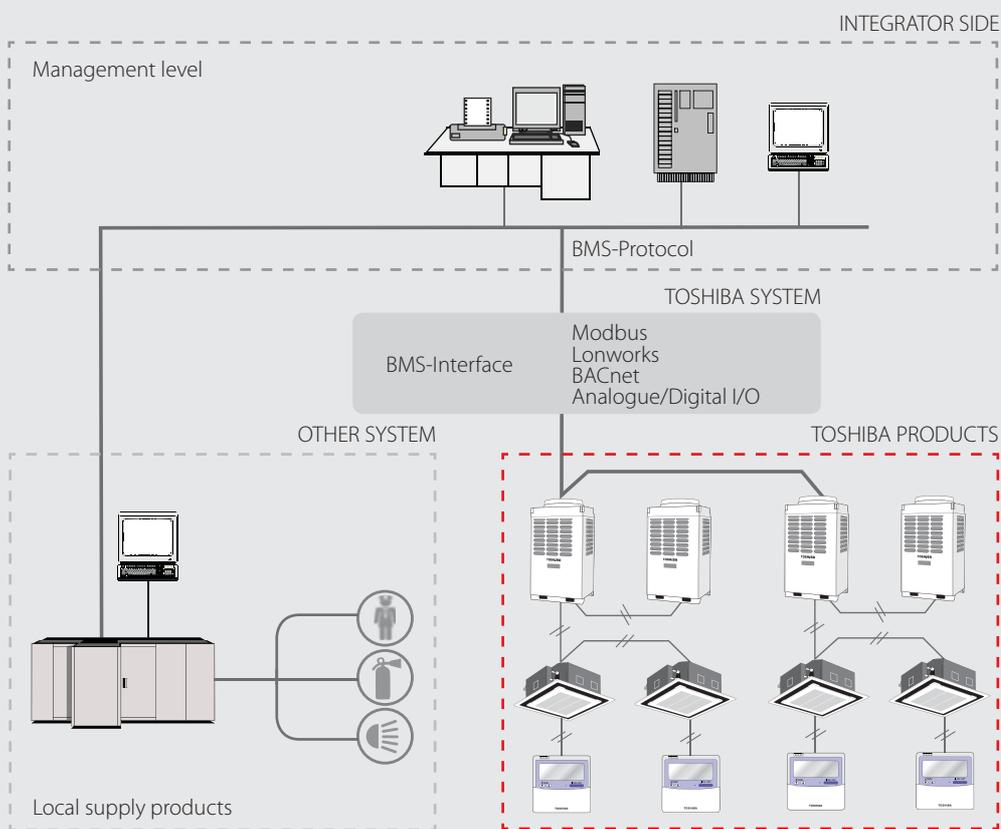
BACnet is a communications protocol for building automation and control networks. It is an ASHRAE, ANSI and ISO standard protocol.

BACnet was designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet protocol provides mechanisms for computerised building automation devices to exchange information, regardless of the particular building service they perform.

Please note that Lonworks® and BACnet® are registered trademarks, however these symbols have been omitted in the remaining text.



Building Management



TCB-IFLN642TLE

Lonworks® Interface

The Lonworks interface is 100% LonMark Compliant and is designed to connect the Toshiba Air Conditioning system to a Lonworks Building Management Control System.

This interface connects directly to the Toshiba TCC-link central control network on the air conditioner side and can be wired on the indoor or outdoor unit side depending on preference.

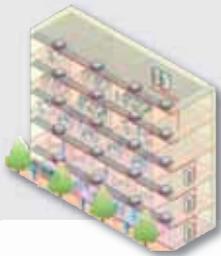
The interface is then connected to the Lonworks Building Management Control system where it

provides 28 network variables for the sending of control commands and receiving unit information.

Multiple Toshiba Air Conditioning Lonworks Interfaces can be connected to a single TCC-link network and addressed using simple switches provided on the device. This is to enable ease of installation, especially in buildings with separate areas where one interface may be used for each area/floor.

Features

- Maximum 64 indoor units/groups and 16 outdoor systems can be connected to a single Lonworks interface
- Network adaptor TCB-PCNT30TLE required (1 per master indoor unit) for connection of DI/SDI indoor units
- Maximum 10 I/F can be used per TCC-link network
- RBC-WP1-PE Lonworks control software also available from Toshiba Air Conditioning



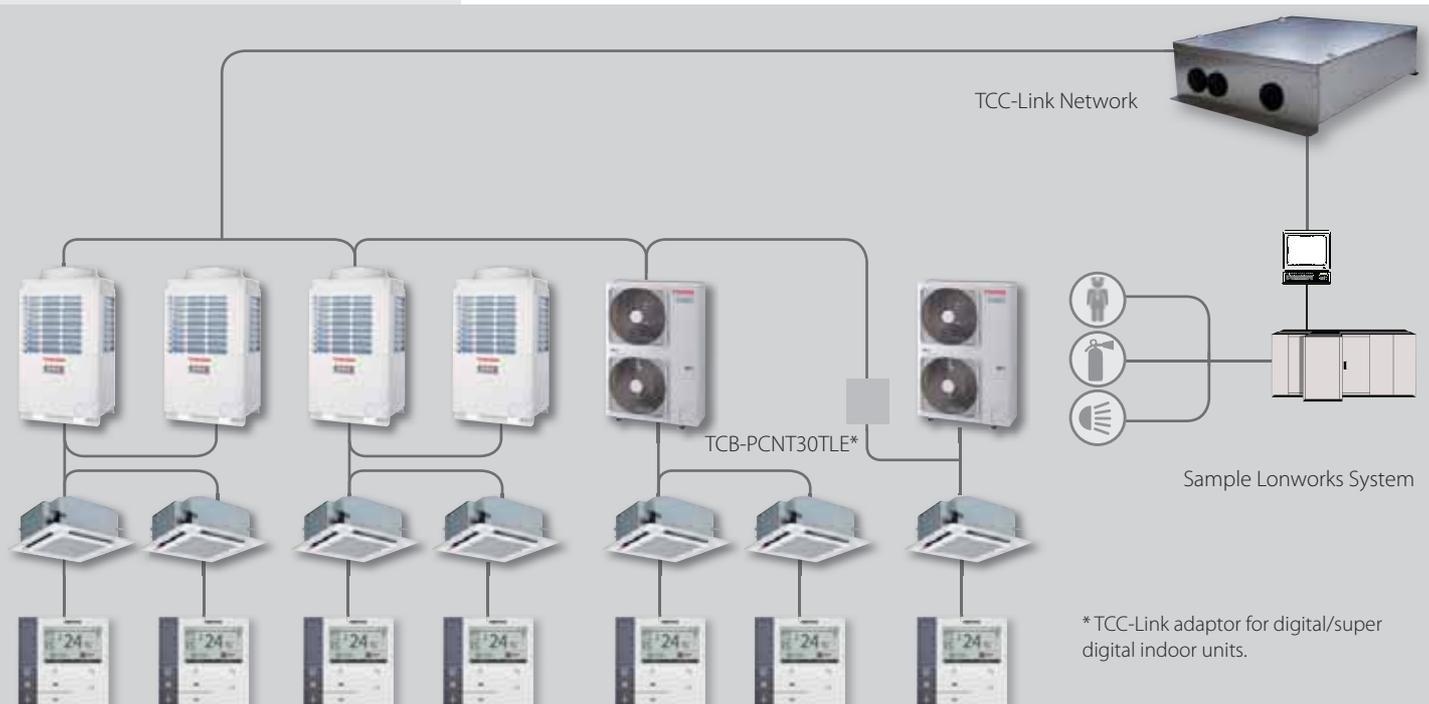
64 INDOOR UNITS

Function	Command Input	Status Output
ON / OFF status	✓	✓
Operation mode	Auto, heat, cool, dry, fan only	✓
Fan speed	Auto, low, medium, high	✓
Louver	Swing, fix	✓
Set temperature	18 – 29°C	✓
Room temperature	-	✓
Permit / prohibit of local operation	ON/OFF, mode, fan speed, louver, set temp.	✓
Error status	✓ Reset	✓
Error code	✓ Reset	✓

Minimum Equipment required for a Lonworks Control System

Equipment	Source
Lonworks interface TCB-IFLN642TLE	Toshiba
Lonworks control system	Toshiba or other local supply
Lonworks network card for PC control	Toshiba or other local supply

Note: The Lonworks interface can also be used to provide energy monitoring and billing functions when used in conjunction with Toshiba's RBC-WP1-PE - interactive intelligence building management software.



TCB-641TLE

Modbus Interface

The Toshiba Modbus interface is designed to connect the Toshiba Air Conditioning system to a Modbus Building Management System.

The Toshiba interface connects directly to the Toshiba TCC-link central control network on the air conditioner and can be wired on the indoor or outdoor unit side depending on preference. The interface then uses the Modbus RTU protocol based on the RS-485 type serial communications protocol to connect to a suitable Modbus master device.

This Modbus master device is then connected to the BMS control system and allows control of all connected Toshiba air conditioner equipment from that BMS control system.

Multiple Toshiba Modbus interfaces can be connected to a single TCC-link network and addressed using simple switches provided on the device.

This is to enable ease of installation, especially in buildings with separate areas where one interface may be used for each area/floor.

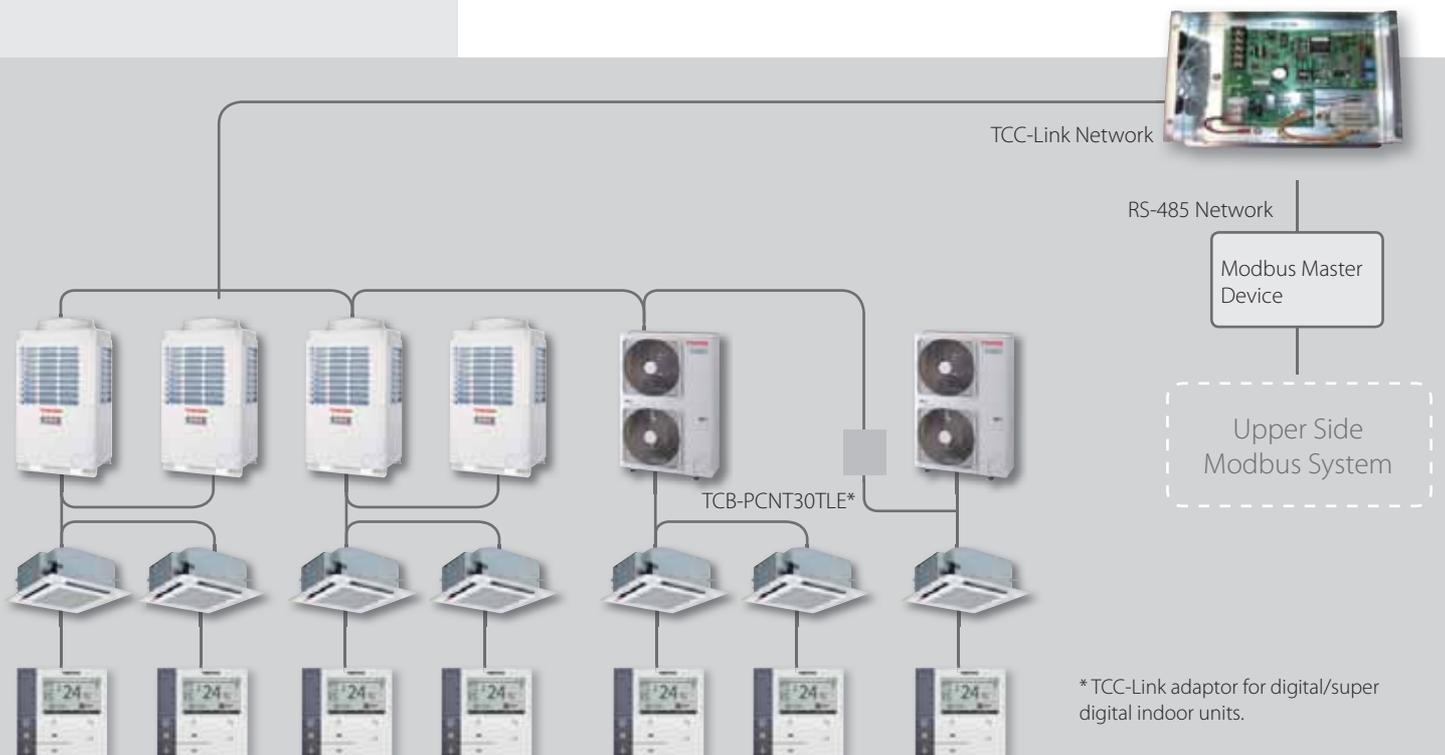
Features

- Maximum 64 indoor units/groups and 16 outdoor systems can be connected to a single Modbus interface
- Network adaptor TCB-PCNT30TLE required (1 per master indoor unit) for connection of DI/SDI indoor units
- Maximum 15 Modbus I/F can be connected per Modbus master device
- Up to 10 Modbus interfaces can be connected to a single TCC-link network



Function	Command Input	Status Output
ON/OFF status	✓	✓
Operation mode	Auto, heat, cool, dry, fan only	✓
Fan speed	Auto, low, medium, high	✓
Louver	Swing, fix	✓
Set temperature	18 – 29°C	✓
Room temperature	-	✓
Permit/prohibit of local operation	ON/OFF, mode, set temp.	✓
Error status	✓ Reset	✓
Error code	✓ Reset	✓

Minimum Equipment required for a Modbus Control System	
Equipment	Source
Modbus interface	Toshiba
Modbus master device	Local supply
Upper side modbus control system	Local supply



* TCC-Link adaptor for digital/super digital indoor units.

TCB-IFCB640TLE

Analogue Interface

The analogue interface product is a device that can be connected directly to the TCC-link central control network to provide analogue & digital inputs & outputs for control over Toshiba Air Conditioning products from non-Toshiba control systems.

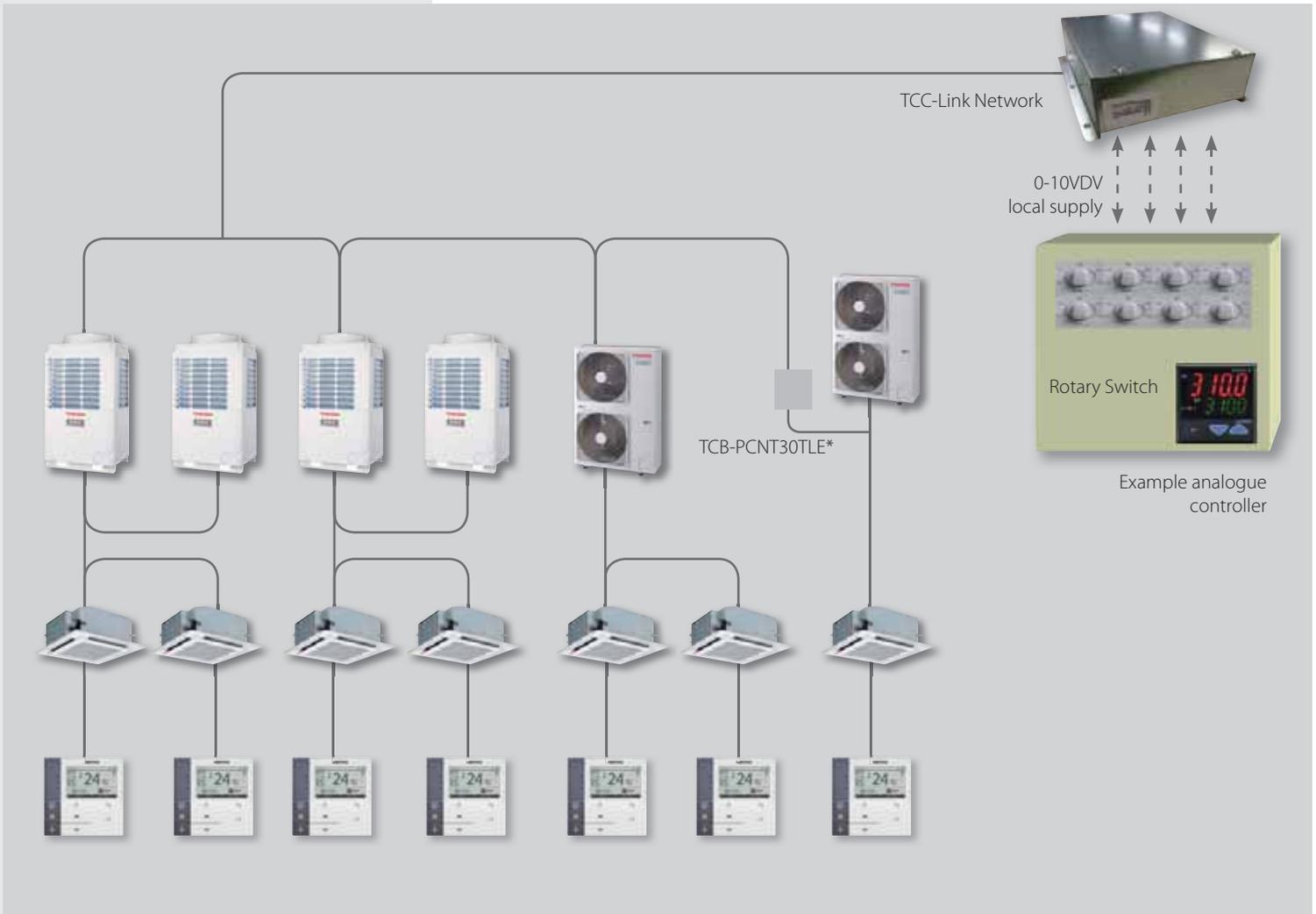
This interface is the ideal design for integrating the Toshiba Air Conditioning product into basic BMS control systems, such as PLC (Programmable Logic Controller) often found in older controls systems.

Features

- Maximum 64 indoor units/groups and 16 outdoor systems can be connected to a single analogue interface
- Network adaptor TCB-PCNT30TLE required (1 per master indoor unit) for connection of DI/SDI indoor units
- Digital & analogue inputs and outputs available for control of indoor units and the general purpose relay interface from Toshiba Air Conditioning



I/O Ports	Channel Number	Specification	Analogue Level
Analogue input	8	Setting for SET/GET	Input 0V – 10V
		Address setting (2 Channel)	
		Temperature setting	
		Operation mode setting	
		Fan speed setting	
		ON/OFF setting	
		Louver setting	
Analogue output	5	Status of set temp, mode, fan speed, ON/OFF and louver.	Output: 0V – 10V
Digital input	2	Photo coupler type: ON/OFF for TCB-IFCG1TLE	ON level 2mA.
Digital output	5	Photo coupler type: alarm, ON/OFF for indoor units and TCB-IFCG1TLE	Maximum 10mA.



BMS-LSV6E

BACnet® Server

The Toshiba Air Conditioning BACnet control system consists of the BMS-LSV6E intelligent server and the BMS-STBN08E BACnet server software, and can be connected to the TCC-link central control network via a TCS-net relay interface to enable control of the attached air conditioner product from a BACnet building management system.



Features

- Maximum 64 indoor units/groups and 16 outdoor systems can be connected to a single TCS-net relay interface
- Maximum 8 TCS-net relay interfaces can be

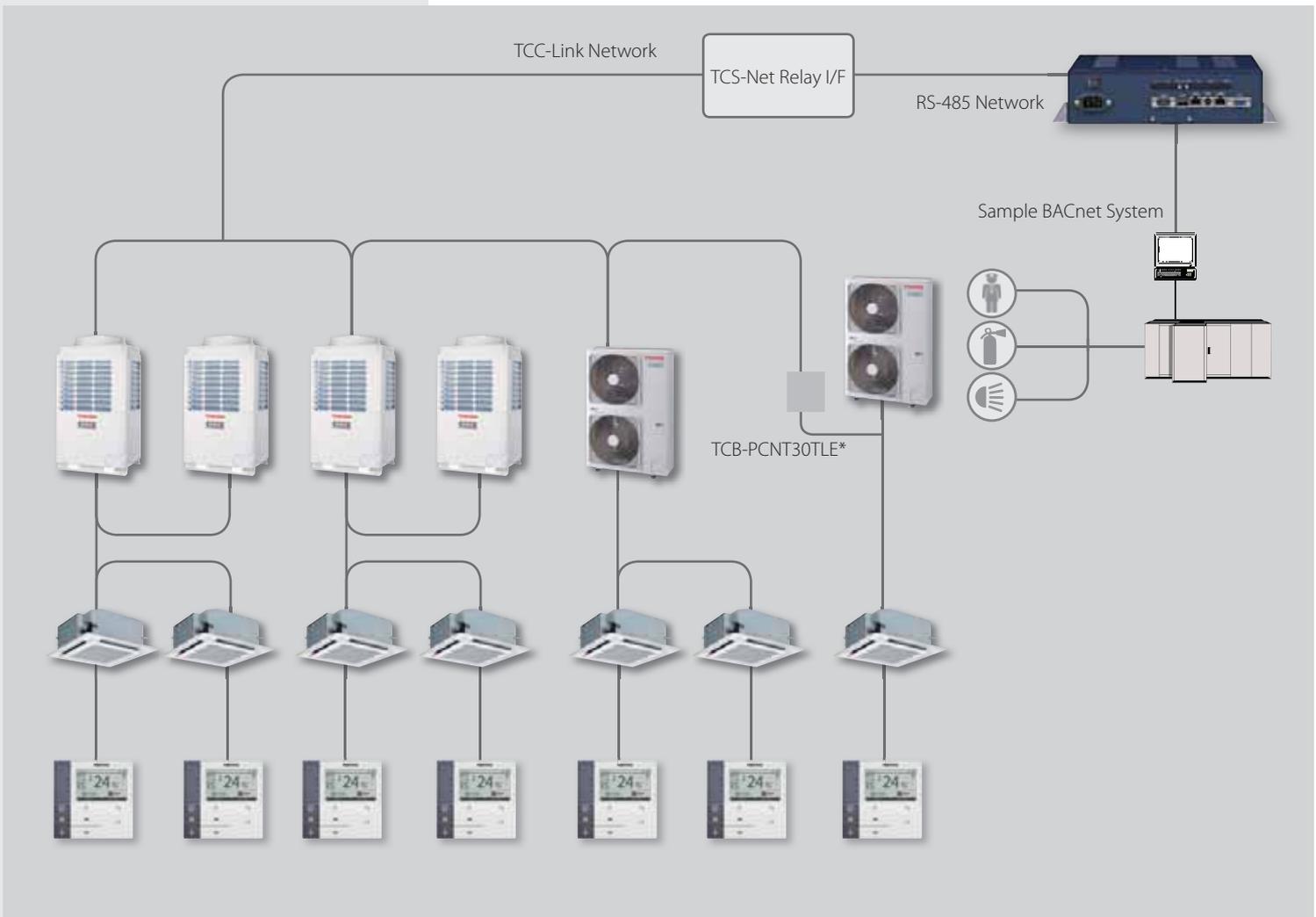
connected to a BACnet intelligent server

- Total maximum 128 indoor units per BACnet intelligent server
- TCB-PCNT30TLE network adaptor required for connection of DI/SDI to BACnet system

Function	Command Input	Status Output
ON / OFF status	✓	✓
Operation mode	Auto, heat, cool, dry, fan only	✓
Fan speed	Stop, auto, ultra-low, low, medium, high	✓
Louver	Swing, fix	✓
Set temperature	18 – 29°C	✓
Room temperature	-	✓
Permit / prohibit of local operation	ON/OFF, mode, set temp.	✓
Error status	✓ Reset	✓
Error code	✓ Reset	✓

Minimum Equipment required for a BACnet Control System

Equipment	Source
TCS-Net Relay Interface TCB-IFLSV3E / TCB-IFLSV2E2	Toshiba
BACnet Intelligent Server BMS-LSV6E	Toshiba
BACnet Server Software BMS-STBN08E	Toshiba
BACnet Control System	Local supply





Relay Interfaces



TCB-IFCG1TLE General Purpose Relay I/F

The General Purpose Relay interface is a device that can be connected directly to the TCC-link central control network and addressed on the TCC-link network in order to provide control of non-Toshiba equipment from a Toshiba control system, and control of the Toshiba air conditioner from digital & analogue inputs.

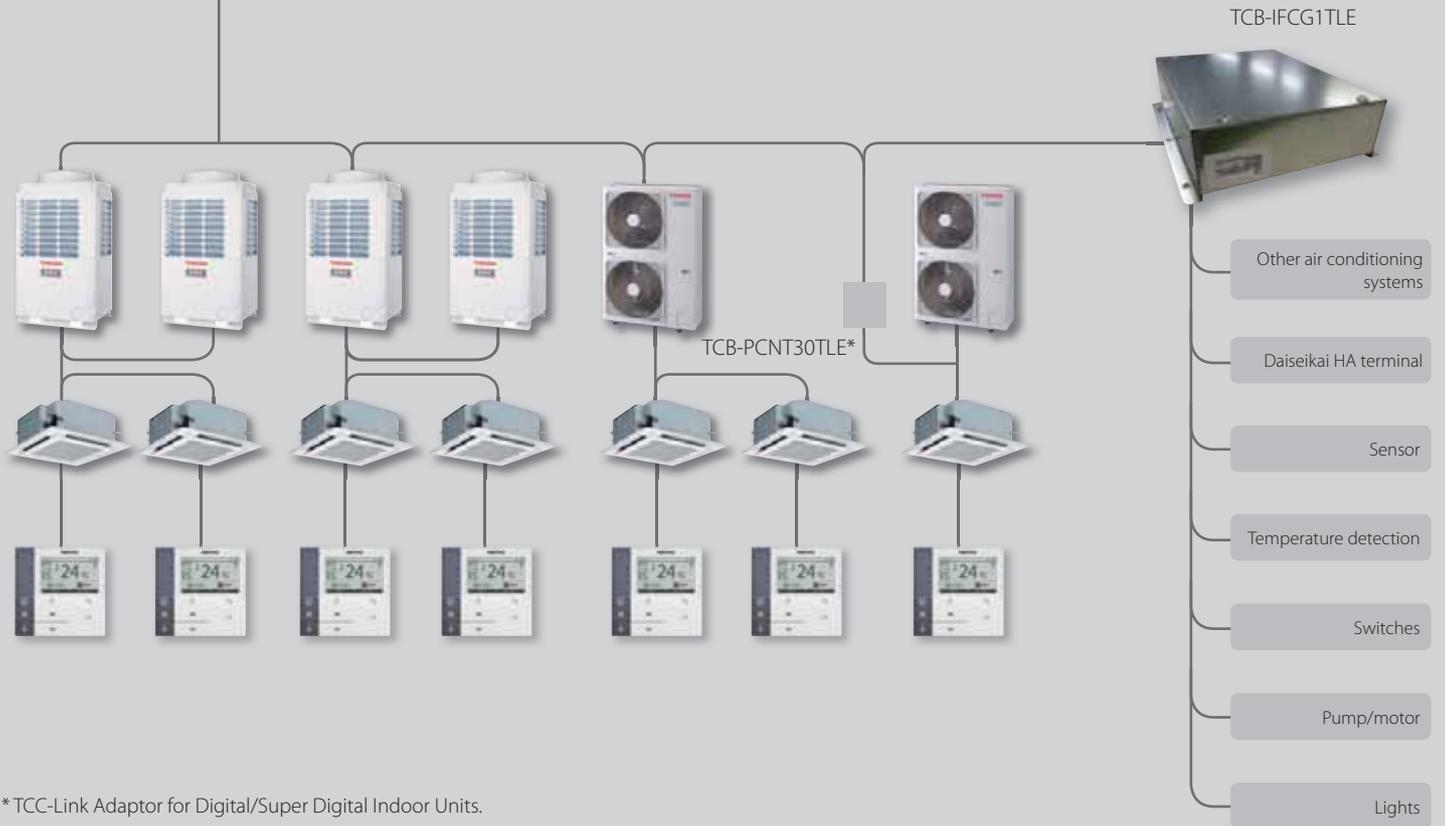
Features

- TCB-IFCG1TLE is given a central control address (similar to an indoor unit) and can then be controlled from a central control device.
- Only ON/OFF input/output available from central controllers.
- Full control available from Modbus interface only
- Can be used to allow ON/OFF control and monitoring of residential indoor units from TCC-link central control devices (selected models only).

TCC-Link Network

Up to 64 indoor units/groups and 16 outdoor systems can be connected on a TCC-link network.

TCC-link control system e.g. Modbus, Compliant Manager (multi language version only) or other central controller.



* TCC-Link Adaptor for Digital/Super Digital Indoor Units.

Application Controls

Outdoor Unit PC Boards

Toshiba Air Conditioning produce a number of control accessory PC boards for use with indoor and outdoor units on both VRF and DI/SDI equipment.

Model	Function	Indoor/Outdoor	Applicable Units
TCB-PCDM4E	Power peak cut control	Outdoor	All VRF units
TCB-PCIN4E	Operation output control	Outdoor	All VRF units
TCB-PCMO4E	Snowfall fan control	Outdoor	All VRF units excluding MiNi-SMMS
	External master ON/OFF	Outdoor	All VRF units
	Night operation control	Outdoor	All VRF units
	Operation mode selection control	Outdoor	All VRF units excludes MiNi-SMMS
TCB-PCOS1E	Night operation control/demand control/operation monitoring	Outdoor	2&3 series DI & RAV-SP4*4AT-E, ATZ-E, ATZG-E
TCB-IFCB-4E2	Remote ON/OFF control	Indoor	All DI/SDI/VRF indoor units
TCB-IFCB5-PE	Windows switch remote ON/OFF control	Indoor	All DI,SDI, VRF units
TCB-KBOS1E	Peak-cut control/night operation/compressor status output	Outdoor	4 series DI, 4 series SDI excluding 1.5-1.7HP

OPTIONAL ENCLOSURES

Model	Description	Applicable Units	Applicable Models
TCB-PX30MUE	Steel enclosure for accessory PC boards on the indoor unit	4-Series 4-way cassette Compact 4-way cassette	TCB-IFCB5-PE TCB-PCNT30TLE2
TCB-PX100-PE	Plastic enclosure for accessory PC boards on the indoor unit (supplied with CN61 cable)	DI/SDI & VRF indoor units	TCB-IFCB5-PE TCB-PCNT30TLE2



TCB-PCMO4E

External Master ON/OFF

This is an application control PC board that can be connected to a VRF outdoor unit in order to provide one of up to four available functions, these are:

- Snowfall fan control
- External master ON/OFF control
- Night operation control
- Operation mode selection control

Features

Snowfall Fan Control

The can be used to activate the outdoor unit fan based on an external input in order to prevent damage to the outdoor unit fan motor due to blockage/freezing.

External Master ON/OFF Control

This function can be used to turn ON, and turn OFF, all indoor units connected in the system simultaneously based on an external input.

This is a very useful control, for example, when considering fire alarm inputs into a system.

Night Operation Control

This can be used to reduce the sound of the outdoor unit based on an external input and it

works by reducing the compressor frequency and fan speed. When active, the night operation control will also reduce the available capacity of the outdoor unit.

Operation Mode Selection Control

This can be used to specify the mode setting of all connected indoor units based on an external input.

The operation mode selection control can be used with SMMSi, SHRM and MiNi-SMMS outdoor units.

The method of connection of the TCB-PCMO4E to an outdoor unit will depend on the required operation function.

Each function has a separate CN connector on the outdoor interface PC board.



TCB-PCIN4E

Operation Output Control

The operation output control accessory PC board connects to connector CN511 of the header outdoor unit PC board.

This PC board provides an output signal based on the ON/OFF status of the connected units and an error output signal based on detected faults on the system.

The operation ON/OFF output provides the ideal control external ventilation fans.

TCB-IFCB-4E

Remote Location ON/OFF Control

This application control PC board connects to the CN61 connector of the indoor unit interface PC board.

It can be connected to the master unit of a group to provide ON/OFF control of up to 8 indoor units.



TCB-PCDM4E

Power Peak Cut Control

The power peak cut accessory PC board connects to connector CN513 of the header outdoor unit PC board.

The upper limit capacity of the outdoor unit is restricted based on the demand request signal from the external input.

There are two functions that can be selected depending on requirements, the standard function and the advanced function.

Standard Function (2 Stage)

Input		SW07-Bit 1 OFF	SW07-Bit 1 ON	Display relay(L1)
SW1	SW2	Capacity	Capacity	
OFF	ON	100% (normal)	100% (normal)	OFF
ON	OFF	0% (stop)	Up to 60%	ON

Expansion Function (4 Stage)

Input		SW07-Bit 1 OFF	SW07-Bit 1 ON	Display relay(L1)
SW1	SW2	Capacity	Capacity	
OFF	OFF	100% (normal)	100% (normal)	OFF
ON	OFF	Up to 80%	Up to 85%	ON
OFF	ON	Up to 60%	Up to 75%	ON
ON	ON	0% (stop)	0% (stop)	ON



TCB-PCOS1E

Sound Reduction & Demand Control for DI

This application control PC board connects to the CN510 connector of the outdoor unit interface PC board (DI only).

When connected the sound reduction & demand control has 4 possible settings based on input connections (voltage free contact):

Night Operation Control

- Sound reduction of 5dB in cooling mode.

Sound Reduction Operation

- 75% demand setting
- 50% demand setting
- 0% demand setting

TCB-KBOS1E

Peak-Cut Control, Night Operation & Compressor Output for DI/SDI

This accessory is compatible with 4-series DI and SDI equipment (excludes SDI 1.5-1.7 HP units) and can be used to provide three possible functions, these are:

Power Peak-Cut Control

This function provides 3 levels of power saving levels by use of an external input. Settings are stop, 50% and 75% total capacity.

Night Operation

This function reduces the noise of the outdoor unit by restricting the fan and compressor operation.

Compressor Output

Provides a non-voltage contact that is ON whilst the compressor is operating.



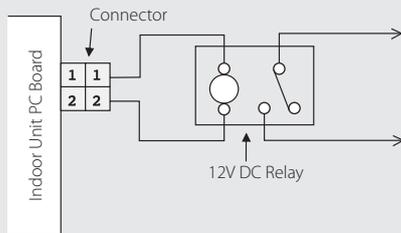
Indoor Units Connectors

Toshiba Air Conditioning indoor units have a number of connectors built in to allow for connection and control of external equipment and control/monitoring of the air conditioner.

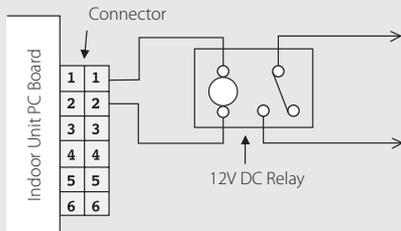
Function	Connector No.	Available Models
Fan Output Control	CN32	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E & RAV-SM***OKRT-E
Option Output	CN60	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E & RAV-SM***OKRT-E
HA Terminal	CN61	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E & RAV-SM***OKRT-E
Option Error Input	CN70	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E, RAV-SM***OKRT-E, MMK-AP***2H, RAV-SM***1/2KRT-E
Demand Input	CN73	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E & RAV-SM***OKRT-E
External Error Input	CN80	ALL DI/SDI & VRF indoor units Excludes RAV-SM***XT-E & RAV-SM***OKRT-E

NOTE: be sure to connect to master indoor unit when in a group.

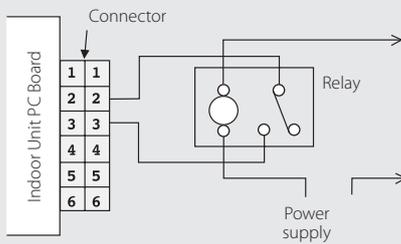
CN32



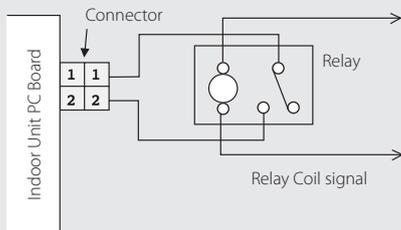
CN60 CN61 (Output)



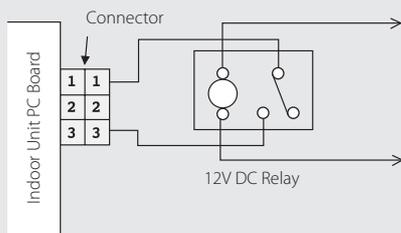
CN61 (Input)



CN70 CN73



CN80



TCB-KBCN32VEE

CN32 - Ventilation Fan control

The external ventilation control allows the control of an external fan (or other equipment) via a 12 VDC relay output.

Available settings: On /off.

TCB-KBCN60OPE

CN60 - Operation Status Output

The operation status output connector supplies a 12 VDC signal to one of the 6 available wires depending on current mode settings.

Available settings: Cooling, heating, fan only, defrost, thermo-on.

TCB-KBCN61HAE

CN61 - ON/OFF Control

The CN61 connector enables multiple input and output functions for the connected indoor unit and can be used to connect additional application control products.

Available settings: On/off control, on/off permit/prohibit control, operation output, alarm output.

TCB-KBCN70OAE

CN70 - Option Error Input

The CN70 connector enables an external error signal to be input into the connected indoor unit and displayed on the connected remote controller without stopping the indoor unit.

Available settings: Alarm display.

TCB-KBCN73DEE

CN73 - Demand Input control

The CN73 connector enables an external input signal to force the connected indoor unit into thermo OFF status.

Available settings: Forced thermo-off control, and alarm display.

TCB-KBCN80EXE

CN80 - External Error Input

The CN80 connector enables an external error signal to be input into the connected indoor unit and that will stop the indoor unit and be displayed on the connected remote controller.

Available settings: Alarm input and forced off.

The capacities in this catalogue are based on Eurovent conditions:

Cooling: Entering indoor air temperature: 27 °C db / 19 °C wb. Outdoor air temperature: 35 °C db / 24 °C wb.

Heating: Entering indoor air temperature: 20 °C db. Outdoor air temperature: 7 °C db / 6 °C wb.

The sound pressure level is given at 1 m distance from outdoor units, and 1,5 m distance from indoor units. Energy class and annual consumption are determined according to 2002/31/EC Commission Directive.



Notice: Toshiba is committed to continuously improving its product to ensure the highest quality and reliability standards, and to meet local regulations and market requirements.

All features and specifications are subject to change without prior notice.

Note: All images provided in this catalogue are used for illustration purposes only.

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