

CLOCK VIEW

Dual Zone

PRODUCTION LINE

TIMER SYSTEM

MANUAL v2

Model SM468 (software V2)

April 2023

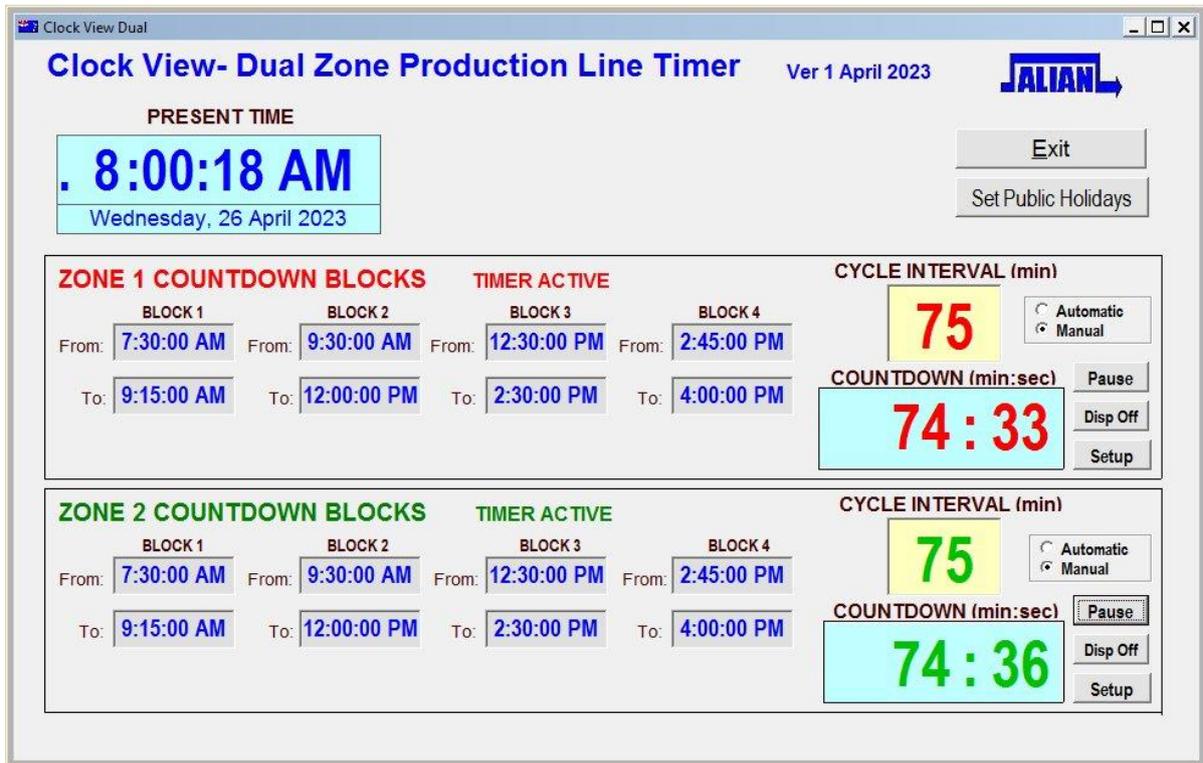


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GENERAL INFORMATION

Clock View is a production line timing system to inform a factory space of how much time has been allocated to a production task, before the line must shift their work product to the next work bay. This release of the Clock View software supports two interdependent zones from the one application.

In practical terms it consists of one or more large LED displays that shows a minute count of up to three digits. This display is mains powered but gets its information wirelessly from a centralised computer, with a small radio transmitter. The computer counts the remaining minutes to the end of the present production cycle. When this countdown reaches zero, a chime or sound effect is generated that may be introduced into a Public Address amplifier at the factory. A transition period of a few minutes is applied to allow for work product to move, then the countdown then primes another fresh cycle.

The countdown is controlled by a Windows PC application which counts down the time delay in accordance with a series of rules and conditions, which may be adjusted by an operator as required. The countdown timer is suspended outside of normal working hours, during meal and rest breaks, weekends and selected public holidays.

The countdown timer may be adjusted, suspended or reset by the operator

Multiple displays may be used. Each display has a working range of approximately 700 metres from the VHF transmitter unit, which has much better range than conventional WiFi systems.

The displays have high visibility easily read up to 100 metres away. They consume small amounts of power from a 240V AC power source (typically 1/3rd of an amp)

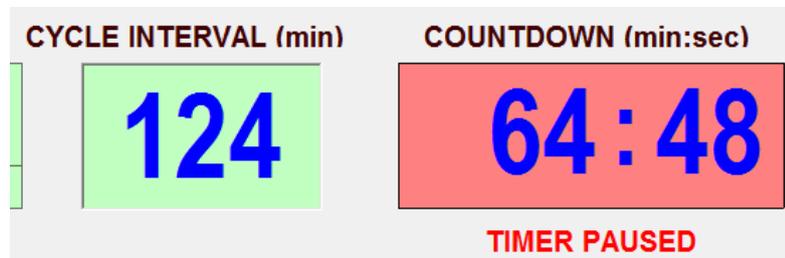
The support computer is an All-In-One PC with all necessary software pre-loaded into its hard drive. When the PC is turned on, it will automatically run the Clock View application. After any mains power interruption, it will automatically re-start and continue with all time values preserved.

Understanding the clock timers

The Clock View system consists of **two separate countdown timers** and a **real-time clock** which knows what the present time & date is.

The two countdown timers are separately set up and only one timer will operate at any moment.

First there is the **Cycle Timer**. This is preset to a normal work interval on a given production line. For example this may be around 2 hours and this would be expressed as 120 minutes.



In the above image **Cycle Time** has been preset to 124 minutes. However we have only **64 minutes, 48 seconds** remaining of the current cycle. When counting down, it has a green background. In this instance the timer has been paused, so the background is red .

The second timer is the **Transition Timer**. This timer automatically starts when the Cycle Timer has reached zero. The Transition Timer counts down the minutes needed for an entire production line to shuffle along by one work-bay position. Here we can see that the Transition Timer had been preset to 5 minutes and is presently counting down. When the Transition Timer is active, it has a Yellow background and a '**Minus sign**' is shown.



The LED display in the factory also shows a Minus Sign when the Transition Delay is in progress. This way, it is easy for staff to see at a glance whether we are in a Cycle Time or a Transition Time.

The **Clock Time** is a conventional clock-calendar sequence which extracts the time and date from the PC memory. This means it should automatically readjust for Daylight Savings.



So the **Cycle Timer** and **Transition timer** are free running countdown timers that would, if given the chance, cycle over and over indefinitely. 124 minutes....5 minutes....124 minutes....5 minutes... etc.

Cycle Timer Alerts

At the end of a Cycle Timer delay, when it reaches 0:00 minutes & seconds, the system will automatically prime the Transition timer, but as it does this it plays one of three pre-recorded sound effects from the computer, which may be introduced into a factory P.A. system via an audio cable. This is called a **Cycle Event Sound**. It can be a short **.mp3** or **.wav** audio file of 3-4 seconds duration that is copied into the PC. The application lets you determine how often this sound is repeated with a simple setting. The same **Cycle Event Sound** is played at the end of the Transition Time countdown, as a new cycle time is commenced.

On some production lines it is reasonable to give a warning before the End Of Cycle is reached as a worker could be deeply involved within a task and is unprepared for the change. A second sound called a **Cycle Alert Sound** can be played a few minutes before the end of the cycle has been reached.

In the Setup screen there is a **Cycle Settings** area. It shows the **Cycle Time**, The **Transition Time** (shown as *Restart Delay*) and the current interval within the current cycle.

At any point in time the default Cycle Time can be altered, or forced active with the Reset button.

The present **Cycle Time Now** can be modified on the fly for extra or fewer minutes within the current cycle.

The **Cycle Start and Stop alerts** can be **Enabled**, **Disabled** or preset for different minute intervals from this setup area, at any time.

CYCLE SETTINGS	
Cycle Time (min)	124
Cycle Time Now	64 : 48 <input type="button" value="Reset"/>
Cycle Start Alert (min)	1 <input checked="" type="checkbox"/> Enable
Cycle Stop Alert (min)	5 <input checked="" type="checkbox"/> Enable
Stop/Start Relay (sec)	3 <input checked="" type="checkbox"/> Enable
Restart Delay (min)	3

System Settings

There are two separate Setup pages, one for each zone. Zone 1 has text in **RED** and Zone 2 has text in **GREEN**. The two zones operate completely independently and support a common transmitter.

The Clock View displays have an encoder behind each digit which is set to TENS and UNITS. The TENS setting for each digit would be set to 1 for Zone 1 operation or 2 for Zone 2 operation. The UNITS setting should be set to 1, 2, 3 for Units, tens and Hundreds respectively.

In the Setup area there is a zone setup field called **Display Page Code**. Typically this would be set to 1 for Zone 1 and 2 for Zone 2. Where Clock View is being used within range of other factories running a Clock View system, these zone settings could be changed to 3 and 4 instead.

Also on the Setup page, there are fields containing the file names of the sound effects files and the path where they are located on the PC hard drive. Normally these sound effect files would be parked in the **C:\ClockView\Sounds** folder.

When a sound effect is played the Repeats field determines how many consecutive times that each sound effect will be played. At any time the sound effects can be tried with the **TEST** buttons

The field labelled **Comm Port** is the serial port that the computer uses to communicate with the transmitter unit. It should not normally be changed. It may need to be changed if the transmitter is plugged into a different USB port. It is usually going to be between Comm 2 and Comm 4. If this value is wrong a red error message will pop up on the main screen when the application is run.

Block Settings

The application has four **Block Setting** time periods. These are the times when the Cycle Timers will be armed. Typically it will be Start to Morning Tea, then Morning tea to lunch time, then lunch time till afternoon tea (if there is one) and Afternoon Tea till end of shift.

It is important to understand that the countdown timers will normally be frozen until the present time of day falls between these block times. To avoid the use of a particular block, simply set the **Stop** time to one minute before the

shown start time and that block will never be active

The countdown blocks on the main screen are shown but can't be adjusted from that page. Note that the background for each of these blocks are normally grey. Whenever the present time of day passes between the **From** and **To** times, the background to that block to change to blue to show that the block is now active. The current cycle time countdown would then resume on the screen and in the factory.

Active Days

As the title implies, we tick the days that we would like the countdown system to be active. If a Saturday shift is needed, then ensure that the Saturday box is also ticked. The system checks these days before arming any timer events.

Set Public Holidays

When a public holiday comes along, the factory would be unattended and we don't want the countdown timers to be active when there is nobody around.

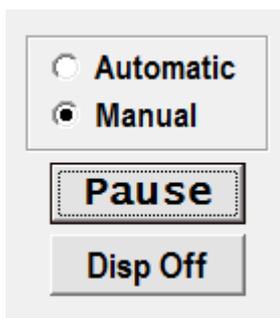
From the Setup page, click on the Public Holiday list. Here up to ten dates can be pre-loaded, with a description that can be added as a reminder.

The countdown time won't run on any of the days on the list.

Ensure the format of **mm/dd/yyyy** is used for any date entries.

Date	Comments
1/11/2022	Melbourne Cup
25/11/2022	Christmas Day
26/11/2022	Boxing Day
26/01/2023	Australia Day
15/04/2023	Good Friday
18/04/2023	Easter Monday
25/04/2023	Anzac Day

Automatic/Manual operation



The system should normally be left in the Automatic mode and let the four blocks control activity, however at any point in time the Manual button may be clicked from the main screen and the countdown may then either be forced on or off.

While in the Manual mode, the LED Displays in the factory space may be deliberately blanked. Pressing Display On and Display Off sends a blanking code to all displays. This may be useful for training purposes, where experimental number changes in the factory may be confusing to production staff.

Public Address System Attachment.

The system uses the conventional Audio Out socket of the PC to extend the sound effects to a factory Public Address amplifier. This should not be coupled directly. An audio Isolation transformer must be used to ensure that no earth loop issues between the PC and the amplifier, which could generate unwanted hum. This adapter has a 3.5mm stereo plug for the PC end and a mono RCA plug to couple to the input of the amplifier.

Generally the audio output level of the pc (Volume Control) should be set to about 50% and further adjustments should be made at the amplifier input and output gain controls.

Note that PC System Sounds have been turned off in the PC Windows environments to ensure that windows sounds don't get played over the PA system.

Transmitter Antenna

It is recommended that a high gain antenna be connected to the PC transmitter box to ensure that strong signals can reach to remote parts of a factory. The antenna provided has several metres of coax cable fitted with a BNC plug on one end. The antenna may be mounted at a convenient location outside of the possibly shielded office space. It may be cable tied or clamped to a secure fitting. The area of the antenna above the black mid-point coil should not be clamped or tied to a metal surface. It needs about 300mm of separation from the nearest metal wall or pillar. The area below the coil is ok to strap to any convenient protuberance.

Specifications

The Transmitter and receivers on this system use 151.300 MHz at 100 mw of power. This should be ample signal for most factory spaces, up to around 700 metres.

Note that it is possible for extreme radio interference to have an affect on this system, but this is rare.

The LED Displays may be Single or Double sided. They require a 240VAC supply to operate They are 800mm x 450mm x 97mm in size. They may be roof mounted via the lugs provided.

The displays are updated every minute or whenever the information changes.
