

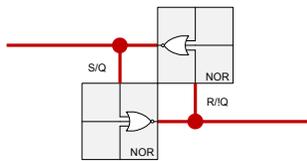
COMPACT RS LATCH

Memory element. Remembers which of the "S" or "R" inputs was last driven high.

This particular RS latch has been designed so that if S and R are driven high at the same time, R = 1, S = 1, the outputs of the RS latch are *simultaneously high* – Q = 1, !Q = 1. This is different to the standard Redpower2 RS-NOR latch, where S = 1, R = 1 results in Q = 0, !Q = 0.

This special behaviour is useful for applications where the Q output must remain high whenever the S input is held high, *even if the R output is driven high at the same time*.

An application for this behaviour is when the RS latch is being used to hold the state of a safety-critical trip flag, which inhibits a system from running if the S line is being held high. The Q line will remain high *even if a reset button is pressed* to drive the R line high.



APPLICATION NOTE:

Where either of the S or R inputs may possibly be short pulses of one tick's duration, such as from a RedPower2 Timer, a repeater must be used to extend the input pulse to at least two ticks. This prevents the RS latch from being driven into an unstable, oscillating state.

NOTE:

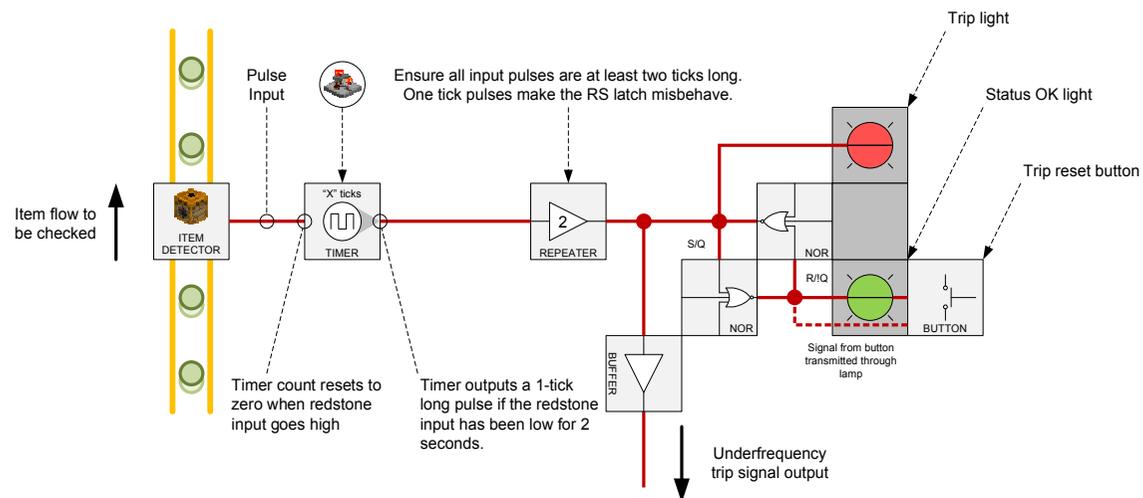
These are standard control logic designs utilising Redpower2 Logic elements. They have been drawn in expanded form for clarity and can be compressed considerably in space-limited applications.

UNDERFREQUENCY TRIP AND LATCH

Detects if frequency of input pulses falls below specified threshold.

When used with Redpower2 item detector, it can detect interruptions in the flow of items in a pipe.

Applications might include stopping a quarry that runs out of blocks to mine, or shutting down a nuclear reactor if the supply of cooling items is interrupted for any reason.



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