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A Universal Life-Test System

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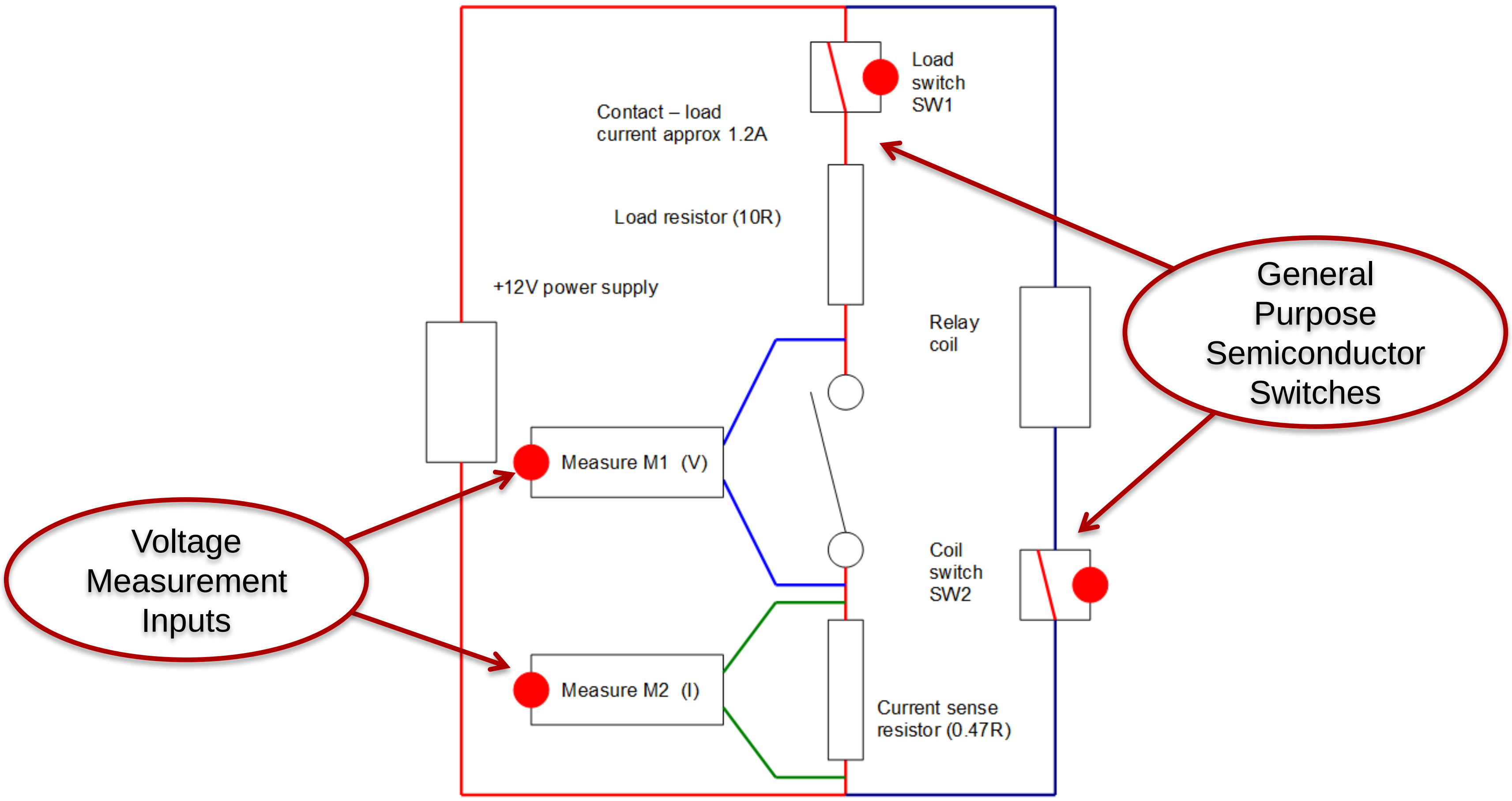
Introduction

- Unique insight into life-time of the modern relay
- Trend analysis using real-time oscilloscope style graphics
- Flexible environment that adapts to the life-test requirements

Our Objectives

- Create a flexible system architecture
- Simple to understand and configure
- Minimal hardware requirements
- Monitor contact voltage on every cycle
- Provide additional failure insight through contact timing and operate/release voltage data.

Concepts



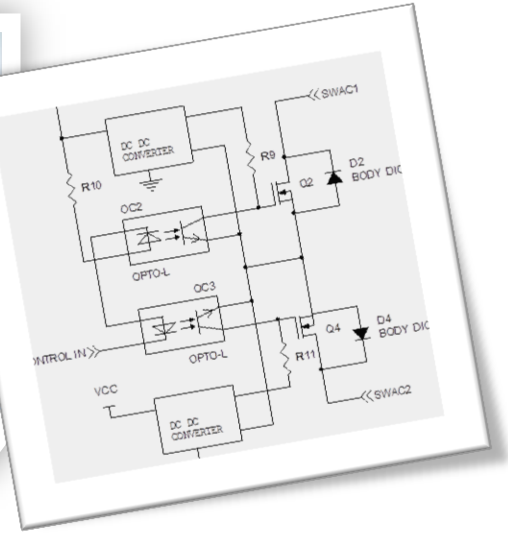
General Purpose Semiconductor Switches

Voltage Measurement Inputs

● Denotes a software-controlled resource

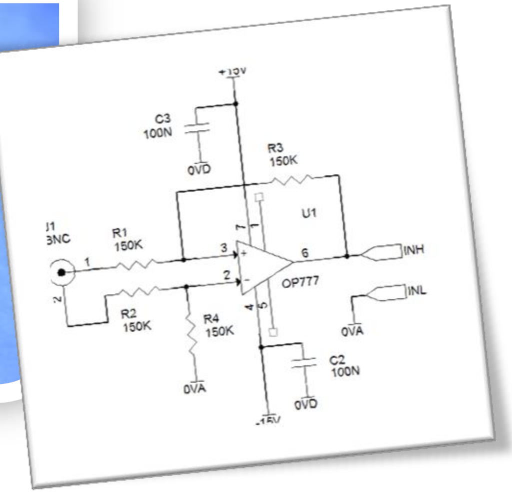
General Purpose Switching

- Solid state switching
- Higher switching rates
- Shorter response times
- Wide range of voltage and current capability
- AC/DC switching



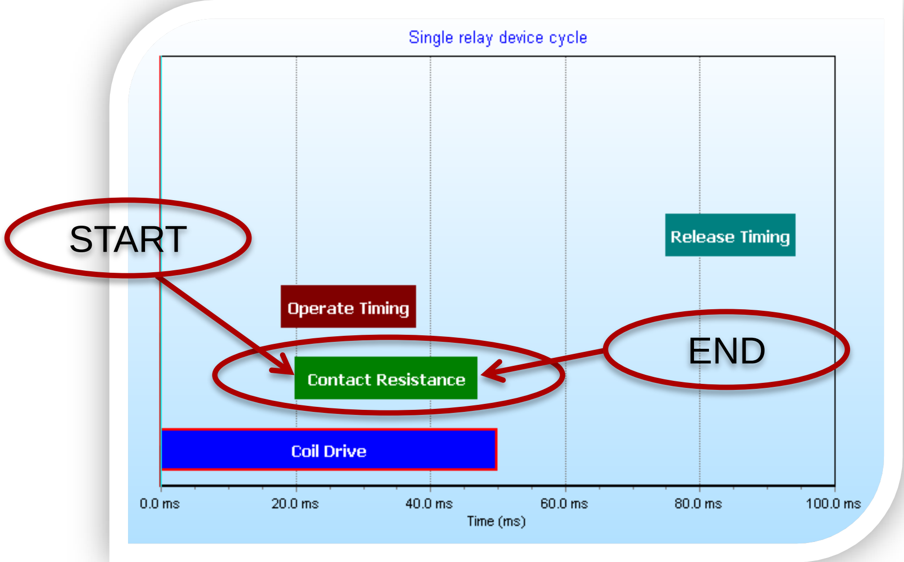
Voltage Measurement Inputs

- Modular design - providing quad differential sense inputs
- Programmable gain/attenuation
- AC & DC measurements



Life-test Programming

- Based upon a single cycle
- Life-test is a single cycle repeated N times
- Event based hardware execution using time slots



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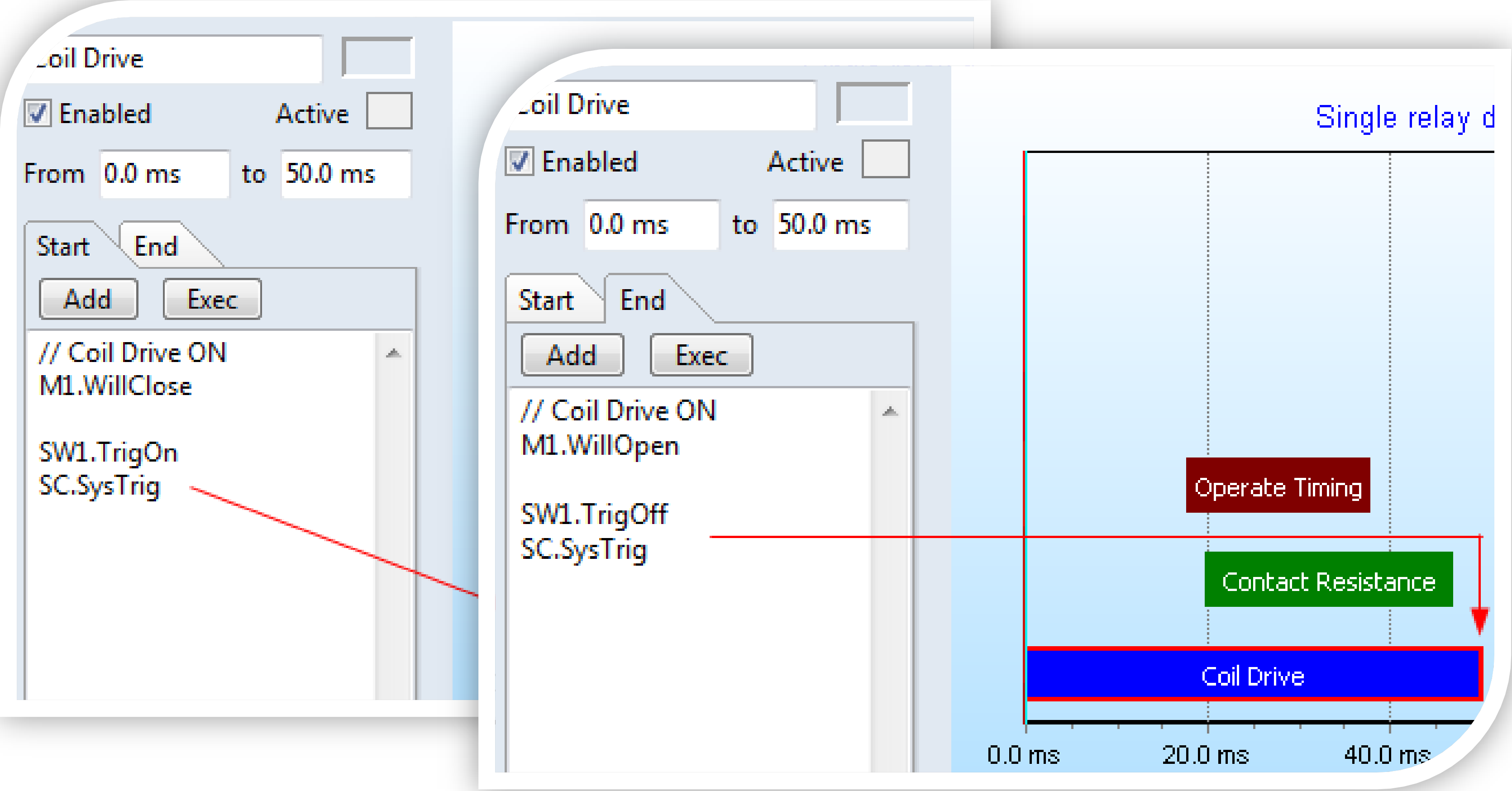
Coil Drive Switching



oil Drive

☑ Enabled Active ☐

From 0.0 ms to 50.0 ms

```
// Coil Drive ON
M1.WillClose

SW1.TrigOn
SC.SysTrig
```

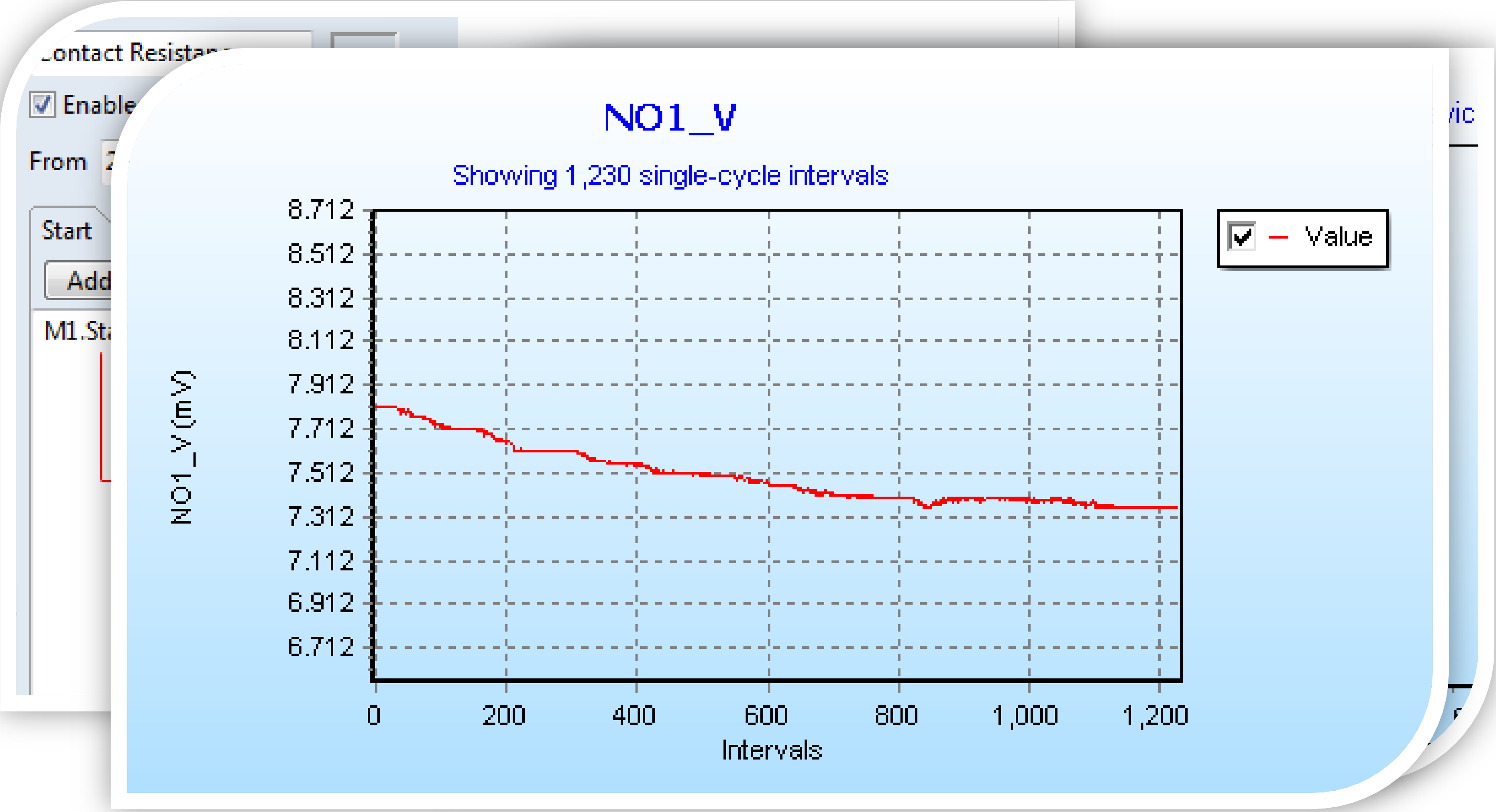
oil Drive

☑ Enabled Active ☐

From 0.0 ms to 50.0 ms

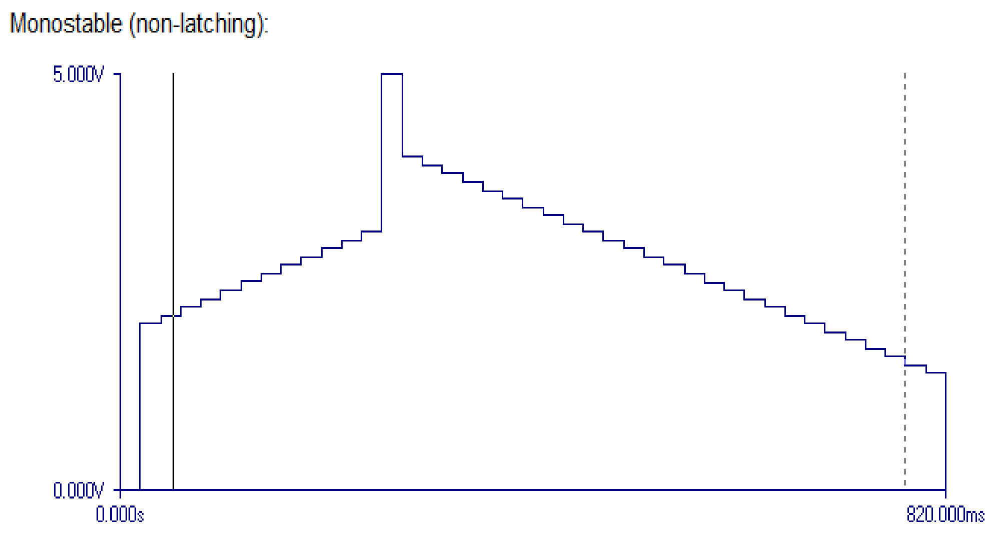
```
// Coil Drive ON
M1.WillOpen

SW1.TrigOff
SC.SysTrig
```

Contact Measurements

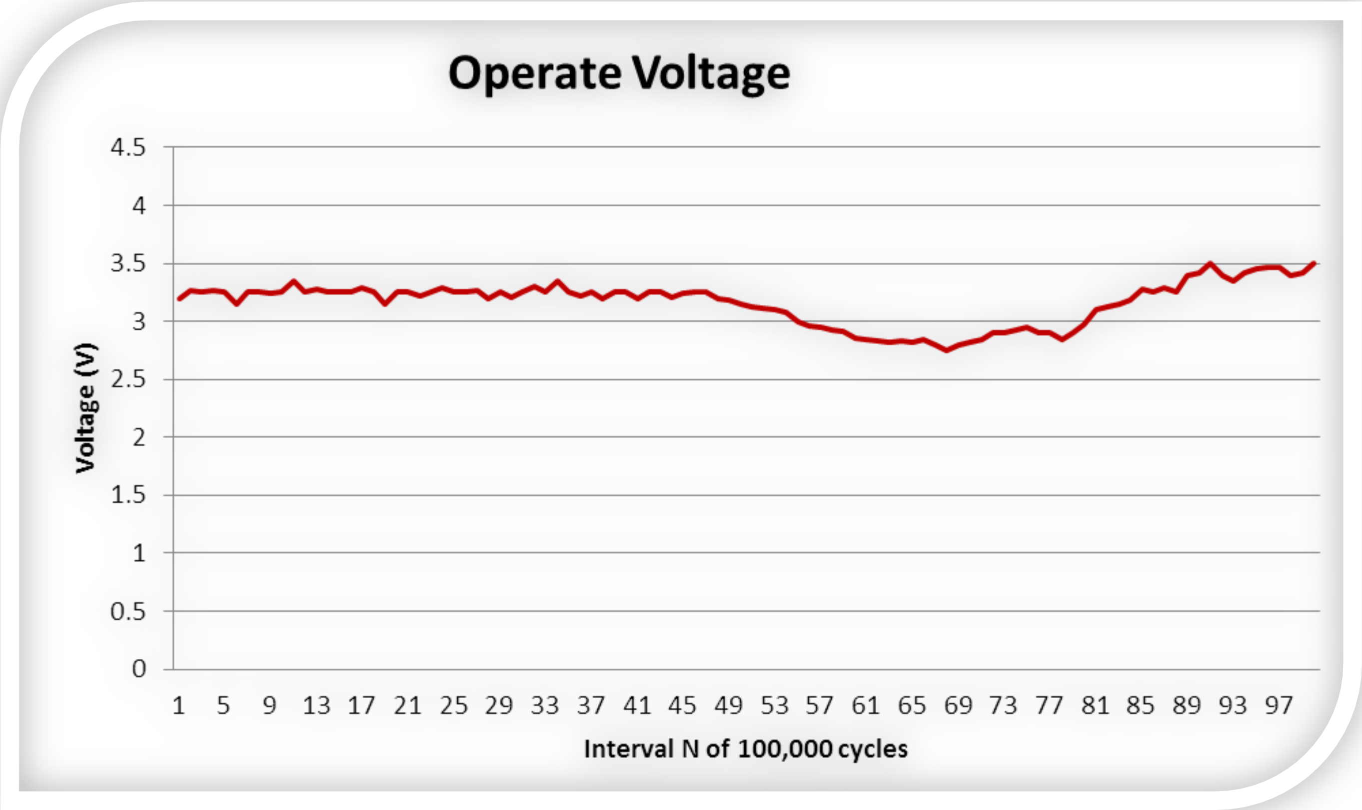


Operate/Release Voltage Test

- Voltage ramp test methodology
- Tested using ‘Interval’ method
- Life test paused for operate/release test



Operate/Release Voltage Results

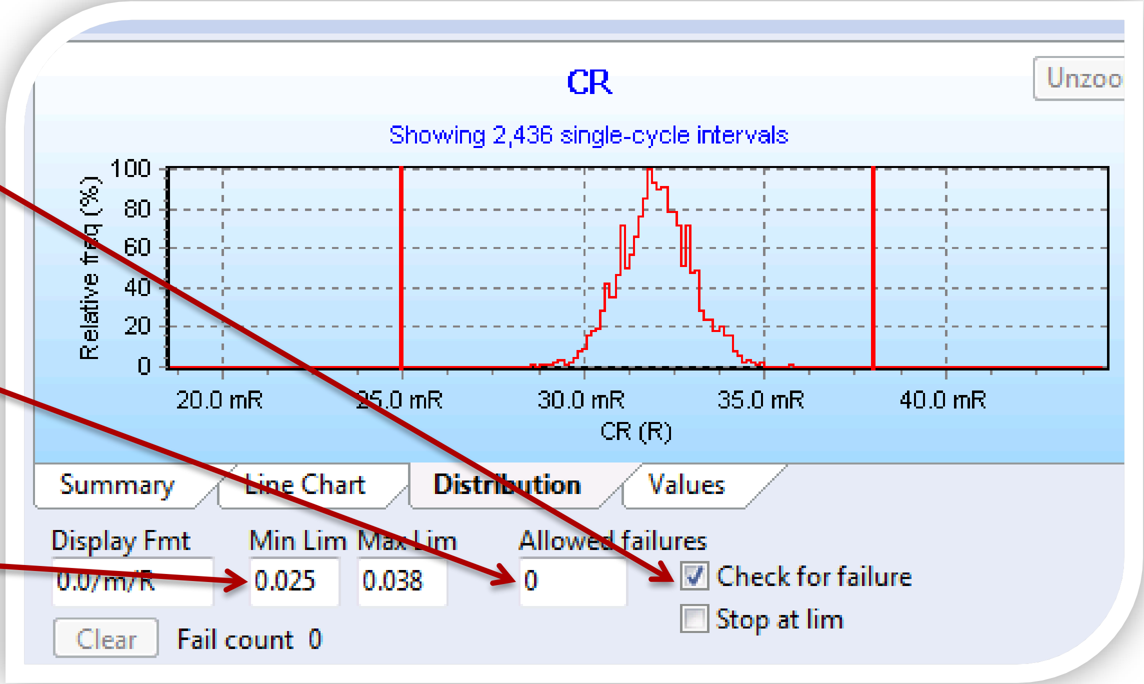


Failure Detection

Enable Failure Checking

Allowed Failures

Min/Max Failure Limits



Display Fmt: 0.0/m/R

Min Lim: 0.025

Max Lim: 0.038

Allowed failures: 0

☑ Check for failure

☐ Stop at lim

Fail count 0

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Conclusion

- Trend analysis using graphical representation
- Enhanced insight through contact timing & operate/release voltage
- Modular set of hardware resources