MK5 Eco Panel overview

Introduction

Welcome to the Dynaflow ® MK5 Eco Control Panel. This panel has been designed by Dynaflow specifically for the Dynaflow Fume Cupboard. The MK5 Panel has been "Product Certified" ISO Product Certification to compliance to AS/NZS 2243.8 2014. The MK% has been designed to provide simple "Function" changes and ease of "Plug and Play" accessories to allow for quick upgrade and replacement options.
Please find and overview of the MK5 Eco Control Panel below.

Panel Layout

The Dynasafe® Control System MK5 Fume cupboard controller has 4 key aspects represented on the front panel.

- A Graphical LCD display which provide the bulk of the user feedback information.
- 5x press buttons which allow user interaction.
- USB port.
- Emergency Stop button.

Panel functions

1. **Air flow indicator -** indicates when air flow within the cupboard and duct work meets acceptable requirements
2. **Display -** indicates cupboard status to the operator. Shows time, current mode, status information and key functions. Refer display breakdown for more information.
3. **Emergency Isolator** - used to isolate the cupboard from electrical and gas services in the event of an emergency.
4. **Supply Fault -** indicates Mains failure, will flash red should Mains supply fail. The controller is then operating on batteries.
5. **Function switch** - used by the operator to enter and exit setup and configuration options.
6. **USB Port -** This port provides USB connection to external computers. It is primarily used for test and commissioning of the cupboard. It provides no user data.
7. **Light switch -** controls the cupboard lighting.
8. **Fan switch -** used to start and stop the cupboard.
9. **Boost switch -** if the cupboard is fitted with Syncroflow® then can be used to boost airflow.
10. **Mute Switch** - used to mute buzzer during alarm states. Please note that should a new alarm occur then the mute will be removed from the alarm. Once the alarm has been corrected then the buzzer will turn off automatically.

Additional Equipment

1. **Interface Card**
   a. Provide the interface to the P5 Control Panel.
   b. Alarm inputs and outputs.
   c. Battery backup.
2. **BMS Card**
   a. This card is an “option” that is used to provide LOW Level interface to Building Management Systems.
   b. Outputs: Start/ Stop, Low Air Fault, Emergency Isolator Activated, Power Failure and low scrubber level.

Display

Display functions

- Time and date display
- Cupboard serial number and firmware version number.
- Operating mode and current status display.

Status and alternate switch function display

Keypad

There are 4 primary push buttons on the front with a 5th function button. During normal operation they control lighting, cupboard start and stop, Syncroflow® and buzzer mute. Together with the function button they have alternate functions that are used to setup and configure the fume cupboard.

Light

Control’s the cupboard lighting. Toggle function, press to turn on, and press to turn off. Will operates in any of the cupboard's operational modes.

Fan

Control’s the cupboard operational modes. Toggle function, press to start cupboard. Starts 60 Second “PRE-PURGE” mode. When in “RUNNING” mode press again to shut down cupboard and commence 20 minute “POST-PURGE” mode.

Boost

Control’s cupboard Syncroflow® mode when fitted. When pressed allows fan boost of fume cupboard extraction. When Syncroflow not fitted button will have no effect.

Mute

Allows the user to mute the alarm tones when the cupboard signals an alarm condition. When pressed the mute, shall remain in effect until the alarm condition has been corrected or a new alarm state is entered.

Operational Modes

The Dynasafe® Control System MK5 Fume cupboard controller has four primary operation modes, “OFF”, “PRE-PURGE”, “RUNNING” and “POST-PURGE”.

Off

The normal state for the fume cupboard is OFF when chemical handling is not taking place. There are no electrical or gas services available to run ancillary equipment within the fume cupboard.

Pre-purge

To commence a handling session press the “FAN” button. The fume cupboard will enter the “PRE-PURGE” mode for 60 seconds. During this mode air flow is established and other equipment is allowed to start and stabilise prior to commencement of handling procedures. At the end of this period the fume cupboard status is checked to ensure all inputs are within normal operating ranges prior to going to “RUNNING” mode. Only at this point are electrical and gas services within the fume cupboard turned on.

Should an alarm situation arise it must be corrected before the cupboard will enter “RUNNING” mode. (Panel Self Diagnostics)

Running

Once the “PRE-PURGE” cycle is complete, no alarms situations have presented themselves then the fume cupboard will allow normal operation to begin. This is indicated by displaying “RUNNING” on the controller display.

Should an alarm situation arise during “RUNNING” mode then the fume cupboard will turn off services and sound the alarm and provide indication as to cause of the alarm. Once the problem has been resolved then the fume cupboard will restart in “PRE-PURGE” mode.

Post-purge

When the handling process is complete the fume cupboard needs to be shutdown. Press “FAN” button to enter the “POST-PURGE” mode. In this mode the services are turned off, the FAN is kept running for 20minutes before going to the “OFF” state.

Clock

Press the “Clock (LIGHT)” button to access clock settings and Timers options. This then allows the user to set the time and date of the system.

Timers

The Dynaflow Mk5 Fume cupboard controller has the provision for a variety of process timers. Up to 4 start-stop sequences can be programmed in a 7 day period. Each process can be set to start or stop on a particular day at a particular hour. DO NOT overlap timer sequences, but a single sequence can run for more than 24 hours.

The Fume Cupboard will start the “PRE-PURGE” sequence at the nominated time for 60 seconds then run until the stated stop time the fume cupboard will then enter “POST-PURGE” for 20 minutes. At which point the fume cupboard will go to the “OFF” state. Until either manual start, remote start or another timer event occurs.

Configuration

This option controls the basic configuration of the fume cupboard; it can only be accessed with a password. Its main use is during setup and commissioning of the cupboard and or maintenance or trouble shooting. The features available behind this option are not described here. Please refer to the setup and configuration manual.

Backlight

This option controls the intensity of the display backlighting. In many cases this is a personal choice and can be changed at any time.

Setting the backlight

1. Press "FUNCTION" button to enter Setup.
2. Press "BLIGHT (BOOST)" button to enter clock and timers setup.
3. Use the "UP (FAN)" or "DN (BOOST)" Buttons to set the desired intensity.

Should a mains failure alarm occur, then the back light intensity will default to the lowest level to conserve battery power. This cannot be overridden during the alarm.

Alarms

The Dynasafe® Control System MK5 Fume cupboard controller monitors several inputs to ensure operation remains within nominal specifications.

Emergency Isolator

Located on the front panel, this switch will cause the fume cupboard to shut down and isolate all electrical and gas services.

To restore operation twist and release the emergency isolator switch.

Mains Failure

Indicates electrical power failure. Batteries will allow operation of the controller for minimum 20 minutes from power failure.

Low Battery

This will occur if there is a fault with the backup batteries or the controller has been running on battery power and the battery voltage has dropped below the preset threshold. It signals the possible shutdown of the control panel if mains power is not restored soon. Panel will resume normal operation once power has been restored.

Low Air Flow

When the airflow within the exhaust duct drops below the preset threshold, an alarm will occur. Electrical and gas services are isolated until the airflow problem has been corrected.

High Sash Alarm

If the Sash is lifted above a predetermined height for more than a period of time (Adjustable), an alarm will be sounded until either muted or the sash is lowered. This is used as a power saving device and can be turned off or on during commissioning.

Optional Features

Remote Start
When installed, allows the remote starting of a one or more fume cupboards from a remote location.

Remote Alarm
When installed, allows the remote alarming of one or more fume cupboards. This alarm will result in the isolation of electrical and gas services.

Remote Isolator
When Installed, allows the emergency isolation of one or more fume cupboards from a remote location.

"GREEN SASH"
The green sash facility is used to allow the sash to be opened to a pre determined height (eg 50%) If the sash opening exceeds the set opening for a pre determined time, a WARNING will appear on the screen asking the operator to close the sash. Not only does this feature prompt the user the keep the sash in a safe position, but reduces the amount of exhaust air being extracted from the Fume Cupboard, thus reducing the huge energy consumption required in the laboratory make up air system.

Scrubber PH Monitoring
When enabled the MK5 controller monitors external PH input via 4-20ma current loop.

Scrubber System

OPTION: (The MK5 Eco Panel has available 40 programmable functions available that can be turned "OFF" or "ON")

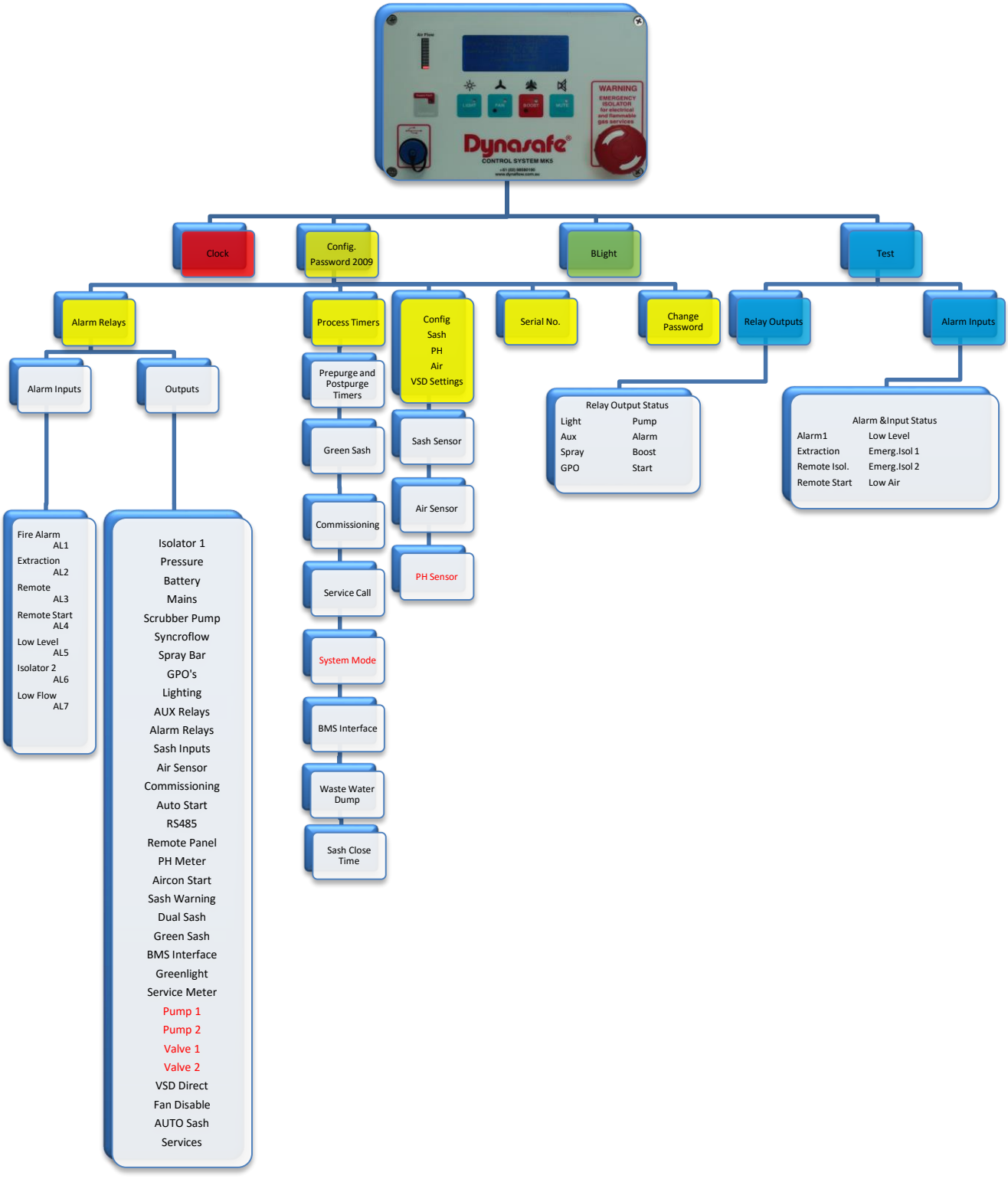
Waste treatment
When fitted, allows control and monitoring of waste water treatment, PH monitoring and dosing prior to dumping to waste.

BMS Outputs
When installed, allows interfacing to building management systems.

Remote Panel
Used in dual sided fume cupboards allow dual controls over the fume cupboard.

Duct Pressure monitoring
When installed, allow for the monitoring of exhaust duct airflow pressure. It is then used to control fan drive systems and damper networks.

Panel Configuration



Dynasafe ECO Management Control System

Configuration Functions

FUNCTION	ALARM		INPUTS/OUTPUTS
1. **"Fire Alarm"**	**AL1**	External alarm	(volt free input) ***NO Relay***
2. **"Spare"**	**AL2**	Not Used	(volt free input) ***NO Relay***
3. **"Remote Alarm"**	**AL3**	Used for external alarm	(volt free input) ***NO Relay***
4. **"Remote Start"**	**AL4**	Used for external start	(volt free input) ***NO Relay***
5. **"Low Level"**	**AL5**	Scrubber low level	(volt free input) ***NO Relay***
6. **"Isolator 1"**		Emergency Isolator	(Front Panel)
7. **"Pressure Alarm"**		Measure duct press	N/A) 4 to 20
8. **"Isolator 2"**	**AL6**	External isolator	(volt free input) ***NO Relay***
9. **"Low Air Flow"**	**AL7**	Low air flow indicator	(volt free input) ***NO Relay***
10. **"Battery Alarm"**		Low battery alarm	
11. **"Mains Alarm"**		Mains Failure	
12. **"Pump Configuration"**		Scrubber pump (240v output)	
13. **"Syncroflow"**		**Variable Volume Sash Control**	
14. **"Spray Bar"**		Fume cupboard spray bar	(240v output)
15. **"GPO Outlets"**		Fume cupboard GPO's	(Output to Contactor) 240 Volt
16. **"Lighting"**		Fume cupboard light	
17. **"Aux Relay"**		Control board relays	
18. **"Alarm Relay"**		General alarm relays	
19. **"Sash Input"**		Require to calibrate sash(s)	
20. **"Air Sensor"**		Variable Hot wire airflow sensor	(N/A)
21. **Commissioning"**		Activate commissioning	(setup)
22. **"Auto Start"**		Auto start after power failure	(Allows Services)
23. **"RS485"**		BMS interface (High Level)	N/A
24. **"Remote Panel"**		Additional control panel	(D/S Fume Cupboards)
25. **"PH Meter"**		Monitor PH Control	(alarms only)
26. **"Air Con"**		Start/Stop output	(NO or NC 240v)
27. **"Sash Warning"**		**Exceed sash opening**	(Duel Sash)
28. **"Dual Sash"**		Allows twin sash to operate	
29. **"Green Sash"**		**Pre-set alarm to close sash**	
30. **"BMS Interface"**		BMS Interface 1. **Power Failure** 2. **Start** 3. **Low Level** 4. **Airflow Failure** 5. **Emergency Stop**	(Low Level) outputs Volt Free
31. **"Green Lighting"**		**Turn light "OFF" at set Time**	
32. **"Service Meter"**		Set Next Service Schedule	
33. **"Pump 1"**		***Waste System only***	
34. **"Pump 2"**		***Waste System only***	
35. **"Valve 1"**		***Waste System only***	
36. **"Valve 2"**		***Waste System only***	
37. **"VSD Direct"**		**Adjust VSD or Control Valve from the Fume Cupboard**	
38. **"FAN Disable"**		**Deactivates "FAN" Button, FC Runs Continually**	
39. **"AUTO SASH"**		**Automatic Sash Movement**	**(Fire Mode)**
40. **"Services"**		Auto start after power failure	**(NO Services)**

40 Programmable Functions