

NETWORK CONTROLLER



Descriptions:

The NETWORK CONTROLLER can support up to 254 TSTATs. Communication options are 2 Input Com Ports (Ethernet or RS232) for PC, and 2 Output Com Ports (RS485 or XBUS) for TSTATs. This device follows MODBUS communication Protocol and can be easily installed within existing systems. The NETWORK CONTROLLER includes a real time clock/calendar and a large memory space, which allows cus-tomized scheduling needs to the end user.

Highlights:

- Control up to 254 TSTATS
- MODBUS Communication Protocol
- 2 baudrate settings: 9600bps and 19200bps
- Real Time Clock/Calendar
- Integrated daylight savings
- Fully Programmable Scheduling scheme
- 20 weekly schedule, 16 annual schedule assigned to any TSTATs
- No volatile clock/calendar setpoint memory
- PC Communication: Ethernet Port or RS232 Port
- TSTAT Communication: RS485 Port or XBUS Port
- In System Programming over the network

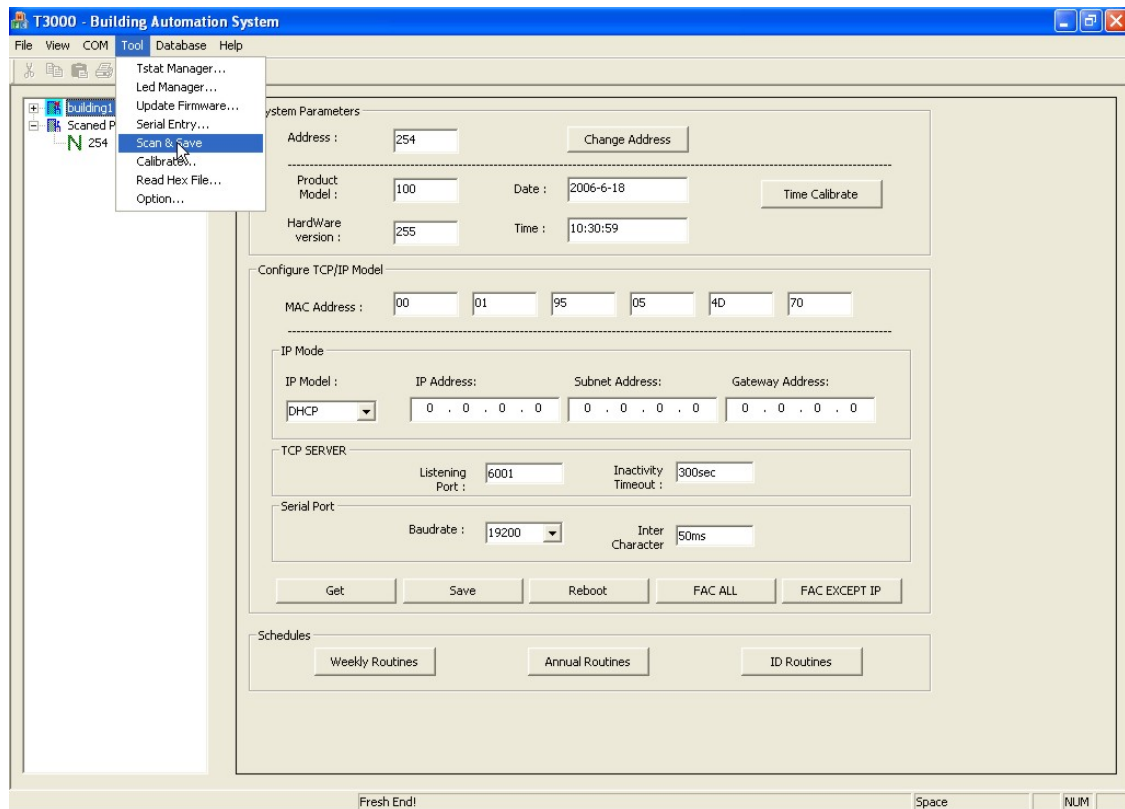
Technical Data:

Supply voltage	12~24Vac ±20%, 50-60Hz
	12~24Vdc ±20%, 50-60Hz
Power consumption.....	80mA at 24VDC
Dimensions.....	40.5mm(H) x 90.0mm(W) x 115.0mm(L)
	(1.59" x 3.54" x 4.53")
Ambient temperature: Operation.....	10-50°C (50-99°F)
Storage.....	2-50°C (35-120°F)
Material Enclosure.....	Flame proof plastic
Enclosure Rating.....	IP31
Temperature sensor.....	10K thermistor ±0.4°C
Colour.....	White/off white

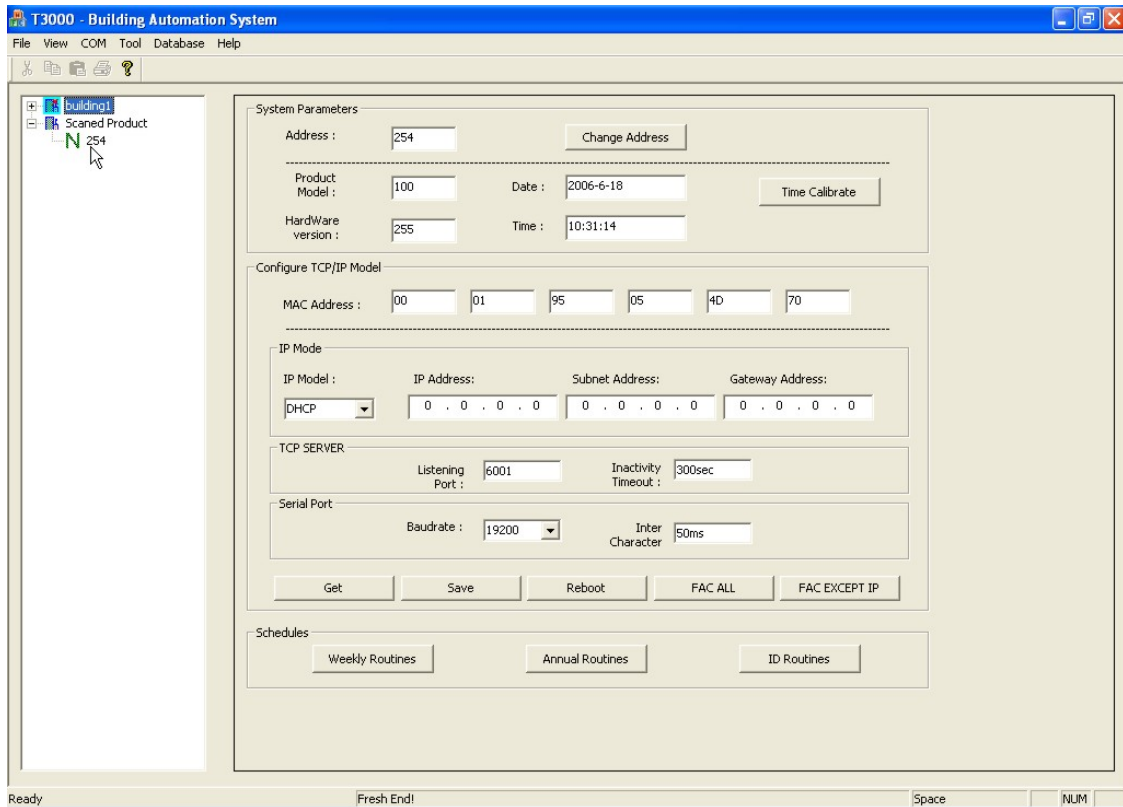
How to start

The Network Controller has two ways to connect to main station. one is via serial port RS232, another is through Ethernet. But you should configure the Network Controller via serial port before you access Network Controller by Ethernet. Following these steps to set up a configuration.

Open T3000, then left click tool/save&scan

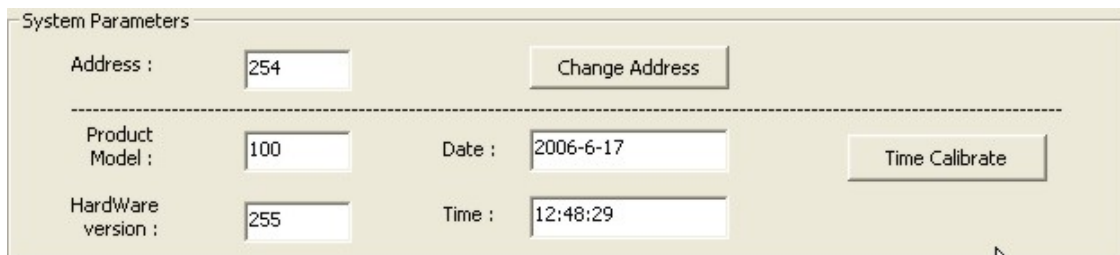


Waiting..., then you will see this screen and left of the screen will show "N Id", The Id mean the address of network controller. For example, 254 means that the Network Controller address is 254. And the address can not be 0 and 255.



Configure Network Controller

System Patameters



Address

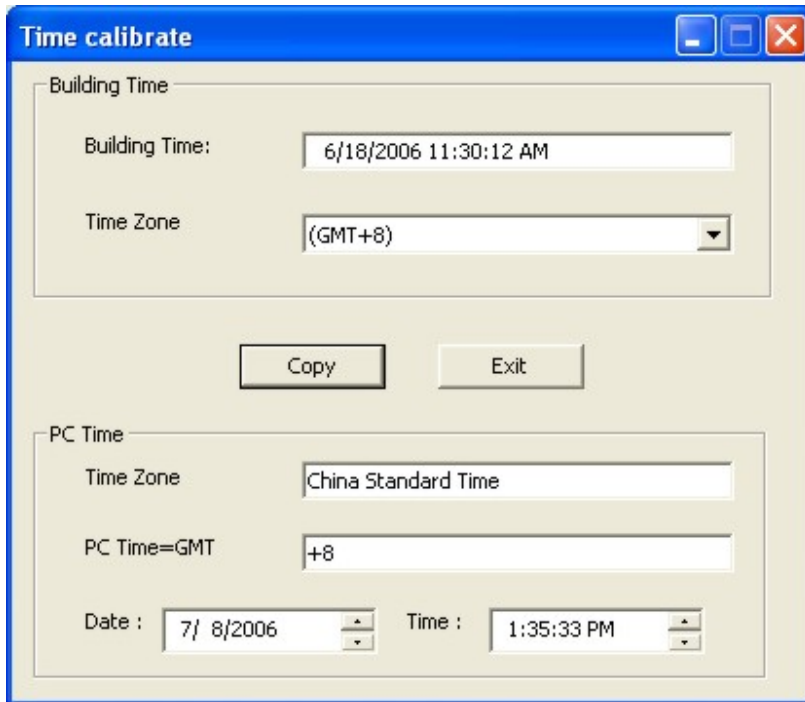
Input a number the range from 1 to 254 if you want change the Network Controller address. Then click "Change Address" button to write the changed address to network controller.

Product Model and Hardware Version

Read only. Just show some information about Network Controller, can not be changed.

Date and Time

Here displays the current date and time which is stored in the network controller. Click "Time Calibrate" button to change it if the time is not what you want.



Building Time

The time is read from network controller.

PC Time

This time is read from your computer.

So you only copy your computer time to the Network Controller if you click "copy" button. Please make sure first your computer time is right before you click "copy" button.

Configure TCP/IP module

Configure TCP/IP Model

MAC Address : 00 01 95 05 4D 70

IP Mode

IP Model : DHCP
 IP Address: 0 . 0 . 0 . 0
 Subnet Address: 0 . 0 . 0 . 0
 Gateway Address: 0 . 0 . 0 . 0

TCP SERVER

Listening Port : 6001
 Inactivity Timeout : 300sec

Serial Port

Baudrate : 19200
 Inter Character : 50ms

Get Save Reboot FAC ALL FAC EXCEPT IP

MAC Address

The MAC address of network controller ,read only.

IP Mode

You have two choices to configure the IP mode of Network Controller via select items at IP Mode listbox..

STATIC

If you select STATIC item at IP mode listbox.You will have to set the IP address,Subnet Address,Gateway Address following the IP mode listbox.

DHCP

If you select DHCP item at IP mode listbox.You do not need to set the IP address,Subnet Address,Gateway Address following the IP mode listbox.But please make sure that your net server support DHCP protocol and can assign an IP address to the Network Controller which is connected to your net.

TCP SERVER

The Network Controller has only one mode which is TCP server mode.At this mode,the default TCP state is[Listen],if there is any incoming TCP connection request,the state will be changed into[Sync-received],then[Established],which means a session is opened.For a while,data will be transferred between hosts.This is the [Data] state.The session will be disconnected due to the request of one of them,which is [Closed] state.And then,the state is automatically changed to its original state,[Listen].

Here is the state transition.

[Listen]→[Sync-received]→[Established]→[Data]→[Closed]→[Listen]

There are two parameters need to configure.

Listening Port

The value of listening port should be greater than 6000 and less than 32767.

Inactivity Timeout

The value of listening port should be greater than or equal to 0 and less than 32767.

If there are no incoming or outgoing data through the serial port during the specified inactivity timeout interval, the existing TCP connection will be closed automatically.

If the inactivity timeout value is set 0, the current TCP connection is maintained unless there is no connection close request. Although inactivity timeout is disabled.

Serial Port

Baudrate

The Network Controller has two baudrates just like TSTAT did.

You can set the Network Controller to work at 9600 baudrate or 19200 baudrate by selecting at Baudrate listbox.

Inter Character

The internal TCP/IP module of Network Controller fetches the overall data from its internal buffer. If there is incoming data through the serial port, the TCP/IP module stores data into the internal buffer. And it transfers data stored in the buffer via TCP/IP, only if the internal buffer is full or the inter-character time interval reaches to the time specified as inter-character timeout. The value of inter-character should be greater than 10 and less than 5000.

Command buttons on operating TCP/IP module

Get

Click this button, the T3000 will read every parameters within Configure TCP/IP Module frame from TCP/IP module.

Save

All the parameters with Configure TCP/IP Module frame will be stored into TCP/IP module

Reboot

You have to click this button after you clicked "save" button to make sure the parameters what you have saved is valid.

FAC ALL

All the parameters of TCP/IP module what you have set was deleted and the parameters become factory default .This screen shows the value after click “FAC ALL’ button.

Configure TCP/IP Model

MAC Address : 00 01 95 05 4D 70

IP Mode

IP Model : DHCP

IP Address: 0 . 0 . 0 . 0

Subnet Address: 0 . 0 . 0 . 0

Gateway Address: 0 . 0 . 0 . 0

TCP SERVER

Listening Port : 6001

Inactivity Timeout : 300sec

Serial Port

Baudrate : 19200

Inter Character : 50ms

Get Save Reboot FAC ALL FAC EXCEPT IP

FAC EXCEPT IP

All the parameters of TCP/IP module will go to factory default except IP address .And the screen should be similar to this after you click “FAC EXCEPT IP”.

Configure TCP/IP Model

MAC Address : 00 01 95 05 4D 70

IP Mode

IP Model : DHCP

IP Address: 192 . 168 . 0 . 127

Subnet Address: 0 . 0 . 0 . 0

Gateway Address: 0 . 0 . 0 . 0

TCP SERVER

Listening Port : 6001

Inactivity Timeout : 300sec

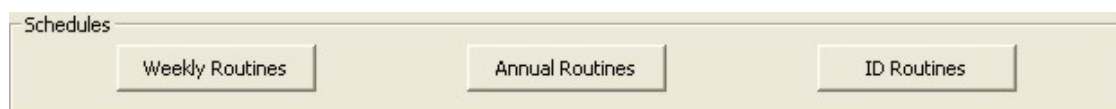
Serial Port

Baudrate : 19200

Inter Character : 50ms

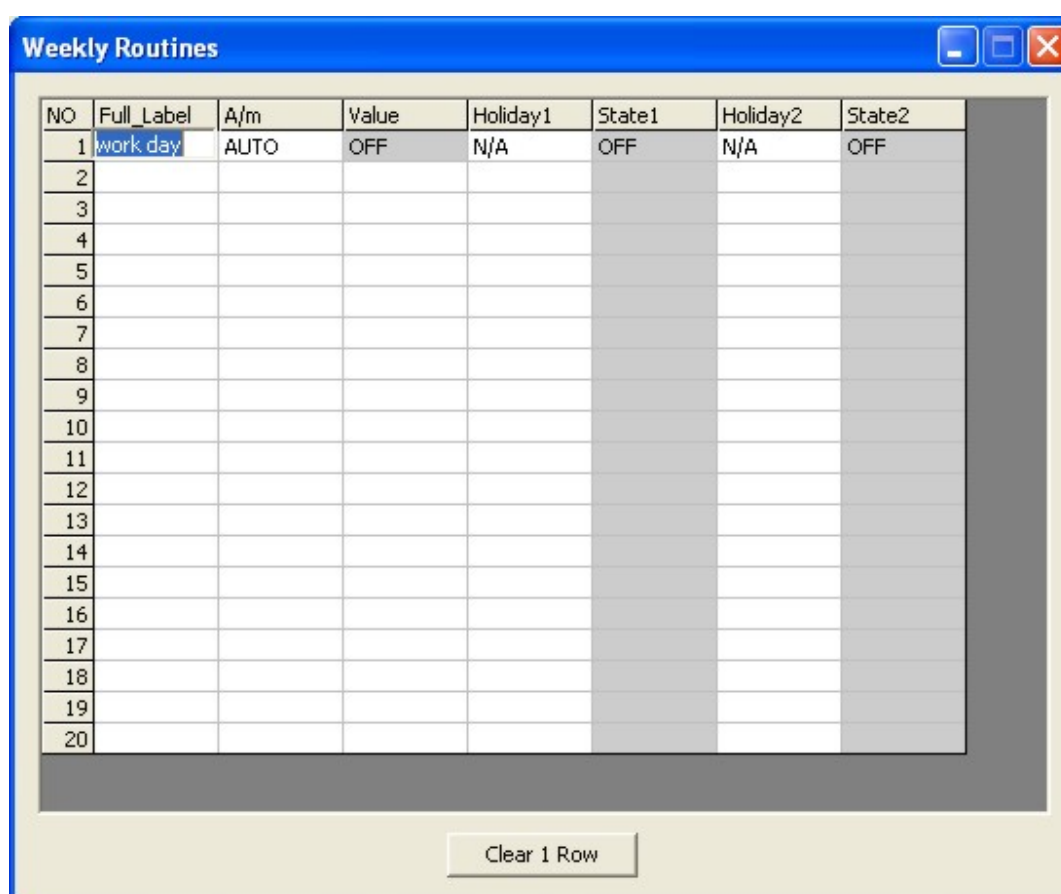
Get Save Reboot FAC ALL FAC EXCEPT IP

How to configure scheduels



Weekly Routines

Click Weekly Routines button ,go to weekly routines screen. There are 20 weekly routines you can use. You can set these weekly routines as spring work day, summer work day, spring weekend day , summer weekend day, meeting day, and so on. These routines be called “WR1”, “WR2”...”WR20”, you will use these names when you configure ID Routines.



Now let us configure one weekly routine and others are similar.

Full Lable

You can assign a name for your weekly routine at this lable box. For example, You can input “work day” if you want this weekly routine to operate the TSTAT on work day in the office.

A/M

Here you left click your mouse you can assign this item is AUTO or MAN.If set this item AUTO.The value of this weekly routine is depend on the current time at ON time area or at OFF time area.Set to MAN,you can assign the value of this routine manually.

Value

Here will show ON if the current time at ON time area and will show OFF if the current time at OFF time area.This item is read only if A/M item is AUTO,can be read can write if A/M is set to MAN.

Note: ON time area and OFF time area refer to Time Setup of Weekly Routines.

Holiday1

Input annual routine,the format is AR1,AR2,...AR16.If you want annual routine 6 at here,input AR6.When the holiday which you set on the Annual routines coming.Whatever the week is,the holiday schedule will overwrite the week schedual.Details in Time Setup of Weekly Routines.

State1

If the current day is holiday which is set on the Annual Routines.The state of holiday1 is ON,otherwise the state of holiday1 is OFF.

Holiday2

Input annual routine,the format is AR1,AR2,...AR16.If you want annual routine 6 at here,input AR6.When the holiday which you set on the Annual routines coming.Whatever the week is,the holiday schedule will overwrite the week schedule.Details in Time Setup of Weekly Routines.

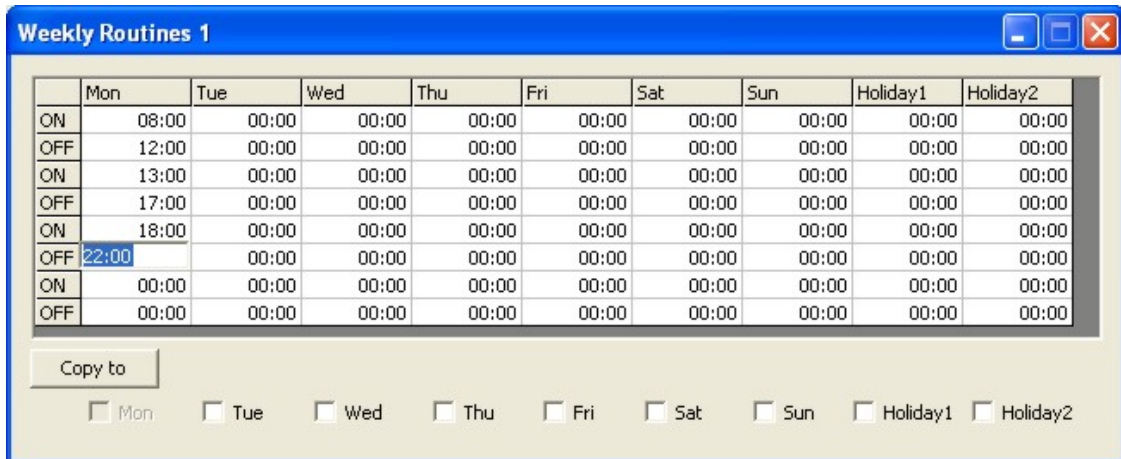
State2

If the current day is holiday which is set on the Annual Routines. The state of holiday2 is ON, otherwise the state of holiday2 is OFF.

Time Setup of Weekly Routines

Press the "Insert" key on the keyboard of your computer, then you can set the schedule for the weekly routine which you selected. Be careful at here, if you clicked row 2,the title of schedule screen should be "Weekly Routines 2",and make sure the row number which you want to set and routine number which you are setting are same.

Now I clicked row1, then I pressed "Insert" key on my keyboard. This screen coming.



On Monday column ,input several time value, from these values I can know the ON time area and OFF time area.

ON time area:

08:00 to 12:00,13:00 to 17:00,18:00 to 22:00

OFF time area:

12:00 to 13:00,17:00 to 18:00,22:00 to 08:00

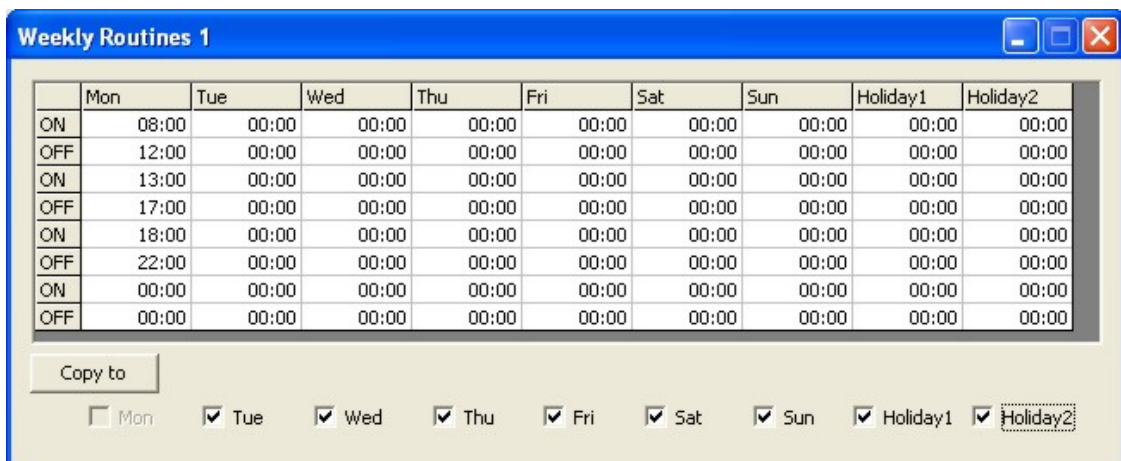
So if the current time at ON time area,the value of weekly routines 1 is ON.

If the current time at OFF time area ,the value of weekly routines1 is OFF.

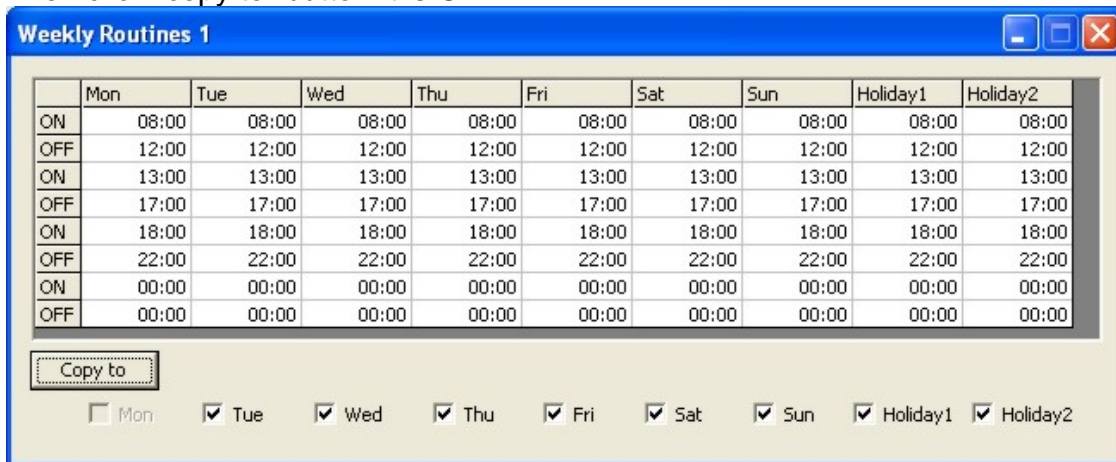
Maybe you want a special schedule on holiday such as NEW YEAR,MAY DAY.SO holiday1 and holiday2 can be set as a special schedule. The priority likes this.

Holiday2 > Holiday1 > week

If you want set others schedule on the same screen,you does not need to input one by one,and you can select the check box on the bottom of the screen.

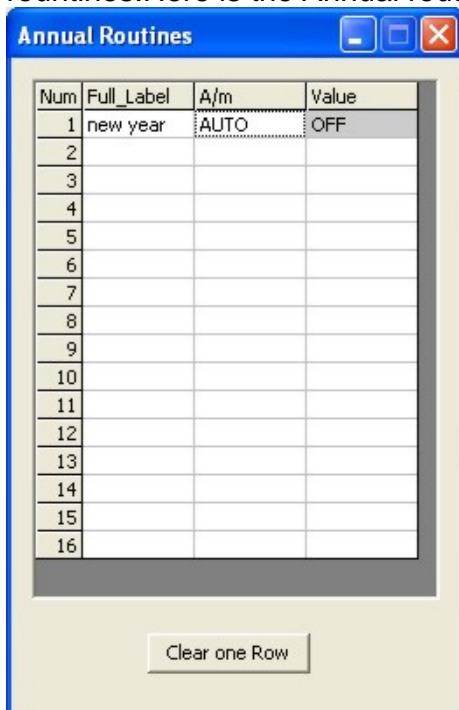


Then click “copy to” button.It is OK.



Annual routines

In some special day ,you need close the TSTAT or open the TSTAT a whole day. There are 16 annual routines you can use. Remember these routines be called “AR1””AR2”...”AR16”. You will use the name when you set Weekly Routines. Each annual routine can be any day combination in a whole year. If the holiday which you set at Annual Routines coming, the holiday schedual in the correspond Weekly Routines which you have assign the annual routine in the holiday column will overwrite the week schedule on the same Weekly routines. Here is the Annual routines screen.



Full_Label

Give a name for the correspond annual routine,for example,NEW YEAR,MAY DAY

A/M

A represents AUTO,M represents MANUAL

AUTO

The value of annual routine only be ON when thecurrent day match the day which you have set in Annual Routines .Otherwise the value of annual routine only be OFF.

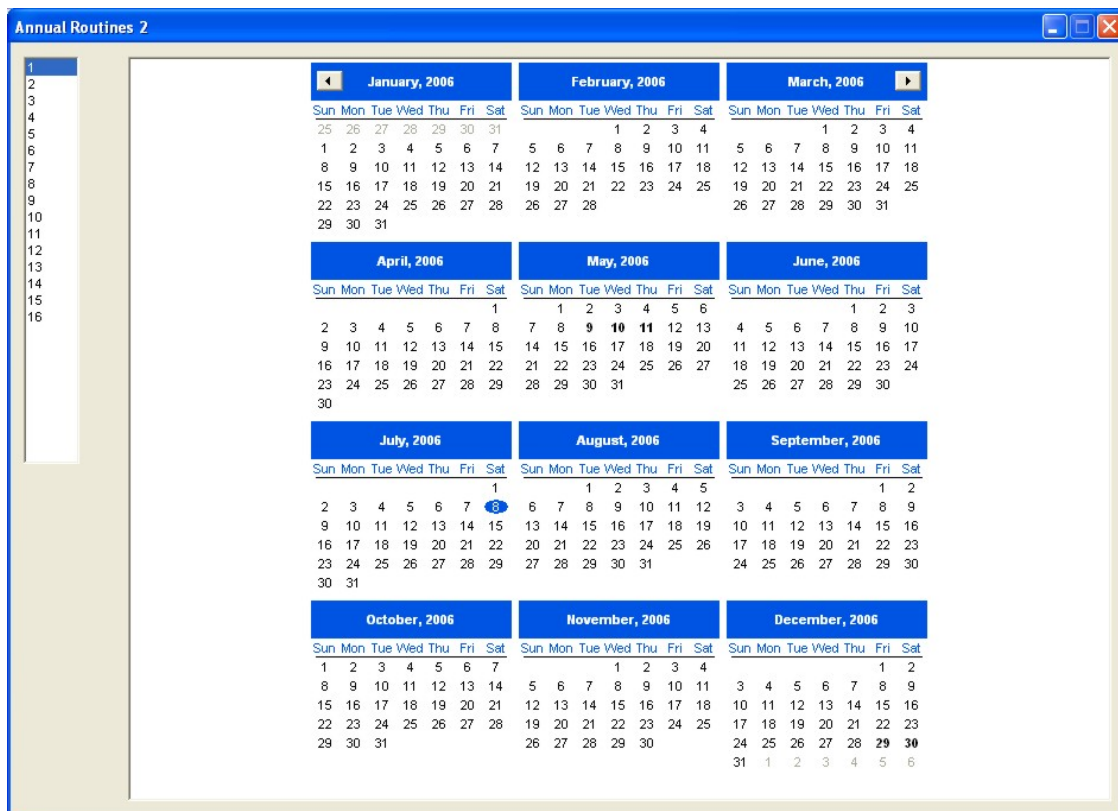
MANUAL

The value of annual routine only be set ON or OFF by manual.

Value

Read only when the A/M item is set AUTO and show ON only when the current day match the annual day.Can be read and write when A/M item is set to MANUAL.

Press "Insert" key on the keyboard of your computer,then the T300 will show the annual schedule configuration screen.



Left click your mouse at the day which you want set to be holiday .Then right click, you will see a command screen.



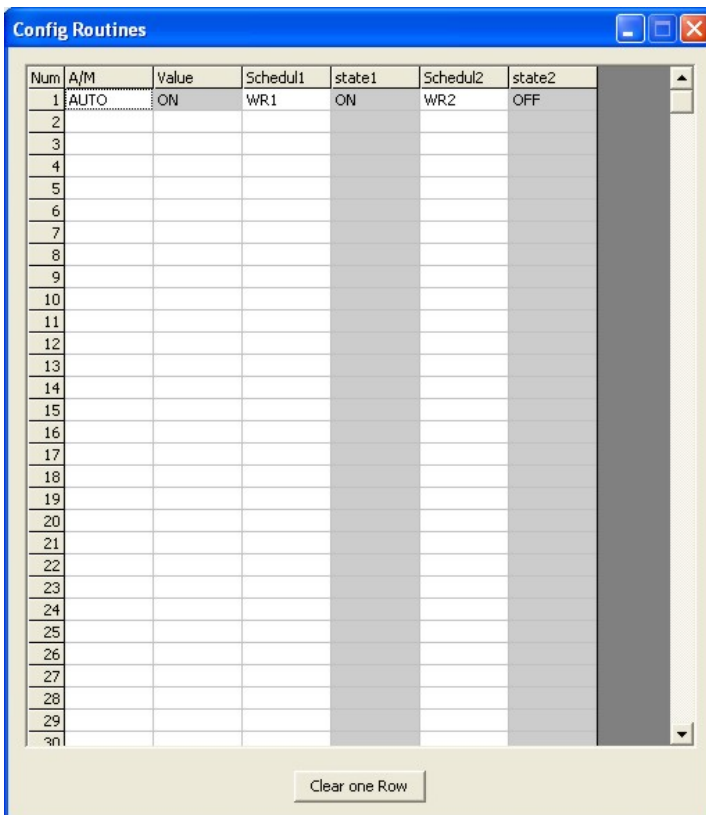
Click "Add/Delete", the day which you want to be holiday will become bold. If you do not want some day is holiday or you set a wrong holiday, you do the following steps will delete that day. Left click the bold day which you have set to be holiday, then right click on that day, click "Add/Delete". OK, you disabled the holiday . But next year, or the policy changed, you may need to re-set the schedule. you can left click on any day then right click,then click "Clear".All the schedule be deleted.

You do not need back to Annual Routines screen if you want set next annual routine.You can switch annual routine through left side text box on the annual schedule setup screen.

Don't try find save button,because your configuration has been stored when you clicked "Add/Delete" or "Clear".

ID Routines

Here you can determine which TSTAT be controlled by which schedule. But ,first you should know the position of tstat and the id ,you also should clear the schedule you have set.Of course,you do not need wary about that if you want all the TSTATs use the same schedule.Click ID Routines button then go to ID Routines configuration screen.



Num column

There are 254 rows on the num column. The num on this column represents the ID address. All the address not only TSTAT address. Because the Network Controller and TSTATs work on the same BUS, so if an ID be assigned to Network Controller ,the ID can not be assigned to TSTATs. But you do not need manage this manually,The “Scan” feature of T3000 can deal with it.Now I suppose that

you only connect an Network Controller on the BUS.And the ID of Network Controller is 254,so the address ranging from 1 to 253 can be assigned to TSTAT.

From up picture we can know that only one TSATA connect to Network Controller,and assigned weekly routine 1 and weekly routine 2 for this TSTAT.The current

A/m

AUTO

The value next column is ON or OFF according to schedule.It means that the tstats be controlled by schedule.

MANUAL

The schedule be disabled,you can open or close TSTAT manually.

Value

If A/M item is set AUTO,the attribute of value column is read only and the value is ON or OFF depend on schedule.

If A/M is set MANUAL,the attribute of value column is read and write.

Schedual1

Input the weekly routine number which you have set.The format is WR1,WR2...WR20”.If you want weekly routine 5 to control the TSTAT,input WR5 in the schedual1 column.And you can not input annual routine like AR2 at here.

State1

The value of correspond weekly routine you have input in schedual1 column.

Schedual2

Input the weekly routine number which you have set.The format is WR1,WR2...WR20”.If you want weekly routine 5 to control the TSTAT,input WR5 in the schedual1 column. And you can not input annual routine like AR2 at here.

State2

The value of correspond weekly routine you have input in schedual2 column.

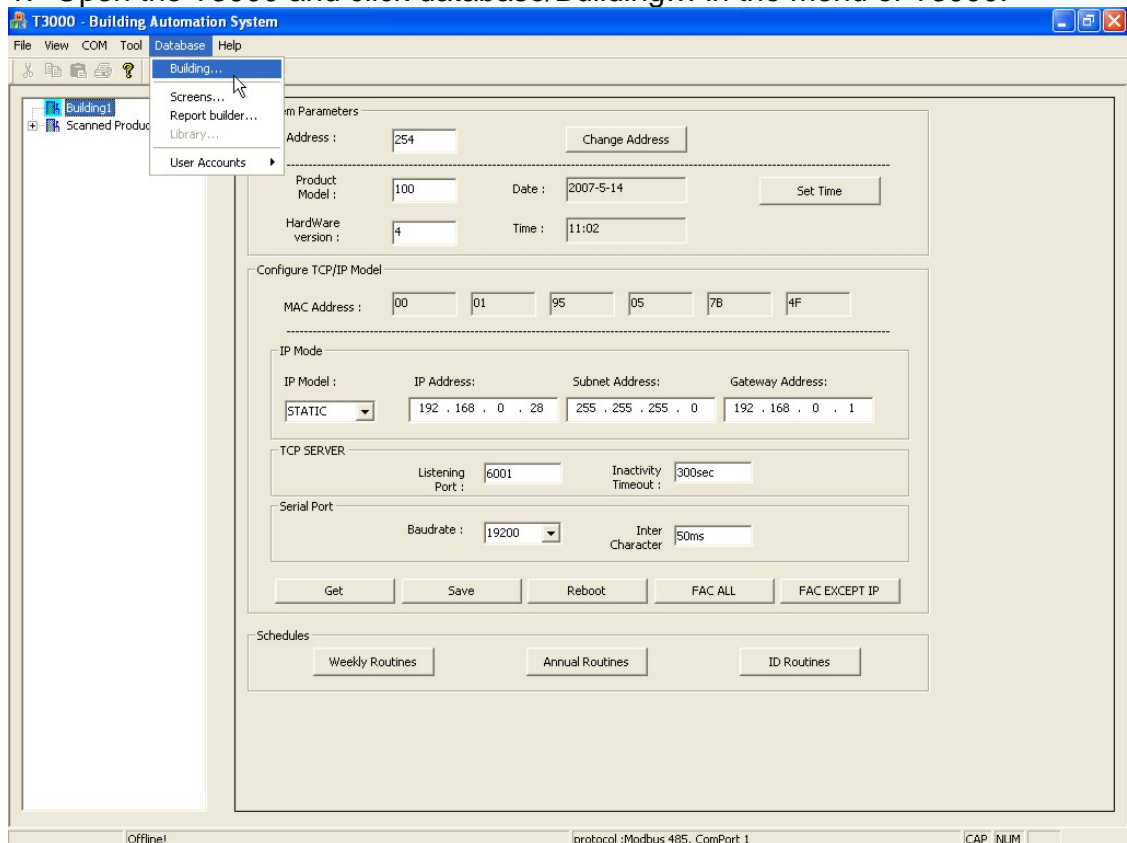
Note:The relationship between schedual1 and schedual2 is or logic.

State of schedual1	state of schedual2	result
ON	ON	ON
ON	OFF	ON
OFF	ON	ON
OFF	OFF	OFF

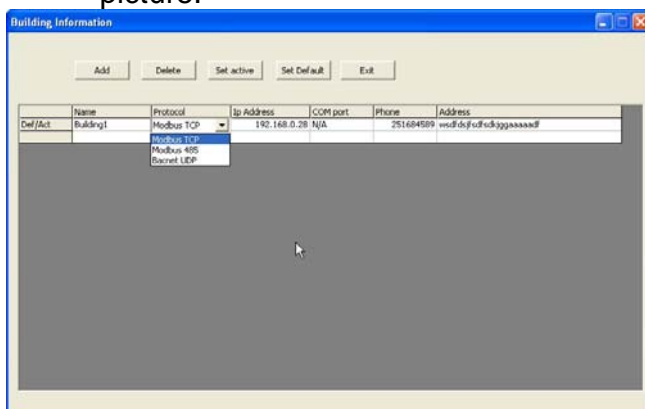
How To Use TCP/IP in T3000

After you configured the T3000 as TCP communication , you can access the Network Controller over Internet. Connect your Network Controller to Switch or Hub . Then you can use T3000 to operate Tstats over Internet. But you should take several seconds to configure T3000 .

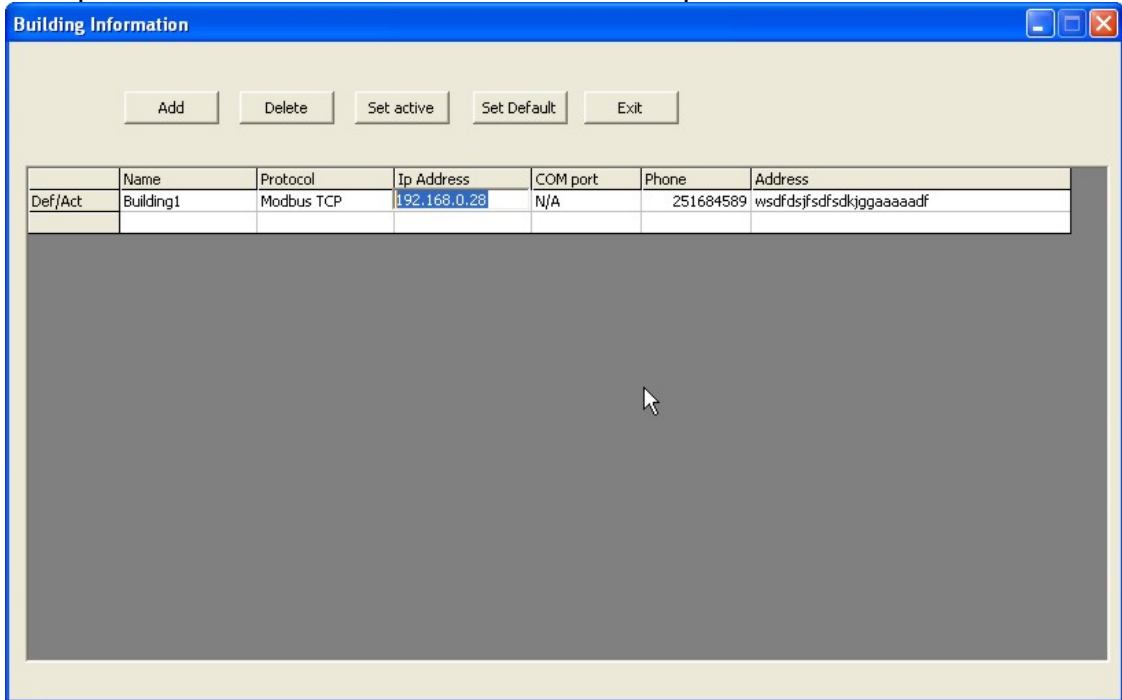
1. Open the T3000 and click database/Building... in the menu of T3000.



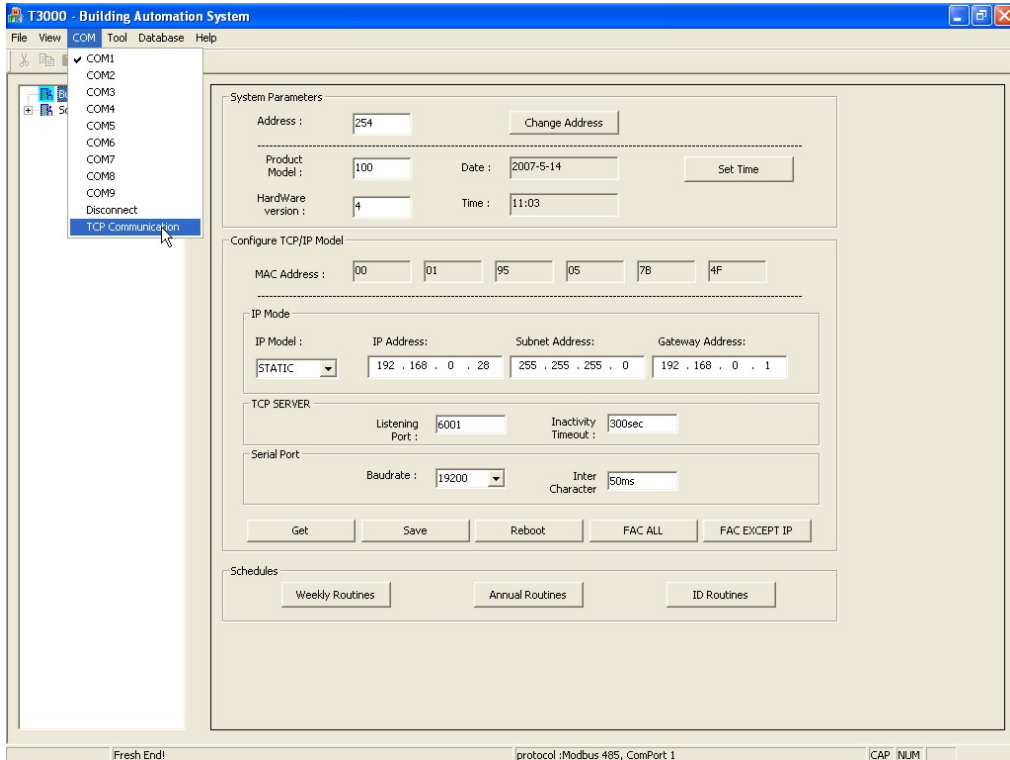
2. Select Modbus TCP protocol at the protocol column in the following picture.



3. Input the IP address of Network Controller at Ip Address column.



4. Close this window and Click Com in menu .Select TCP Communication.



FAQs

1. Why the ISP LED always light, and the Network Controller can not go to work mode?

Please remove that jumper on Network Controller board after you programme the Network Controller.

2. Why I can not communicate with Tstat but I can access Network Controller by T3000?

Please make sure that the cable between Network Controller and Tstat is right. The right sequence is net- to net - , net+ to net+, GND to GND, no cross. You can find the Tstat and Network Controller by using scan on T3000 if the wiring is right. Do not worry about baudrate, because the T3000 will try change the baudrate when he is scanning.

3. Why I can not open the Tstat by using schedule.

The Network Controller write 1 to register 184 of Tstat to open the Tstat, the Tstat will go to AUTO mode after received the value. So ensure that your AUTO table is not all OFF.