



APPLICATION NOTE

EM405-8X105 Ethernet 8-Channel Signal Conditioning

The EM405-8X105 (P/N 11029430-0001) is a 19" wide 1U high instrument that provides special purpose signal conditioning for low speed signals. The module has two debounce channels designed to cleanup noisy switch contact closure signals and a very versatile quad window comparator function for monitoring voltage, current, or resistance. The window comparators are isolated from logic ground to allow monitoring of floating sources, such as batteries or isolated UUT's. The window limits operate in a fixed mode that requires no application programming or can be configured over Ethernet.

Using ANSI Standard M-module building blocks, the EM405-8X105 integrates eight M215 Signal Conditioning M-modules into an EM405-8 Ethernet M-Module Carrier as shown in Figure 1. Each M215 is identical and functions the same. However, each module may be configured to perform different functions by connecting the I/O pins in differently. The basic functionality of a single module is shown in Figure 2. Refer to separate M215 documentation for configuration details.

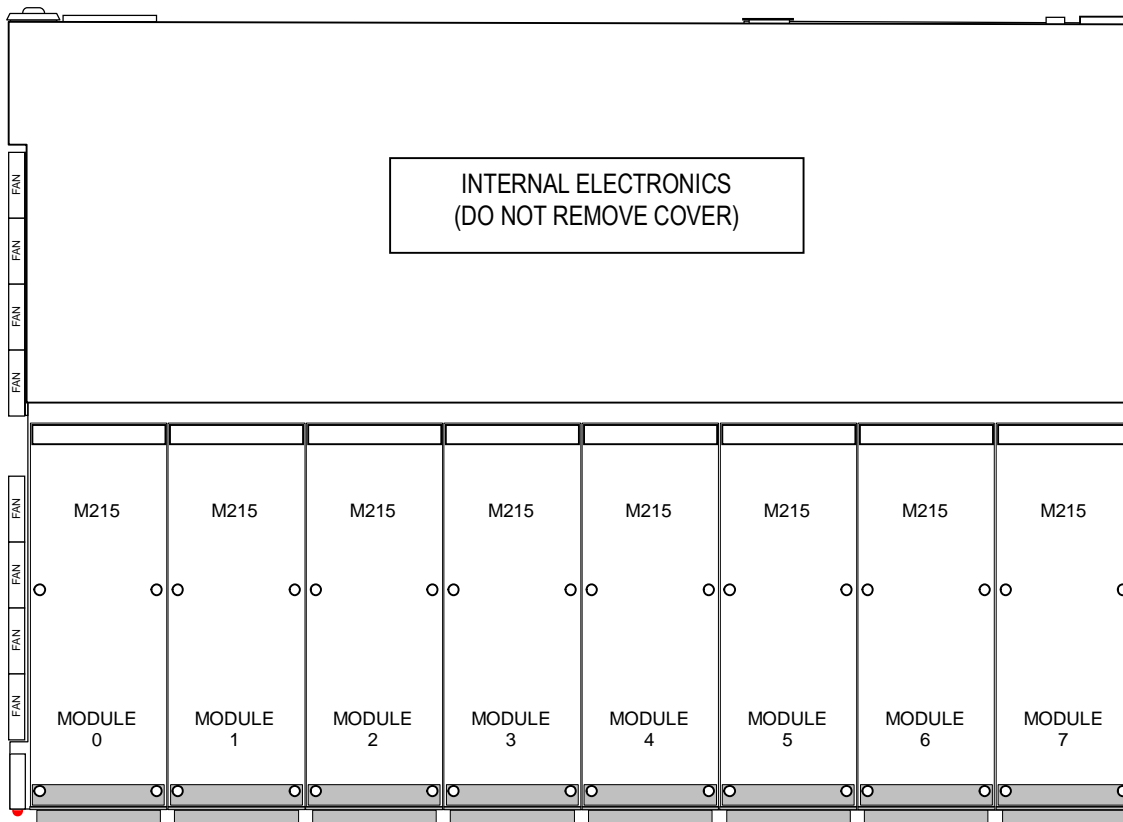


Figure 1. Integration Layout

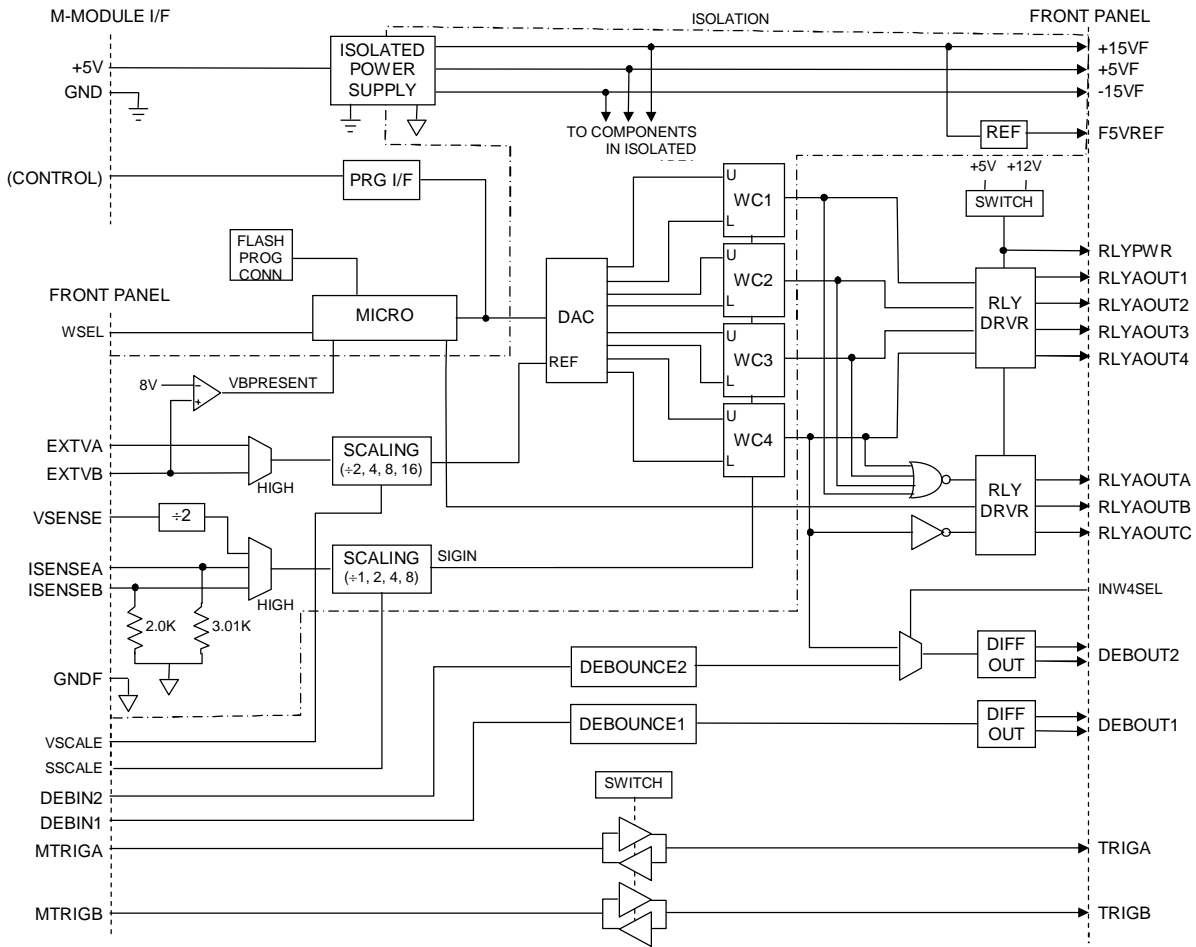


Figure 2. Functional Block Diagram

The window comparator reference values can be programmed over Ethernet. This allows very flexible usage for monitoring a wide variety of signals or sources. The relay output signals can be used drive external relays or simply used as a status signal. Further flexibility is provided through the I/O connector. The External Voltage Scaling and Current Sense Scaling can be set by pulling signals high or low on I/O connector.

The module can be configured to voltage, current, or resistance. For instance, one channel (one M215) may be configured to monitor a battery level and signal when the level is within or outside of some voltage limits. Another channel may be configured to monitor the resistance of a line and signal when it is between some set values. A channel can simultaneously provide debounce signal conditioning.

- Two Debounce Circuits with Differential Outputs
- Versatile Quad Isolated Window Comparator
- Programmable or Preset Window References
- External Reference Inputs (EXTVA/B) up to 30V
- Voltage Sensing (VSENSE) up to 40V
- Current or Resistance Sensing (ISENSEA/B)
- Relay Driver Outputs
- Isolated Power Source (1000V isolation)
- Over-Voltage Protection on Inputs
- Bidirectional M-Module Trigger Function