VESDA MULTI-FUNCTION CONTROL CARD (MCC) APPLICATION NOTE

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Preface

Xtralis has developed the Multi-function Control Card (MCC) to provide the VESDA VLF aspirating smoke detectors with additional output and input communication options. There are currently two MCC models: VIC-020 and VIC-030.

This application note outlines the components of the MCC and demonstrates how they may be used to extend VESDA VLF detector functionality.

Related Products

The Multi-function Control Card was designed for use with the following products:

- VESDA VLF-250
- VESDA VLF-500

Contents

1 Multi-function Control Card (MCC) Features

Both the VIC-020 and VIC-030 MCC provide the following:

- Two dry relay contacts
- One General Purpose Input (GPI) – supervised input circuit

In addition to these features, the VIC-030 also provides either of the following:

- A Monitored Powered Output (MPO)
  or
- An additional dry contact output.

2 Uses for the MCC

2.1 The Relay Outputs

The three relay outputs, provided on the VESDA VLF detectors, are configured to communicate the following conditions to external devices such as Fire Alarm Control Panels (FACP):

- Action and Fire 1 alarm states
- Faults

The two relay outputs provided by the MCC are configured for the remaining two fire alarm states indicated on the detector (Alert and Fire 2). Thus, with the MCC installed, all four alarm levels can be communicated to external devices and can be used in a staged response to a fire event, for example:

- **Alert** – for local communication, to trained staff members, that there may be a fire event in progress.
- **Action** – for communicating a Pre-Alarm to the FACP so that standard fire response strategies can be commenced.
- **Fire 1** – for communicating a fire alarm to the FACP to mobilize first responders, according to fire codes.
- **Fire 2** – for communication with the FACP and local suppression systems for fire fighting.

Latching of the MCC alarm states is determined by the latching configuration of the VLF detector.

Note!

Instructions for installing and configuring the MCC can be found in the MCC Product Guide (Doc. No. 12468).

2.2 The General Purpose Input (GPI)

The GPI on the MCC is configured to monitor external faults such as AC input failure on the remote 24 Vdc power supply. The GPI on VESDA VLF detectors, on the other hand, can be configured for any one of the following six functions:

1. To perform a detector Reset.
2. To Disable/Reset a detector.
3. To put a detector into Standby mode.
4. To select day alarm thresholds.
5. To select night alarm thresholds.
6. To monitor an external power supply.

Having two GPI's available means that external power supply monitoring can be handled by the MCC GPI, leaving the VLF GPI free to perform one of the other five functions. For example, many local codes require that a smoke detector be reset from the associated FACP. With the MCC, this requirement can be met without sacrificing external power supply monitoring, another common code requirement. These two GPI inputs provide material savings on system equipment, since additional external monitoring and control modules are not required. The diagram below illustrates this configuration (Figure 1).

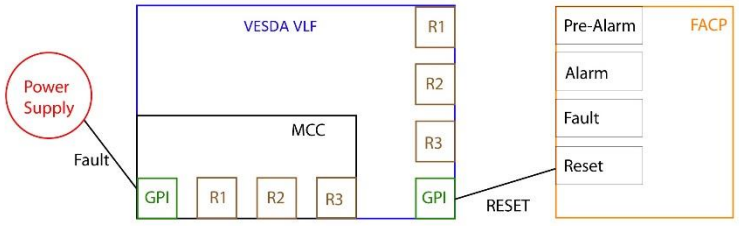

Figure 1: Example of one possible configuration for the detector and MCC GPIs

To summarize the functionality represented in the above diagram:

- The MCC GPI supervises the remote 24 Vdc power supply fault output. If a fault occurs, the GPI will detect it and raise a fault condition.
- The VLF GPI monitors the associated FACP system reset relay output. When the FACP is reset, the relay contact will close. This activates the VLF reset function which returns the detector to normal operating mode. If elevated levels of smoke persist, the VLF may re-enter the alarm state.

Another example configuration, suitable for a hazardous production area, is shown below (Figure 2).

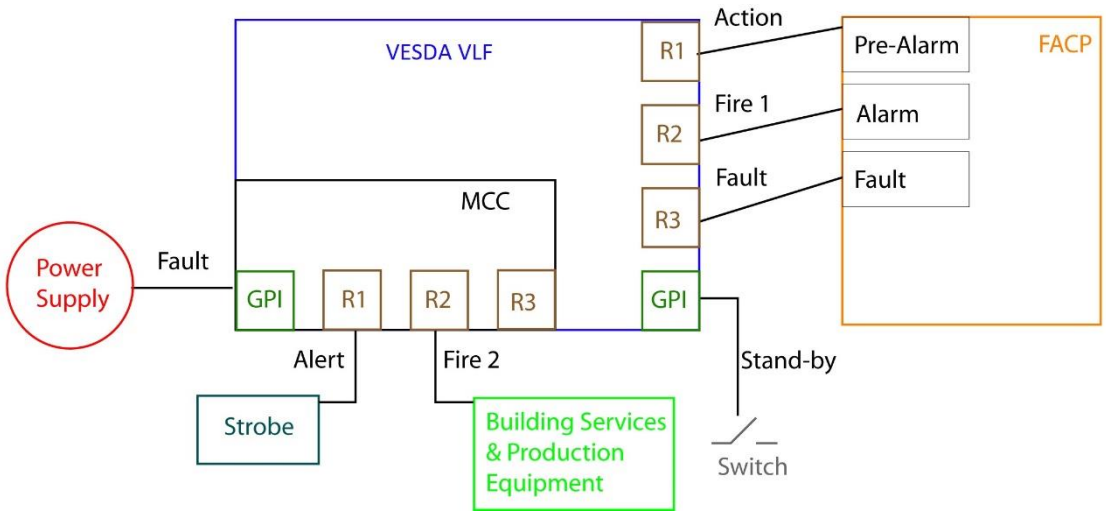

Figure 2: Example of the use of a VIC-020 MCC with a VLF detector in a hazardous production area

The above configuration is compliant with most local codes as it provides primary reporting of both pre-alarms (***Action***) and fire alarms (***Fire 1***) at the FACP. Other advantages of this configuration are as follows:

- Very Early Warning audio/visual indication (***Alert***) via the strobe in the area being protected.
- Local control of the detector to place it in Standby mode while the hazardous production facility is being washed down. Rendering the detector inoperative protects it against being damaged during the cleaning process. A fault condition will be reported to the FACP when the detector is in Standby mode.
- Automatic shutdown of hazardous or production equipment, mission critical machinery and activation of building services. The ***Fire 2*** alarm threshold of the detector can be set to a level suitable for the automatic shutdown of high current power supplies, computer servers etc or for the activation of smoke extraction systems which would localize and mitigate the fire threat.
- FACP power supply monitoring via the MCC GPI means that loss of AC or back-up battery power will be reported as a Fault to the FACP via the VLF fault contacts.

Configuring the VLF detector and MCC as shown (Figure 2) fully utilizes the very early warning capabilities of VESDA detectors by making use of the multiple programmable alarm threshold levels. Trained staff also have local control of the detector for operational purposes. The local status indication (Alert), driving an audio/visual device such as a siren, allows staff to shutdown expensive or potentially dangerous equipment and begin a safe, orderly, staged evacuation process.

Note!

Instructions for installing and configuring the MCC can be found in the MCC Product Guide (Doc. No. 12468).

2.3 The Monitored Powered Output (MPO)

The Monitored Powered Output (MPO) is only available on the VIC-030 MCC. It is a 24 Vdc output relay, capable of driving an external device such as a siren or a strobe for alarm annunciation. When the MCC is configured to use the MPO, the MCC GPI may be used to disable the MPO which will silence any connected audio/visual device, such as a siren or strobe, driven by it. Thus, the MCC can be used to both drive and silence external annunciation appliances.

The silence function could either be activated by a simple switch installed near the detector or by using a silence output from the FACP. A switch close to the detector provides convenient local control of the annunciation devices; this becomes more important where the FACP is remote from the detector and annunciation device.

An example configuration is shown below (Figure 3).

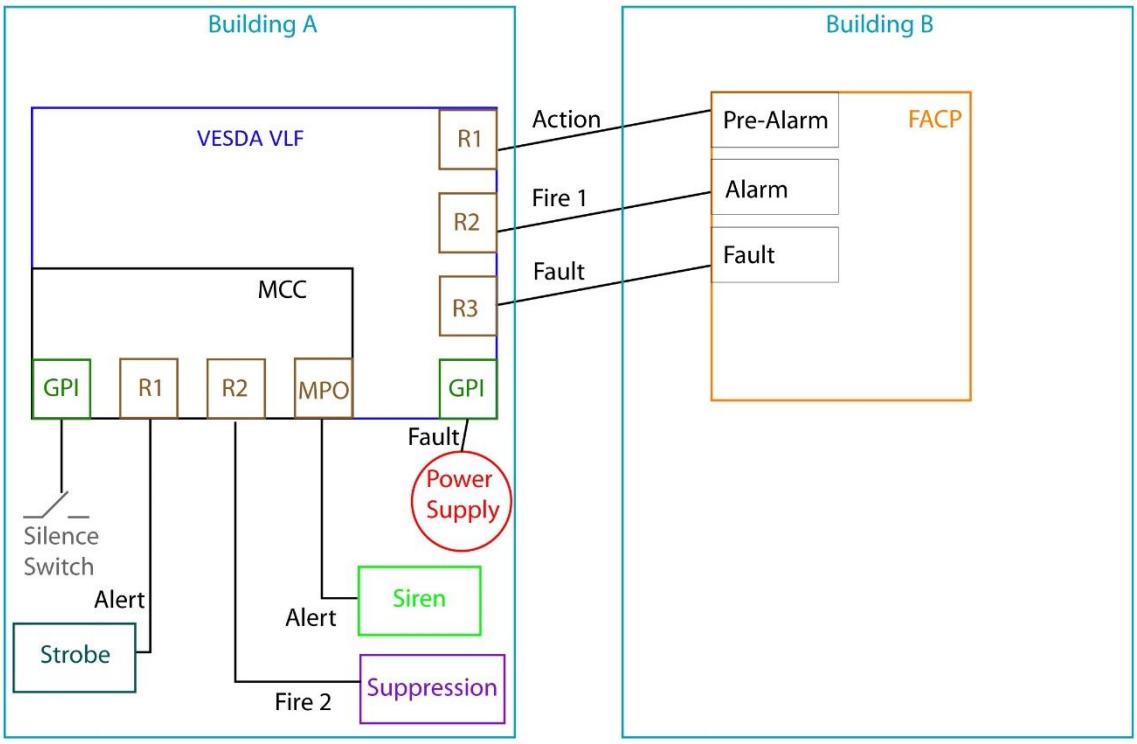

Figure 3: Example of the use of a VIC-030 MCC with a VLF detector where the FACP is remote to the detector.

Suppression actuation would be performed by a small sub-panel, which would provide both supervision and control of the suppression system. The VLF would trigger the sub-panel to release the agent suppressant or start up the sprinklers, when the appropriate alarm level (Fire 1 or Fire 2) is reached

The above configuration is compliant with most local codes as it provides primary reporting of both pre-alarms (***Action***) and fire alarms (***Fire 1***) at the remote FACP. It also provides the following:

- Audible Very Early Warning (***Alert***) via the monitored powered output (MPO) which drives a siren. The Silence Switch gives local control of this audible signal.
- Visual Very Early Warning (***Alert***) via a local strobe, which will continue flashing even if the FACP siren has been silenced.
- Automatic actuation of a suppression system (***Fire 2***) should the smoke density rise to a level indicative of a flaming fire.
- Monitoring of the power supply via the VLF GPI. A Fault is reported to the remote FACP if power is lost.

Configuring the VLF detector and MCC as shown (Figure 3) fully utilizes the very early warning capabilities of VESDA detectors by making use of the multiple programmable alarm threshold levels. It also reduces installation costs by reducing the amount of equipment that must be installed. Using a local suppression panel, provides the best solution for control of the suppression system.

Notes!

- When the MCC is configured with relay R3 selected instead of the MPO, the GPI performs the external power supply monitoring function discussed in the previous section and shown in Figure 1.
- Instructions for installing and configuring the MCC can be found in the MCC Product Guide (Doc. No. 12468)**.**

3 Compatible Devices

Xtralis has identified the following devices as being compatible with the MCC:

- Fulleon ROLP
- Fulleon ROLP MAXI
- Fulleon 1B/R/S/2W/24V Xenon Beacon
- VIMPEX Flashtone LED (green lens) sounder wiring
- VIMPEX Easy AV Smart Strobe
- Strobell SMBF-6EV-24 Bell/strobe
- Kobishi SL-401 Strobe

Note!

This list is not exhaustive, it merely represents the products that Xtralis has tested with the MCC.

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