wireflow

PRODUCT CATALOG

WireFlow

In 2011, four engineers in Göteborg, Sweden, decided to start the company that they wished they'd worked for. All four had long experience with National Instruments' products and tools. As LabVIEW programmers, as hardware designers, as integrators, as system architects and as instructors, they had come to greatly appreciate the intuitive usefulness and the openness of the NI platform.

Their vision was to build a company that would amplify the power of the NI eco-system. They would do so by offering consultancy services and by complementing the panoply of hardware and software already on the market, with products that they would develop themselves.

Today, some years later, the company has grown to become one of the leading in Europe within its niche.

We have several products on the market, both hardware and software.

We have helped numerous clients over the years, often with tasks regarding LabVIEW, cRIO, PXI or other National Instruments products.

We are WireFlow.

WireFlow AB is a privately held engineering company that was founded in 2011 and is based in Göteborg, Sweden.

CONTENTS

State-of-the-art biometric algorithms for enrolment and identification

The WF 2111 from WireFlow is a USB fingerprint reader specifically made for LabVIEW applications. The CMOS sensor delivers superior image quality with 256 gray scale values in every single programmable pixel. The fingerprint reader comes shipped with LabVIEW VI:s for capturing images and state-of-the-art biometric algorithms for enrolment and identification.

[Product Code: AE0016]

Specifications

- Image size (200 x 152 pixels)
- Image depth (8 bits)
- USB version 2.0
- No. of finger placements > 10 million
- Size (87 x 55 x 25 mm)
- Supported platforms; Windows

Features

- High quality robust fingerprint sensor
- 3D pixel sensing technology
- A thick, hard and scratch resistant coating
- Can read virtually any finger, dry or wet
- Ergonomic housing for proper finger guidance
- Includes all HW and SW needed to get started
- Shipped with biometric algorithms

Application areas

- Convenient biometric login
- User identification
- Headless authentication
- Fingerprint timekeeping system
- NI TestStand user management

WF 2111 – USB Fingerprint Reader for LabVIEW

Protect your RT/FPGA system software

The WF 2007 from WireFlow is a USB Security dongle for all LabVIEW RT/FPGA targets with access to an USB port. It may be used to protect LabVIEW based systems from being duplicated without permission, to unlock features in the software etc.

The dongle has a secure memory to hold secret keys and data. Using the supplied LabVIEW driver, the presence of a dongle with a certain key is queried using a new random challenge each time. The key never leaves the dongle, it just sends the resulting hash back to the driver. This ensures that the dongles cannot be copied or imitated. Protection against brute force attacks is guaranteed by using industry standard SHA-256 hash algorithm with 256 bit keys. This means more possible key values than there are atoms in the sun!

[Product Code: AE0008]

Specifications

- Algorithm type: NIST SHA-256
- Key/data size: 256-bit
- No. of keys: 9
- No. of data fields: 3

Features

- Prevent an application from running unless a dongle with the correct key is present.
- Dongles can be unique or substitutable.
- SW license is not locked to a specific target.
- Easy development using the supplied LabVIEW driver.
- Easy to program new keys using the intuitive programming application.

Application areas

- License management
- Product activation
- User identification
- IP copy protection
- System feature control
- Serial number storage

WF 2007 – USB Security Dongle for LabVIEW RT

Protect your LabVIEW software

The WF 2008 from WireFlow is a USB security dongle for all LabVIEW (Windows/Mac/Linux) targets with access to an USB port. It may be used to protect LabVIEW based systems from being duplicated without permission, to unlock features in the software etc.

The dongle has a secure memory to hold secret keys and data. Using the supplied LabVIEW driver, the presence of a dongle with a certain key is queried using a new random challenge each time. The key never leaves the dongle, it just sends the resulting hash back to the driver. This ensures that the dongles cannot be copied or imitated. Protection against brute force attacks is guaranteed by using industry standard SHA-256 hash algorithm with 256 bit keys. This means more possible key values than there are atoms in the sun!

[Product Code: AE0014]

Specifications

- Algorithm type: NIST SHA-256
- Key/data size: 256-bit
- No. of keys: 9
- No. of data fields: 3

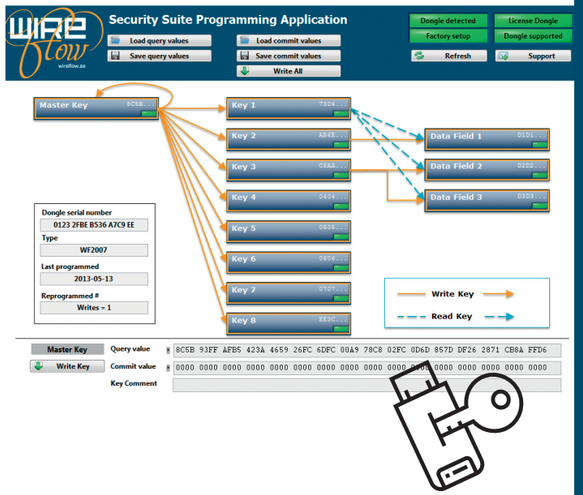
Features

- Prevent an application from running unless a dongle with the correct key is present.
- Dongles can be unique or substitutable.
- SW license is not locked to a specific target.
- Easy development using the supplied LabVIEW driver.
- Easy to program new keys using the intuitive programming application.

Application areas

- License management
- Product activation
- User identification
- IP copy protection
- System feature control
- Serial number storage

WF 2008 – USB Security Dongle for LabVIEW



Manage your WF Security Dongles

The Security Suite Programming Application is an intuitive PC application used to manage WireFlow's Security Dongles for LabVIEW. The keys and data fields of the secure memory inside the dongles can easily be programmed. The functions to load and save entire dongle setups from/to file makes the application effective for both lab development as well as for programming dongles in volume production.

[Product Code: AE0009]

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Specifications

- Supported dongles: WF 2007, WF 2008
- Operating system: Windows
- Requires a license dongle to unlock all features included when purchasing

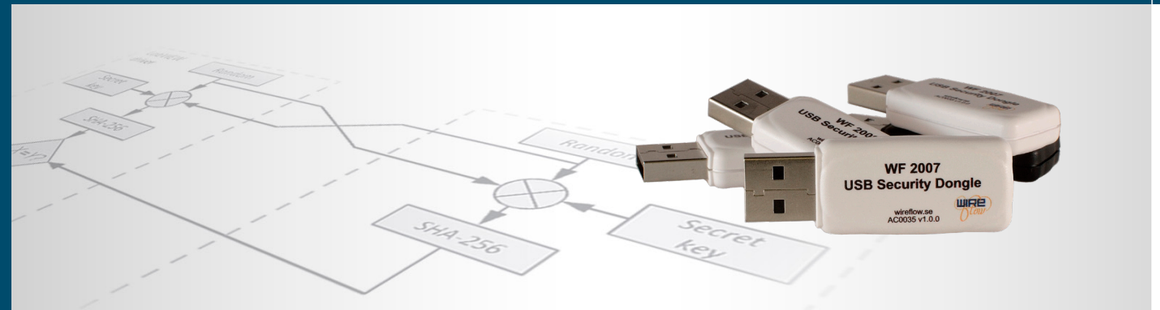
Features

- Intuitive user interface
- Creation of asymmetric keys
- Dongle memory overview with individual comments for each key
- "Write All" functionality for fast programming
- Dongle configuration file handling

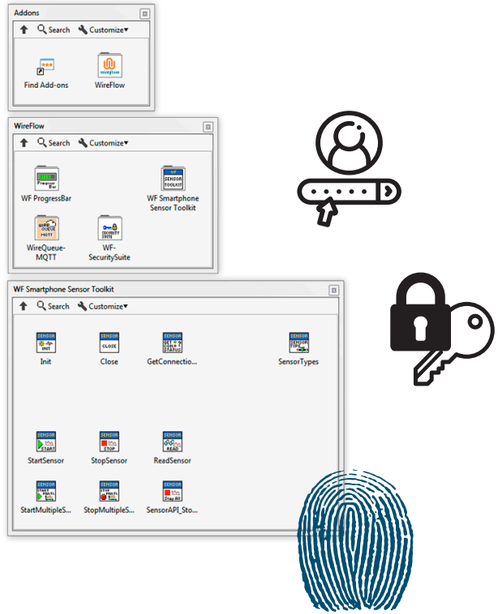
Application areas

- Create a secret dongle setup
- Analyze a dongle setup
- User identification
- Program dongles in volume production

Security Suite Programming Application



User Access Toolkit



User level restrictions
Feature control
Protect & Authenticate

The User Access Toolkit allows an application to easily grant access to specific code in a LabVIEW application, depending on the currently active user. It supports user interactive authentication as well as by security tokens, i.e. login dialog, WF dongle (WF 2007 or WF 2008) or the WF Fingerprint reader (WF 2111).

In the configuration tool, each user can be configured to use one or more of the authentication methods, allowing an application to mix authentications within one single configuration. Users can be associated with one or more groups, where each group identifies additional features that are enabled for the group members.

At runtime the application checks if the current user is an administrator, if the user is a member of a named group or if a specific feature is enabled.

[Product Code: AE0017]

Requirement

- LabVIEW version 2012 or greater

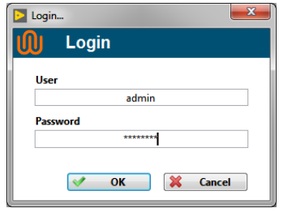
Features

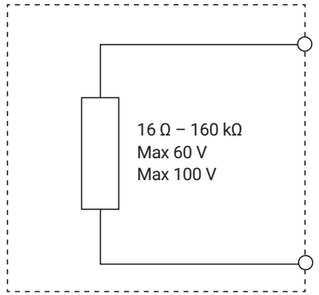
- Prevent unauthorized access to VIs, menus etc.
- Support for different authentication control methods; **WF Dongle, User-Password, WF Fingerprint reader**
- Support headless user authentication
- Support LabVIEW RealTime targets when headless credentials are used
- Same interface for all types of authentications
- AES-256 encryption of configuration data

Application areas

- User level restrictions
- Feature control
- Headless login

User Access Toolkit





The WF 3144 is a 4-channel, 16-bit, Programmable Resistor Module for Compact RIO.

Each channel is galvanically isolated, making it ideal for sensor simulation. The 16-bit resolution is non-linear with finer steps at lower resistance values. It could, for example, be used to emulate a PT100 sensor with a range of 40 –180 Ω/-150 ± 200°C with a resolution of 0.1°C.

[Product Code: AE0001]

Specifications

- Channels; 4
- Max Voltage; 60 V
- Max Power; 100 mW/channel
- Range; 16 Ω – 160 kΩ
- Update Rate; 200 S/s
- Max Error; R < 1 kΩ: 0,1%
- Max Error; R < 10 kΩ: 1%
- Max Error; R < 160 kΩ: 10%
- Enhanced mode:
  Max Error; 32 Ω < R < 160 kΩ: 0.25%

Features

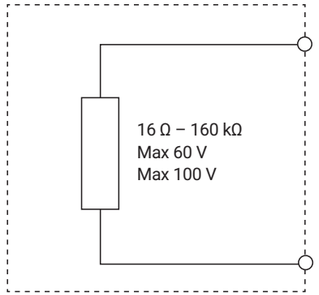
- Four independent, galvanically isolated channels
- Entirely solid-state simulation
- High resolution with non-linear scaling
- Wide resistance range
- On-board calibration memory
- LabVIEW driver included
- VeriStand driver available

Application areas

- Resistive sensor simulation; Pressure sensors, Thermistors, RTDs etc.
- ATE (Automatic Test Equipment)
- HiL testing (Hardware in the Loop)
- Laboratory testing of electronic control units
- Automated calibration and alignment
- Automate manual controls

WF 3144 – Programmable Resistor Module

WF 2144 – USB Programmable Resistor Module



The WF 2144 from WireFlow is a USB 2.0 compatible 4-channel, 16 bit, programmable resistor module.

Each channel is galvanically isolated, making it ideal for sensor simulation. The 16 bit resolution is non-linear with finer steps at lower resistance values. It could, for example, be used to emulate a PT100 sensor with a range of 40 –180 Ω/-150 ± 200°C with a resolution of 0.1°C.

An open API using the Modbus standard with Python and LabVIEW drivers makes it compatible with most computer architectures and operating systems.

[Product Code: AE0029]

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Specifications

- Channels; 4
- Max voltage; 60 V
- Max power; 100 mW/channel
- Range; 16 Ω – 160 kΩ
- Update rate; 75 S/s
- Max error; R < 100 Ω: 0.03%
- Max error; R < 1 kΩ: 0.1%
- Max error; R < 10 kΩ: 1%
- Max error; R < 160 kΩ: 10%
- Enhanced mode:
  Max Error; 32 Ω < R < 160 kΩ: 0.25%

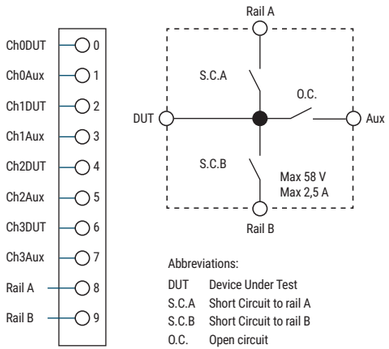
Features

- Four independent, galvanically isolated channels
- Entirely solid-state simulation
- High resolution with non-linear scaling
- Wide resistance range
- Enhanced accuracy mode
- On-board calibration memory
- LabVIEW and Python driver included
- Combines permutations of real resistors to achieve desired value

Application areas

- Resistive sensor simulation; Pressure sensors, Thermistors, RTDs etc.
- ATE (Automatic Test Equipment)
- HiL testing (Hardware in the Loop)
- Laboratory testing of electronic control units
- Automated calibration and alignment
- Automation of manual controls

WF 2144 – USB Programmable Resistor Module



Abbreviations:

DUT	Device Under Test
S.C.A	Short Circuit to rail A
S.C.B	Short Circuit to rail B
O.C.	Open circuit

The WF 3154 from WireFlow is a 4-channel Fault Injection Module for Compact RIO.

Each channel has a capacity to handle signals up to 58 V/2.5 A and provides three solid state relays that can be used to create electrical fault conditions like:

- Open circuit
- Short circuit to battery
- Short circuit to ground

It is possible to connect channels in parallel for increased current capability.

[Product Code: AE0002]

Specifications

- Channels; 4
- Max voltage; 58 V
- Max current; 2.5 A/ch (6 A peak < 100 ms)
- Ch. resistance; < 0.1 Ω
- Max power dissipation; 1.5 W/module

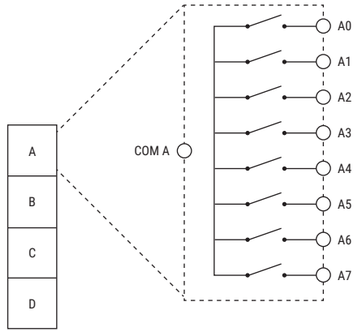
Features

- Four independent, galvanically isolated channels
- Entirely solid-state design
- Two general purpose short circuit rails.
- LabVIEW driver included
- Compatible with NI VeriStand

Application areas

- Product safety testing
- HiL testing (Hardware in the Loop)
- FMEA tests
- Fault simulation

WF 3154 – Fault Injection Module



The WF 3132 from WireFlow is a 32-channel Multiplexer/Matrix Switch for Compact RIO and Compact DAQ. It is a general purpose switch that can be used to switch almost any type of signals. The relays have ruthenium sputtered contacts making them ideal for low current switching, but are at the same time capable of switching up to 0.5 A.

The 32 SPST reed relays can be used in multiple configurations:

- 1 x 32 (1 wire)
- 1 x 16 (2 wire)
- 1 x 8 (4 wire)
- Four banks of 1 x 8 (1 wire)
- 4 x 8 Matrix (1 wire)

[Product Code: AE0003]

Specifications

- Max voltage 60 VDC/30 V RMS
- Max current 0.5 A
- Max power 10 W
- Max resistance 0.3 Ω
- Max update rate 1500 S/s

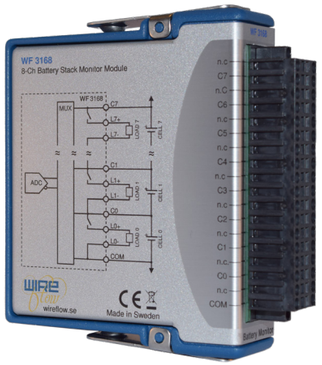
Features

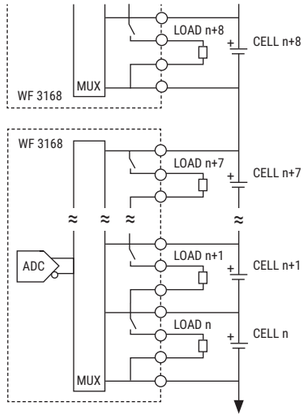
- 32 SPST relays
- Multiple configurations possible
- Standard 37-pin D-sub connector
- LabVIEW driver included
- Compatible with NI VeriStand

Application areas

- High channel count test systems
- High channel count control systems
- HiL testing (Hardware in the Loop)
- Production test
- Galvanically isolated interfacing

WF 3132 – Multiplexer Module





The WF 3168 from WireFlow is a complete battery monitoring and balancing device that includes a high voltage input multiplexer, ADC and balancing switches for each battery cell. The module can measure up to 8 series-connected cells with a voltage up to 15 V per cell.

The module measurement circuit is galvanically isolated from the earth ground and provides up to 1000 VDC channel-to-earth ground isolation, making the module ideal for accurately monitoring large battery stacks.

By using several WF 3168 modules it is possible to monitor every cell in a long string of series-connected cells.

[Product Code: AE0027]

Specifications

- Cell voltage range; 15 V
- Resolution 0.1 mV
- Accuracy, typical; ± 0.6 mV @ 10 V
- Sampling rate; 33 Hz
- Balancing current; 1.5 A/Ch
- Ch – Earth isolation; 1000 VDC

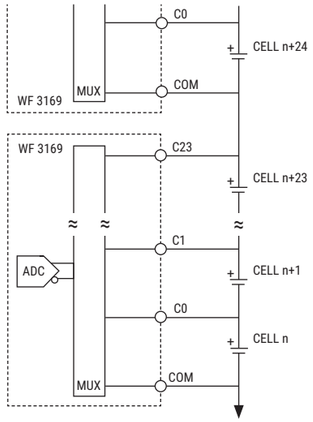
Features

- Measures up to 8 battery cells in series
- 8 discharge FETs for passive balancing
- Stackable architecture
- Supports multiple battery chemistries, such as 12 V lead-acid and 3.7 V Li-ion
- Galvanically isolated from earth ground
- 1000 VDC ch-earth isolation (continuous)
- Also for negative grounding systems

Application areas

- Battery backup systems
- Battery management system
- Electric and hybrid electric vehicles
- High power portable equipment
- Energy storage packs

WF 3168 – Battery Stack Monitor and Balancing Module



The WF 3169 from WireFlow is a battery monitoring device that includes an ADC and a high voltage input multiplexer. The module can measure up to 24 series-connected cells with a voltage up to 5 V per cell.

The module measurement circuit is galvanically isolated from the earth ground and provides up to 1000 VDC channel-to-earth ground isolation, making the module ideal for accurately monitoring large battery stacks.

By using several WF 3169 modules it is possible to monitor every cell in a long string of series-connected cells.

[Product Code: AE0028]

Specifications

- Cell voltage range; 5 V
- Resolution 0.1 mV
- Accuracy, typical; ± 0.2 mV @ 3.3 V
- Max sampling rate; 335 Hz
- Operating temperature -40°C to 70 °C
- Ch-Earth isolation; 1000 VDC

Features

- Measures up to 24 battery cells in series
- Stackable architecture
- Supports multiple battery chemistries, such as 3.2 V LiFePO4 and 3.7 V Li-ion
- Galvanically isolated from earth ground
- 1000 VDC ch-earth isolation
- Also for negative grounding systems

Application areas

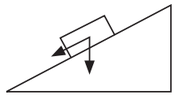
- Battery testing
- Battery management system
- Electric and hybrid electric vehicles
- High power portable equipment
- Energy storage packs

WF 3169 – Battery Stack Monitor Module

The WF Smartphone Sensor Toolkit for LabVIEW makes it possible to utilize smartphone sensor data in your LabVIEW application.

Just start the WireFlow Sensor Toolkit application on your smartphone, connect wirelessly over TCP/IP or plug it into a Windows PC or a NI Real-Time target with a USB cable and start collecting sensor data.

[Product Code: AE0026]



FORCE

ORIENTATION

GPS

ENVIRONMENT

Specifications

- LabVIEW for Windows or LabVIEW for Real-Time targets (2014 or later)
- Android smartphone, API level 19 or greater (iPhone available in future release)
- WireFlow Sensor Toolkit Android application (available for free in Google Play store)
- USB cable to connect your smartphone to your system (optional)

Features

The following sensor data is supported in the toolkit and can be acquired from a smartphone (available sensors varies depending on smartphone model)

- Accelerometer
- Gyroscope
- Magenetic field
- Rotation vector
- Geomagnetic rotation vector
- Gravity
- Light
- Linear acceleration
- Pressure
- Proximity
- Relative humidity
- Ambient temperature
- GPS position
- GPS time

Application areas

- Remote control
- Meta data acquisition
- Education

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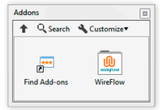
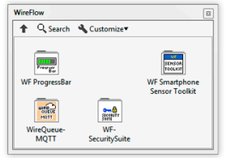
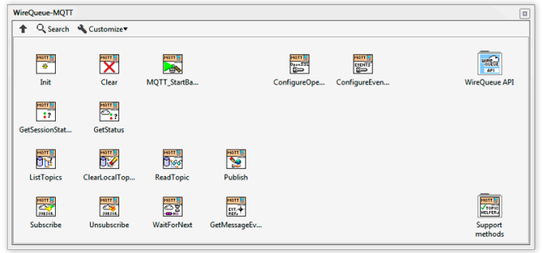
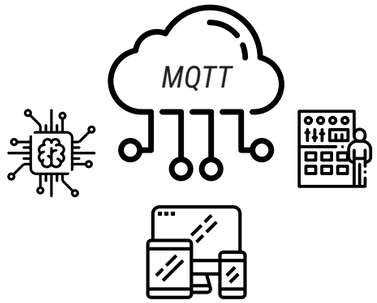




Connected Devices
Control & Monitor





The WireQueue MQTT Toolkit is the easy way to connect your devices using the de facto standard protocol for IoT: MQTT.

It is ideally suited to connect LabVIEW devices over local or remote network for robust data acquisition and control purposes.

WireQueue MQTT can connect to any standard MQTT message broker on your LAN or in the cloud with the option of using TLS secured communication.

[Product Code: AE0020]

Specifications

- LabVIEW for Windows
- LabVIEW for Real-Time targets
- Supports MQTT v3.1.1
- Compatible with MQTT brokers on LAN or WAN

Features

- Open pub/sub protocol
- Optimized for high-latency or unreliable networks
- Secured with TLS
- Optional hardware dongle message authentication

Application areas

- Data logging
- Asset monitoring
- Remote control
- Industrial IoT

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Are you looking for customized off-the-shelf products?

Do you need help with system integration?

Looking for LabVIEW expertise in your projects?

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Wireflow at your service!

We have a long history of helping companies when they need to beef up their organization with expertise help.

We also have proven capability to develop customized hardware, implement embedded systems and help clients integrating their products, etc.

Our engineers are sertified LabVIEW developers, architects as well as certified LabVIEW instructors.

We'd love to hear from you!

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For Engineers – By Engineers

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