JTL SYSTEMS LIMITED

NT200 RANGE TIME SCHEDULER
OPERATING MANUAL

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INTRODUCTION

There are 2 fundamental timer types in the JTL product range. These are ABSOLUTE and RELATIVE types. All units have a battery backed real time clock and support 4 independent channels with sequencing over a 7 day cycle with "special" date operations. Each unit channel can drive a physical relay and/or send time commands via the JTL network.

Relative Timers (NT200 range)

Relative timers work in conjunction with master time schedules which can be programmed for the entire installation and that all individual times are relative to the master. There can be 2 master time schedules which are 'virtual' units residing in the JTL Network Controller. Each channel in a relative timer can be assigned to 1 of the master timer schedules, the relative timers can support up to 4 master time schedules but only 2 are implemented in the Network Controller. Note the 3rd and 4th master time schedules can be programmed locally in the NT21x allowing for a mixture of site wide master timers and local absolute time schedules.

The NT210 and NT211 have all the facilities of the Mk2 absolute timers except that on "special" dates the time sequencer outputs can only be "off".

The time sequence is entered on a 7 day week basis. There can be up to 32 events each of which can be on/off or disabled. The 32 events can be on any day of the week in any sequence.

1. SETTING UP THE CONTROLLER

The time schedulers can be programmed locally using a JTL maintenance unit. See section 10 for operation of this unit.

Generally there are item numbers for selection and setup of various items of data. These item numbers reside in the range 0 - 999. The following sections refer to the items required for setting up and commissioning the timers.

2. TIMER DATA

The relative timer NT21x works with respect to master time schedules. Each relative timer can be assigned to any of the 4 master time schedules each with 32 seven day events. 2 of the master time schedules can be synchronised by master time schedules residing in the JTL Network Controller. The other 2 can only be local.

The 32 events for each master time schedule are programmed on items 501 - 896.

The data is best viewed using the JTL SiteSuite software but it can also be viewed using a JTL Maintenance Unit as follows

2.1 Master Time Schedule Data

The master time schedule events are in 4 blocks of 100 items. 500 - 599 for master time 1 and 600 - 699 for master time 2 etc. There are 32 master time events each using 3 items starting at item 501. The 32 events end at item 596.

ITEM	DESCRIPTION	CODE	CODE MEANING
t01	Event 1 mode	nonE t.dis oFF on	Not used Event disabled Off event On event
t02	Event 1 day	Sun - Sat	
t03	Event 1 time	00:00 - 23:55	Time in 5 minute intervals only allowed

The master time schedules can be set up using the following items:

Master time	1	2	3	4	Notes
Network or local master	598	698	798*	898*	*3&4 local only
Extend on period	500	600	700	800	off or extend
Extend on period length	598				

Note when network operation is selected, any settings entered on the master time schedule will be over written by the network controller.

There are a number of key items which select which master time schedule is used and the relative offsets.

Channel	1	2	3	4	Range
Master time schedule item	199	299	399	499	1 - 4
Event on offset	197	297	397	497	±240 mins
Event off offset	198	298	398	498	±240 mins

2.2 Channel Events

The NT21x controller takes the relevant master time schedule event data and adjusts the 7 day event sequence according to the relative on/off event time and the master extend time to create a new schedule. This is visible (but not adjustable) on the maintenance unit.

2.3 Channel Event Data

The channel data is in 4 blocks of 100 items. Items 100 - 199 for channel 1, 200 - 299 for channel 2 etc. There are 32 events each using 3 items starting at item 101. The 32nd event ends at item 196. The times are calculated using the selected master time schedules. c=channel no.

ITEM	DESCRIPTION	CODE	CODE MEANING
c01	Event 1 mode	nonE t.dis oFF on	Not used Event disabled Off event On event
c02	Event 1 day	Sun - Sat	
c03	Event 1 time	00:00 - 23:59	

2.4 Relative Time Sequence Output Control

The controller program scans the recalculated events to find the most recent on or off event, on a 7 day cycle, from the current time. The output is activated accordingly.

3. SPECIAL DATE OPERATION

Up to 16 special dates can be entered. The absolute timers allow a special event sequence whilst the relative timers will set all outputs to off on the special dates.

No of special days	940
Dates	941 - 956

4. LIGHT SENSOR OPERATION

The timer NT211 supports Light Sensor inputs for each channel.

The sensors can be set individually for each channel. One sensor can be wired into several inputs if desired. The sensors can be selected to be:

a) disabled

b) operational when the channel would normally be off
i.e. the output will come on during the off period if the ambient light level becomes too low.

c) operational when the channel would normally be on
i.e. the output will go off during the on period if the ambient light level becomes high enough.

d) operational at all times i.e. the time sequence is ignored.

The sensitivity of the light sensor can be programmed to cover 4 ranges:

0 - 2000 lux
0 - 4000 lux
0 - 10000 lux
0 - 20000 lux

The sensitivity levels and hysteresis (deadband) are also programmable for each channel.

Item Numbers 900 - 939

5. DAYLIGHT SAVING OPERATION

When connected to the JTL Network these units can implement automatic correction for daylight saving (summer time) operation.

Once the unit has been selected for daylight saving operation (item 18) then each channel can individually be selected to work on standard time or daylight saving time.

The JTL Network Controller computes the correct algorithm for daylight saving according to the current EU directive (or the daylight saving function can be initiated manually at the Network Controller if desired).

If the channel is set for daylight saving then all the events are compared with daylight time which is displayed on the time items 2 - 5, otherwise control is against standard time.

	Channel 1	Channel 2	Channel 3	Channel 4
Enable daylight saving	18			
Daylight saving or Standard time	28	38	48	58

6. MANUAL & OVERRIDE CONTROLS

6.1 Store manned input

The controller can be set to have an external "store manned input". If this input is not present then no outputs come in. The store manned input is set individually for each channel.

	Channel 1	Channel 2	Channel 3	Channel 4
Site manned input enable item no	23	33	43	53
Site manned input state item no	75			
External input mode selection	77			

Note: For site manned input operation external input mode must be off

6.2 Display Pushbutton Override

The pushbuttons on the time sequencer display can be used to override the normal channel output state. This feature can be enabled separately for each channel. The override time is also programmable.

If the override function is enabled the override is activated by pressing the function button [F] and the scroll button [•] within 5 seconds. Using the scroll button to select the desired channel (1 of 4) wait until the display indicates "on" or "off". Pressing Enter [**5**] will cause the channel state to be overridden. The display can be left to scroll to the end of the list or pressing the scroll will move onto the next selectable item. At the end of the choice list dAtA is displayed and the display reverts to normal operation.

	Channel 1	Channel 2	Channel 3	Channel 4
Enable display pushbutton override facility	25	35	45	55
Display pushbutton status	24	34	44	54
Display override time duration	76			

6.3 External Input Override

The controller can be set to allow all outputs to be overridden individually by external switches. This function is mutually exclusive with the store manned input facility.

	Channel 1	Channel 2	Channel 3	Channel 4
External switch input status	26	36	46	56
External input mode selection	77			

Note: For external input operation, the mode must be set to E.S.On

7. FORCED OUTPUT STATUS

The channel can be forced or advanced to the next state by operating the forcing functions via the JTL network. JTL SiteView software mounted on a remote computer can implement this facility if it is enabled. The forcing stays set (unless manually cancelled) until the next normal state change.

	Channel 1	Channel 2	Channel 3	Channel 4
Force on	20	30	40	50
Force off	21	31	41	51
Force of state by JTL network command enable	79			

8. EXTEND ON TIME

The relative timers support a facility to remote extend the master time schedules off time by a fixed length of time. The extension time is programmable. The JTL SiteView software mounted on a remote computer can be used to extend the master time schedules.

Master time schedules	1	2
Extend on	500	600
Extend time	957	

9. OUTPUT RELAY STATE

The output relays can be selected for energised when channel is on or deenergised for on. This is a global function available on item 78.

10. MAINTENANCE UNIT OPERATION

Introduction

The JTL Systems range of electronic alarm, monitoring and control units can all be interrogated by a plug-in maintenance unit which displays data selected by the operator.

The maintenance unit is essential for commissioning the controllers and for making adjustments to the operating data stored in the controllers.

The data that can be displayed and adjusted varies with the type of controller and in so many cases with the software version of the controller. Each item of data is referred to by an item number which is in the range 0 to 999.

The unit has a 4 digit 7 segment display and a 16 key keypad which can be used for selecting the data to be displayed or data to be entered or modified.

Selecting an item for display

When the maintenance unit is plugged in, the unit type name or - - appears on the display.

For example, on controller type LAPN, to display item 21, the air on temperature, press [ITEM] [2] [1] [ENTER]

The air on temperature is then displayed.

To display the next item, item 22, the air off temperature, press [+] [ENTER]

Similarly, the item numbers can be reduced by pressing [−] [ENTER]

If when selecting a new item number [ENTER] is omitted, then after about 5 seconds the value of selected data is displayed anyway.

Modifying the data in a selected item

If it is required to change an item of adjustable data, the item should be selected as above. The current value is then displayed. For example, on a type LAPN display cabinet controller, to set Item 30 temperature setpoint to -20.0, press

[ITEM] [3] [0] [ENTER] [SET] [−] [2] [0] [0] [ENTER]

It should be noted that it is not necessary to enter the decimal point and that if [ENTER] is omitted then, after 5 seconds, the value will revert to the original setting.

If, at any time before the setting procedure is completed, the [CANCEL] button is pressed, then the original value is restored on the selected item.

Automatic Data Range checking

When setting data into an item, the controller only allows the data to be adjusted within a set range. This range is defined in the controller by the position of the bitswitches mounted on the controller.

If the data are set outside the allowed range, then the nearest allowable value is flashed on the display.

Initial commissioning - Setting default data

On all controllers there is a special function which installs a set of default operating data into the controller during commissioning or when making a service replacement. This is item number 9 on the maintenance unit. The data that is entered depends on the bitswitch setting.

To set this function select item 9 and then press the sequence [SET] [1] [2] [3] [4] [ENTER]

The display then displays SEt.

When all the selected default data are set into the controller's parameter memory the display indicates CLr.

Other settable functions

There are generally some special settable functions available on the controllers which require an item to be set to 1 or 0. For example, on a display cabinet controller type LAPN, setting item 77 gives a forced defrost.

To set this function, select the item (77) and then press the key sequence [SET] [1] [ENTER]

The display then displays Fd.on.

To clear this function, select the item and press [SET] [0] [ENTER]

The display then shows OFF.

Displaying invalid or unsupported data

If the data to be displayed is invalid or corrupt, then the display shows Err

If the data to be displayed is unsupported by the current version of the software, or is dependent on other data being set to particular values, then the display shows –

Updating of non-volatile "backup" memory

Depending on the version of the software the controller will wait up to 2 minutes after the last parameter has been set before updating the non-volatile memory. This time delay can be temporarily ignored by entering item 9 with the sequence [SET] [1] [0] [6] [6] [ENTER]

The non-volatile memory is then updated immediately without the delay.

If parameters are altered while the non-volatile memory is being updated the display shows buSY.