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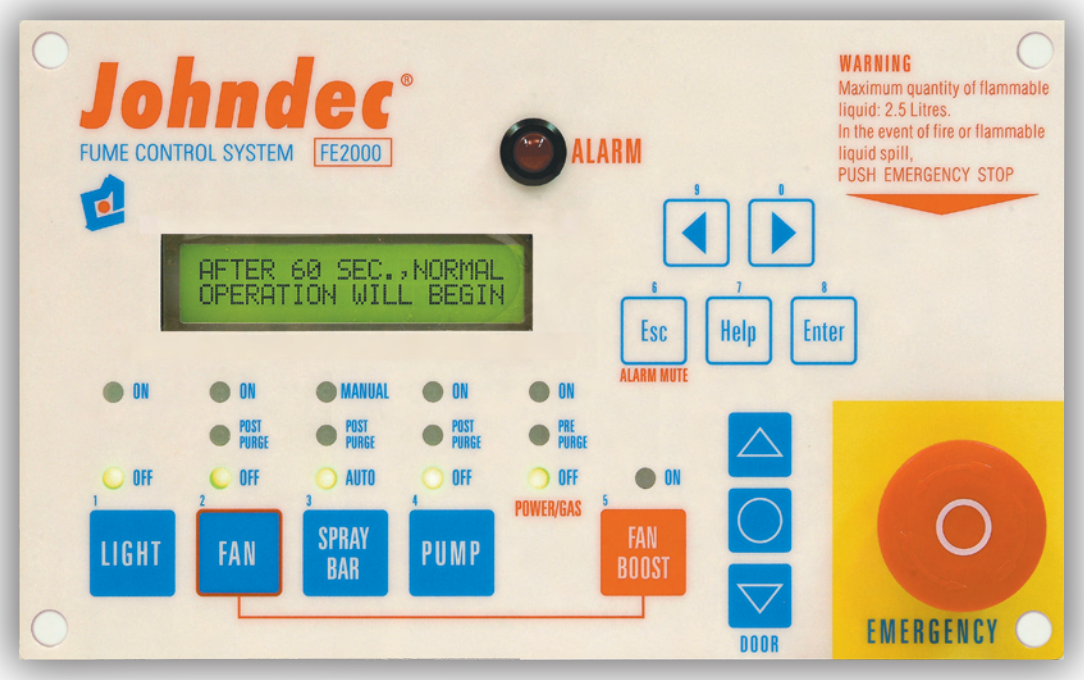
JOHNDEC®

FAILSAFE FUME CONTROL SYSTEM FE2000

A compact electronic module which makes compliance with the Australian Standards exacting conditions simple, safe and cost effective.

The Johndec Failsafe Control System and pressure sensor is a compact electronic module containing all switches and timers to enable a fume cupboard to comply with Australian Standards 2243.8, 3000, 2430.3.6 Appendix 'A' and 1482 and therefore be classified as non-hazardous.

This in turn allows the use of flammable liquids and gases to be used together with Bunsen burners and other non fire proof electrical equipment such as hot plates, etc.



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SPECIFICATION

DESIGN

Johndec FE2000 Fume Control System for fume cupboards is wholly designed and manufactured in Western Australia.

A compact electronic module which makes compliance with the Australian Standards exacting conditions simple and safe.

The Johndec Fume Control System is a compact intelligent microprocessor module with built in pressure switch, all of the functions are controlled by the software stored in the unit EPROM and hosted by the microprocessor. The use of software control allows significant operational flexibility with scope for tailoring operations to particular user requirements and to implement future upgrades.

The system also incorporates pre purge, post purge, emergency isolation of services to comply with AS2243.8, AS3000, AS2430.3.6.

The microprocessor control module has a fully programmable system incorporating a green backlit 20 character x 2 line liquid crystal display (LCD). The display allows Alphanumeric messages to be displayed by highlighting critical safety issues to the operator.

The display shows current status of the gas, power supplies, exhaust fan, sprays and scrubber pump (if fitted) of the fume cupboard in the form of clearly legible messages on the (LCD) and also by means of a light emitting diodes (LED) located on the front panel. Special attention has been given to the front of the panel, to keep the display uncluttered and use of visual and audible cues when user response is needed. Unexperienced personnel or students are guided by the preplanned legible instructions while the experienced operators can choose any option and program in the unit to suit their requirement.

A battery backup is connected to the control module, so when a mains power failure occurs the audible alarm will sound for 20 minutes. Upon resumption of electrical power, the electrical and flammable gas services to the fume cupboard will not be automatically re-established. The reset switch is used to manually reset this alarm.

Full diagnostic and setup screens are provided for commissioning and testing of the fume cupboard. On powering up of the fume cupboard the panel will perform a diagnostic program. It will report any failures along with a re-programmable service, contact phone number on the (LCD) display.

If an extraction failure or other emergency sequence such as an over-temperature should arise, the program of the Johndec FE2000 can automatically execute its emergency shut down sequence. It will isolate the gas and power while allowing the exhaust fan to continue operating as required by AS2243.8 thus setting the fume cupboard into a safe mode. At the same time the panel will activate an audible and visual alarm with the offending item on the (LCD).

An emergency isolation switch is included on the panel. In emergency situations the operator simply presses the switch and thereby isolates the power and gas outlets in the fume cupboard. This is reported on the screen and the alarm will be activated.

The panel is highly integrated onto a single PCB with touch sensitive keys, (LCD) display, (LED) indicators, relays and audio visual buzzer are self contained along with the embedded microcontroller thus enhancing the overall reliability of the device. The graphic panel is designed with key features which are colour coded for ease of identification in emergency situations.

The RS485 serial communication electrical standard was chosen for it's ability to allow multiple devices to share multi-drop cable. This has proven to be effective over extended distances and in electrically noisy environments. The RS485 multi-drop communication channel makes communication between an external data terminal or computer and the Johndec internal processor possible, thus allowing remote control of the panel and retrieval of the status data of the fume cupboard. This allows the maximisation of energy saving features, reporting to central data logging devices, access by building management systems, remote emergency shutdown or startup, reporting the sash position of the fume cupboard and delivering a signal proportional of the air volume passing through the fume cupboard.

Therefore allowing the airconditioning within the room to adjust and deliver the required air volume. Infact, the versatility of this feature is bounded only by the user's imagination.

CONTROLS

Controls contained within the Johndec FE2000 are as follows:

LIGHT

On and off switches are provided for the light with individual (LED) indicators and is complete with a relay to connect directly to the fume cupboard light fitting.

FAN

On and off switches are provided for the fan with individual (LED) indicators and a 20 minute timer to allow the fume cupboard to be "post purged" when the "off" switch is activated. The "post purge" mode operation is also indicated by a (LED). A 5 minute post purge is available for Secondary School fume cupboards.

REMOTE INDICATOR

A further replay is provided for wiring directly to a remote "fan off" indicator (alarm light) if desired.

SPRAY BAR

An "auto" switch with (LED) indicator which allows the spray bar (usually fitted behind a back baffle) to automatically operate for the required 15 minutes "post purge" when the fan is switched off. The "post purge" mode is indicated by a further (LED) indicator. A "manual" switch is provided to allow an operator to activate they spray bar at any time, if user so desires. Terminals and relay are provided for wiring to a water solenoid valve fitted in the supply to the spray bar.

PRE PURGE

Terminals and relay are provided for wiring directly to a gas solenoid valve to be fitted in any gas supply and to a 16 Amp contactor fitted in the 240 Volt power line to any power outlets on the fume cupboard. When the fan is turned "on" a (LED) will indicate that the power/gas is "off" until the necessary one minute "pre purge" has been completed, after which a separate (LED) will indicate that power/gas is "available"

POST PURGE

When the fan is turned "off" the (LED) will indicate that the fan is now in its necessary 20 minute "post purge" mode. Supplies to any power/gas will be immediately cut as indicated by a (LED).

PUMP

Terminals are provided for wiring direct to a fume scrubber recirculating pump (if fitted). (LED) indicators are provided to indicate when the pump is "off" in the necessary 15 minute "post purge" mode and when the pump is operating.

FAN BOOST

A "fan boost" switch is provided for when the fume cupboard is supplied with an Airconserver Saver System. On activation of this button a maximum extraction rate across the fume cupboards face will be achieved regardless of sash position. A green (LED) will indicate when "fan boost" is activated. To deactivate press the "fan boost" switch. If the fume cupboard is not supplied with an Airconserver Bypass Damper the "fan boost" will always be activated.

DOOR

These switches operate the fume cupboard sash if fitted with "Autosash". By pressing the "up triangle" the fume cupboard sash will go to the fully open position. The "down triangle" will go to the fully closed position. The switch with the circle will stop the door in any position. In addition, the fume cupboard can be fitted with an attendance sensor located on the top facia on the fume cupboard. If the fume cupboard is unattended for a period of 2 minutes the "attendance sensor" will command the sash to fully close, ensuring maximum saving of conditioned air.

AUDIO / VISUAL ALARM

A terminal and relay are provided for wiring from the Pressure Sensor, which is connected to the exhaust duct via a small flexible tube. In the event of a large variation or extraction failure within the fume cupboard exhaust duct, the power and gas supplied will automatically shut down, a 75 dB alarm within the module will be activated and a larger indicator light will start flashing.

REMOTE WARNING

Also provided is a further relay for wiring direct to a remote alarm or lights if desired. This feature is ideal for indicating an extraction failure in situations where a separate alarm system is required e.g. in a passage way or a security office.

ALARM MUTE

An "alarm mute" switch is provided to turn off the alarm in the module. Activation of this switch will not turn off the flashing warning lights or any remote warning device. After alarm is muted power/gas will remain shut off until fault is corrected.

RESET

This reset switch is used to manually reset the alarm system. After any fault is rectified one cannot reset the alarm system until the fault is rectified.

EMERGENCY ISOLATOR

This emergency isolator required by the Standards, will when activated, isolate electrical power to any power

outlets fitted to the fume cupboard and any gas supply via a 240 volt contactor and solenoid valve installed in the gas supply line. Operation of this "emergency switch" does not interrupt the supply to the exhaust fan and is indicated by the (LCD) & (LED).

HEAT SENSOR

Input terminals are provided within the module to provide wiring from a heat sensor fitted inside the fume cupboard. In the event of overheating within the fume cupboard chamber, the heat sensor circuit will provide for shutting down supplies, activating the fire alarm system and activation of spray bar (if fitted).

COMMISSIONING PROGRAMME

Concealed within the control module is a special code eto access for maintenance staff only, which allows the in built timer to be bypassed to enable commissioning adjustment and rectification of any faults. Hence maintenance can be carried out without the delay of waiting until timers run out. Refer to switches listed below.

ENTER

This switch is to enter and activate the menu driven functions for engineering set up, a special code is required to access some of these functions.

ESCAPE

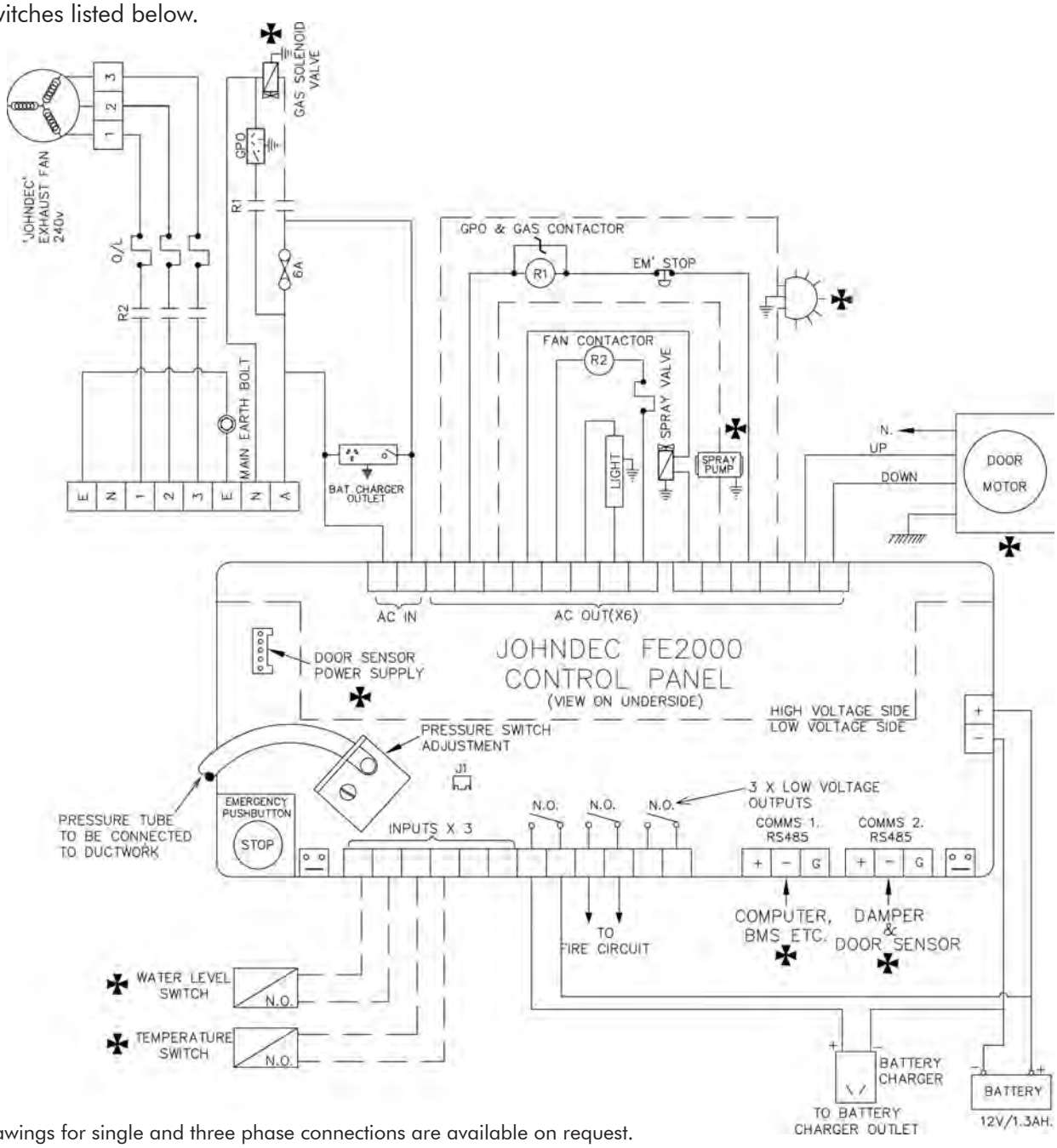
This switch is used to escape the previous level in the menu driven system, only requires activation during emergency, commissioning or programme change.

ARROWS

These switches are to advance to the left or right of the menu driven function.

HELP

This switch is provided to further assist the operator diagnose any problems which are not displayed on the (LCD) if the solution cannot be found the (LCD) will display the telephone number to contact for service.



Certified drawings for single and three phase connections are available on request.

All of the above operating systems, switches, timers, relays etc are contained in the module measuring 250mm x 150mm x 70mm deep. The face of the panel is finished flush. All switches are of the touch design, except the mushroom headed emergency switch.