

Dynamic Zone Mimic®



# Installation & Commissioning Manual



# **Issue History**

Issue	Date
DZM-2401	15 <sup>th</sup> January 2025
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### 1. System overview

dynamicZM is a Dynamic Zone Mimic®, a fire alarm graphical mimic display showing the active fire zones in alarm within the protected premises. The active fire zones are overlayed onto a graphical representation of the building to enable quick identification of the area in an alarm condition. The dynamicZM system also includes further images and information for linked zones, such as links to other buildings across the site or essential information detailing non-fire inputs.

It is recommended that each dynamicZM screen is suitable for displaying up to approximately 20 active zones, to ensure clarity of the building plan displayed ensuring compliance with BS 5839-1:2017. Refer to Section 15 - Design considerations for further information.

During normal operation, the dynamicZM displays the end users chosen images and silent videos. A media and display schedule can be loaded during installation for use offline, or alternatively the user can actively manage their media and schedules via an online digital signage platform.

The uploaded media and fire alarm information remain separate, with no facility for the user to access or change the fire alarm configuration without engaging with a dynamicZM approved installer or maintenance provider.

To enable testing of the system to ensure a graphical representation of the building is accurate and configured with zone coverage, a remote test switch facility is provided. The test switch enables the test to take place <u>without</u> activating the fire alarm system.

## 2. Safety

The dynamicZM forms part of a life safety system and should therefore <u>only</u> be installed and connected by trained and competent fire alarm personnel. The system should be installed in accordance with IEE regulations for electrical equipment in buildings, all statutory requirements and codes of practice. The system is designed to operate at 24V DC and must be connected to a suitable power supply unit. (Refer to the installation and safety guidance from the manufacturer of the chosen power supply unit regarding its safe installation.)

The system is designed for indoor use only and to operate between 0°C to +40°C, use of the product outside this range will negatively impact on its performance and safety.

## 3. Power requirements

The dynamicZM should be connected to an EN54-4 compliant power supply unit with mains fault monitoring. The dynamicZM monitors the power supply unit fault contacts so that in the event of a mains power loss, the dynamicZM will enter a low power mode and cease displaying the user's media for the duration of the mains supply fault in order to lower power consumption. During any mains power loss, the dynamicZM general fault output will be activated.

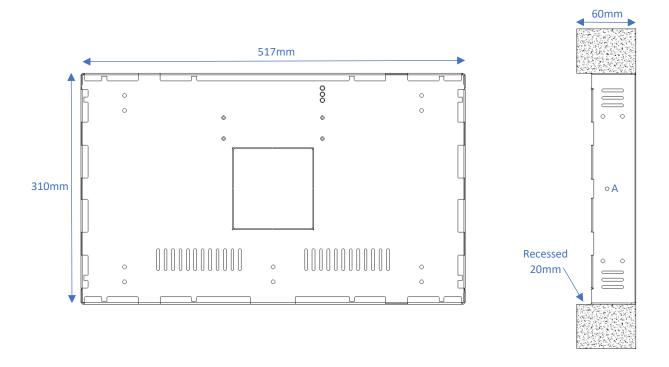
## 4. Installing the dynamicZM

The dynamicZM should be installed by a trained and competent installation professional, in accordance with, but not limited to, BS 5839, BS 7671, IEE regulations for electrical equipment in buildings and all statutory requirements and codes of practice. The dynamicZM should be mounted on a dry, flat surface, at a height and position agreed with the user that is conspicuous for the display of the fire alarm information in the event of an alarm.

Suitable fixings should be used to ensure the dynamicZM is securely mounted and is not liable to move once fixed.

The dynamicZM is intended for indoor use and should not be subject to temperatures greater than 40°C and should not be mounted near sources of excessive heat.

Incoming fire alarm system cables should be connected using suitable cable glands fitted to the knockouts provided.



Note 1 - The backbox should be recessed **20mm** from the wall face, to allow the dynamicZM to be flush against the installation surface when fitted. *See Fig. 1. and Fig. 2.* 

Note 2 - For surface mounting, secure the front panel with the 2 screws provided. These are inserted (one on each side) in the hole marked **A**.

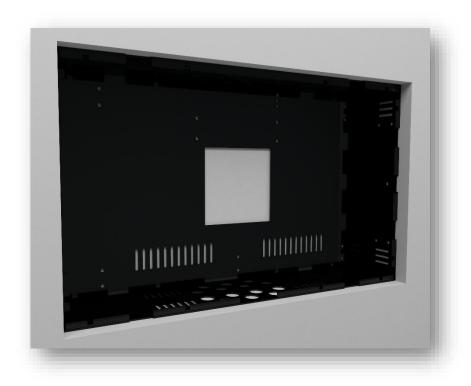


Fig. 1 – dynamicZM backbox recessed for flush fitting

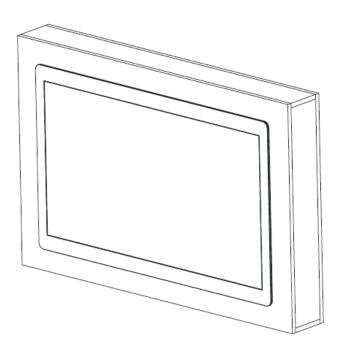
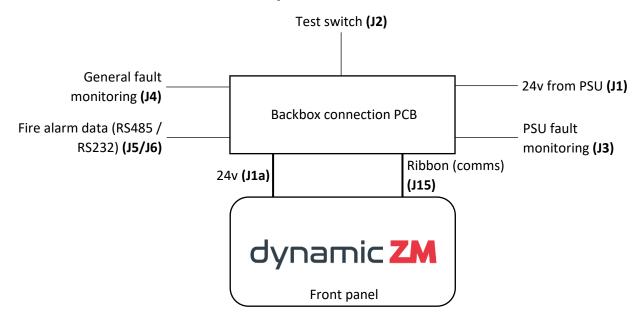


Fig. 2 - dynamicZM flush fitted

## 5. Connections to the dynamicZM



#### 24v from PSU (J1)

The dynamicZM should be connected to an EN54-4 compliant power supply unit with mains fault monitoring.

#### Test switch (J2)

The dynamicZM has the provision of a test switch for periodic inspection of the loaded fire alarm zone plan of the building. The test switch may be remote from the location of the dynamicZM but should be in an accessible location and clearly labelled. A fish key switch marked 'dynamicZM TEST' is recommended.

#### PSU fault monitoring (J3)

The PSU fault relay connections should monitor the closed contacts of a normally energised relay in the power supply unit. Should the mains supply fail to the PSU then the relay should de-energise and the closed contacts open.

Note – Remove the pre-installed link on connection to the PSU fault contacts.

#### General fault monitoring (J4)

The General Fault relay in the dynamicZM is energised in the Normal Operating Condition. Should a fault condition occur with the dynamicZM the relay will de-energise and the contacts open.

#### Fire alarm data (RS485/RS232) (J5/J6)

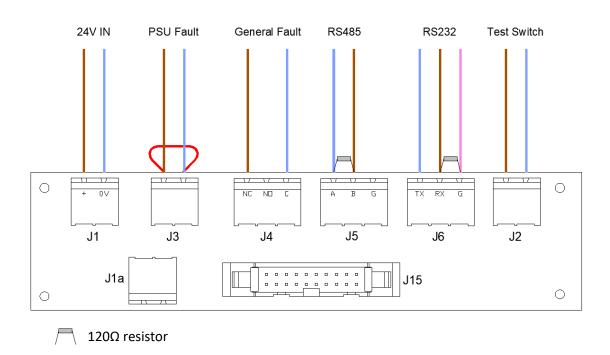
See Section 14 – Appendix 1 for specific connection details for each compatible fire alarm control panel. Ensure the  $120\Omega$  resistor remains in place in either J5 or J6 (host panel dependent).

Note - RS232 has been tested to communicate effectively at distances up to 120m, however please be aware that specific site conditions and routing of the cable may affect communications at certain distances.

#### Connecting the front panel to backbox/connection PCB (J1a/J15)

Connections for the comms ribbon and 24v from the front panel into the backbox on final installation.

#### Wiring connection schematic



#### Connecting and fitting the dynamicZM

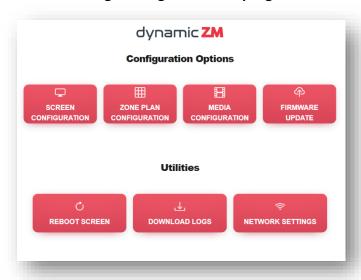
Connect the ribbon from the screen front panel to the ribbon connector **J15** and the 24v to **J1a** located on the PCB in the mounting backbox. Install the screen into it's final position as shown in Section 4, *Fig.* 1.

Pre-installed link – remove on connection to PSU fault contacts.

## 6. dynamicZM Configuration

The dynamicZM is pre-loaded with media (set to display for 24 hours a day) and a fire alarm commissioning matrix in place of the site-specific zone plan. This allows, if required, for the dynamicZM to be installed and zone tested prior to the final building plan and zoning being confirmed.

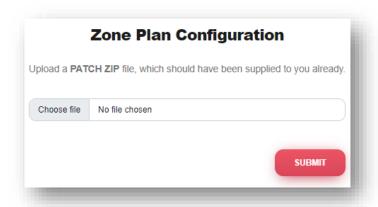
#### 6.1 Connecting the Engineers Tool program



- 6.1.1 Open the dynamicZM Engineers Tool program and select **Network Settings**.
- 6.1.2 Connect to the dynamicZM wi-fi hotspot (wi-fi credentials are supplied with the documentation of each unit and printed on the reverse of the screen.

#### 6.2 Uploading a zone plan configuration

dynamicZM is pre-loaded with a simple zone matrix which should be replaced with an accurate building plan and zone configuration on commissioning. Contact your distributor to obtain a zone plan configuration file.

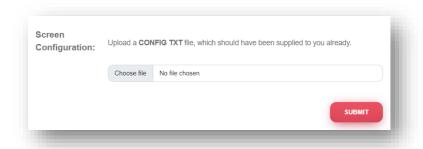


- 6.2.1 Select **Zone Plan Configuration**.
- 6.2.2 Click **Choose file** to select the configuration file (.zip) and click **Submit.**
- 6.2.3 dynamicZM will reboot to apply the new configuration.

#### 6.3 Uploading a screen configuration

The screen is already configured for the host fire alarm control panel prior to shipping. This function allows for the configuration to be amended for a different host panel installation.

If these parameters have changed during the installation of dynamicZM, contact your distributor to obtain a new screen configuration file.



- 6.3.1 Select **Screen Configuration**.
- 6.3.2 Click **Choose file** to select the configuration file (.txt) and click **Submit.**
- 6.3.3 dynamicZM will reboot to apply the new configuration.

#### 6.4 Media Configuration

Click **Media Configuration** - dynamicZM has two options for displaying media.

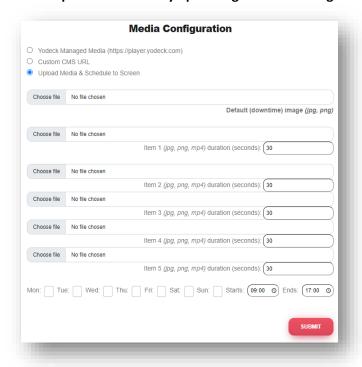
#### Option 1

Upload up to 5 images or silent videos and set the schedule manually using this tool. This option requires a competent and approved installer to upload the media.

#### Option 2

Connect the dynamicZM to a wired internet connection to manage the media online with Yodeck or other digital signage provider that supports web browser displays. This option allows the user to manage their own media and schedules via an online digital signage platform.

#### 6.4.1 Option 1 - manually uploading and scheduling media

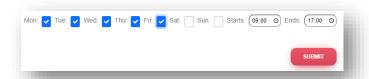


- 6.4.1.1 To upload media and set a schedule manually, select **Upload Media & Schedule to Screen**.
- 6.4.1.2 The first file option is for a default (downtime) image. This is to set an image that will display outside of the scheduled hours for the main media. If this is used, the selected image will display when no other media is scheduled to display.

If no default image is set, dynamicZM will display a blank screen outside of scheduled times for media, prolonging the life of the LCD display.

6.4.1.3 The remaining 5 slots are for up to 5 images or silent videos (or a combination of both). To add a file, click **Choose file** and select your media. For images, type your desired duration (in seconds) that you wish this image to display.

Note – for videos, the duration field is not available as all videos will play for their entire length.



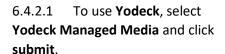
6.4.1.4 To schedule your playlist, select a start and stop time and select the days of the week you'd like the media to display.

6.4.1.5 When your desired media files have been selected and schedule set, click **Submit** to send to dynamicZM which will reboot to apply the changes.

#### 6.4.2 Option 2 – using the wired internet connection







- 6.4.2.2 dynamicZM will reboot to apply the changes.
- 6.4.2.3 After reboot, dynamicZM will show the activation screen for **Yodeck** like this example. The user should input the registration code shown on the screen into their online dashboard. Full details of how to set up an account and manage media online can be found at <a href="https://www.yodeck.com">www.yodeck.com</a>.



- 6.4.2.4 To use another signage provider, select **Custom CMS URL** and input the desired URL of your browser based signage player and click **submit**.
- 6.4.2.5 dynamicZM will reboot to apply the changes.



6.4.2.6 After reboot, dynamicZM will show the landing page for the custom URL supplied. (example image shown)

#### 6.4.3 Media utilities



- 6.4.3.1 To reset the online media connection, such as Yodeck or Custom URL, click **Clear Cookies and Cache**. Click **OK** to confirm and the dynamicZM will reboot to apply the changes. This will reset the online media to the landing page for connection to an online media management tool as described in 6.4.1.3 previously.
- 6.4.3.2 To delete all the media manually uploaded in section 6.4.2, click **Delete Local Media** and click **OK** to confirm. dynamicZM will reboot to apply the changes. This will remove all media so dynamicZM will require new media (or default image) to be uploaded or a connection established to an online media management tool such as Yodeck. Without replacement media, dynamicZM will display a blank screen unless there is a fire alarm activation.

#### 6.5 Utilities

At the bottom of the home page of the dynamicZM Engineers Tool are 3 utility buttons.



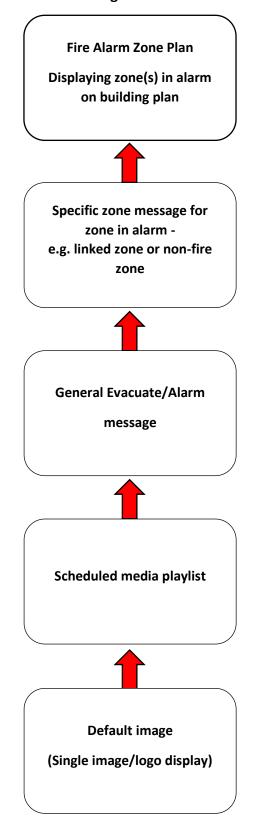
6.5.1 **Network Settings** – this opens your PC network settings for you to connect to the dynamicZM via wi-fi. You must be connected to the dynamicZM to carry out all other operations within this engineers tool.

(wi-fi credentials are supplied with the documentation of each unit and printed on the reverse of the screen.

- 6.5.2 **Reboot Screen** this performs a simple reboot of dynamicZM and will resume with the same media and zone plan configurations.
- 6.5.3 **Download Logs** when requested, this downloads a log file that can be sent to your distributor when further investigations into faults are required.

## 7 dynamicZM Operation

7.1 Display hierarchy – scenarios shown higher will override those shown lower



### 7.2 Normal condition



In a normal condition, the dynamicZM displays the users' chosen media.

### 7.3 Fire condition – Detection zone(s) activated



In a fire condition, the dynamicZM displays the zone plan layout and indicates the zone(s) in alarm. The first zone to be activated is shown with a flashing outline as an indicator of the zone of origin of the fire alarm. Further zones are shown solid indicating the subsequent spread of the fire alarm activations.

#### 7.4 Fire condition - Non-fire or linked zone activated



Where a fire alarm zone in alarm is from a linked system, dynamicZM will display a custom image for this linked zone. In this example, a zone has been configured on activation of the school lockdown alert.

If multiple zones are represented by images instead of active areas on the dynamic fire alarm zone mimic, only the image for the <u>first</u> zone in alarm will display.

#### 7.5 Fire condition – Evacuate (Sound alarms – no zone)



If the fire alarm system is activated by the evacuate or sound alarms button on the control panel, dynamicZM will display a system activated message. This image can be bespoke for the protected premises.

Note - A fire condition received from a zone represented on the dynamic fire alarm zone mimic will override this image and display the full dynamic zone mimic.

#### 7.6 Fault condition – Data fault



The dynamicZM constantly monitors the data connection cable to the fire alarm system\*. Should the connection be lost, normal media display will continue with a clear fault message displayed. The dynamicZM will activate a general fault condition.

\* this feature is not used when connecting to an Advanced MxPro fire alarm panel. See appendix 14.4 for more information.

#### 7.7 Fault condition – Power supply fault



Connected to an approved power supply, the dynamicZM monitors for power supply fault. In the event of a mains power failure, the dynamicZM activates standby mode to conserve power, only reactivating the display in the event of a fire alarm activation. This enables dynamicZM to comply with standby durations required under the recommendations of BS 5839-1:2017.

During this standby mode, the green power LED remains illuminated to indicate that dynamicZM is still ready to receive fire alarm information and re-activate the screen if necessary.

## 8 Test facility

A test facility connection is provided with the dynamicZM to enable on demand testing that the building layout is present, still correct and fully covered by potential fire alarm zones. The connection should be made to a switch (a fish key type is advised), labelled dynamicZM test, which will display the building layout for 60 seconds without the need to activate the fire alarm system. After 60 seconds, the dynamicZM reverts to media display without any further user intervention. This test facility works on a 'toggle' and needs only to be switched one way to perform this test.

#### 9 Maintenance

Routine testing of the fire alarm in accordance with BS 5839-1:2017 will identify any malfunction with the dynamicZM. The dynamicZM should be monitored for faults via the general fault connection available. Any malfunction with the dynamicZM should activate a fault signal on the host fire alarm system. Any such faults should be reported to the fire alarm maintenance company immediately.

During all periodic inspections of the fire alarm system, the dynamicZM should be tested to ensure the zone plan is still accurate and correctly represents the building covered. Use of the dynamicZM test facility will also confirm all areas covered by the red zoning.

Each dynamicZM configuration is supplied with documentation confirming the images used for linked or non-fire input zones and evacuate messages. These should also be checked during each periodic inspection to ensure that these emergency messages are still correct and relevant to the building and its occupants.

Any changes needed to the zone plan and associated safety images should be obtained and uploaded to the dynamicZM without delay.

# 10 Troubleshooting

Problem	Possible cause
Data fault reported	Cable fault between the host fire alarm panel and the dynamicZM.
	Check all connections are made and secure both in the host fire alarm control panel and on the dynamicZM PCB.
	Configuration for the zone plan has been set for the wrong host fire alarm panel.
Screen blank, power LED ON & fault relay activated	The PSU fault relay has activated – check the remote PSU. dynamicZM will be in low power mode.
Screen blank, power LED OFF & fault relay activated	There is no power to the dynamicZM, the PSU has lost mains supply and the backup batteries have discharged.
Screen blank, power LED ON & no fault reported	There is no media scheduled. This can be confirmed by successfully operating the test switch.
Test facility not working	There is an active alarm condition on the fire alarm system and dynamicZM.
	Check all connections are made and secure both in the test switch and on the dynamicZM PCB (J2).
Fire alarms not activating screen	Data fault is present.
	If no data fault is present, check the polarity of the data connection between the fire alarm panel and dynamicZM is correct as detailed in the fire alarm panel connection appendices.
	If no data fault is present, configuration for the zone plan may be set for the wrong host fire alarm panel. Contact your distributor.
Data and/or PSU faults not being reported by host fire alarm panel	Check that the host fire alarm panel is monitoring the dynamicZM general fault via the connection to the dynamicZM PCB (J4)
	Check all connections are made correctly and secure both in the host fire alarm control panel and on the dynamicZM PCB.

## 11 Technical specification

#### **Mechanical & Environmental**

Power requirement	DC 24V
Operating Temperature	0°C - 40°C
Weight	10Kg
Finished Dimensions (flush mounted)	538mm x 330mm x 5mm

#### Screen

LCD Size	21.5"
LCD Panel	TFT LCD
Resolution	HD (1920 x 1080)
Luminance	300 cd/m <sup>2</sup>
Viewing Angle	178° (H/V)
Screen life (hours)	50,000
Glass	Thermally toughened (EN12150 certified)

#### **Fire Alarm System**

Quiescent (standby mode)	490mA
Alarm (full screen brightness)	1.57A

### Connectivity

WLAN	802.11 a/b/g/n/ac

## **12 Battery Requirements**

Where dynamicZM will be used as the default method of indication of fire to persons responsible for monitoring the system, batteries should be provided to maintain a quiescent mode for a minimum of 24 hours plus an additional 0.5 hours in a full alarm condition.

Where dynamicZM is installed in addition to equipment used at the default method of indication of fire batteries should be provided to maintain a quiescent mode for a minimum of 4 hours. See BS 5839-1:2017 25.4(f) for full details.

Table 1 – Example battery requirements

Standby (hrs)	Alarm (hrs)	Batteries (Ah)
24	0.5	17
4	0	3.2

A minimum 2.5A EN54-4 compliant PSU c/w mains fault relay is required.

# 13 Compatible fire alarm panels

Conventional (non-addressable) systems		
Manufacturer	Models	
C-TEC	CFP 704-4 CFP 708-4	
Addressable systems		
Manufacturer	Model(s)	
Advanced	MxPro 5	
C-TEC	XFP (1 Loop)	
Fike	CIE-A-200 CIE A-400	
GLOBAL FIRE EQUIPMENT	G-One Gekko Octo+	
<b>Electronics</b> Ltd	Syncro	

dynamicZM interfaces with the fire alarm control panels listed via their respective communications or printer ports to receive information regarding fire alarm events.

## 14 Appendix 1 - Data connection details

## Appendix 14.1

Manufacturer: Global Fire Equipment

Model: **G-One** 

#### Connection between panel and dynamicZM



INT RS422 P2P card

The fire alarm control panel should be fitted with an INT RS422 P2P communication card.

Refer to the manufacturer's instructions for the correct fitting and setup of the card.

Once installed, configure the fire alarm panel BMS settings to use the 'UI' communication setting.

Connections should be made as follows:

 Fire Alarm Panel
 dynamicZM

 RS485 TX
 RS485 (J5)

 A
 A

 B
 B

Manufacturer: **C-TEC** 

Models: CFP 704-4, CFP 708-4, XFP (1 loop)

## Connection between panel and dynamicZM



The fire alarm control panel should be fitted with a CFP761 network card.

Refer to the manufacturer's instructions for the correct fitting and setup of the card.

CFP761 network card

Once installed, connections should be made as follows:

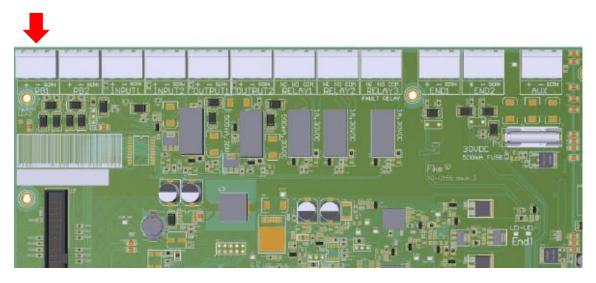
Fire Alarm Panel	<u>dynamicZM</u>
RS485	RS485 (J5)
Α	Α
В	В

Manufacturer: Fike

Models: CIE-A-200 and CIE-A-400

## Connection between panel and dynamicZM

The dynamicZM connects to the port PB1 (peripheral bus 1) for repeater connections.



Connection detail for Fike CIE-A range of panels

### Connections should be made as follows:

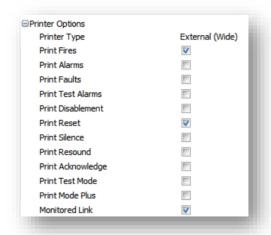


Manufacturer: Advanced

Model: MxPro 5

#### Connection between panel and dynamicZM

dynamicZM connects to the RS232 port and requires the port to be configured for printing as follows using the Advanced Config Tool program.



Ensure only the following are selected:

- Print Fires
- Print Reset
- Monitored Link

#### Fire alarm data fault reporting

The fire alarm data fault reporting facility on dynamicZM is not used when an Advanced MXPro is the host fire alarm panel. The data link is monitored by the fire alarm system as a 'monitored printer'.

Connections should be made as follows:

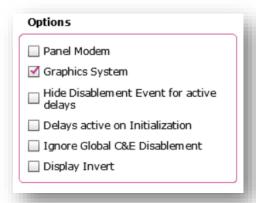
<u>Fire Alarm Panel</u>	<u>dynamicZM</u>
RS232	RS232 (J6)
TX	RX
RX	TX
G	G

<sup>&#</sup>x27;Printer Options' section from Advanced 'Config Tool' software

Manufacturer: **Kentec** 

Model: Syncro

When commissioning the panel, ensure that the 'Graphics System' option is ticked as below.



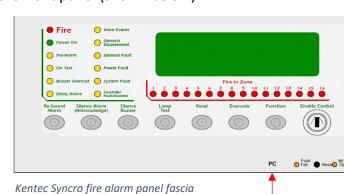
'Options' section from Kentec 'Loop Explorer' software

#### Installing the DZM-KE communication interface

Securely fix the DZM-KE communication interface (see Figure 1) and connect with the IDC cable to the 'PC' port on the bottom of the front panel (shown below).



DZM-KE communication interface



#### Connection between panel and dynamicZM

<u>Fire Alarm Panel</u>	<u>dynamicZM</u>
DZM-KE	RS232 (J6)
TX	RX
GND	G

**Important** – use unshielded cat5/6 cable when connecting dynamicZM to the local network.

## 15 Appendix 2 – Design considerations

dynamicZM is driven by the zone in alarm, giving clear indication of the origin of the alarm activation automatically. Below are some examples where dynamicZM can be incorporated into the fire alarm design to enhance the fire alarm system installation.

#### Siting of the Fire Alarm Control panel



#### Linked fire alarm zones - Retail & Hospitality

In retail and hospitality settings when fire alarm systems have zones linked to other inputs, such as the shopping centre main fire alarm (usually referred to as Landlord link) and the sprinkler system, these are noted on the fire alarm zone plan. But what do they mean, and what action should be taken when one of these linked zones is activated?

#### SOLUTION

videos and live feeds at all other times.

With bespoke images for linked zones dynamicZM makes all fire alarm activations easy to understand.



Example – landlord fire alarm system has been activated

#### Fire Alarm weekly tests - public notification

The mandatory weekly fire alarm test can cause confusion for customers or visitors. Staff are usually familiar with the procedure, date and time of the weekly test but visitors or customers need to be informed to avoid any confusion.

#### SOLUTION

Utilising the full media online dashboard with dynamicZM, the media can be set to automatically display a warning to customers and visitors that the fire alarm system will activate shortly and that this is just a test and no need for any concern or action.

For example, if the fire alarm is tested on a Tuesday, at 10:00 am, using the comprehensive media scheduling tools the following image could be automatically displayed between 9:45am and 10:00 am every Tuesday.



#### Linked fire alarm zones - Education

In educational settings when fire alarm systems have zones linked to other inputs, such as a lockdown alarm, these are noted on the fire alarm zone plan. But what do they mean, and what action should be taken when this is activated?

#### SOLUTION

With bespoke images for linked zones dynamicZM makes all fire alarm activations easy to understand.

For example, when a zone on the fire alarm is used for lockdown, it may activate intermittent or pulsing sounders, or different coloured flashing beacons so that staff can quickly invoke their lockdown safety procedures. But any visitors, particularly parents, may be confused to find the alarms sounding and access restricted with no sign of an evacuation.

When dynamicZM is used in the main entrance, the lockdown zone can be programmed to display an image such as this:



#### High dependency buildings - fire alarm zoning

In high dependency buildings where evacuation can be more complex, identifying the source of alarm quickly is paramount. Often, individual fire zones are allocated to each bedroom or ward but even with the correctly printed fire alarm zone plan on display, locating the small zone of alarm can be difficult when the plan is showing all zones present on the system.

#### SOLUTION

dynamicZM only identifies the zone(s) in alarm, leaving the remaining parts of the building clear for quick and effective identification of the area in alarm. In these high dependency premises, the fire alarm activation from a specific bedroom can be seen clearly allowing for the most rapid response from both staff and the emergency services on arrival.

In this example, a single bedroom has been highlighted as the zone in alarm with the rest of the building clear to easily identify the quickest route to the bedroom.



#### High rise buildings

In high rise buildings, the information available to the Fire and Rescue Service (FRS) on arrival is crucial. The Fire Safety (England) Regulations 2022 made it a legal requirement from 23 January 2023 for responsible persons of high-rise residential buildings in England to draw up and share electronically up-to-date floor plans identifying the location of key fire-fighting equipment with their local fire and rescue services.

#### SOLUTION

dynamicZM can be configured using the information commonly seen on an externally fixed Premises Information Plate.

On arrival to a fire alarm activation, dynamicZM will display the premises information to the FRS, showing the layout of the ground floor and upper floors while also showing the floor(s) in alarm with a clear red colour. Additionally, the floor of origin will be flashing while additional floors in alarm remain a solid red colour, directing the FRS to the cause of the alarm and indicating potential fire spread.

At all other times, dynamicZM can be utilised by the building managers to display useful information and notices to residents.

