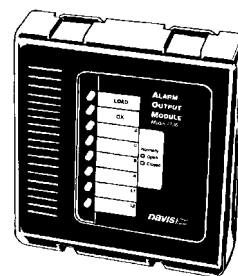


ALARM OUTPUT MODULE



7736
AUTOMATION

The Alarm Output Module (AOM) can be incorporated in any GroWeather® or EnviroMonitor® weather station. It monitors the status of the alarms in the Console and of bits sent by the user from a computer (running the GroWeatherLink or Energy WeatherLink software) and makes any four of these available as contact closures which may be used to control external systems, indicators, or equipment. Use of the module is discussed in Application Note 3.

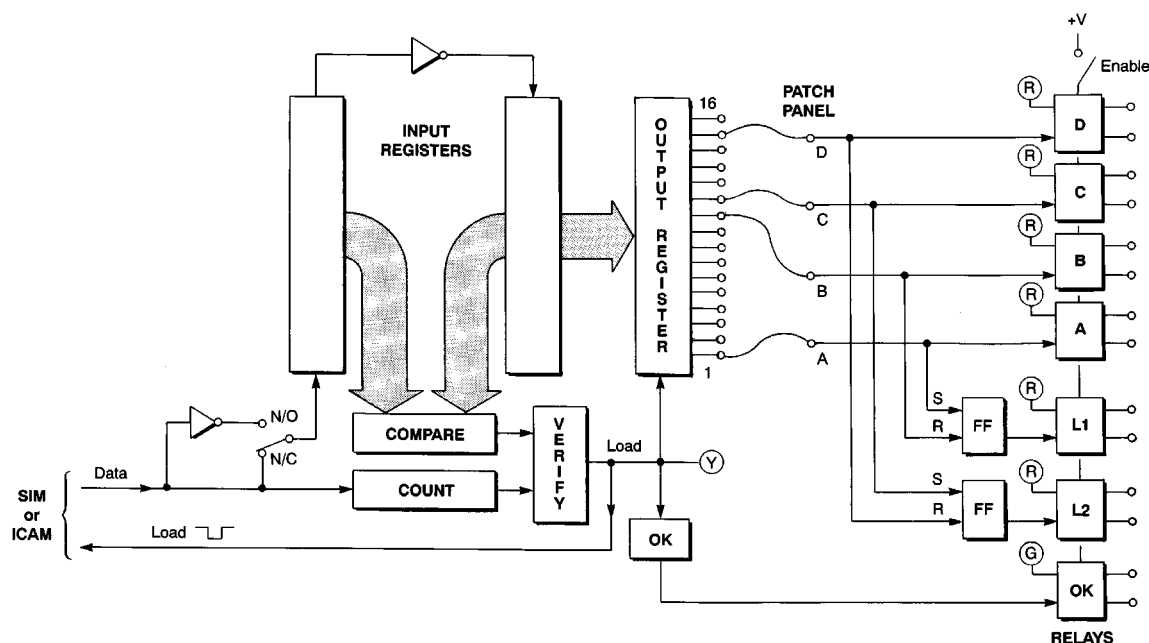
CAUTION: *The Alarm Output Module is not suitable for any use in which the health or safety of any person or the value or protection of valuable property is dependent on the operation of the AOM.*

SPECIFICATIONS

| | |
|---|---|
| Operating Temperature | -40° to 140° F (-40° to 60° C) |
| Output Contact Closures | 4 Alarm and User bits and 2 Latches (jumper selected), 1 Status |
| Contact Specifications (each of the seven output contacts is rated as follows) | |
| Type | Photo-coupled MOS FET |
| Load Voltage | 28VAC or 48VDC |
| Peak Voltage | + 100 V, maximum |
| DC Load Current | 300 mA, maximum, at 77°F (25°C), derated to 150 mA at 176°F (80°C) |
| AC Load Current | 200 mA rms, maximum at 77°F (25°C), derated to 100 mA at 176°F (80°C) |
| Peak Load Current | 900 mA, 100 msec., maximum |
| ON Resistance | 4 Ohms, maximum |
| OFF Leakage | 1 uA, maximum |
| Power Dissipation | 450 mW, maximum |
| Output Signals Available | Varies by system, see table below |
| Supply Power | +8 to +12V, 85 mA (Separate source or Y-cable; both are provided) |
| Connectors | |
| Contact Terminals | Wago terminal blocks with stainless-steel spring-loaded cage-clamp terminals. |
| Data I/O | Modular (RJ-11) |
| Dimensions | 5.72 x 5.85 x 1.25 inches, 145 x 149 x 32 mm |

OPERATION OF THE ALARM OUTPUT MODULE

As shown in the block diagram below, serial data are fed to the AOM's Input Registers from the console via the sensor interface module (SIM) or the Interface Cable Adapter Module (ICAM). As an error check, the data stream contains two copies of the 16-bit alarm data, one in true form and one inverted. A user-set POLARITY switch determines whether the outputs will be open or closed when their respective alarms are active.



Block Diagram of the Alarm Output Module

When the correct number of bits has been sent and the two copies of the data compare correctly, a LOAD pulse transfers the data into the Output Register. An indicator flashes to show that a good data transfer has occurred. LOAD pulses are sent back to the console, where the success-rate of data transfers is monitored and reported at the computer.

The table below shows the available output registers (and the output register's pin assignment) for each system (GroWeather, Energy EnviroMonitor, Health EnviroMonitor). Note that the Time alarm remains active for one minute; the Daily ET alarm remains active for 8 to 20 seconds. All other alarms remain active as long as alarm condition exists.

| Pin | GroWeather | Energy EM | Health EM |
|-----|------------------------------------|------------------------------------|-------------------------------------|
| 16 | Time | Time | Outside Temperature, Low |
| 15 | Daily ET | Outside Temperature-Humidity Index | Outside Temperature, High |
| 14 | Dew Point | Dew Point | Inside Temperature, Low |
| 13 | Radio Power | Radio Power | Inside Temperature, High |
| 12 | Outside Humidity, Low | Outside Temperature, Low | Outside Humidity, Low |
| 11 | Outside Humidity, High | Outside Temperature, High | Outside Humidity, High |
| 10 | Air Temperature, Low | Outside Humidity, Low | Inside Humidity, Low |
| 9 | Air Temperature, High | Outside Humidity, High | Inside Humidity, High |
| 8 | Soil Temperature, Low | Wind Chill | UV Dose |
| 7 | Soil Temperature, High | Wind Speed | Outside Temperature-Humidity Index |
| 6 | User 1 | User 1 | Wind Speed |
| 5 | Outside Temperature-Humidity Index | Daily Rainfall | Temperature-Humidity-Sun-Wind Index |
| 4 | Wind Chill | Not Used | Daily Rainfall |
| 3 | Wind Speed | Not Used | Inside Temperature-Humidity Index |
| 2 | User 2 | User 2 | Wind Chill |
| 1 | Daily Rainfall | Barometer | UV Index |

Any four of the Output Register bits may be jumper-selected to drive the four photo-isolated solid-state relays, A, B, C, and D.

In addition to the four direct outputs, the module has two latched outputs: signals A and B are wired as SET and RESET inputs to an R-S flip-flop which drives relay L1; signals C and D similarly drive relay L2. The SET input causes the latch relay contact to close, the RESET input opens it. The POLARITY switch must be set to normally-open for correct operation of L1 and L2.

Each of the six relays has an associated red LED, which is lighted when the relay is driven ON (contact closed).

The ENABLE switch controls power to the relays. When it is set to OFF the output contacts are unconditionally open. The LEDs continue to display the status of the signals to the relays. This permits the user to "disconnect" all outputs while continuing to monitor the performance of the AOM.

For possible use as a safety interlock, the OK output indicates that the other contact outputs may be considered valid. The green LED is lighted and the OK contact is closed when the following conditions are true: a valid data transfer has occurred within the prior 10 seconds, the ENABLE switch is on, and AOM power is present. The polarity of this output is not affected by the setting of the POLARITY switch.

When power is first applied to the AOM all output contacts are kept OPEN until the first valid LOAD is performed.

CONNECTION ALTERNATIVES

The AOM communicates with the console via the SIM-console bus. It may be connected at the SIM, or, if it is desired to locate the AOM farther from the SIM, it may be connected at the ICAM, which may be placed at any point on the SIM-console cable. The connection cable to either SIM or ICAM may be a maximum of 40 feet (12 m) in length (Davis cable #7878-040); a two-foot (0,6m) cable is provided with the AOM.

The AOM requires its own source of +12VDC power. This may be provided by either a separate power adapter or by a short "Y" cable, which wires power from a single adapter to both the Console and the AOM; both are provided.