JTL SYSTEMS LIMITED

NT100 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.

Absolute Timers (NT100 range)

The NT110 which features 1 off and 1 on time per day including the special day type associated with up to 16 dates which can be programmed on an annual basis. It also features 2 normally open relays and 2 changeover relays on the timer channels and an overall input indicating that the timing sequence should be activated.

The NT120 and NT121 feature additional inputs which can be used to override outputs manually. The time sequencing allows 2 on and off times per day including special dates. All 4 relays are changeover variety.

In addition, the NT121 provides four 0-10 V light sensor inputs allowing ambient light levels to override the time sequence control as desired.

1. SETTING UP THE CONTROLLER

The time schedulers can be programmed locally using a JTL maintenance unit. See section 9 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 EVENTS

2.1 Channel Daily Time Data

The data is best viewed using the JTL SiteSuite software but it can also be viewed using a JTL maintenance unit as follows:

This sequence covers item numbers (110 - 499) for channels 1-4.
A general form of item number is "cdx". The "c" shown in each item number should be replaced by the channel number (1-4).
The "d" shown in each item number should be replaced by the day of the week, where 1 is a Sunday, 2 Monday etc, and 8 is the "Special Day"

cd0 ON time 1
cd1 OFF time 1
cd2 ON time 2
cd3 OFF time 2

If ON time 1 is 00:00 the channel will be forced off all day.
If ON time 1 is set and the OFF time 1 is 00:00 the channel will be on all day.
If ON time 2 is set to 00:00 then the second ON/OFF selection is disabled (NT120 and 121 only)

2.2 Absolute Time Sequence Output Control

The controller program checks the daily on/off events. When on precedes off, if the current time is between either of the event pairs, OR when off precedes on if the current time is outside of the event pairs, then the output is on.

Note on the NT12x range if either one event pair indicates on then the output is on. Both event pairs must indicate off for the output to be off.

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.

	Absolute NT1xx	Notes
No of special days	20*	*Not in early versions
Dates	21 - 36*	*Set to 32 - 12 to disable on early versions

4. LIGHT SENSOR OPERATION

The Mk2 Absolute timer NT121 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 510 - 549

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	56	57	58	59

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	103	203	303	403
Site manned input state item no	40			
External input mode selection	42			

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	105	205	305	405
Display pushbutton status	104	204	304	404
Display override time duration	41			

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	106	206	306	406
External input mode selection	42			

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	100	200	300	400
Force off	101	201	301	401
Force of state by JTL network command enable	44			

8. 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 43.

9. 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.

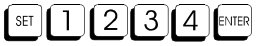
Automatic Data Range checking

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 

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 

The display then displays Fd.on.

To clear this function, select the item and press 

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 

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.