Technote 30 – Using Badger RTR with Obvius IO products.

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This document discusses the use of the Obvius AcquiSuite and IO products with the RTR pulse output devices from Badger.

Concept:

The pulse inputs on all Obvius products have been designed to supply a sense or wetting voltage on the pulse input terminals to allow the device to detect a contact closure. Typically, this is a 3v to 5v supply, and is expected to conduct between 3mA and 5 mA when the contact is closed.

The Badger RTR pulse output is designed to operate at 30VDC, however, the output can only handle 1mA. This can cause problems if the RTR is attached directly to the Obvius pulse input terminals.

Resistor Configuration:

This issue can be overcome by simply adding some resistors to the RTR hookup circuit. The resistors serve to limit the current flowing through the RTR, however still allow the pulse input to detect the contact closure. Resistor wiring is detailed on the following two pages. Note: different resistor values are required depending on the Obvius IO device used.

A8812, A8332-8F2D	Two 3.3k resistors per channel
A8911-23, R9120 (Rev-C)	Two 2.2k resistors per channel
A7801, A8811, A8923-4, R9120 (Rev-A)	Not supported for this configuration

Proper Contact Closure Threshold configuration:

There are several options on the Obvius pulse input module that must be configured to allow the RTR to work with the module. These are all found in the Advanced configuration page of the AcquiSuite or may be configured by using the Obvius Config Console software (OCC).

For the A8812, and A8332-8F2D, use the OCC or AcquiSuite setup to change the contact closure threshold to 2000 ohms. (2k).

For the R9120, R24120, and A8911-23, use the OCC or AcquiSuite setup to change the contact closure threshold to 1700 ohms. (1.7k)

Proper Contact Closure Speed Configuration

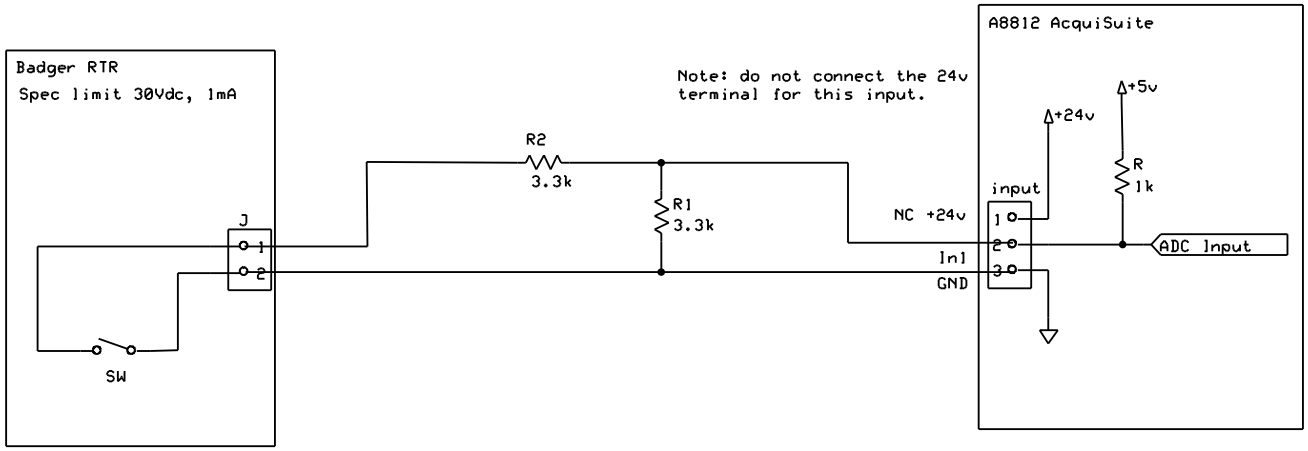
The Badger RTR has a nominal pulse width of 15mS to 75mS, however the pulse width may be as short as 8ms over the full product temperature range. With an 8ms pulse width, using a 50% duty cycle, the contact closure frequency will be about 63Hz. In testing at 70ºF, the RTR output had a pulse width of 50mS.

For the R9120, R24120, and A8911-23, set the contact closure speed to 100Hz.

For the A8812, and A8332-8F2D, the contact closure speed is fixed at 10hz and may not be able to capture all pulses at full speed and temperature.

Badger RTR to flex input wiring diagram

Covers Obvius A8812 and A8332-8F2D products



Current through RTR when contact is closed: 0.97mA

Note: The Badger spec sheet states that the internal resistance is 7.5 ohms.

3.3k resistor, 1/4 watt - Radio Shack 271-1328

R-Total seen by the A8812 when contact is closed: 1.62k ohms

R-Total seen by the A8812 when contact is open: 3.3k ohms

Use the AcquiSuite to configure the contact closure threshold to 2k ohms in the A8812 onboard io advanced setup page to handle this configuration.

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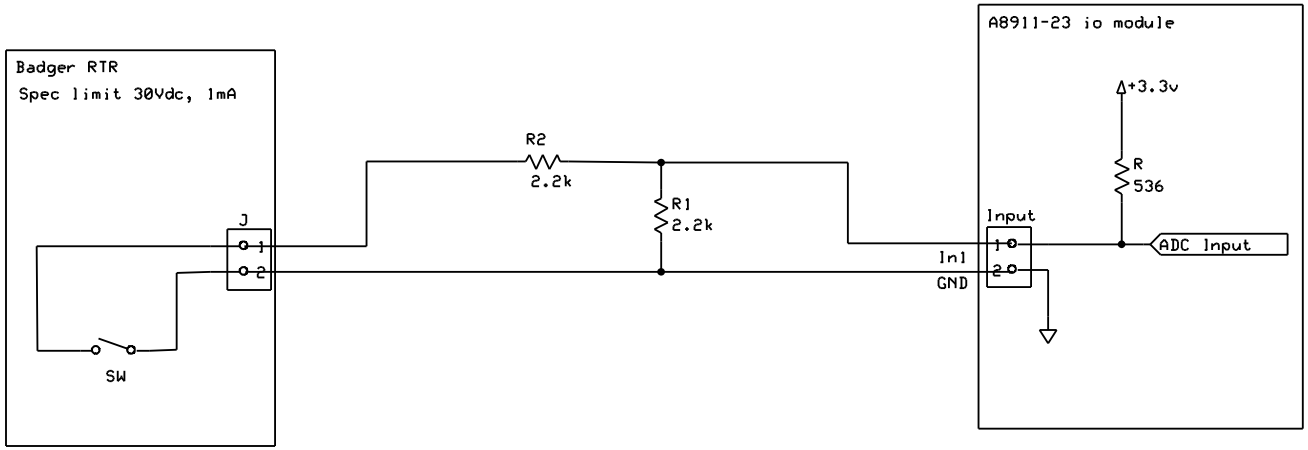
Badger RTR to pulse input wiring diagram

Covers Obvius A8911-23 and R9120 products



Current through RTR when contact is closed: 0.97mA

Note: The Badger spec sheet states that the internal resistance is 7.5 ohms.

2.2k resistor, 1/4 watt - Radio Shack 271-1325

The R9120 and A8911-23 use 3.3v with 536 pullup.
Use 2.2k resistors for R1 and R2 with these io inputs.

R-Total seen by the A8911-23 when contact is closed: 1.1k ohms

R-Total seen by the A8911-23 when contact is open: 2.2k ohms

Use the AcquiSuite or OCC tool to configure the contact closure threshold to 1.7k ohms in the A8911-23 io advanced setup page to handle this configuration.

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