



Titan Products RDU-4/TS & RDU-4/5B Time Scheduling Room Display Units



Time Scheduling RDU-4/TS - Description of Control Operation

The temperature control and time scheduling for the building space is achieved by connecting the RDU-4/TS to a Titan Products FCU4/TS controller with custom software to meet the operational requirements for the project.

All information is held within the FCU-4/TS and is transferred to the RDU-4/TS via a RJ11 plug-in connection. The RDU-4/TS will also take its power from this connection.

RDU4/TS – Overview



Temperature Adjust:

Up Arrow:

Pressing the up arrow on the left hand side of the RDU will increase the temperature set point.

Down Arrow:

Pressing the down arrow on the left hand side of the RDU will decrease the temperature set point.

The temperature adjust buttons are also used to cycle through the menu screens when in the time scheduling screens.

Mode Adjust:

Pressing the mode buttons on the right hand side of the RDU room display unit will cycle through the available mode selections and these are as follows.

Auto:

With Auto selected the controller will automatically cycle between heating and cooling to achieve the desired set point temperature.

If the measured temperature is below the set point + the dead band + the heating proportional band then the heating cycle is enabled if ON/OFF control of heating is required. All the time the heating is required the fan coil cooling valve and fan will be deactivated to prevent any cool air circulation. The heating cycle will operate until the measured temperature reached the control dead band.

As the temperature increases to the desired set point the controller enters a pre-set dead zone when there is no heat, cool or fan output and the controller is balanced at the set point.

The controller can also provide a HIU enable whenever heating is called for if required.

Should the temperature increase above the set point + the dead band then the cooling cycle is enabled. The fan will start in low speed and the cooling valve will start to modulate open. Should the measured temperature increase above the set point + the dead band + the cooling proportional band then the fan will increase to medium or high and the cooling valve will continue to modulate open to achieve the desired set point level. All the time the cooling is required the fan coil heating valve and HIU enable (if used) will be deactivated to prevent any hot air circulation.

In Auto mode the fan only runs in the cooling cycle, there is no fan speed when set point is achieved and the controller is in the dead band.

Off (Frost and Fabric protection):

When OFF is selected on the RDU then no heating or cooling takes place. However if the internal temperature falls to the low limit setting the controller offers the option to open the heating valve to maintain the low limit temperature set point. The controller will switch off again once the temperature is above the low limit setting by 1.5°C.

A high temperature fabric protection can also be selected if required.

Manual Cool Only with Manual Fan Speed Adjust:

When 'Cool' is selected via the mode buttons the controller will only offer cooling control.

During manual cool the fan continues to run at the set speed (Low / Med / High). Should the measured temperature increase above the set point + the dead band then the cooling cycle is enabled and the cooling valve is modulated open. The fan will continue to run in the selected speed. Should the measured temperature increase above the set point + the dead band + the cooling proportional band then the cooling valve will continue to modulate open to achieve the desired set point level. All the time the cooling is required the fan coil heating valve will be deactivated to prevent any hot air circulation.

The fan speed is manually adjusted (Low/Med/High) by pressing the up and down mode selection arrows on the RDU. The desired temperature can be adjusted using the Temperature adjust buttons and the cooling valve will modulate to achieve the temperature set point. When the measured temperature reaches the desired value the cooling valve will be fully closed but the fan will continue to run at the speed selected.

Heat Only:

When 'Heat Only' is selected via the mode buttons the controller will only offer heating control.

If the measured temperature is below the set point + the dead band + the heating proportional band then the heating cycle is enabled if ON/OFF control of heating is required. All the time the heating is required the fan coil cooling valve and fan will be deactivated to prevent any cool air circulation. The heating cycle will operate until the measured temperature reached the control dead band.

As the temperature increases to the desired set point the controller enters a pre-set dead zone when there is no heat, cool or fan output and the controller is balanced at the set point.

System Flush:

A system flushing regime is preprogrammed within the controller to exercise the Heating and cooling valves for a set period on a pre-defined cycle. Alternatively, this flushing can be initiated by the BMS via BACnet communications.

Override Button:

Override On:

Should the controller be operating in a time scheduled OFF period the occupant can override this state by pressing the Override Button once this brings the controller into the Override On state. Override On brings the controller on in Auto mode and default set point. During this override period the occupant can fully adjust the setting to the desired operational mode.

Once Overridden ON the controller will remain on through the next scheduled ON period until the following programmed OFF time or if the Override Button is pressed again. This will terminate the Override On state and remain OFF until the next programmed ON time.

'Override On' is displayed on the RDU screen whenever the controller is Overridden ON in a scheduled OFF period.

Override Off:

Whenever the controller is operating to a scheduled ON period the occupant can override the controller to an OFF state by pressing the Override Button until 'Override Off' is displayed on the RDU

The controller will remain in the Override Off condition for the duration of the scheduled ON period and remain OFF until the beginning of the next programmed ON period.

To exit an Override Off mode press the Override button once and Timed will be displayed on the RDU.

Timed:

The normal controller operation is dictated by the scheduled On/Off time program.

The Occupant can select an ON temperature (between the Min & Max Setpoint Values) for each Individual Timed On period. The controller will come on In Auto mode and the selected set point temperature for that on period

The occupant can cycle between the operational Timed state to 'Override On' or 'Override Off' by pressing the Override button on the RDU.

Schedule Button:

Scheduling mode allows the occupant to set the time and date or to add, remove or edit time schedules that they wish the controller to operate to.

To enter the time scheduling mode press the schedule button on the bottom left of the RDU.

Note: *The Schedule button is only available on the Master 6 button RDU. The time schedules entered in the master controller are transmitted to any other connected slave controller.*

The time schedules are common to all connected slave zone controllers

Set Time and Date:

Press the Time Schedule button then with line 1 highlighted press the mode button to enter the **Set Date and Time** menu. To change the date and time use the temperature up and down arrows on the left hand side of the RDU to highlight the figure to change. Once highlighted, use the right hand side mode buttons to adjust the figures to the required numbers.

| Scheduling | |
|-------------------|--------------------|
| 1 | Set Date and time |
| 2 | Sch Occ |
| 3 | Return to Previous |

| Set Date and Time | | |
|--------------------------|--------------------|----------|
| 1 | Date | 01/01/15 |
| 2 | Time | 09:00 |
| 3 | Return to Previous | |

Once the desired settings have been made, scroll down the menu with the left hand temperature buttons, highlight 'return to previous' and press a mode button.

SCH-Occ:

SCH-Occ is where the ON and OFF times of the heating/cooling are set. To set a time schedule enter the Scheduling screen by highlighting SCH-Occ in the above **Scheduling Menu** and the following menu will appear. Use the left buttons to highlight line 1 **Weekly** and then press a mode button on the right.

| | |
|----------------|--------------------|
| SCH-OCC | |
| 1 | Weekly Schedule |
| 2 | Exceptions |
| 3 | Return to Previous |

The following menu with the **Weekly Schedule** day list will be displayed

| | |
|------------------------|--------------------|
| Weekly Schedule | |
| 1 | Monday |
| 2 | Tuesday |
| 3 | Wednesday |
| 4 | Thursday |
| 5 | Friday |
| 6 | Saturday |
| 7 | Sunday |
| 9 | Return to Previous |

In the **Weekly Schedule** menu use the temperature adjust buttons on the left side to scroll through to the day required. With the day required highlighted then press a mode button on the right hand side. The following corresponding day menu with setting options will appear (example shows Monday is selected).

| | |
|---------------|-------------------------------------|
| Monday | |
| 1 | Copy from None |
| 2 | Add Entry |
| 3 | Clear All |
| 4 | Return to Previous |

Copy from:

This allows the user to copy existing day schedules to the day that has been selected. Highlight line 1 '**Copy from**' then use the mode buttons on the right to select the option. The following menu with setting options will appear (example shows Monday is selected).

| | |
|---------------|--|
| Monday | |
| 1 | Copy from Tuesday |
| 2 | Confirm Copy |
| 3 | Return to Previous |

With the left hand temperature buttons highlight line 1 '**Copy From**' then with the right hand mode buttons scroll through the days until the desired day is shown. With the left hand temperature buttons now select '**Confirm Copy**' then press one of the mode buttons to confirm.

This action copies all the time schedules from one day to another and is useful if the time schedules are the same for each day of the week. Therefore using this feature the occupant can set all the time events for one day then copy the time scheduled to the respective days that are the same.

Once '**Copy From**' and '**Confirm Copy**' actions are complete, with the left hand buttons select '**Return to Previous**' to continue the entry of Time Schedules.

Add Entry:

This allows the occupant to add a time schedule. In the selected Day menu select line 2 '**Add Entry**' and press the mode button to view the Edit Event Menu in this menu setting options will appear (example shows Monday is selected).

| | | |
|---------------|--------------------|------|
| Monday | | |
| 1 | Copy from | None |
| 2 | Add Entry | |
| 3 | Clear All | |
| 4 | Return to Previous | |

| | | |
|-------------------|--------------------|-----------|
| Edit Event | | |
| 1 | Time | 08:30 |
| 2 | Value | ON or OFF |
| 3 | Temperature | 21°C |
| 4 | Delete Entry | |
| 5 | Confirm Entry | |
| 6 | Return to Previous | |

In the **Edit Event** menu to set an **ON time** select line 1 and use the temperature up and down arrows on the left hand side of the RDU to highlight the **Time** figure you want to change. Once highlighted, use the right hand side mode buttons to adjust the time (hours then minutes).

Once the time is entered, using the left buttons scroll and highlight line 2 '**Value**'. With the mode buttons enter **ON** (which is the start of the programmed ON period). Once entered use the temperature adjust buttons to scroll to line 3 **Temperature** and select the on Temperature required for that period. Once the temperature has been set scroll to line 5 **Confirm Entry** now press the mode buttons to save the entry made.

After the start of the ON period is set and confirmed you can now set an **Off time**. Use the left temperature buttons to scroll back to line 1 **Time** and highlight the time figure to be changed. Once highlighted, use the right hand side mode buttons to adjust the time (hours then minutes).

Once the time is entered, using the left buttons scroll and highlight line 2 '**Value**'. Now with the mode buttons enter **OFF** (which is the end of the programmed ON period). Once entered use the temperature adjust buttons to scroll to line 4 **Confirm Entry** now press the mode buttons to save the entry made.

You have now completed a programmed ON and OFF period. You can enter up to 6 x On/Off events for each day of the week.

Note: If a day schedule is set and is to be repeated on other days then you can use the **Copy From** feature which saves time programming every day.

Once all event schedules for the day have been added select Return to Previous to exit this menu.

| Edit Event | | |
|-------------------|--------------------|-----------|
| 1 | Time | 08:30 |
| 2 | Value | ON or OFF |
| 3 | Temperature | 21°C |
| 4 | Delete Entry | |
| 5 | Confirm Entry | |
| 6 | Return to Previous | |

To delete a time scheduled entry,

- Select the day required in the Weekly menu
- Select the time event in the Day menu
- Select Delete Entry in the Edit Event menu and press the mode button.
- To delete an On/Off cycle then you need to delete the Occupied and Un-Occupied events.

To delete the time schedules for a whole day.

- Select the day required in the Weekly menu
- Select line 3 **Clear All**
- Press the mode button to clear all time events for the selected day.

| Monday | | |
|---------------|--------------------|------|
| 1 | Copy from | None |
| 2 | Add Entry | |
| 3 | Clear All | |
| 4 | Return to Previous | |

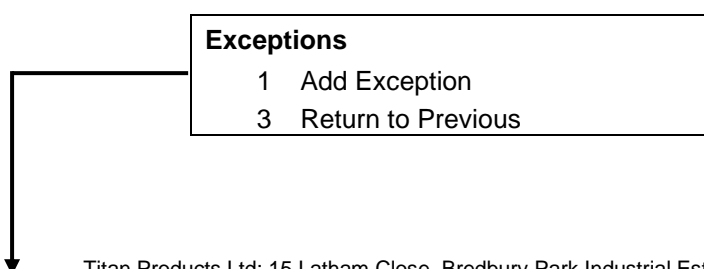
Exceptions:

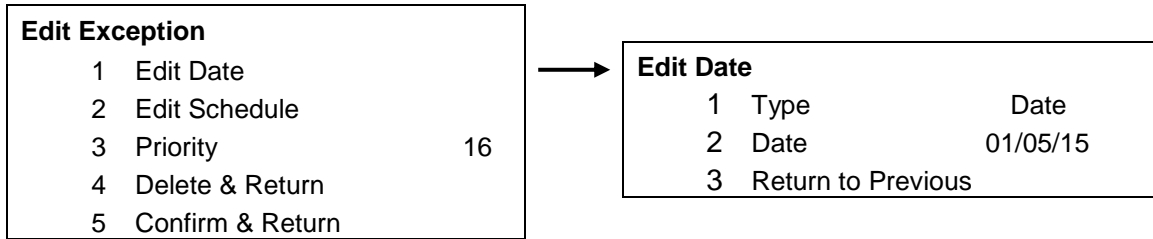
Exceptions allow the occupant to set specific days or date ranges that they do not wish the controller to follow the time schedules that have been set. This is particularly useful for holiday periods which can be pre-programmed.

In the main **Scheduling** menu select SCH-OCC and the following menu appears

| SCH-OCC | | |
|----------------|--------------------|--|
| 1 | Weekly | |
| 2 | Exceptions | |
| 3 | Return to Previous | |

With the left hand temperature buttons select line 2 **Exceptions** and press a mode button. The following menu is displayed the select **Add Exception**

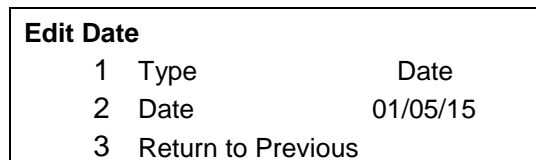




Select **Edit Date** using the mode buttons. In the **Edit Date** menu there are 2 types of exceptions to choose from. With line 1 '**Type**' highlighted use the mode buttons to cycle through the two options and chose the type **Date** or **Date Range**.

Date: (Exception)

This allows the normal operational time schedules to be changed (edited) on a specific date only. This feature provides flexibility by allowing the change of time schedule profiles for a specific date whilst the normal schedules do not get altered or changed. This can be pre-programmed for up to 1 year ahead. The specific date exception is a one off event and only operates on the date chosen.



Once the required date has been entered, select Return to Previous and in the next menu select line 2 '**Edit Schedule**' using the mode button.

The occupant can now use 'Copy From' or 'Add Entry' as they normally would do for time scheduling (See SCH-Occ above for full details).

Note: *If the heating / cooling is to be off for the exception date chosen then set the OFF period to 0.00.*

Once the schedule has been set for the exception date, select 'Confirm and Return' using the mode buttons. An overview of the new schedule will be viewed. From here the occupant can add more schedules, clear schedules or return to previous.

Select Return to Previous and 'Confirm and Return' again. The exception date will now be shown in list form under the Exceptions title.

Date Range: (Exception)

Using the mode buttons select Date Range (see menu below). This selection allows the normal operational time scheduled to be changed for the duration of a specific date range. This feature allows a different time schedule profile to be set for all of the days within the date range.

The Date Range exception is a one off event and only operates for the duration of days in the date range chosen.

| Edit Date Range | |
|-----------------|---------------------------------------|
| 1 | Type Date Range |
| 2 | Start 01/07/15 |
| 3 | End 01/09/15 |
| 4 | Return to Previous |

Once the required date range has been entered, select Return to Previous and in the next menu select line 2 'Edit Schedule' using the mode button.

The occupant can now use 'Copy From' or 'Add Entry' as they normally would do for time scheduling (See SCH-Occ above for full details).

Note: If the heating / cooling is to be off for the exception date chosen then set the OFF period to 0.00.

Once the schedule has been set for the specific date range, select 'Confirm and Return' using the mode buttons. An overview of the new schedule will be viewed. From here the occupant can add more schedules, clear schedules or return to previous.

Select Return to Previous and 'Confirm and Return' again. The exception date will now be shown in list form under the Exceptions title.

Up to 9 individual exceptions can be entered. To edit exceptions at any time select it using the mode buttons.

RDU-4/TS Screen (normal operational view)

Current Set Point. Shown when the set point adjust buttons are pressed. Reverts to actual temperature readout 5 seconds after set point is set.



Current Mode of operation

Time and Date

Override Status (On / Off / Timed)

RDU-4/TS

The RDU-4/TS will normally be fitted within the main living area in the property to allow easy access to the time scheduling features. All other zones requiring temperature control in the property will require a RDU-4/5B, 5 button version.

RDU-4/5B – Time Schedule Override only

The RDU-4/5B does not incorporate the time scheduling button found on the RDU-4/TS and provides an override button only. This button allows the time scheduling for that particular temperature zone to be overridden ON or OFF until the button is pressed again or until the beginning of the next time schedule event.

The RDU-4/5B is connected directly to a standard FCU-4 controller via the RJ11 cable.



RDU-4/5B

END.