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# Actionpac LNS3 & Safeguard V3

## *User operating guide - System Engine*

*Issue 6.*

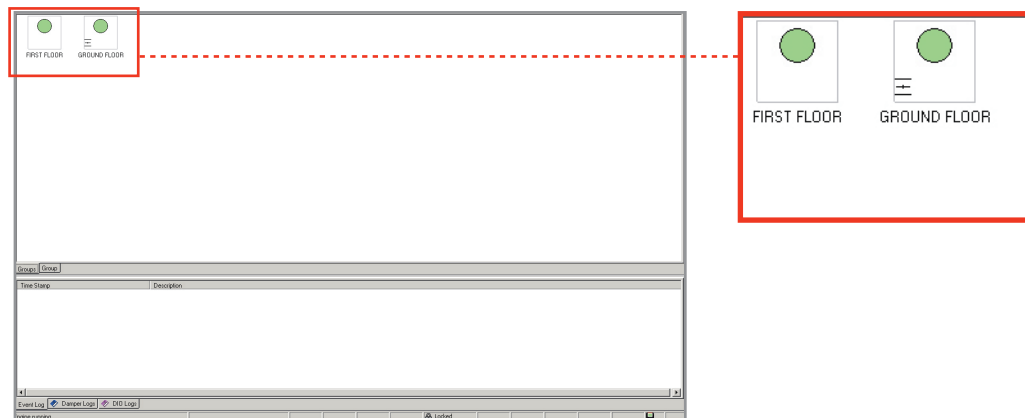


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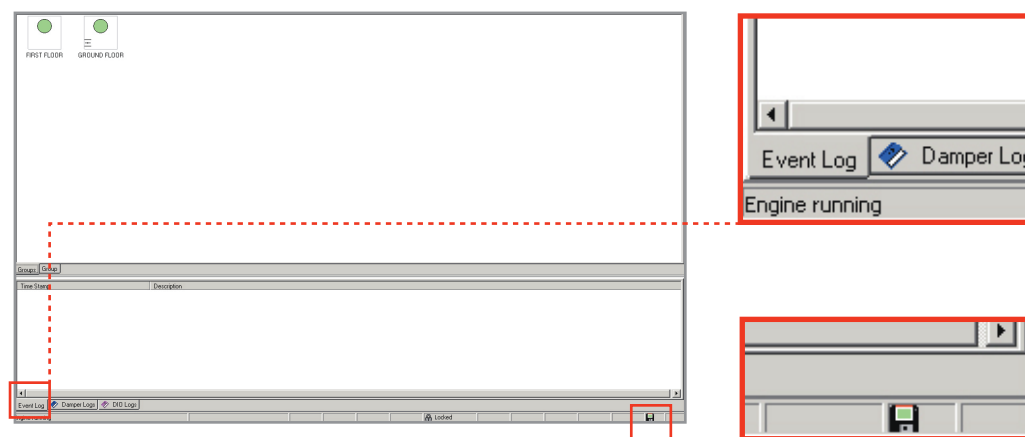
## System Engine



### Damper status

In this example you can see that we have two groups of dampers, one ground floor and one first floor.

The ground floor icon indicates that all dampers are open and healthy and the first floor icon has no open or closed indication but indicates that dampers are healthy. This is because on the first floor there is a mixture of dampers, some are failsafe open and some are failsafe closed. In the event of a fault the group's icon will turn red.



### Event log

The 50 most recent events are logged in the Event Log and system logging active is indicated by disc.

After 51 or more events they are logged to history for preventative maintenance purposes.

## System Engine

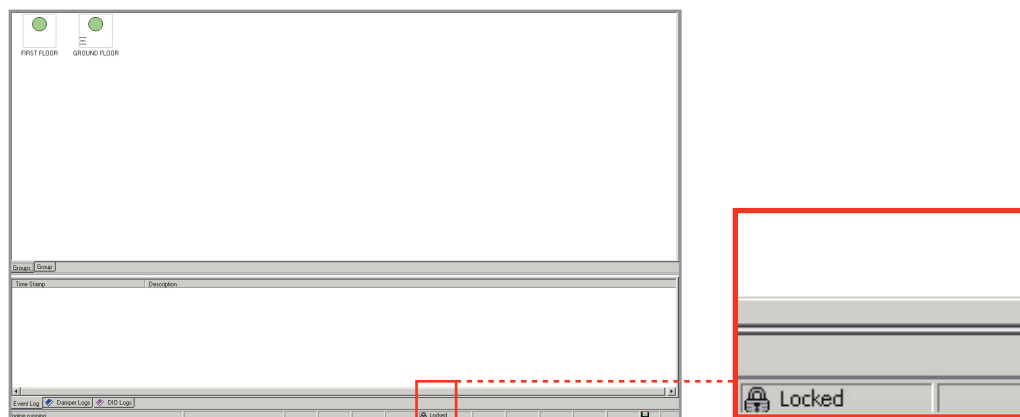


### View a group

To view a particular group, either double click on the group within the groups pane or select tab "Group" and then select the group that you want to view from the drop down menu at top of pane.

### View a damper fault

Select Damper Logs to view damper fault.

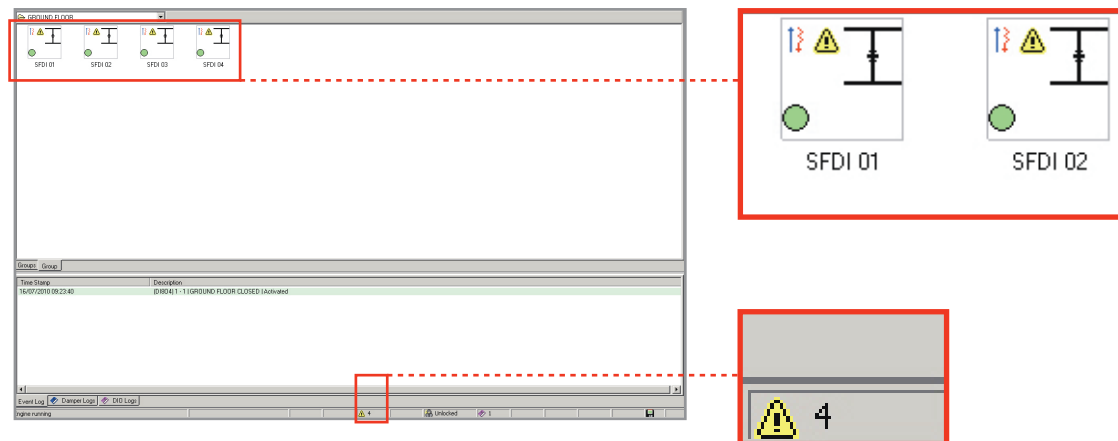


### Locking and unlocking

To unlock the system use Ctrl + F10. If using on screen keyboard, open keyboard then select screen before Ctrl + F10. The user can then operate a damper, a group or all groups. If the user changes the state of some or all of the dampers and locks the system (Ctrl + F10 again), then the dampers will remain in that state until future inputs are introduced.

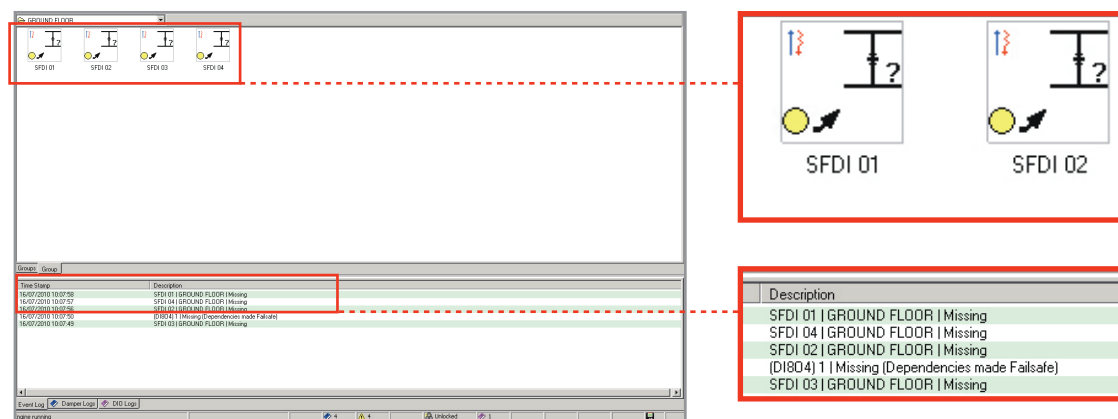
PLEASE NOTE: If a user is to be given access to the system they must be a competent person who understands and takes responsibility for their actions. When they have finished, they must remember to lock the system (Ctrl + F10).

## System Engine



### Closed dampers

The user has chosen to close all ground floor dampers which in this case were normally open. The damper icon indicates that they are now closed and the yellow warning triangle indicates that they are not in their normal position. The total number of dampers that are not normal is indicated in the taskbar.



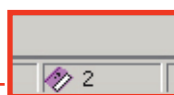
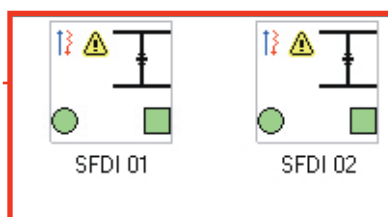
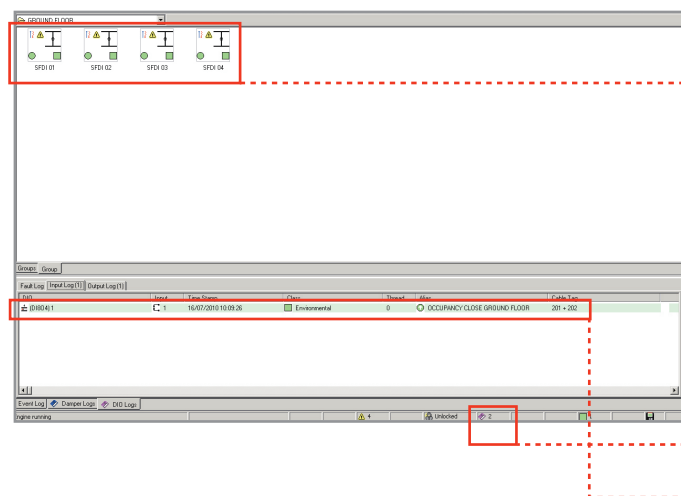
### Loss of network / power

If wired radially and the network cable is cut or power to the dampers is lost then "Missing" will be indicated in the Event Log, the dampers will attempt to failsafe and their LED will change to yellow at the group screen. Alternatively, view Damper Logs.

If wired in a loop and the network cable is cut the dampers still communicate because the system now sees two radial network cables. If one newtwork cable breaks there will be no indication on the system.

(DI804) 1 Missing (Dependencies made Failsafe) means that DI804 (a DIO device) has failsafed all the dampers that are associated with it.

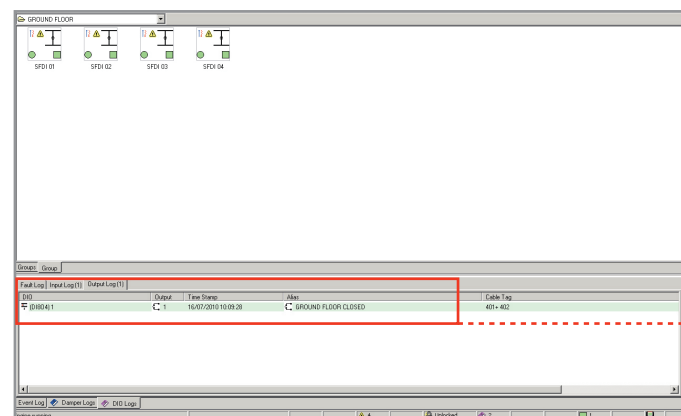
## System Engine



DIO	Input	Time Stamp	Class	Thread	Alias	Cable Tag
(D1804) 1	1	16/07/2010 10:09:26	Environmental	0	OCCUPANCY CLOSE GROUND FLOOR	201 + 202

### Environmental input

The dampers are now under the influence of an environmental input as can be seen from the green square icon and this is typically used for occupancy. Two IO events are now active, 1 input and 1 output, which can be viewed in the DIO logs. In the input log it shows that input one environmental is active, its description (alias) and cable tags references. Thread is for subsystems where multiple systems can run on one server.

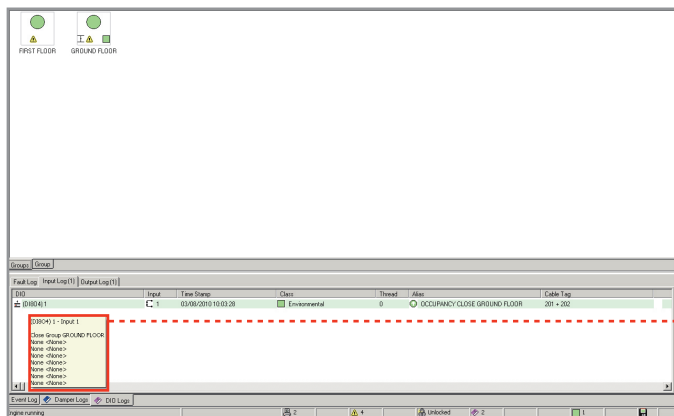


DIO	Output	Time Stamp	Alias	Cable Tag
(D1804) 1	1	16/07/2010 10:09:28	GROUND FLOOR CLOSED	401 + 402

### Output log

From the output log you can see that one output one is active, its description (alias) and cable tag references.

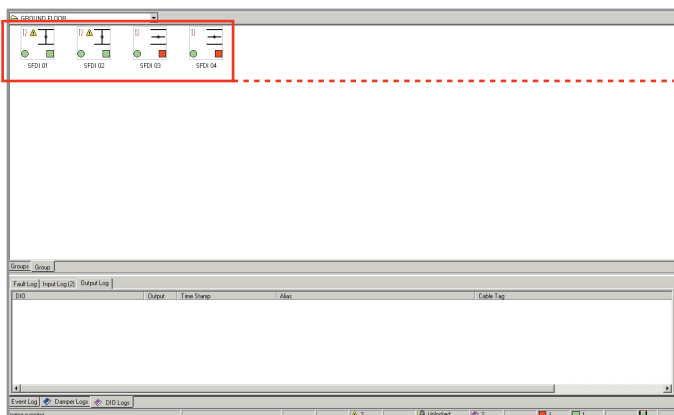
## System Engine



(DI804) 1 - Input 1  
Close Group GROUND FLOOR  
None <None>  
None <None>  
None <None>  
None <None>  
None <None>  
None <None>  
None <None>  
None <None>

### Input programming

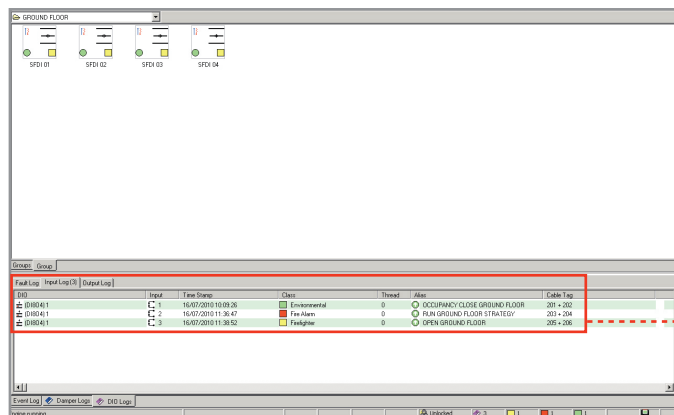
Select an input to view how it is programmed. Alternatively, if in the output log select an output to view how it is programmed



### Fire alarm input

A fire alarm input has now been introduced into the system which can be viewed in the taskbar and from red square icons on the dampers. In this case two dampers have been opened as per the cause & effect (building strategy).

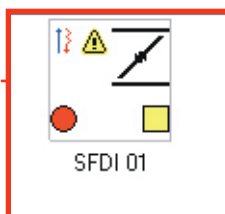
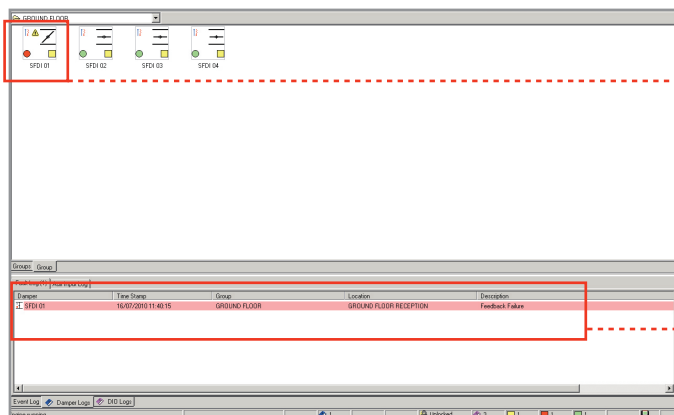
## System Engine



### Firefighter override

Now a fire fighter override has been introduced into the system and opened all ground floor dampers and from the input log all inputs can be viewed. N.B. Environmental inputs have the lowest priority and are locked out by fire alarm inputs which in turn are locked out by the highest priority, fire fighter inputs.

DIO	Input	Time Stamp	Class	Thread	Alias	Cable Tag
[D1804] 1	1	16/07/2010 10:09:26	Environmental	0	OCCUPANCY CLOSE GROUND FLOOR	201 + 202
[D1804] 1	2	16/07/2010 11:36:47	Fire Alarm	0	RUN GROUND FLOOR STRATEGY	203 + 204
[D1804] 1	3	16/07/2010 11:38:52	Firefighter	0	OPEN GROUND FLOOR	205 + 206

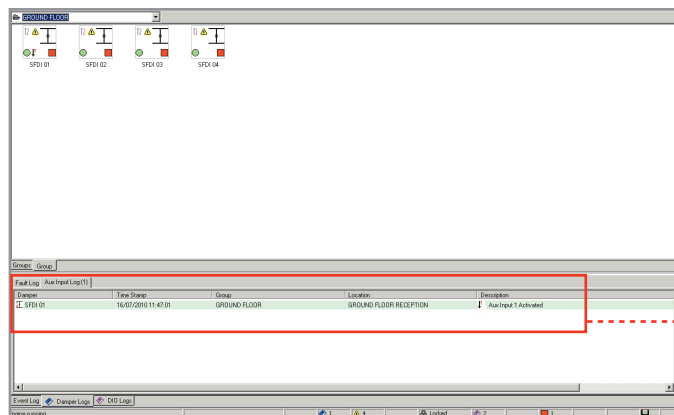


### Damper failure

Should one of the dampers fail to reach one of its end positions it will attempt to failsafe and indicate a feed back failure in the Event Log and its LED will change to red.

Damper	Time Stamp	Group	Location	Description
[SFDI 01]	16/07/2010 11:40:15	GROUND FLOOR	GROUND FLOOR RECEPTION	Feedback Failure

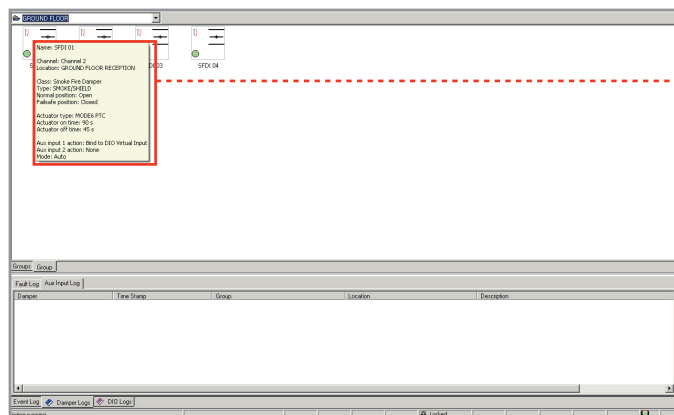
## System Engine



### Auxiliary 1 input

Auxiliary input 1 smoke detector for ground floor reception has been activated as can be seen on SFDI 01 and the building strategy was to close all dampers on the ground floor.

Damper	Time Stamp	Group	Location	Description
SFDI 01	16/07/2010 11:47:01	GROUND FLOOR	GROUND FLOOR RECEPTION	Aux Input 1 Activated

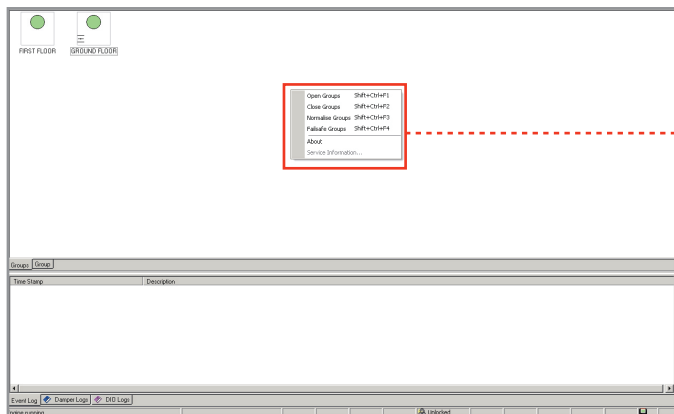


### Damper details

Select a damper to view its details

Name: SFDI 01  
 Channel: Channel 2  
 Location: GROUND FLOOR RECEPTION  
 Class: Smoke Fire Damper  
 Type: SMOKE/SHIELD  
 Normal position: Open  
 Failsafe position: Closed  
 Actuator type: MODE6 PTC  
 Actuator on time: 90 s  
 Actuator off time: 45 s  
 Aux input 1 action: Bind to DIO Virtual Input  
 Aux input 2 action: None  
 Mode: Auto

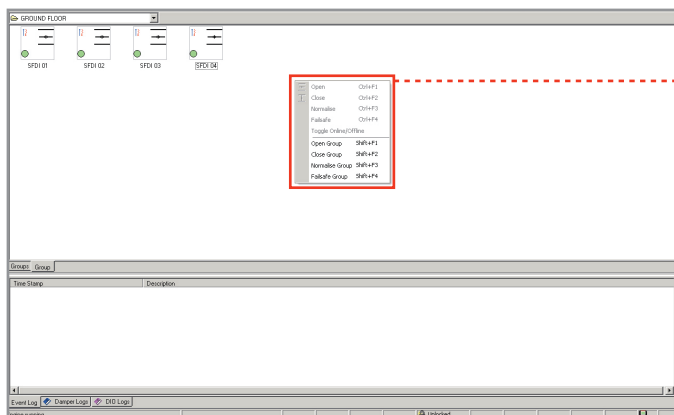
## System Engine



Open Groups	Shift+Ctrl+F1
Close Groups	Shift+Ctrl+F2
Normalise Groups	Shift+Ctrl+F3
Failsafe Groups	Shift+Ctrl+F4
About	
Service Information...	

### The groups pane

Right click on Groups pane to open, close, normalise or failsafe all groups. Alternatively use Shift + Ctrl + F keys as shown. "About" indicates current software revision.

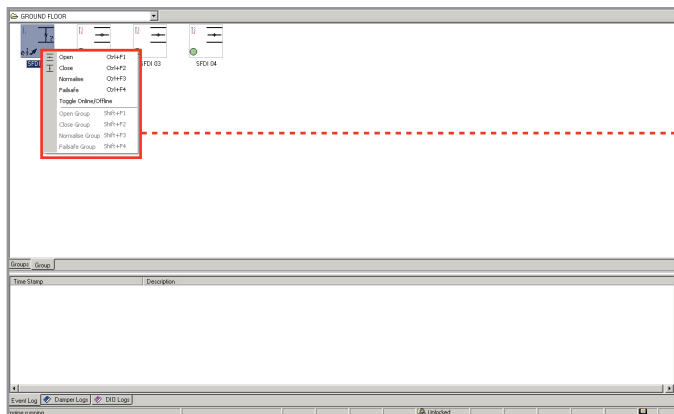


Open	Ctrl+F1
Close	Ctrl+F2
Normalise	Ctrl+F3
Failsafe	Ctrl+F4
Toggle Online/Offline	
Open Group	Shift+F1
Close Group	Shift+F2
Normalise Group	Shift+F3
Failsafe Group	Shift+F4

### The group pane

Right click on Group pane to open, close, normalise or failsafe a Group. Alternatively use Shift + Ctrl + F keys as shown.

## System Engine



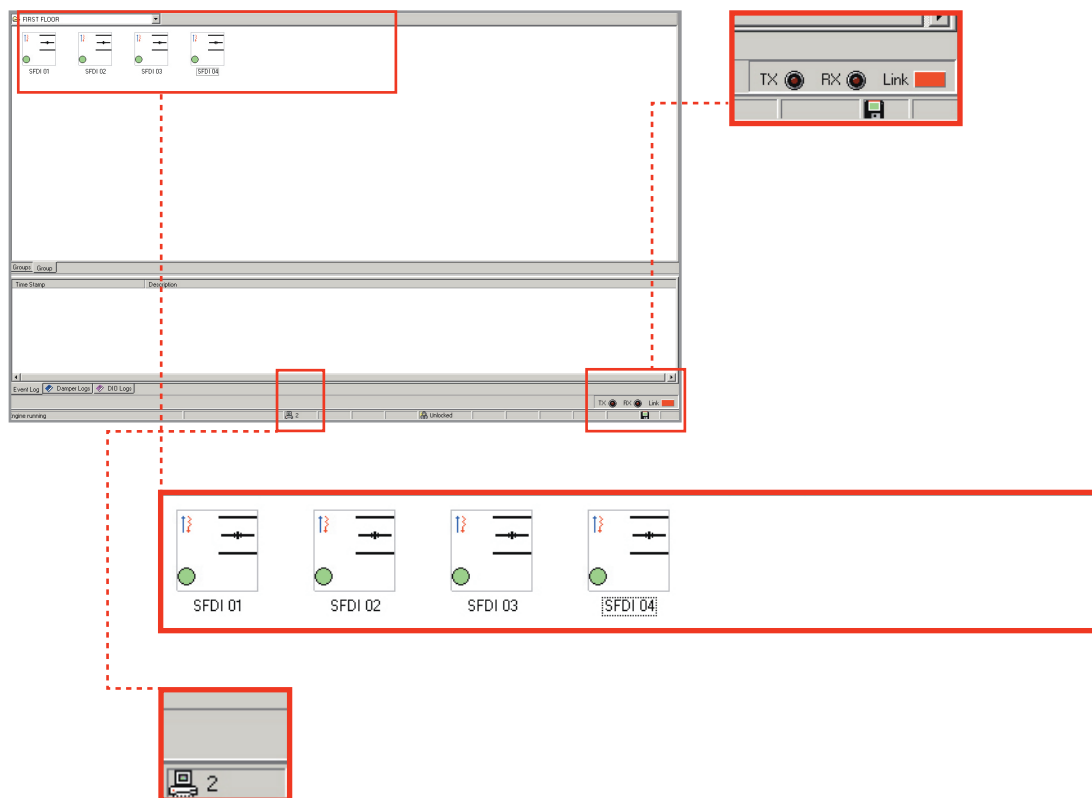
Open	Ctrl+F1
Close	Ctrl+F2
Normalise	Ctrl+F3
Failsafe	Ctrl+F4
Toggle Online/Offline	
Open Group	Shift+F1
Close Group	Shift+F2
Normalise Group	Shift+F3
Failsafe Group	Shift+F4

## Damper control

Right click on a damper to open, close, normalise or failsafe. Alternatively use Shift + Ctrl + F keys as shown. If you need to undertake maintenance on a particular damper or dampers select the damper(s) and select toggle online/offline. To revert back just select the same command.

N.B. If the user chooses to toggle a damper offline then it will be ignored by the system until has been toggled back online.

## System Engine



### BMS (Monitoring of dampers and if required IO)

In the bottom right hand corner of the screen we can see that the BMS has been activated but is currently not communicating, link is red. When the BMS is communicating the link will show green and the transmit and receive will pulse green as appropriate.

### Damper types

On the 1st floor a mixture of various dampers can be seen and at the bottom of the screen we can see that 2 dampers are under the control of other systems i.e. BMS

Smoke Fire Damper Interface (SFDI) - Energises actuator to drive and failsafes via spring-return.

3 Position Damper Interface (3-PSFDI) - Actuator can be set to a balanced position or driven open/closed and failsafes via spring-return. Shown as 3-PSFDI LNS. Alternatively, actuator can be modulated via 2 – 10V signal from BMS and only instructed to failsafe by the system in the event of an input. Shown as 3-PSFDI BMS.

Smoke Damper Interface (SDI) - Energises actuator to drive open/close damper.

Fire Damper Interface (FDI) - Monitors damper position and provides facility for energising an electromagnet. Damper failsafes closed via spring mechanism and must be manually reset.

VAVI - Provides a 24V supply to actuator for control by others. Monitored for open/close position by the system and instructed to failsafe by the system in the event of a programmed input.