DDM800 – Universal fire and gas detector module

Part No. 577.800.006 (PCB)

Installation information

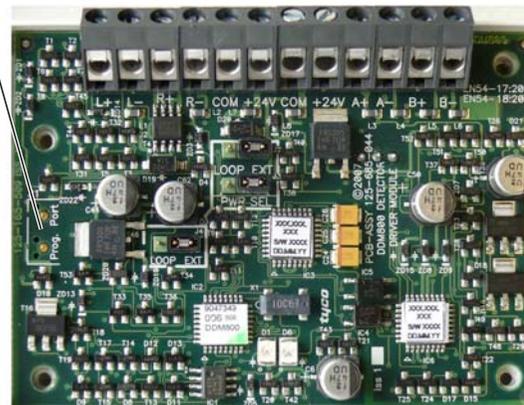DDM800 PROGRAMMING PORT FOR 801AP SERVICE TOOL

Fig. 1: DDM800 – Universal fire and gas detector module

Description

The DDM800 provides the ability to connect and interface 2 zones of 20 V DC 2-wire conventional fire detectors, or two 4-20 mA signalling sensors, to the MX fire alarm controller.

The DDM800 monitors the status of the detectors and the wiring to the detectors and signals detector and wiring status back to the controller.

The conventional detector circuits can be configured in one of two ways:

- To monitor 1 or 2 Class B spur circuits
- To monitor a single Class A loop circuit

The DDM800 supports the BS 5839 detector removal option.

The 4-20 mA signalling sensors may be one of two types:

- Current sinking
- Current sourcing

Technical specification

- Type Identification Value: 149
- System Compatibility: Use only with MX Fire Alarm Controllers
- Environment: Indoor Application only
- Operating Temperature: -25 to +70 °C
- Storage Temperature: -40 to +80 °C
- Operating Humidity: Up to 95 % RH non-condensing
- Dimensions (WxHxD)
  PCB: 84x60x25 mm (includes LED on rear)
- Cable Termination: One cable up to 2.5 mm^2
- Detector Circuits (x 2)
  – Detector Circuit Supply Voltage: 22 V nominal (22.5 V max.)
  – Detector Supply Voltage Low: 21 V, 14.5 V for Series 600 detectors in Loop Power mode

mzx TECHNOLOGY

■ Detector Circuit Current Limit:
  – 25 mA (22 min., 27 max.)
  – 52 mA max. when configured for Evac type call points
  Detector Current per Circuit: 2.5 mA max.
  Detector Circuit Resistance: 50 Ohms max.
■ EOLs (End of Line Devices)
  Conventional Circuit: 4,7 kOhms, 1 % standard
  Detector Removal (BS 5839): 18 V, 2 % Zener diode
  4-20 mA signalling sensors:
  – No EOL for current sinking sensor
  – 220 Ohms, 1 % for current sourcing sensor
■ 4-20 mA Current Sensing
  Sense Resistor: Value 220 Ohms, 1 % 0.25 W
  – Internal to DDM800 for current sinking sensors
  – Fit to terminals for current sourcing sensors
  Insertion Voltage:
  – 5 V max. (Compliance Voltage)
  – 4.4 V/20 mA
    Relative to 0 V when DDM800 sinking (i.e., for current sourcing sensor). Relative to DDM800 22 V supply when sourcing (i.e., for current sinking sensor).
■ MX Loop Voltage
  Max. Loop Voltage: 40 V DC
  Min. Loop Voltage:
  – 28 V DC (all loop power modes except for only Series 600 detectors)
  – 21 V DC (external power or on Series 600 detectors on loop power)
■ External 24 V PSU Voltage: 21.9 V to 29 V
■ Battery Requirements – External Power Mode
  From Addressable Loop
  – Standby Current: 2.2 mA per DDM800 (1.1 mA per cct for Class B)
  – Alarm Current: 7.7 mA per DDM800 (Alarm LED on)

From 24 V PSU
  – Class B Standby Current, 4,7 kOhms EOL: 10 mA per DDM800/5 mA per cct (excludes detector load)
  – Class A Standby Current 4,7 kOhms EOL: 5 mA per DDM800, one cct only (excludes detector load)
  – Class B Standby Current, 18 V EOL: 18 mA per DDM800/9 mA per cct (includes detector load)
  – Class B Alarm Current: 52 mA per DDM800/26 mA per cct (or per DDM800 for Class A)
■ Battery Requirements – Loop Power Mode
  From Addressable Loop: 4.6 mA No load (both ccts open)
  – Class B Standby Current: 20 mA per DDM800 + det load x 1.82/10 mA per cct + det load x 1.82
  – Class B Alarm Current: 100 mA per DDM800 (2 ccts in alarm, Alarm LED on)
  – Class B S/C Fault Current: 95 mA per DDM800/48 mA per cct
■ Electromagnetic Compatibility
  The DDM800 complies with the following:
  – Product family standard EN 50130-4 for immunity
  – EN 61000-6-3 for emissions

Address setting

The DDM800 has a default factory set address of 255, that must be set to the loop address for the device. The DDM800 may be programmed prior to installation by using the 801AP MX Service Tool and the internal programming port (see Fig. 1).

A single DDM800 can be programmed after installation with the "Change Address" command in the MX controller or MX Loop Tester.

The DDM800 allocates up to 4 consecutive addresses on the MX addressable loop, dependant on configuration, starting from the chosen programmed address number.

- DDM800 – Universal fire and gas detector module (PCB)   577.800.006

- DDM800 – Universal fire and gas detector module c/w M520 cover   577.800.036

- DDM800 – Universal fire and gas detector module IP55 D800 housing   577.800.056

- DDM800 – Universal fire and gas detector module (PCB)   577.800.006

- DDM800 – Universal fire and gas detector module c/w Exd housing   577.800.066

- DDM800 Zener diode EOL (Pack of 10)   557.800.057

- DIN rail mounting bracket   547.004.002

- M520 ancillary cover   517.035.007

- ANC8 ancillary housing   557.180.096 .A/T/Y

Wiring and installation

How to connect the DDM800

1. If the DDM800 is to be loop powered, then move the header links on J2, J3 and J4 to pins 1 and 2.
2. All conductors to be free of earths.
3. All wiring must conform to current edition of IEE Wiring Regulations and BS 5839 Part 1.
4. See Figs. 7 to 13 for simplified DDM800 wiring diagrams.
5. For Class A wiring (see Fig. 9), detector circuit A is used, the return is to circuit B which is fitted with the EOL.
6. For 4-20 mA gas sensors, connection of the loop and 24 V wiring is shown in Figs. 12 and 13.

    Maximum one sensor may be fitted to each circuit, both sensors must be of the same type (sinking or sourcing).
7. When using current sourcing 4-20 mA sensors, the 220 Ohms 1 % 0.25 W current sensing resistor must be fitted to the DDM800 terminals as shown in Fig. 13.

    For this reason (220 Ohms) the FV300 cannot source a DDM800 and so must be configured as a current sinking device with the DDM800 sourcing as per Fig 12.
8. Verify the correct polarity of all wiring before connecting the DDM800 to the addressable loop wiring, 24 V supply and detector circuits.
9. When using the Exd housing, all wiring must be in MICC or equivalent.
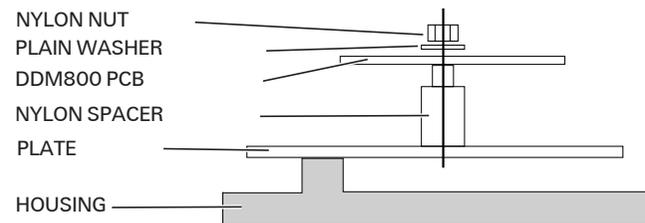10. Conventional detector circuit resistance must not exceed 50 Ohms for BS 5839 (otherwise 100 Ohms).

NYLON NUT
PLAIN WASHER
DDM800 PCB
NYLON SPACER
PLATE
HOUSING

Fig. 2: ANC8 - PCB fixing detail

Mounting

Pre-mounted options

For pre-mounted options follow the ordering information (see section "Ordering information" on page 9).

Note that fitting the PCB to the D800 box and Exd housing each require a specialised mounting plate that is not available apart from ordering the appropriate Finished Goods Part Number (see section "Ordering information" on page 9).

Installation of DDM800 into an ANC8 ancillary housing

The ANC8 housing can accommodate up to eight ancillary PCBs. A stacking kit is available if a second layer of PCBs is required.

How to install DDM800 modules into an ANC8 ancillary housing

1. Assemble the required DDM800 PCBs onto the chassis plate as required, fixing as shown in Fig. 2.
2. Assemble the chassis plate into the housing and secure using fixing screw, as Fig. 3.
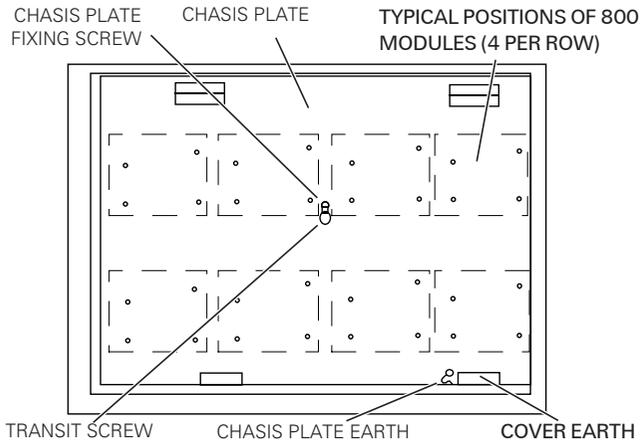3. Connect the chassis plate earth lead to the housing, as Fig. 3.

Fig. 3: ANC8 - Chassis plate

Mounting the DDM800 to an M520 ancillary cover

How to mount the DDM800 module to an M520 cover

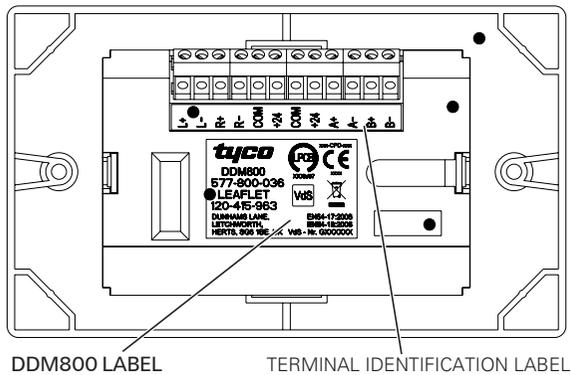1 Assemble the DDM800 to the M520 Double Gang cover, using the four screws and washers provided.

2 Fit the DDM800 and terminal identification labels to the protective cover (see Fig. 4).

3 Fit the protective cover.

DDM800 LABEL   TERMINAL IDENTIFICATION LABEL

Fig. 4: DDM800 - Label positioning

CE Marking

$\mathsf{C}\,\mathsf{E}$
0832
Tyco Safety Products Dunhams Lane Letchworth SG6 1BE UK 09 0832-CPD-1029
EN 54-17:2005 EN 54-18:2005
DDM800
Short-circuit isolator and input-output device for use in fire detection and alarm systems

Installation Instructions	120.415.963
Service Instructions	17A-04-S

Fig. 14: CPD Certification data

Ordering information

FROM +   PSU −

SUPPLY
SIGNAL

4-20 mA
CURRENT
SINKING
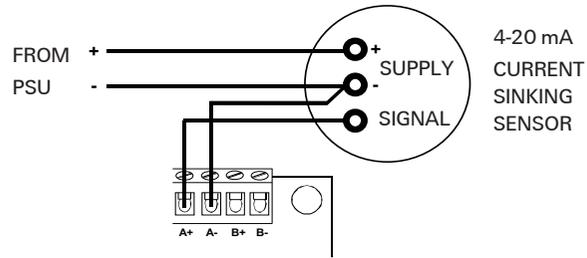SENSOR

A+   A−   B+   B−

Fig. 12: Connection of a 4-20 mA current sinking sensor (only one circuit shown for clarity)

FROM +   PSU −

SUPPLY
SIGNAL

4-20 mA
CURRENT
SOURCING
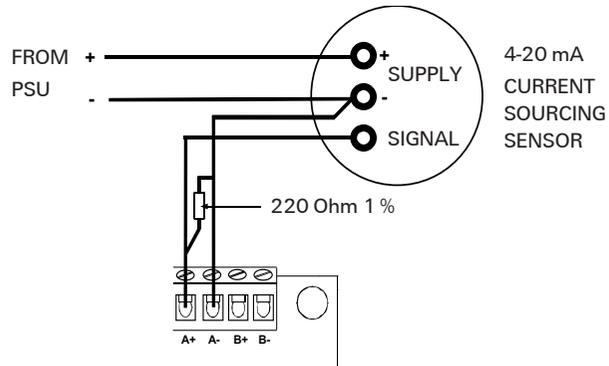SENSOR

220 Ohm 1 %

A+   A−   B+   B−

Fig. 13: Connection of a 4-20 mA current sourcing sensor (only one circuit shown for clarity)

Mounting the DDM800 into an D800 IP55 ancillary housing

How to mount the DDM800 into an D800 ancillary housing

1 Slide the four white stand-offs from the downside into the fixing holes of the mounting plate.

4 FIXING HOLES
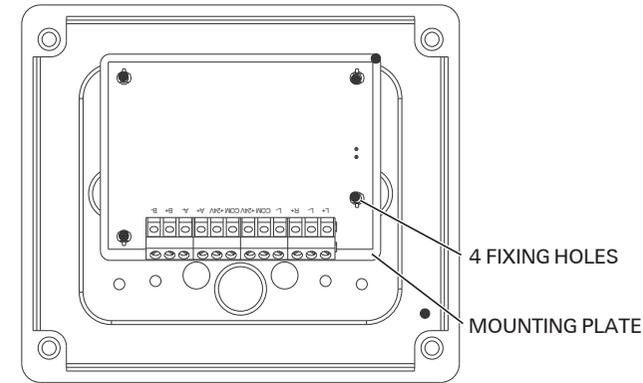
MOUNTING PLATE

Fig. 5: DDM800 in the D800 housing

DIN rail mounting

Use DIN rail mounting bracket.

How to mount the DDM800 to a DIN rail

1 Mount the 35 mm "top-hat" DIN rail into a suitable electrical enclosure.

Fig. 6: DDM800 on DIN rail mounting bracket

2 Mount the mounting plate into the housing and tighten the four fixing screws (see Fig. 5).

3 Fit the PCB to the stand-offs, push until the PCB firmly locks.

4 Install the cables through the appropriate cable inlets.

5 Fix the cover with the four screws.

2 Fit the PCB to the stand-offs on the DIN rail mounting bracket (see Fig. 6).

3 Clip the mounting bracket onto the DIN rail.

Mounting the Exd housing

Refer to the installation instructions supplied with the housing.

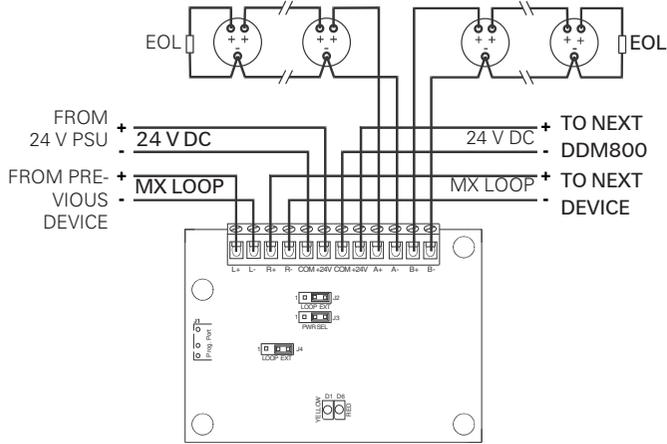## Simplified DDM800 wiring diagrams
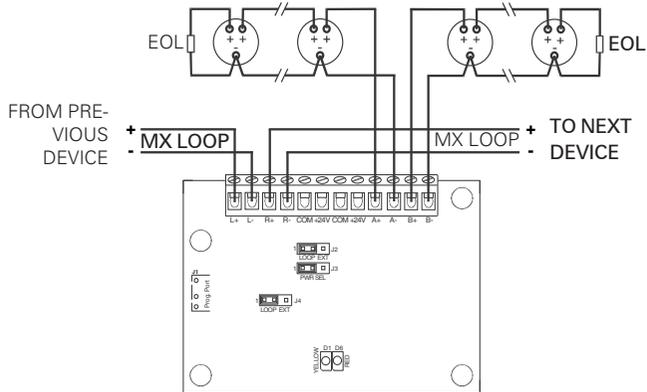

Fig. 7: Spur circuits with external 24 V

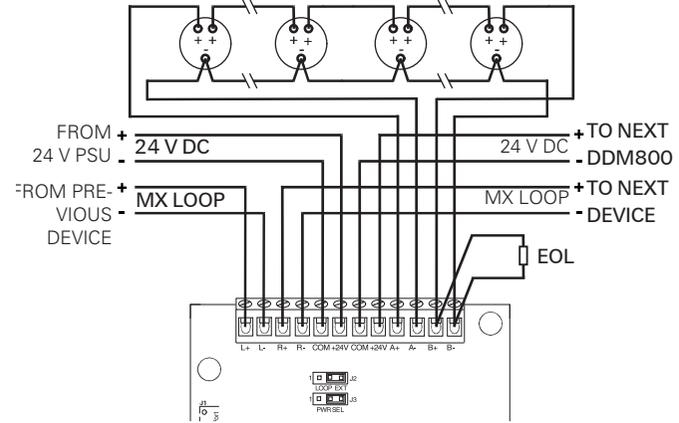*Fig. 8: Spur circuits loop powered*

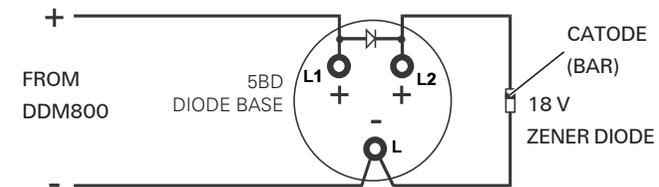*Fig. 9: Loop circuits (Class A wiring) with external 24 V*
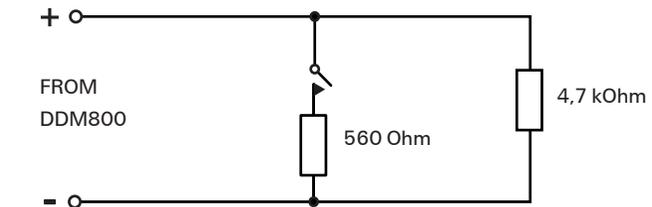

Fig. 10: Diode base and Zener EOL connection

Fig. 11: Connection of an "Alarm" Clean Contact N.O.