HEVAC Control Agencies

# FIRE MODE MATRIX DAMPER ACTUATOR CONTROL


**LOGO PLC CONTROLLED FIRE MODE DAMPER ACTUATORS FOR 6 ~ 10 FLOORS.**

## PRE-PROGRAMMED PLC c/w OPTIONAL SANDWICH MODE CONTROL

**Features**

- S/A & EXH./A DAMPER ACTUATOR CONTROL FOR 6 FLOORS
- EXPANDABLE TO 10 FLOOR CONTROL (with extra relay exp. module)
- CONTROL ANY NUMBER OF FLOORS BY INTERLOCKING TO ADDITIONAL SETS OF THESE PLC MODULES
- STATUS DISPLAY ON LCD SCREEN
- INPUTS & OUTPUTS SET FOR FAIL SAFE OPERATION
- RELAY OUTPUTS (VOLTAGE FREE) rated at 5amps/240v
- DIN RAIL MOUNT (10 ~16 DIN MODULE WIDTH)

**Use**

Hevac have pre-programmed these very ruggard ultra reliable Siemens Logo PLC modules for fire & smoke control of motorised 2 position spring return dampers used in multi story building smoke control systems as an alternative to the traditional method of wiring many 10s of physical relays etc. This plc program has been set to control 6 floors using 6 supply air + 6 exhaust air spring return damper actuators based on a GFA input and 6 fire affected floor inputs in an optional pressure sandwich mode of operation. The plc control is easily expandable to 10 floors (20 actuators) with an additional 8 relay expansion module. Also by linking this module to the fire output signals from other logo plc groups controlling floors above & below, the number of floors that can be controlled is open ended.

*For smoke & ventilation systems using **modulating 0-10vdc controlled spring return actuators** that are normally controlled by a BMS system, Hevac's PBEC1v modules can be added to not only switch over to an external common 12vDC signal source needed to drive damper actuators to their open or closed position as required, this module also includes an on-board output A/O/M slide switch which greatly aids in system testing & commissioning. One PBEC1v is required per actuator but is also available with five pcb's assembled in one common housing, model PBEC5v.*

## OPERATIONAL NOTES

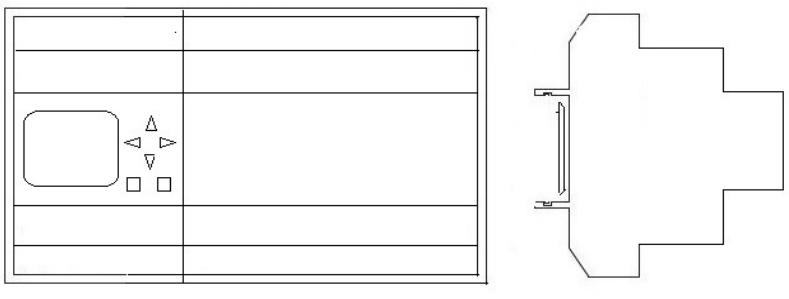
The plc inputs & outputs have been programmed in a fail safe manner to control the relative exhaust air dampers on fire affected floors and optionally the supply air dampers on adjoining floors above & below for sandwich smoke mode control. All the other non fire affected floor damper actuators are sprung or driven closed. As per standard fail safe industry practice, in this software version, the exhaust air damper outputs have been set to control normally open dampers (Spring Return open) & the supply air dampers as normally closed (Spring Return closed). All inputs are expected to be normally ON (closed contacts) for normal operation, with the plc responding to open inputs as a fire mode indications, unused inputs should be connected to the positive supply if the actual number of floors wasn't pre-commissoned by Hevac to suit a specific project. In normal non fire operation, the exhaust air dampers are driven closed and all the supply air dampers are driven open for normal floor ventilation. Variations to these program defaults can be made on request to suit the project.

## Technical Data

Electrical Specifications

| | |
|---|---|
| Power Supply | 24vAC **OR** 24vDC |
| Input / Output Indication | LCD screen showing current I/O status |
| Input Terminals | 24v active (referenced to a common neutral) to the plc's inputs via external fire mode interlocks |
| Voltage free Relay outputs | Rated at 5 Amp @ 240vac |

| | | |
|---|---|---|
| Storage and Transport | Ambient Temperature | 0...45oC |
| | Humidity | < 85 % RH (Non Condensing) |
| | Ambient Temperature | -5...65oC |
| | Humidity | < 90 % RH (Non Condensing) |
| Weight | Including Packaging | 350 grams |
| Housing | Colour | Dark gray |
| | Material | ABS POLYCARB |
| | UV Stabilised | YES |
| | Fire Retardant | YES |
| | 6 floor Size | H 90mm x W 145mm x D 60mm |
| | 10 floor Size | H 90mm x W 216mm x D 60mm |
| | Mounting Method | 35mm Din Rail Mountable |



H 90mm W145mm D 60mm (216MM WIDE for 10 floor version)

**Terminal Designations**

## LOGO INPUT TERMINALS

**P1 24v ACTIVE (AC or DC)**

**P2 24v NEUTRAL**

**i1 SWITCHED 24v ACTIVE GFA INPUT**

**i2 NOT USED in 6-10 floor systems**
**OR AS INPUT FROM FLOORS BELOW LOGO SYSTEM**

**i3 1st CONTROLLED FLOOR FIRE INPUT**

**i4 2nd CONTROLLED FLOOR FIRE INPUT**

**i5 3rd CONTROLLED FLOOR FIRE INPUT**

**i6 4th CONTROLLED FLOOR FIRE INPUT**

**i7 5th CONTROLLED FLOOR FIRE INPUT**

**i8 6th CONTROLLED FLOOR FIRE INPUT**

## DM16 12/24R INPUT TERMINALS

**L+ 24v ACTIVE (AC or DC)**

**M 24v NEUTRAL**

**i1 7th CONTROLLED FLOOR FIRE INPUT**

**i2 8th CONTROLLED FLOOR FIRE INPUT**

**i3 9th CONTROLLED FLOOR FIRE INPUT**

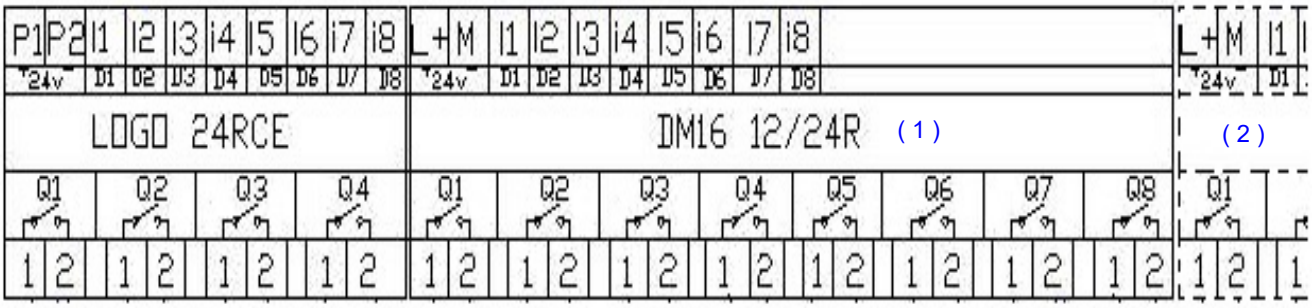
**i4 10th CONTROLLED FLOOR FIRE INPUT**

**i5 NOT USED**

**i6 NOT USED**

**i7 NOT USED**

**i8 NOT USED** in 6-10 floor systems
**OR AS INPUT FROM FLOORS ABOVE LOGO SYSTEM**




## LOGO OUTPUT TERMINALS

**Q1 RELAY TERMINALS 1st CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q2 RELAY TERMINALS 1st CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q3 RELAY TERMINALS 2nd CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q4 RELAY TERMINALS 2nd CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**

## DM16 12/24R OUTPUT TERMINALS (1ST expansion module)

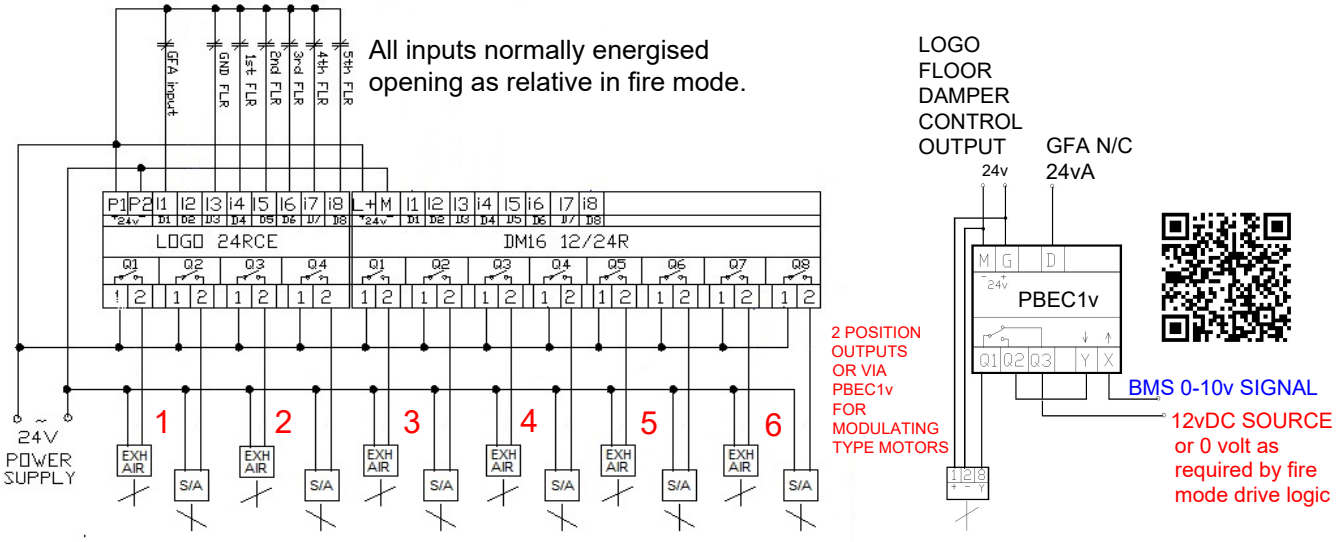
**Q1 RELAY TERMINALS 3rd CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q2 RELAY TERMINALS 3rd CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q3 RELAY TERMINALS 4th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q4 RELAY TERMINALS 4th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q5 RELAY TERMINALS 5th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q6 RELAY TERMINALS 5th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q7 RELAY TERMINALS 6th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q8 RELAY TERMINALS 6th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**

## OPTIONAL 2nd DM16 12/24R OUTPUT TERMINALS

**Q1 RELAY TERMINALS 7th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q2 RELAY TERMINALS 7th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q3 RELAY TERMINALS 8th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q4 RELAY TERMINALS 8th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q5 RELAY TERMINALS 9th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q6 RELAY TERMINALS 9th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**
**Q7 RELAY TERMINALS 10th CONTROLLED FLOOR EXH./ A DAMPER MOTOR INTERLOCK**
**Q8 RELAY TERMINALS 10th CONTROLLED FLOOR S / A DAMPER MOTOR INTERLOCK**

## Application Examples

**SYSTEM TO CONTROL 6 FLOORS OF SMOKE CONTROL DAMPERS WITH OR WITHOUT SANDWICH MODE OPERATION.**




In normal operation for floor ventilation all damper motors are powered, positioning all exhaust dampers closed (spring open in fire affected floor mode) and all supply air dampers open (spring closed in non fire affected floor fire mode).

*For systems with **modulating** spring return damper actuators, Use a common external 12vdc supply+ hevac PBEC1v's to allow both the BMS signal or fire mode (0 or 12v) logic to position damper actuators in fire mode.*

**SYSTEM TO CONTROL 10 FLOORS OF SMOKE CONTROL DAMPERS**

**EXPANDABLE WITHOUT LIMIT TO AS MANY FLOORS AS REQUIRED BY INTERCONNECTING ADDITIONAL LOGO PLC MODULES**

*IF THE NUMBER OF FLOORS HAVE NOT BEEN PRESET IN SOFTWARE BY HEVAC, UNUSED INPUTS SHOULD BE TIED TO THE ACTIVE SUPPLY.*