# 16DO Digital Output Module
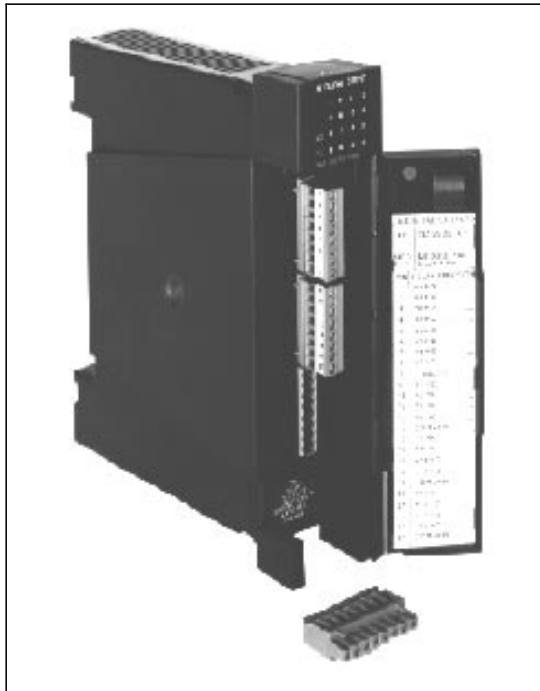
## for the MOSCAD RTU

*The 16 Digital Output module is an accessory to the MOSCAD RTU family that provides 16 relay outputs that may be connected to, and used to control, other on-site electrical devices. Examples includes lighting circuits, control circuits,and interpose relays.*

### Data Output

Under the control of the defined Application Program, the CPU module will move the current status of the data variables in the CPU module that are associated with the relays to the 16DO module via the motherboard. The 16DO module then opens or closes relays according to the status of this data.

▲ *The application in the CPU module, using data obtained throughout the system, determines the state of the output relays.*

### Electrically-Energized Relays

The electrically-energized relay module has 16 conventional relays. These relays have a single coil each. The relays remain closed for as long as their coils are energized.

▲ *This type of relay module allows user control when it is mandatory that the relays open when power is lost or control otherwise disrupted.*

### Magnetically-Latched Relays

The magnetic-latched relay module has 16 latch-type relays. These relays have two coils each plus a small internal magnet. The relay is closed by briefly energizing the Set coil—the magnet then keeps the relay closed. Similarly, the relay is opened by briefly energizing the Reset coil.

▲ *This type of relay module should be used when prolonged operation from the backup battery power source is expected. There is no sustained current drain from the battery to keep the relay(s) closed.*

### Activation Feedback

Both types of 16DO modules have secondary contacts on the relays that provide positive feedback that the relay has closed.

▲ *This feedback may be treated as digital inputs and incorporated into the Application when required.*

### Packaging

The module is packaged in a plastic housing that plugs and locks into the motherboard. Wire connections (up to 14 ga. wire) are made to removable connectors on the face of the module. No jumpers, calibration pots, etc. are located on the module (any calibration is done electronically via software from the ToolBox program.)

▲ *Modularity allows the MOSCAD RTU to be easily expanded as system wants and needs change and makes field module replacement quick and easy.*

**(A) MOTOROLA**

## Specifications

| Order | Plant Installed: | Magnetically-latched—V516; Electrically-energized—V616 |
|---|---|---|
| | Field Installed: | Magnetically-latched—FRN1492; Electrically-energized—FRN1491 |

| Outputs | 16 relays, all either Magnetically-Latched (ML) or Electrically-energized (EE) |
|---|---|

| Contact Rating | 60W or 125 VA, not to exceed 2 amp and 250 volts |
|---|---|

| Output Protection | 1 kV between contacts, 1.5 kV between contact & coil per ANSI C37.90.1-1989 |
|---|---|

| Diagnostic | 20 LEDs: | 16 for outputs, 1 each for Module Fail and No Clock |
|---|---|---|

| Power | 5 Vdc: | 5 ma (ML), 25 ma (EE) |
|---|---|---|
| | 12 Vdc: | ML: 5 ma (45 ma with LEDs on) |
| | | EE: 260 ma (300 ma with LEDs on) |

| Environment | Humidity: | 0 to 90% @ +50°C |
|---|---|---|
| | Temperature: | -30 to +60°C |

### Typical Output Circuit
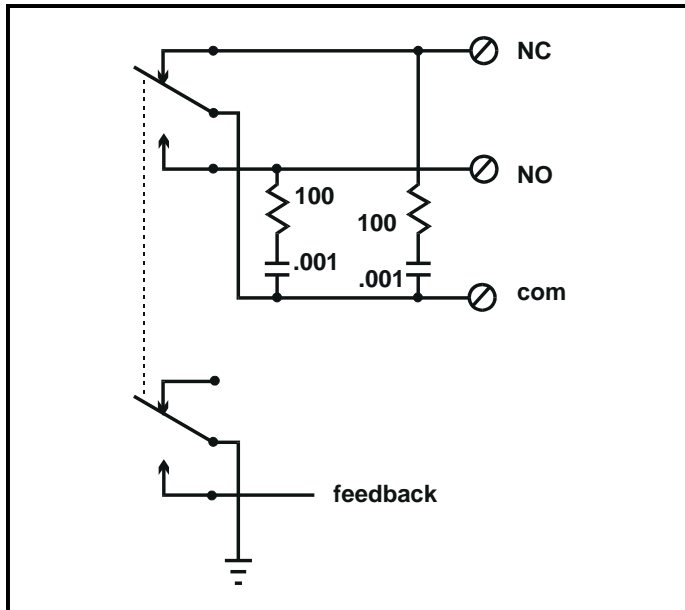


### Connections Chart

| Term | Function | | Term | Function |
|---|---|---|---|---|
| 1 | K1 NO | | 13 | K8 NO |
| 2 | K1 NC | | 14 | K5-8 com |
| 3 | K2 NO | | 15 | K9 NO |
| 4 | K2 NC | | 16 | K10 NO |
| 5 | K3 NO | | 17 | K11 NO |
| 6 | K3 NC | | 18 | K12 NO |
| 7 | K4 NO | | 19 | K9-12 com |
| 8 | K4 NC | | 20 | K13 NO |
| 9 | K1-4 com | | 21 | K14 NO |
| 10 | K5 NO | | 22 | K15 NO |
| 11 | K6 NO | | 23 | K16 NO |
| 12 | K7 NO | | 24 | K13-16 com |