

DUO-TOUCH® – Models AT-..M-2A Two-Hand Control Modules

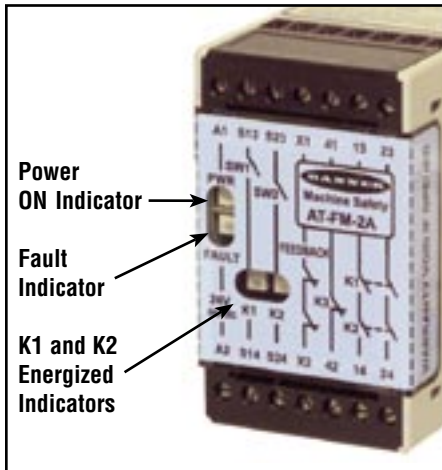


Figure 1. AT-..M-2A status indicators



CAUTION ... Not an Anti-Repeat Control Device

Anti-repeat control is not a function of the AT-..M-2A Two-Hand Control Safety Module. The user of this device must provide a suitable means of anti-repeat control for any single-stroke or single-cycle machines.



WARNING ... Avoid Hazardous Installations

The user has the responsibility to satisfy all local, state, and national laws, rules codes, and regulations relating to the use of safety equipment in any application. It is extremely important to be sure that all appropriate agency requirements have been met and that all installation and maintenance instructions contained in the appropriate manuals are followed.

Appropriate Applications

The DUO-TOUCH Two-Hand Control Safety Module may be used as an initiation device for most powered machinery when machine cycling is controlled by a machine operator.

Using a two-hand control system makes the operator a “hostage” while the hazard is present, thus limiting or preventing exposure to the hazard. The two-hand control actuators must be located in a way that hazardous motion is completed or stopped before the operator can release one or both of the buttons and reach the hazard (see **Separation Distance** on page 6).

Simultaneous use of both hands is required, meaning that both buttons must be actuated within a very short time span. The time span is specified by ANSI/RIA R15.06, ANSI/NFPA79, and ISO 13851 (EN 574) as not more than 500 ms, even under single-fault conditions. This requirement reduces the possibility of intentional defeat and unintended initiation of the machine cycle.

When used in single-cycle or single-stroke mode, the machine control must provide an anti-repeat feature so that the operator must release the two-hand control actuators after each machine cycle, before a new cycle can be initiated.

The actuating devices must be protected from accidental or unintended operation. This can be accomplished by their mounting position and/or through the use of protective shields such as rings, guards or shields; see Figure 3.

NOTE: Two-hand control and two-hand trip safeguarding protect *only the operator's hands*. Additional safeguarding may be required. The user must refer to the relevant standards for additional requirements for the application of two-hand control and two-hand trip devices when used for safeguarding.

Part-Revolution Clutched Machinery

A two-hand control safety module can be used for the following functions: “inch” (jog), “single-stroke,” or “continuous” (run). Two-hand control safety modules are recognized as a means of protecting the machine operator when the hand controls are safely located and protected from false operation (see **Mechanical Installation** on pages 4-5 and **Separation Distance** on page 6) and when properly interfaced to the machine (see **Electrical Installation** on page 7) to control the required stopping action.

Full-Revolution Clutched Machinery

A two-hand control safety module used to initiate the cycle of a full-revolution clutched machine is known as a “two-hand trip device.” Two-hand trip devices are recognized as a means of protecting the machine operator when the hand controls are safely located and protected from false operation (see **Mechanical Installation** on pages 4-5 and **Separation Distance** on page 6) and when properly interfaced to the machine (see **Electrical Installation** on pages 6-7) to prevent accidental cycle initiation.

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Theory of Operation

The input circuit of the DUO-TOUCH Safety Module requires simultaneous actuation (within 0.5 seconds of each other) of both two-hand control actuators to generate an output signal.

The timing diagram in Figure 2 illustrates that an output signal from the DUO-TOUCH Safety Module occurs only if switches #1 and #2 (SW1 and SW2) are actuated within 0.3 seconds of each other (300 ms typical, not more than 500 ms under single-fault conditions). The output signal drops within 25 milliseconds following the release of either switch. The device output does not reenergize until both hand controls are disengaged, and then simultaneously re-actuated. This logic reduces the possibility of defeating the two-hand control system by tying down one or both actuators.

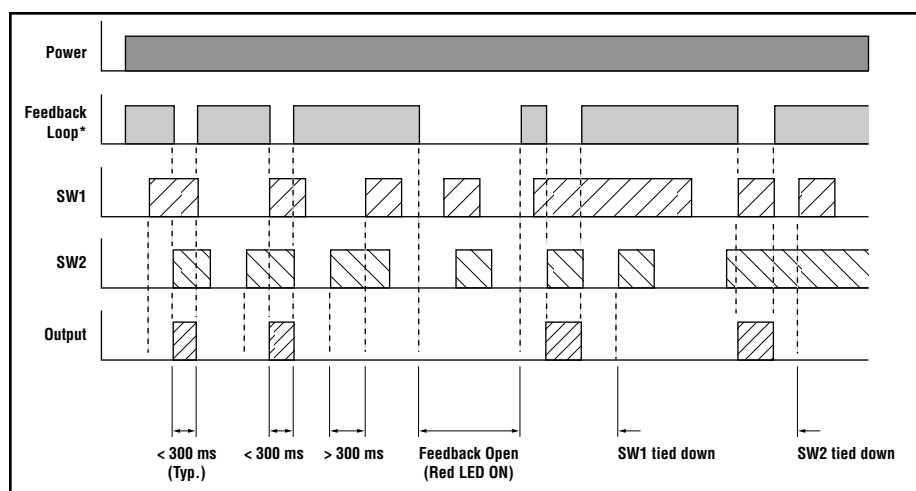


Figure 2. DUO-TOUCH Safety Module AT-..M-2A timing diagram

Mechanical Installation

The DUO-TOUCH Safety Module must be installed inside a NEMA 3 (IEC IP54) rated, or better, enclosure. It is not designed for exposed wiring. Safety Module dimensions are shown in Figure 6. The device mounts directly onto standard 35 mm DIN rail.

Heat Dissipation Considerations

For reliable operation, the user must ensure that the operating specifications are not exceeded. The enclosure must provide adequate heat dissipation, so that the air closely surrounding the Module does not exceed the maximum operating temperature stated in the Specifications (page 11). Methods to reduce heat build-up include venting, forced airflow (e.g., exhaust fans), adequate enclosure exterior surface area, and spacing between modules and other sources of heat.