General information
B45 Programming
Programming sensor parameters with OPUS software

Sensor parameters

Outputs

The two outputs are selectable:

- Antivalent - dual switch outputs, N.O./N.C. (default)
- *N.O. + failure* – one switch output, N.O. and the failure warning output (Alarm)
- *N.C. + failure* – one switch output, N.C. and the failure warning output (Alarm)

Weak signal indicator (Optical failure control)

The weak signal indicator provies a signal (flashing red LED) to indicate the receiver is picking up less light than intended. The cause of this could be a dirty lens or misalignment.

If N.O. + failure or N.C. + failure mode is selected, the failure warning output will also switch along with the LED. The failure warning output always operates as an N.O. function.

The sensor can be programmed for either static or dynamic (default) failure indication.

Static – This mode should be chosen for applications that have a fixed sensing distance and position. The static failure warning indicator can also be used as an adjustment aid for the sensor.

Dynamic – This mode should be chosen for use with targets that have variable sensing distances or high switching frequencies.

Operating frequency

The switching frequency can be set to one of five options: 1kHz (default), 500 Hz, 250 Hz, 100 Hz, 50 Hz and 25 H. The switching frequency influences the interference signal filter. Lower switching frequencies increase the amount of filtering. With greater filtering, a larger numer of interference pulses are suppressed.

Hysteresis

The sensor can be programmed for one of three settings: small, standard (default) and large to optimize the sensor to the application. If the target object has positional tolerances close to the switch point (e.g. movement of a liquid surface), a large hysteresis setting will prevent continuous switching back and forth of the output.

Timer function

The sensor operates with four timer functions: one ON delay and three OFF delay functions.

Timer function 1

- Switch-on delay

  The ON delay requires a sensing event to last for at least the ON delay time period (0.1 – 25.5 sec) before the output will energize.

Timer function 2

- Switch-off delay

  The OFF delay function holds the output for a preset time (0.1 – 25.5 sec) after the input signal is removed.
- Pulse lengthening (pulse expansion)

  The status of the output remains constant for at least a time period (0.1 – 255 ms) regardless of what the sensor detects during this time period.
- One-shot function

  The output is activated for a fixed time period (1 – 255 ms) regardless of how long the sensor detects its target.

The default setting for both timer functions is none.

Input functions

There is a choice of four input functions that can be set on the sensor:

Self-test

- N.O./N.C. switch-over
- AND logic operation
- OR logic operation
- XOR logic operation

The input function can be also be inverted, which means the function is active when the input signal is < 2 VDC. On the thru-beam model the emitter also has a control input which, when set high, turns the emitter off.

During the self-test, the sensor¥s transmitting LED is turned off. The sensor checks for proper operation of the internal circuitry.

If the N.O./N.C. Switch-over option is active, the switch outputs reverse their functions: N.O. becomes N.C. and N.C. becomes N.O. The weak signal indicator output cannot change its function, it is always N.O.

If the logic operations are active, the switch output is as follows:

AND *The sensor changes state when the input function is active **and** the sensor detects an object.*

OR *The sensor changes state when the input function is active **or** the sensor detects an object.*

XOR *The sensor changes state under two circumstances:*

The input function is active and the sensor does not detect an object.

or

The input function is not active and the sensor detects an object.

The default setting for the input function is None.