



# WF 522x

Battery Monitoring and Balancing Gateways

The WF 522x series of Gateways are designed to interface WireFlow WF 5218 Battery Monitoring and Balancing Nodes with a higher-level control system such as a PC, PLC or industrial controller.

The gateways handle data acquisition, control, and communication for up to 16 WF 5218 nodes connected in a daisy-chain topology. This enables safe, accurate and scalable monitoring and passive balancing of large series-connected battery stacks.

Two gateway variants are available; the WF 5220 with USB communication and the WF 5221 with EtherCAT communication for industrial control systems.

Both gateways support open and well-established communication standards, enabling straightforward integration into customer-specific software environments.

## Application areas

- R&D battery testing and validation
- Laboratory battery characterization
- Battery module and pack prototyping
- Energy storage systems (ESS)
- EV battery service and diagnostics
- Second-life battery evaluation
- Battery state-of-health (SoH) and state-of-charge (SoC) studies
- Industrial automation and test systems



## Features

- Supports up to 16 WF 5218 battery monitoring nodes
- Scalable architecture for monitoring large battery stacks
- Compatible with battery systems up to 1600 VDC
- Open communication interfaces for easy software integration
- Configuration and setup via PC using WireFlow configuration software
- Control of cell measurement modes and passive balancing
- High system safety with defined insulation barriers
- DIN-rail mounting support via accessory

## WF 5220 specific features

- USB communication
- Modbus RTU based open API
- Compatible with C, Python, C#, LabVIEW, and other environments

## WF 5221 specific features

- EtherCAT slave interface
- Suitable for PLC-based and industrial automation systems

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WF 522x Data Sheet  
AB0005-146, rev B

## Specifications

### Communication interfaces

Gateway $\leftrightarrow$ Host	WF 5220: USB - WF 5221: EtherCAT
Gateway $\leftrightarrow$ Nodes	Link (M12 cable, 4-pin)
Number of WF 5218 nodes	1-16 (1-192 battery cells)

### System performance

ADC modes	Filtered / Normal / Fast
Max sampling rate with 1 node	WF 5220: 66Hz - WF 5221: 66Hz
Max sampling rate with 16 nodes	WF 5220: 13Hz - WF 5221: 40Hz

### Power supply

Voltage (DC input / USB port)	11-32 V (DC input) / 5V (USB port)
Rated power DC input	WF 5220: 0.77W - WF 5221: 1.7W
Rated power USB port	WF 5220: 0.61W - WF 5221: 1.4W

### Environmental

Operating temperature	-20°C to 60°C
Indoor / Outdoor	Indoor use only

### Mechanical

Size (w x d x h)	147.36 x 123.50 x 59.90 mm
Weight	WF 5220: 326 g - WF 5221: 375 g

## Ordering information

Article no	Product
AE0044	WF 5220 Battery Monitoring and Balancing Gateway
AE0045	WF 5221 Battery Monitoring and Balancing Gateway for EtherCAT

