



Who is Advanio ?

The vision of Industry 4.0, driven by Internet of Things (IoT) is radically changing all industries in a speed quicker than ever before. Smart factory – a future factory of high efficiency and flexibility, zero defect and downtime is the key to success. Advanio Tech., standing for “advanced I/Os technologies” was born for this revolution to help manufacturers to smartly implement this vision into reality.

Founded by a group of IoT experts and system engineers, and with more than 20-year field experience, Advanio team accumulated profound knowledge in industrial automation, embedded application and information technology. Unlike traditional I/O products which were made by lab engineers who barely knew the harshness of factory floors, Advanio’s I/O modules were genuine data acquisition modules designed with real-world industrial application in mind. Positioning ourselves as a solution provider for smart industrial automation, we collected on-site user feedbacks before getting started with product design. We currently offer a complete array of input/output devices ranging from wired RS-485, CAN, Ethernet, EtherCAT, PROFINET to wireless Bluetooth/Wi-Fi/3G/4G to connect sensors and actuators, and to acquire data from different hardware equipment. We also carry various computing platforms with special industrial provisions to fit into different applications. A Global Sales Cloud easily accessed via Android/iOS devices was built to provide instant sales, product and service information to our customers.

Starting from system integration, Advanio understands what reliability and easy maintenance mean to customers. From the initial design through component selection to production and testing, we have rigorous validation and verification procedures to ensure that all Advanio’s devices can be easily serviced on the site and can withstand the continuous operation in the hostile industrial environments.

If you are groping your way to the new industrial era, Advanio can illuminate a path to you. Let’s start together into the dawn of Industry 4.0.





Introduction

Wolf is a series of RS-485 remote I/O modules with 20 kinds of control mode- analog input, output, analog input/output, digital input, output, digital input/output and relay output. Each control mode in Wolf series provides either 8, 16 or 32 input/output channels for user's choice.

Applications

- Remote data acquisition
- Process monitoring
- Industrial process control
- Energy management
- Supervisory control
- Security systems
- Laboratory automation
- Building automation
- Automatic testing System
- Direct digital control

Highlights Summary

- Space saving
- Easy to install
- Easy to maintain and diagnose
- Hot-swap and auto-configuration
- Suitable in rugged industrial environment
- Programmable power-on and safety values
- Wide power input range from +10 to +60VDC
- Isolation protection
- Advanced features of DI/O modules
 - D/I latch function
 - Low speed counter
- Advanced features of A/I modules
 - Independent channel configuration
 - Overvoltage protection and isolation between channels
 - Disconnection detection



Highlights

5 years Warranty

Space saving

Space is always a premium in industrial floor. Unlike Advantech ADAM-4000 and ICPDAS M-7000 series I/O devices' lie-flat design which is very space taking, Wolf series' upright design with only 47.2mm in thickness enables the modules to be installed vertically. The number of Advanio modules installed in the same space is 1.5 times as many as that of traditional I/O devices. The I/O channels of Wolf series outnumbers and almost three times to the competing devices in the market. For space-constricted environment such as power distribution box or small room, Advanio modules can effectively save space.

Easy to install

Unlike market-available I/O devices connected in series by wiring which make installation and future maintenance difficult, Wolf series modules are cascaded by docking them to a separate base. No need to disconnect the wiring, this independent base design makes installation and wiring easy; repair and replacement very fast. The terminals for wire connection are located at the front side of the modules, facing the users and very convenient for wire connection and adjustment.

Easy to maintain and diagnose

The maintenance of market-available I/O devices would usually require technicians with computer or laptop which needs certain level expertise. Instead of using computing devices, the Modbus node address of Wolf Series modules is configured via two rotary switches. The setting can simply be done by a screw driver. The working status of the module can easily be told from the various combinations of



the 3 LEDs on the device, very convenient for on-site diagnosis. If a module fails and a same model is put on as replacement, the LED can indicate whether the module has started working properly. Rotary switches and LED design makes maintenance very easy.

Hot-swap and auto-configuration

Wolf series allow users to hot-swap the devices without re-wiring each channel. A non-volatile EEPROM is used to back up the parameters and configuration of the I/O modules. After an old module is replaced by a same model, simply remove the EEPROM from the old device to the new one, all configurations can be restored shortly. If the EEPROM is wrongly plugged to a different model, an error message will be indicated by the LED.

Suitable in rugged industrial environment

Electronic devices like I/O modules are easily tampered with various noises generated from harsh industrial environment, and this interference would possibly cause failure or errors during operation.

The Wolf series modules are integrated with self-reliant module watchdog and system watchdog to recover from this unexpected malfunction. When faults occur, the module watchdog, triggered by hardware, will reset itself to place the module in a safe state and restore to normal operation.

With configurable time intervals, the built-in system watchdog is designed to monitor the remote host such as PC, PAC, PLC. Once a halt or error from the remote host is detected and when the system watchdog timer elapsed, the module will reset to a safe state to prevent any operation error.

Programmable power-on and safety values

Every output modules provide programmable power state and safe state to prevent the system from malfunction when power is on or to avoid accidents when system failure occurs. The safe state is defined by a preset safety value. When the system watchdog detects a network or communication error, the module will output the preset safety value to place the actuator into a safe state to avoid accidents or to mitigate their consequential damages.



Wide power input range from +10 to+60VDC

Wolf series modules support +24VDC unregulated industrial power. For common sites with regulated power input of 12V, 36V, 48V, etc., Wolf Series modules can work fine as well. As far as the power supply ripple peak should not exceed 5V, and its instantaneous voltage is within the supported power range, the module can work normally.

Isolation protection

Wolf series modules provide isolation protection on power, communication and I/Os, and the protection voltage can reach 3,000VDC. This isolation design can prevent the internal logic chip from being damaged by noise, and further avoid damage to the module. The choice of Advanio modules can effectively protect the key parts in the host site.

Advanced features of DI/O modules

Apart from basic functions, the input of Wolf series DI/O modules can also be set to the status of "normal" or "inverted". This feature is especially a premium when the modules are applied to existing projects as a difference from the original settings could lead to logic error and possible malfunction. In addition, Wolf series D/I modules also provide some advanced features as following.

D/I latch function

All D/I channel provides a latch function to hold the internal register of high/low state of the module. In normal conditions, the main controller uses polling process to read the status of all D/I. As RS-485 is a low-speed fieldbus and the polling process takes time, it could possibly miss a very short time signal. With the DI latch function, even a short-duration ($> = 5\text{ms}$) signal can be kept.

Low-speed counter

The MCU in the D/I modules will automatically count the D/I signal in the background signal frequency



under 100Hz will be detected and recorded.

Advanced features of A/I modules

Independent channel configuration

Unlike market-available devices using one AD(Analog to Digital) convertor for all channels, Wolf series A/I modules group 2 channels as one set with one AD convertor and each group can be configured separately. A module can be connected to an A/I voltage transducer, current transducer and different thermocouples, providing great flexibility in small-scale applications.

Overvoltage protection and isolation between channels

Wolf series universal A/I modules provide overvoltage protection to an upper limit of 240V. When the input voltage is superposed by interference or voltage spikes, or even if an AC cord is wrongly connected to the module, this protection design can prevent the module from being damaged. Channels between the universal A/I modules use isolation voltage up to 240V. Even if the working site is poorly grounded, this isolation design prevents the module from being damaged and ensures that the device can still operate

Disconnection detection

Wolf Series modules provide disconnection detection for sensors like transmitters, secondary instruments and temperature sensors, etc. The module would detect the disconnection status of these sensors once they are not functioning to ensure that no accident like fire or explosion occurs due to wrong message delivered.



Selection Guide

Analog I/O			
IO Type		Product Number	Notice
Analog Input	Universal	W-M1B103 W-M1B104	High Common Mode Voltage Protection
		W-M1B105 W-M1B106	
	Thermocouple	W-M1B107 W-M1B108	
	Current	W-M1B109 W-M1B110	
	Voltage	W-M1B111 W-M1B112	
	RTD	W-M1B113	Available soon
Analog Output	Voltage & Current	W-M1B201	Available soon
Digital I/O			
I/O Type		Product Number	Notice
Digital Input	DC Input	W-M1B301 W-M1B302	
Digital Output	DC Output	W-M1B401 W-M1B402	
	Relay Output	W-M1B403 W-M1B404	
Digital Input & Output	DC Input & Output	W-M1B501	
	DC Input & Relay Output	W-M1B502	
Related Products			
Converter	RS-232 to RS-485 Converter	G-M1E001	Available soon
	USB to RS-485 Converter	G-M1A001	
Repeater	RS-485 to RS485 Repeater	G-M1F001	Available soon