

Figure 1. MINI-BEAM *Expert* series features

## Dynamic TEACH

Dynamic TEACH is a method of setting the sensor's sensitivity while the object to be sensed is in motion. After multiple sensing events, the sensor automatically adjusts the sensitivity to account for variations between them.

### Determining the Output ON and OFF Conditions

Dynamic TEACH is used for optimizing the sensor's sensitivity and will not configure the output ON and OFF conditions. A Static TEACH must be used first to change the output ON and OFF conditions, if needed (see accompanying data sheet). If the outputs are configured properly for your installation, Dynamic TEACH may be performed as needed without reverting back to Static TEACH.

### Setting Sensitivity

Sensitivity is automatically set and optimized when the sensor is taught dynamically. When the push button is depressed and held, the sensor continues to sample events and registers them into memory. Upon release of the button, the sensor chooses the optimum setting for the application and then returns to RUN mode.

### Dynamic Sampling Rate

When using Dynamic TEACH to sample an application for programming, it is important to consider the speed of the object being sensed. The sensor's sampling rate during this set-up process is much slower than its response time in RUN mode. For normal-speed sensors it is about 18 times slower and for high-speed sensors it is about 54 times slower. Once sampling is complete and the sensor returns to RUN mode, sensor response time returns to its original value.

### Dynamic TEACH Programming Using the Remote TEACH Line

To pulse the TEACH line, momentarily connect the Remote (gray) wire to dc common; no press-and-hold procedure is required to enter TEACH mode. (This is the equivalent of a "click" when using the sensor TEACH push button.)

1. Using the Static TEACH procedure, set up the application's Output ON and OFF conditions. (This step is not necessary if the Output ON and OFF conditions already are configured properly for your application.)
2. Double-pulse the Remote TEACH line (see Figure 2). The sensor is now ready for Dynamic TEACH. The bi-color (green/red) indicator will be ON solid red and the yellow indicator will flash.
3. Hold the Remote line low. Sample sensing events while continuing to hold the Remote line low.
4. Release the Remote line when event sampling is complete. The green indicator will turn ON and the sensor will return to RUN mode with the new settings, if the contrast is adequate.

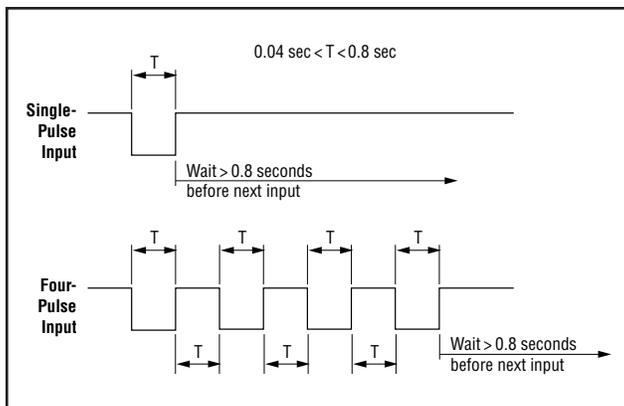


### **WARNING . . . Not To Be Used for Personnel Protection**

**Never use these products as sensing devices for personnel protection. Doing so could lead to serious injury or death.**

These sensors do NOT include the self-checking redundant circuitry necessary to allow their use in personnel safety applications. A sensor failure or malfunction can cause either an energized or de-energized sensor output condition. Consult your current Banner Safety Products catalog for safety products which meet OSHA, ANSI and IEC standards for personnel protection.

# MINI-BEAM *Expert*™ Series – Dynamic TEACH Supplement



If the contrast is not adequate, the red indicator will flash at a rate proportional to the received light signal strength and the yellow indicator will be ON solid, indicating that the sensor needs to be retaught. In this case, return to step 2.

NOTE: To exit Dynamic TEACH without updating, wait 90 seconds or cycle sensor power.

Figure 2. Remote programming timing programs

## Dynamic TEACH Sequence

Push Button		Resulting Indicator Status
Press and hold until the bi-color (green/red) indicator begins to flash red, or turns OFF.	<b>Push and Hold</b> ≥ 2 Seconds 	<b>Yellow:</b> ON <b>Red:</b> Pulses to indicate relative received signal strength.
<b>Initiates Dynamic TEACH Mode</b>	<b>Double-Click</b> 	<b>Yellow:</b> Pulses at 0.5 Hz. <b>Red:</b> ON
<b>Starts TEACH Process</b> Present the sensing condition while holding the button	<b>Push and Hold</b>  <b>Sensing Condition</b>	<b>Yellow:</b> ON Solid <b>Red:</b> ON Solid
<b>Ends TEACH Process</b>	<b>Release</b> 	If contrast is acceptable, the sensor returns to RUN mode. Otherwise, it will return to Static TEACH mode; double-click to initiate Dynamic TEACH.  <b>Green:</b> ON (or flashes if signal is close to the switching threshold). <b>Yellow:</b> ON or OFF, depending on condition

<sup>1</sup>NOTE: The sensor will return to RUN mode if the first TEACH condition is not registered within 90 seconds. Dynamic TEACH mode may be cancelled by waiting 90 seconds or by cycling sensor power.



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