Technical Bulletin #22

Please Pass On To Your Technicians

PRODUCT INFORMATION

DATE: 01 OCT 2003

SUBJECT: BEA Module Overview and Explanation

EXPLANATION OF LO-21 LOCKOUT MODULES

The BEA family of lockout modules provides intelligent switching for activation and safety circuits for automatic pedestrian doors. Below, is a chart that shows what modules can be used with what type of operators.

Model	Operator Compatibility	Safety Beam Allowed	Circuits Required For Lockout Module
LO-21	All except PWM	Yes	Safety Only
LO-21B	Besam MP (same as LO-21U)	Yes	Safety & Activation
LO-21K	KM 3000 (with PWM motor input)	Yes	Safety Only
LO-21P	Use With Parallax System	No	Activation Only
LO-21S	Stanley Magic Swing / Force	No	Safety & Activation
LO-21U	All except PWM	Yes	Safety & Activation

What is PWM?

PWM refers to "Pulse Width Modulation". Historically, most automatic door operators with DC motors, when powered, have a constant non-pulsed voltage to drive the operator. Generally speaking, the higher the voltage, the faster the motor turns, and the faster the door movement. With PWM, as the name implies, the voltage going to the motor is sent in pulses. The pulse varies with the amount of voltage, and the amount of time the voltage stays on and off. A higher voltage does not necessarily imply a faster turning motor, as the On time may still be very low. PWM is now starting to be used on automatic doors, as it provides for smaller, more efficient, and more controllable motors – all desireable traits.

How do you know if a motor is PWM? Without information from the manufacturer, the most obvious sign is when you observe motor voltage values with a multimeter, as the door is activated. You will generally see a very low voltage. Your meter cannot react fast enough to see the pulsed signal. Thus, you only see the average value. When the door is in hold open, it is possible to see values of only 2 or 3 volts DC. This is why it causes a problem with lockout modules. The lockout modules generally need to see a voltage value of around 9 to 12 volts DC when the door is open, in order to function correctly. If the voltage is too low, the lockout time may begin counting down prematurely. Of course, BEA will continue to monitor the technology of our industry and will do our absolute best to keep pace with these changes, as we strive to offer the best possible sensor interfacing solutions for the future.

EXPLANATION OF OTHER MODULES.

The following chart shows the current modules offered by BEA. As a general rule, **these modules may be used on nearly all automatic door operators**. Power input to the modules is 12 to 24 Volts AC or DC (in most cases). Lockout style modules will work with AC or DC motors, but will not work on operators that use a PWM (Pulse Width Modulation) style motor input, unless specified. Contained in this document, is a brief description of each module.

MODULE	DESCRIPTION	FUNCTION
MC-10	Time Delay Module	Provides a time delay of 99 seconds max.
MC-10RL	Time Delay with reverse relay logic	Same as MC-10, but requires a normally closed input
MC-11	Latching Relay	Upon a momentary input, the output changes state and holds indefinitely until the next momentary input. Also referred to as a ratchet relay
MC-15	Safety Module and Lockout Relay	Provides a safety circuit for controls that do not have it (typically low-energy door operators).
MC-25	Delay on Make, Delay on Break	Provides a delayed output to allow operation of an automatic door with an electric lock device.
MC-50	Door Interlock Module	Provides control for 2 doors whereby if one is opened the other is disabled until the first is closed again.
MC-65	Door Sequencer	Provides control for sequential operation (bi-directional allowance)
LE-21	SuperScan Lockout	Disables the approach side SuperScan for manual door operation. SuperScan is only operation if module receives an activate signal first.

MC-10 / MC-10RL
The MC-10 is an adjustable time delay module for use with floor mats, push plates, pull cords, etc. The purpose of this module is to provide an adjustable time delay from 0 to 99 seconds for activation devices that do not have an internal time delay of their own, such as the devices just listed. The MC-10 is extremely reliable, simple to install, and maintains a high degree of accuracy. An LED on the front of the module makes it very easy to verify operation.

The MC-10 is powered by 24 Volts AC connected to the brown and orange wires - power must be continuous. The time delay function will begin when the two blue wires have made momentary contact with each other through an alternate set of normally open dry contacts. **POWER MUST NEVER BE APPLIED TO EITHER OF THE TWO BLUE WIRES!** At that time, the state of output from the MC-10 will change and will remain changed until the preset time delay adjustment has expired. The change of output will be verifiable through the illumination of the red LED on the front of the module. Anytime the MC-10 has been activated the red LED will illuminate. The LED goes out when the time delay has expired. The unit may be re-activated at any point during the time delay countdown and will simply reset the time delay each time it is re-activated through the blue wires. An additional feature of the MC-10 is the ability of outputting a dry voltage or a wet voltage depending on the location of the jumpers.

MC-15
The microprocessed MC-15 Safety Module & Lock Out Relay is designed to add safety to automatic door operators that are designed without a safety circuitry such as, Keane Monroe 2000 or TM and Gyro Tech 700/710. The MC-15 uses the motor and BODYGUARD to determine if the swing path of the automatic door is clear and allows the door to open or close. If the swing path of the automatic door is not clear and the door is in the open position, the MC-15 will allow the BODYGUARD to hold the door open as long as the BODYGUARD detects something. If the door is closed and there is something in the BODYGUARD pattern, the MC-15 will prohibit the activation device from opening the door.
The MC-15 Safety Module & Lock out Relay provides a means of blocking out the signal from a Bodyguard presence sensor as it detects the door during its closing cycle, thereby allowing re-activation if necessary. This system is known as a dedicated or committed system. Consequently, if a person were to step back into the swing path of the door while the door was closing, the BODYGUARD would ignore them, until the door reached a fully closed position, when the MC-15 would normally time out.
Note: The MC-15 was designed to add safety to doors in the Low-Energy Operator category, ANSI 156.19.

MC-25
The MC-25 is a delay on make, delay on break time delay. It is perfect to use when either a magnetic lock or electric strike is installed on an automatic door. The delay on break timer will release the lock and then the delay on make timer will enable the door to open and be held open for a set period of time. The primary purpose of this is to allow a slight delay for door activation to prevent any binding from electric locking devices.

MC-50
The microprocessed MC-50 is designed to interlock doors in sequential operation. This means that in a clean room application, bank vault, airlock, and other security applications, if any one door in a interlocked network is opened, either manually or by a door operator, no other door will be allowed to operate automatically. However, it does not stop a person from opening the locked out door(s) manually if there is no magnetic lock or electric strike on the door.
One MC-50 will be required for 2 automatic door that are to be controlled by the sequencing network. The MC-50 also has a built in 2 second hold open time delay to eliminate the need for a MC-10 Time Delay.

MC-65
The MC-65 is a microprocessed door sequencer. It is ideal to use in a small vestibule to coordinate inbound and outbound traffic through automatic doors. Since the MC-65 is microprocessed, all values stored in permanent memory are retained if there is a power loss. Also, the MC-65 has a double digit display to aid in programming the correct time delays needed. It is capable of accepting 4 independent inputs from push plates and it provides two relay outputs in a timed sequence depending on the direction of travel. Relay 1's output can be either a dry output or a wet output by changing the position of two jumpers. Relay 2's output is only a dry output.

LE-21
The LE-21 is a lock out module that has been designed to inhibit the Approach SuperScan on an automatic door when the door is used manually. For instance, when the SuperScan is installed on a low energy operator that is to be used manually as well as automatically, the LE-21 will allow the SuperScan to be active only when the door is triggered by activating a push plate. The SuperScan will remain in the activation circuit until the door fully closes following the automatic operation of the door. A door position switch is needed to indicate to the LE-21 that the door has reached its fully closed position and to ignore the input of the SuperScan until the push plate activates the door again. If the door is opened manually, the LE-21 will prohibit the input from the SuperScan from reaching the door control. The LE-21 provides the hold open time delay; therefore, the door's time delay should be set to minimum.The LE-21 is a lock out module that has been designed to inhibit the Approach SuperScan on an automatic door when the door is used manually.

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If after troubleshooting a problem, a satisfactory solution cannot be achieved, please call B.E.A., Inc. for further assistance during Eastern Standard Time at **1-800-523-2462 from 7am - 5pm.**
For after-hours, call East Coast: 1-866-836-1683 or 1-800-407-4545 / Mid-West: 1-888-308-8843 /
West Coast: 1-909-596-3011. **DO NOT** leave any problem unresolved. If you must wait for the following workday to call B.E.A., leave the door inoperable until satisfactory repairs can be made.
NEVER sacrifice the safe operation of the automatic door or gate for an incomplete solution.