MCT -425
Supervised Wireless PowerCode Smoke Detector

1. Description

The MCT-425 is photoelectric smoke detector designed to sense smoke, but not gas, heat or flame and fitted with a Power-Code- type UHF transmitter module RFT-3A. It provides early warning of developing fire by sounding an alarm with its built-in alarm horn, and by transmitting a coded alarm signal to a PowerCode receiver or to a compatible wireless alarm control panel.

2. Specifications

a) Smoke detector

Detection sensitivity: 2.66 ±1.11 %/ft obscuration
Alarm sound level: 85 dB at 3 m (10 feet)

b) Transmitter and coding

Operating frequency (MHz): 315.
Transmitter's ID code: 24-bit digital word, over 16 million combinations, pulse width modulation.
Overall message length: 36 bits.
Supervision: Automatic signaling at 60-minute intervals (US version).
Tamper alerts: Tamper event (removal of the unit from its bracket) is reported once, until the tamper switch is restored.
Transmission indicator: Yellow LED lights upon transmission (visible only when Switch SW-1 is ON).

c) Electrical data

Power source: 9 V alkaline or lithium.
Operation voltage: From 7.2 V to 9.5 V.
Current drain: 28 µA standby, 20 mA in operation.
Battery life expectancy:
Alkaline: at least 1 year (for typical use).
Lithium: at least 2 years (for typical use).
Battery supervision: Automatic transmission of battery status data as part of any transmitted message.
Audible low battery warning: Built-in horn beeps once a minute for up to 30 days when the battery voltage drops.

d) Physical data

Operating temperature: 0°C to 37.8°C (32°F to 100°F).
Relative humidity: 10% to 85%
Dimensions: 130 mm (5.12") x 75 mm (2.95")
Weight (including battery): 272 g (9.6 oz)

3. Duration of transmission

Upon an alarm, during the first 3 minutes transmitting every 30 seconds a burst/message of 3 seconds.
After 3 minutes for 27 minutes, transmitting every 3 minutes a burst/message of 3 seconds.
If during this time the input alarm trigger stops (i.e. no more smoke), the transmission is immediately stopped.

4. Internal antenna description

A piece of wire AWG 24, 15 cm long inside the casing is used as an antenna.

Appendix A. The Visonic Ltd. PowerCode System

A-1. The PowerCode message format

The PowerCode message transmitted includes the detector's 24-bit ID and a status report (see Fig. A1).

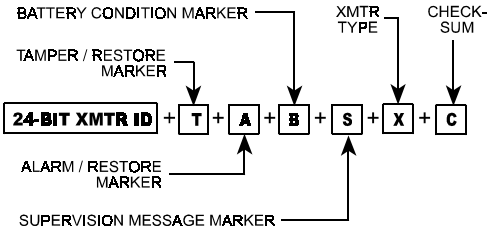

Figure A1. *Transmitted Data*

A message includes the following data:

- **Detector's ID:** Any message transmitted starts with the 24-bit ID assigned to the particular detector unit.
- **Tamper / Restore:** Upon removal of the unit's front cover, a message will be transmitted with a "tamper marker" ON. If the unit's cover is put back, a message will be transmitted with the tamper marker OFF ("Tamper Restore").
- **Alarm:** Once the detector is in alarm, a message will be transmitted with an "alarm marker" ON.
- **Low battery:** A special battery condition marker is used to report the battery status in any message. The battery is tested once an hour and if found low, the "low battery marker" is set to ON in all following messages.
- **Supervision message:** A special "supervision message marker", when set to ON, identifies the periodic supervision messages transmitted automatically at 1 hour intervals. This marker will be OFF in all other messages.
- **Transmitter type:** A special marker indicates the type of the transmitter:
  - Supervised or non-supervised
  - Reports or does not report restorals after alarm
- **Checksum:** Checksum bits at the end of the message allow the receiver to determine whether an incoming message is valid (error-free). This feature considerably upgrades the reliability of the wireless communication link.

A-2. Anti-Collision

To overcome message collisions at the receiving end, PowerCode transmitters transmit 3 data bursts at random intervals, with 6 repetitions of the same message in each burst (Fig. A2). This redundancy improves the probability of reception.

Note: *Periodic supervision messages are an exception to this rule - they consist of a single 6-message burst.*

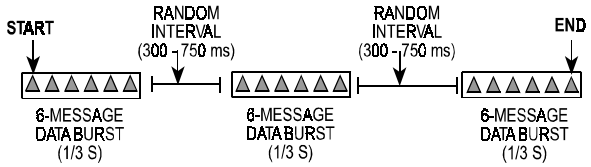

Figure A2. *Anti-Collision Transmission Sequence*

SPECIFICATIONS FOR:

M 816 VS SMOKE DETECTOR

Model number: M 816 VS

Ordering number: EK3642-0

M 816 VS smoke detector is M 816 CS without the CO part and with Visonic requirements.

The detector is CE approved and manufactured according to UL and ISO 9001 standards.

Product Features

- Photoelectric sensing technology
- Meets new UL 217 smoke standard
- Easy installation and maintenance
- Low battery warning
- Test button verifies alarm operation any time
- Sounding a loud alarm signal of exceeding 85 dB at 10 feet at alarm mode
- Five-year limited warranty for the sensing unit

SPECIFICATIONS:

Smoke Sensitivity:	2.66+/-1.11%Ft Obscuration
Power Supply:	9V battery (Alkaline/Lithium),
Battery Life:	Alkaline-1 year; Lithium-5 years
Humidity:	0 to 85% RH, no condensation or icing
Dimension:	14 cm (Dia) x 4.5 cm (H) or 5.6" (Dia)x1.8"(H)
Color:	White.
Operating temperature:	0ºC to 40ºC
Alarm Sound Level:	85 dB at 3 m (10 feet).

Visonic requirements:

1. Special PCB that include place for Visonic parts, with tests points.
   The PCB should be a FR-4 1.6mm with soldermasx up and down and white silk screen.
2. Placing all Visonic part on the PCB according to Bom list.
3. Oblong yellow led on the upper PCB in LED2 place.
4. Special bottom plastic with 2 holes one for the tamper and the second for the dipswitch.
5. Packaging structure according to packaging document.