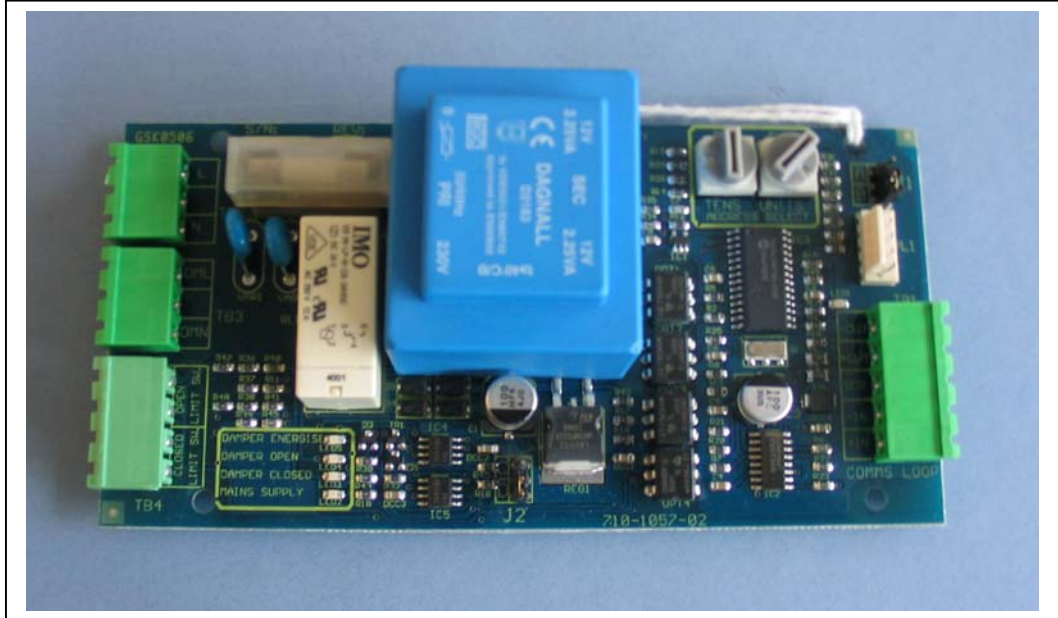


Damper Interface



Product Data Sheet

Features

- Damper Motor drive and limit switch monitoring integrated into a single unit
- Dual limit switch inputs for confirmation of damper-fully-open and damper-fully-closed positions.
- Selectable monitoring on switch inputs to prevent short circuits in the wiring from giving false position readings.
- Fail-to-safe options in case of data errors in the communications loop.

Models, Sales Order Parts:

Mxp-046-BX1 Damper Interface Boxed
Mxp-046 Damper Interface Card

Applications / Limitations:

For use with normally hold open dampers
 Fail-to-safe operation only applicable to electrically opened & mechanically closed dampers.

Compatibility:

Use with dedicated damper panel in fire systems using Hochiki protocol devices.
 Mx Series Fire panels require Version 019-01 (or higher) program to use with Apollo protocol devices.
 PC configuration program must be 4.10 (or higher) to support damper interface units.

Item	Specification Details
Enclosure Dimensions	300mm h x 200mm w x 150mm d – Steel IP66
Colour	RAL 7032 Light Grey
Weight	4kg
PCB Dimensions	70mm x 142mm (35mm high)
Operating Temperature	-5°C to 40°C
Relative Humidity	95% non-condensing (maximum)
Mains Supply	230V AC, 50Hz (+10%, -15%), 30mA (plus motor load)
Motor Switch Rating	1.0A
Fuse (PCB)	T3.15H250V
Fuse (Fuse terminal block)	T3.15H250V
Data loop current	1.6mA
As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice	

Damper Interface

1 Identification of Parts

Refer to diagram opposite:

The boxed unit comprises of a metal enclosure with hinged door. A lock mechanism secures the door in the closed position.

At the bottom of the enclosure is a glanding plate. This plate is punch marked with positions for glands. To preserve the IP rating, drill the plate only in the positions required and fit the appropriate glands.

The enclosure is provided with four mounting holes in the corners (marked A). These are capped with plastic inserts – only remove those required for fixing to preserve the IP rating.

The interface card and incoming mains terminal block is mounted onto a chassis plate. This is secured into the rear of the enclosure at four points.

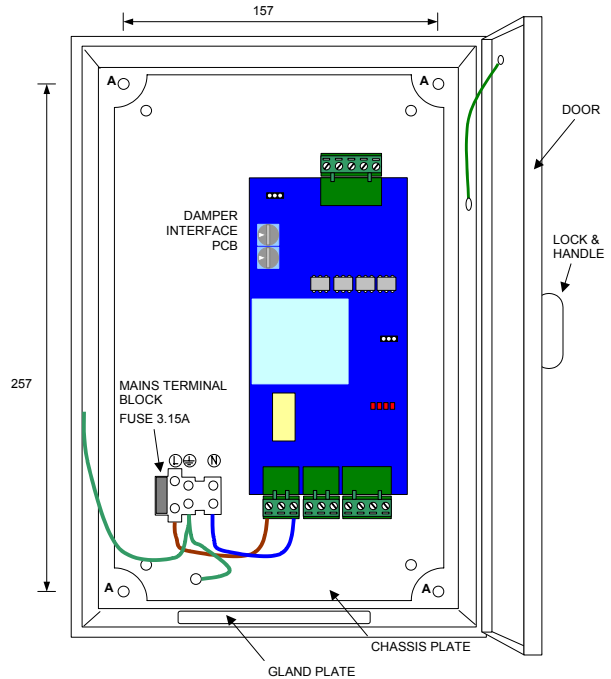


Figure 1



Caution - Isolate the mains supply before working inside this unit.

2 Installation Wiring

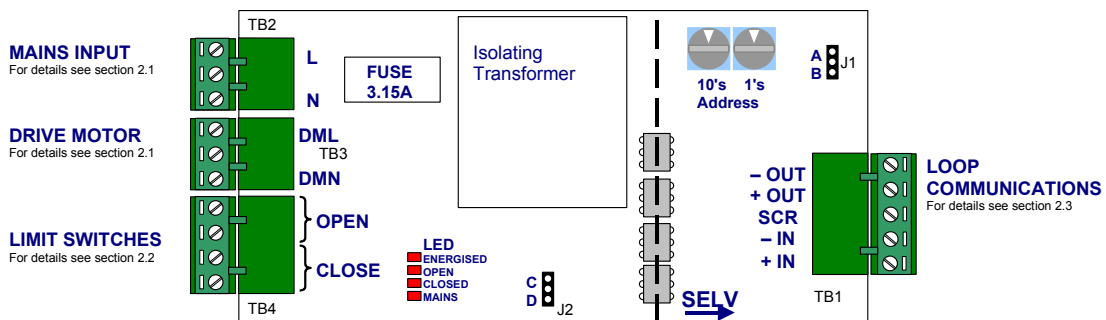


Figure 2

2.1 Mains Power Supply and feed to damper motor.

The unit is designed to control 230V rated damper motors. When supplied as a boxed unit, the box incorporates a mains fuse block. Connect the incoming Live, Neutral and protective Earth conductors to the terminals indicated on the supply label (See Figure 1).

Mains supply to the circuit board is via TB2 as follows: -

TB2-L	230V live input
TB2-N	230V neutral input.

Connect the damper motor to TB3: -

TB3-DML	230V switched feed to damper motor
TB3-DMN	230V common neutral

2.2 Damper limit switches

Connect the clean contact (i.e. volt free) position limit switches to TB4 as follows: -

TB4-Open Limit SW. Input that closes when the damper is in the fully open position.

TB4-Closed Limit SW. Input that closes when the damper is in the fully closed position.

To monitor the wiring for short circuit conditions, fit a 1K Ω at the switch and set option link J2 to position 'C'. See Figure 3 and Section 3.1 below:

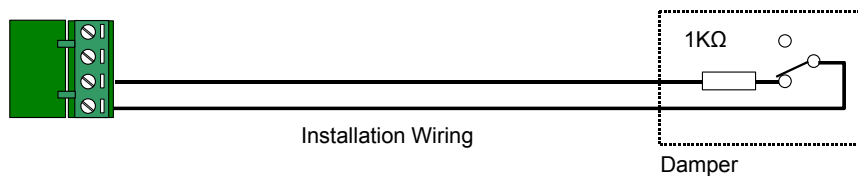


Figure 3

2.3 Panel Communications

The interface communicates with the control panel via the '+' and '-' terminals on TB1. For maximum integrity, the communications link should be formed as a loop. Two pairs of '+' and '-' terminals are provided for ease of connection. The loop interface on the module is not polarity sensitive but it is recommended that polarity is maintained with the signal polarity of the panel signals (i.e. '+' to '+', etc.)

Twisted pair fire rated cables are recommended for optimum communications. Both in and out cable screens should be taken to the "SCR" terminal only. The cable screen should only be connected to earth at the control panel and should not come into contact with any other earth point.

For further information on loop wiring and recommended cables, refer to the manual supplied with the control panel. Short circuit isolators can be installed in the loop to prevent the loss of communications to all devices in the event of a short circuit wiring fault. Short circuit isolators can be ordered separately. (Part Number 10-55000-700)

Each damper interface is assigned to an address in the range 1-99 using the rotary switches SW1 & SW2.



The communications circuit is classed as SELV and is isolated from the mains supply in the damper interface. Take care to keep all mains wiring away from the SELV communications loop.

3 Operation

3.1 Option Jumpers

In addition to the configurable items available at the control panel, the operation of the interface can also be modified according to the position of configuration jumpers J1 and J2. These modify the behaviour as follows

Jumper	Description
J1 - Position A	Fail safe communications The unit will fail-to-safe by de-energising the damper motor if the communications loop voltage falls to zero.
J1 - Position B	Enhanced fail safe communications In addition to the above, the unit continuously checks that the communications loop is signalling properly framed data packets. The unit will fail-to-safe by de-energising the damper motor if data packets are lost for more than four (4) minutes.
J2 - Position C	Monitored limit switch wiring. For this mode, each limit switch requires a 1K Ω resistor in series at the limit switch terminals. Short circuits occurring between the switch and the interface unit will then be prevented from giving a false "closed" or "open" confirmation.
J2 - Position D.	Non-monitored wiring. The switches are plain, volt free contacts without any additional sensing resistors.

3.2 LED Indicators

The main status indicator LEDs are shown below.

LED label	Description
Damper Energised	LED on when power is switched on to the damper motor
Damper Open	LED on when limit switch confirmed in the fully open position
Damper Closed	LED on when limit switch confirmed in the fully closed position
Mains Supply	LED on when the 230V mains feed is on ¹

¹ The mains LED will not turn on if either the incoming mains fuse or the PCB fuse (FS1) is ruptured.

4 Commissioning damper interfaces with the MX-4000 series panels

There are two alternative methods of programming the damper interface: -

- “Auto-Learn” at the panel and entering zones, text etc from the panel keypad.
- Using a PC to define the interfaces with the PC programming software and then transferring the information from the PC to the panel.

Regardless of the method used, each damper interface is assigned to a unique address on the communications loop. It is classed as an “Input/Output” device, with zonal assignment, text descriptions and output group programming principles the same as with other fire input/output devices. It is recommended that the word “Damper” is included in the text description to readily distinguish these devices from other I/O devices.

The default options for a damper interface set, for example, to address 3 are :-

Damper Address	Type	Action	Sensitivity (SAM) Delay	Output Group	Used for
3.0	Switch	Control	0	-	Damper open limit switch
3.1	Switch	Control	0	-	Damper closed limit switch
3.2	Relay (Monitored)	Fault Input	100s	199	Damper motor drive and fault monitor

When viewed from the panel, the damper limit switches will show as ‘L’ when open and ‘H’ when the switch is closed .

The Sensitivity (SAM) delay defaults to 100s. This allows time for the damper motor to reach the end of the travel and close the limit switch. This can be adjusted as required, but it is recommended that a margin of say 10s should always be added to prevent unnecessary fault warnings.

4.1 *Fault indication*

Communication faults such as device missing, corrupt, double address etc. are reported in the standard manner.

Operational faults are detected at the damper interface unit and displayed at the panel (in the above example, these will be reported at address 3.2)

e.g.

Condition	Fault message
230 V supply lost	“Supply fault”
Open limit switch does not close when the damper is energised	“Fail to Open”
Closed limit switch does not close when the damper is de-energised	“Fail to Close”

4.2 Output Group programming

By default, the damper interface unit is assigned to group 199. The damper would therefore normally be open(energised). The damper will close (de-energise) when any zone enters a fire condition (assuming output group 199 is in the default state).

The following gives a PC programming example in which all dampers on the first floor close if a fire occurs in zones 15,16,17,18 and 96.

Step 1

- Add damper interfaces at the appropriate addresses on the loop.
- Enter text etc as with any other I/O device.
- Adjust the sensitivity delay as required (sub address 2 on each damper)
- Assign each of the dampers on the first floor to an unused output group, e.g. group 20.

Step 2

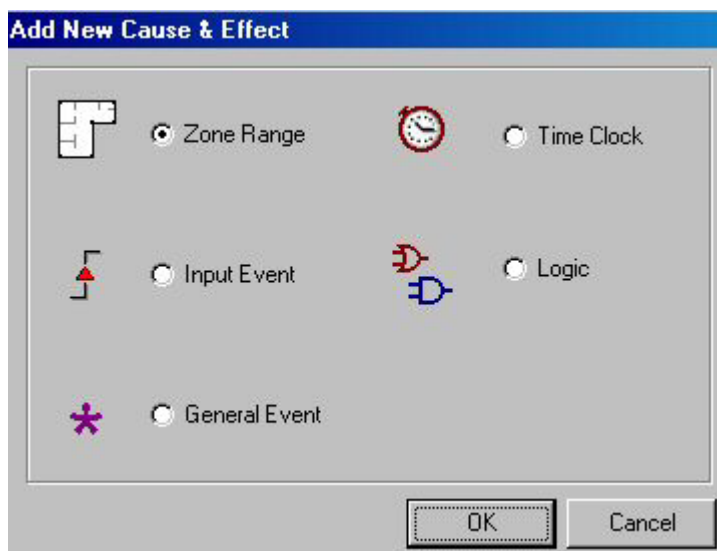
Create the new output group :-



The screenshot shows a dialog box titled "New Output Group". It has a blue header bar with a close button (X) on the right. The main area is titled "Output Group Details" and contains two input fields: "Group Number" with the value "20." and "Group Description" with the value "1st floor dampers". At the bottom right, there are two buttons: "OK" and "Cancel".

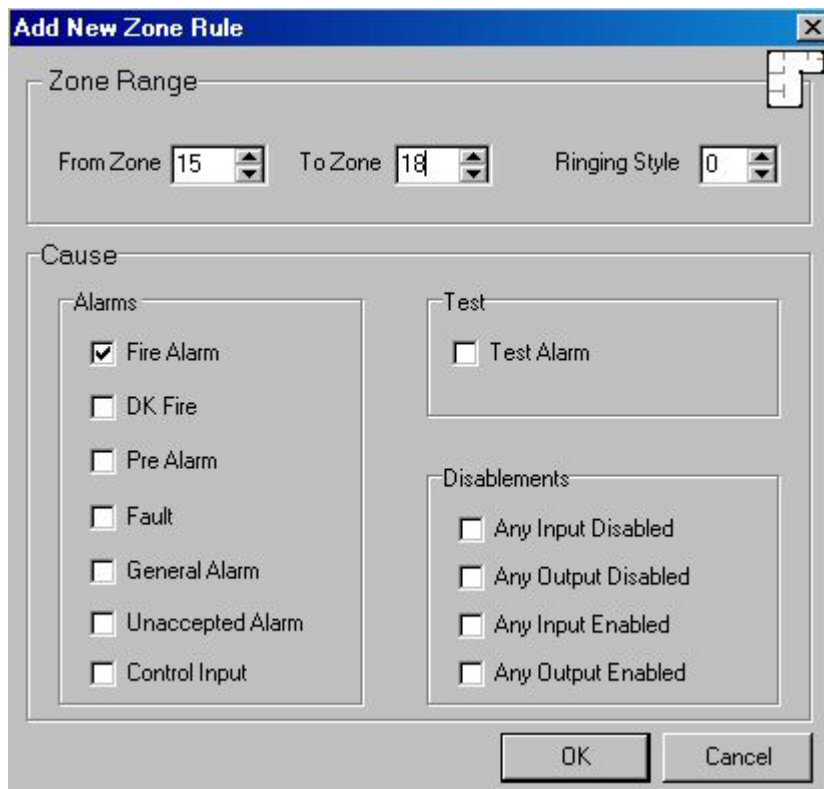
Step 3

Define the conditions for activating output group 20 e.g.



The screenshot shows a dialog box titled "Add New Cause & Effect". It has a blue header bar. The main area contains five radio button options, each with an icon: "Zone Range" (selected, with a floor plan icon), "Time Clock" (with a clock icon), "Input Event" (with a red arrow icon), "Logic" (with a blue logic symbol icon), and "General Event" (with a purple asterisk icon). At the bottom right, there are two buttons: "OK" and "Cancel".

Press OK, then say which zones to use



Note that default ringing style 0 is used – this instructs the dampers to activate (de-energise) without any delay. Other styles could be defined to delay the activation if required.

Step 4

Repeat step 3 for any other zones (in this case zone 96)

Step 5

Finished ! The total cause-and-effect for this group is as below

