

# Voltage Relay REU 523



**Protects your investments**

**General voltage protection and supervision relay**

**Proven performance in challenging environments**

**Easy to use human-machine interface**

**Easy to configure for your application**

**Flexible connectivity including IEC 61850 support**



## **Voltage relay REU 523**

Three-phase general-use overvoltage and undervoltage protection and supervision relay for power system applications.

REU 523 is a constituent of ABB's RE500 platform of communicating numerical protection relays.

### **Scope**

REU 523 is a combined three-phase overvoltage and undervoltage protection and supervision relay. The relay features two-stage overvoltage protection and two-stage undervoltage protection, both with selectable definite-time or inverse-time operation characteristic. The  $U_{<<}$  stage of the undervoltage protection can be set to measure the positive-phase sequence of the energizing voltage. The  $U_{<<}$  stage can further be set to measure just one phase instead of all three phases.

### **Application**

REU 523 is primarily intended for the overvoltage and undervoltage supervision of distribution substation busbars, but it is equally well suited for the overvoltage and undervoltage protection of power plant generators. The positive-phase-sequence measuring feature of the relay is particularly useful in protecting small local power plants

against loss of synchronism during faults in the public power system and against asynchronous reconnection of these power plants to the power system. REU 523 is also frequently applied as undervoltage protection relay for large motors.

### **Disturbance recording**

REU 523 includes an internal disturbance recorder with three analog and eight digital channels. The analog channels can be used for recording instantaneous or RMS values of the measured signals in order to capture the curve forms of the signals. The recording can be triggered by any start or trip signal of the protection stages, or by a binary signal applied to the external control input of the relay. The channels

can be set to trigger on the rising or the falling edge of the signal. The digital channels can be used for recording the state of any start or trip signal of the relay and the state of the external control input.

The total recording capacity of the disturbance recorder amounts to a total of 12 seconds. Once a recording session has stopped, the recording is readily available for uploading and subsequent analysis on a PC running the required software.

#### Local and remote communication

The REU 523 voltage relay is based on field-proven micro-controller technology. Relay settings, measured values and recorded data can be read by a centralized substation control and monitoring system via the relay's rear communication port.

Relay information can also be read locally using the local human-machine interface or a laptop computer connected to the front port of the relay.

#### Non-volatile memory

REU 523 can be configured to store various data in a non-volatile memory, which retains data also in case of loss of auxiliary supply. Alarm indication messages and LED indications, the number of starts, disturbance recorder data, event codes and recorded fault values can all be configured to be stored in the non-volatile memory. By design, the relay setting values are always stored in a permanent memory.



## Innovative technology

The REU 523 voltage protection relay is a constituent of ABB's substation automation concept. The support for a wide range of communication protocols and standards, including the novel IEC 61850, makes the relay an attractive choice for your power system protection, control and management environment. The flexible connectivity facilitates effective

communication with the relay. The relays' common configuration, setting and monitoring tools offer you yet another benefit: you just need to learn how to handle one relay, as all RE500 series protection and control devices use the same interface technology.



You can download the connectivity package from [www.abb.com/substationautomation](http://www.abb.com/substationautomation)

## Technical Data REU 523

Protection functions	ANSI number
• <b>3U&gt;, 3U&gt;&gt;</b> 3-phase, two-stage overvoltage protection with definite-time or inverse-time characteristic	<b>59</b>
• <b>3U&lt;, 3U&lt;&lt;</b> 3-phase, two-stage undervoltage protection with definite-time or inverse-time characteristic	<b>27</b>
• <b>U<sub>2</sub>&gt;</b> Positive-phase-sequence overvoltage protection with definite-time or inverse-time characteristic	<b>47</b>
• <b>CBFP</b> Circuit-breaker failure protection	<b>62BF</b>

#### Disturbance recording

Disturbance recorder featuring

- 3 analog channels
- 8 digital channels
- adjustable sampling rate
- up to 12 s recording time

#### Measurements

<b>U<sub>12</sub>, U<sub>23</sub>, U<sub>31</sub></b>	Phase-to-phase voltage
<b>U<sub>1s</sub></b>	Positive-phase-sequence voltage
<b>U<sub>max</sub></b>	Maximum value of the three phase-to-phase voltages
<b>U<sub>min</sub></b>	Minimum value of the three phase-to-phase voltages
<b>U<sub>1min</sub></b>	One minute average value of the three phase-to-phase voltages
<b>U<sub>10min</sub></b>	Ten minute average value of the three phase-to-phase voltages

#### GENERAL

- Non-volatile memory for settings, events and recordings
- One user-assignable digital control input
- Two heavy-duty CB control output contacts
- Two signaling output contacts
- Self-supervision (IRF) output contact

#### Communication and connectivity

- IEC 60870-5-103 in unbalanced transmission mode, SPA bus protocol, IEC 61850 (with interface adapter)
- Connectivity package

#### Relay case dimensions

Width 94.0 mm (with raising frame 111.4 mm),  
Height 249.8 mm (with raising frame 265.9 mm)  
Depth 235.0 mm (with terminal cover 245.1 mm)



ABB Oy  
Distribution Automation  
P.O. Box 699  
FI-65101 VAASA, Finland  
Phone: +358 10 22 11  
Fax: +358 10 22 41094  
[www.abb.com/substationautomation](http://www.abb.com/substationautomation)