PLCs, Software,
Conveyor Controls

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Connecting ConveyLinx-Ai/Ai2 modules to Siemens S7 PLCs

Appendix F

Pin2 functions

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1. **Sensor Error**
    a. Type: Input
    b. Effect: Some sensors have an additional signal on Pin2. The Pin2 signal will be energized, if there is a problem with the sensor beam – lower-than-operational input voltage, dirt on the sensor transmitter/collector and more. The red Sensor LED will be activated and for each rising edge, the Sensor gain counter is incremented.

2. **Accumulate**
    a. Type: Input
    b. Effect: When Pin2 is energized, the zone will accumulate.

3. **Wake Up**
    a. Type: Input
    b. Effect: When Pin2 is energized, the zone will start its motor to accept the product. As long as the signal is ON, the zone will keep rotating. Upon Pin2 going into OFF state, the zone will stop after the JAM timeout has expired.
    c. Limitation: This function must only be activated on the first zone of a logical conveyor line. In other words, there should not be an upstream zone, controlled by a ConveyLinx-Ai/Ai2 module, which has a logical connection to this module.

4. **Lane full signal**
    a. Type: Input
    b. Effect: When Pin2 is energized, the zone will not send product downstream. After a product is sent downstream and the Lane full signal is energized, the zone will interpret this as an arrival confirmation.
    c. Limitation: This function can only be activated on the last zone of a logical conveyor line. There should be no downstream connection.

5. **JAM error**
    a. Type: Output
    b. Effect: When a JAM error is registered on the zone, the Pin2 output is energized.

6. **Product on zone**
    a. Type: Output
    b. Effect: When a product is registered on the zone, the Pin2 output is energized.

7. **Wake Up with timeout**
    a. Type : Input
    b. Effect: When Pin2 is energized, the zone will start its motor to accept the product for the duration of the JAM timeout.
    c. Limitation: This function must only be activated on the first zone of a logical conveyor line. In other words, there should not be an upstream zone, controlled by a ConveyLinx-Ai/Ai2 module, which has a logical connection to this module.

8. **Pin2 as second sensor (logical OR with Pin4)**
    a. Type: Input
    b. Effect: The logical sensor signal that is passed to the roller will no longer be the Pin4 signal. Instead, now it is the result of the logical OR between the Pin2 and Pin4 signals. As long as at least one of the signals is true, the logical signal passed to the logic would be true.
    c. Limitation: It is recommended that the two sensors are put together in such a way, that even the smallest product for this application cannot fit between the sensors, without blocking at least one of them.
    d. Applicability: This function can be used on high speed conveyors, where there is the possibility for a product to over-travel the sensor. This function allows for a second sensor to be installed (for example) 10 cm from the main one. If a product is small (let's say 15cm) and moving fast, it may very well over-travel the main sensor, when ordered to accumulate. But in this case, the second Pin2 signal will still catch it.

9. **Pin2 as a zone sensor in opposite direction**
    a. Type: Input
    b. Effect: The Pin2 signal will become the zone sensor signal, when the conveyor is running in opposite to configured direction.
    c. Applicability: When using bi-directional conveyor, usually the zone sensor is put in the middle, as opposed at the end of the zone. Putting the sensor in the middle is problematic, because it makes full zone area utilization problematic. With this function, it is possible to put two sensors, one at each end of the zone and the ZPA logic will use as zone sensor Pin4 when running in the configured direction and Pin2, when running in opposite to the configured direction.