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Find the *Siemens SIPROTEC 7RW6000-2EA00-0DA0/BB* at our website: *Click HERE*

SIPROTEC 7RW600
Numerical Voltage, Frequency and Overexcitation Protection Relay



Fig. 11/70 SIPROTEC 7RW600 voltage, frequency and overexcitation protection relay

Description

The SIPROTEC 7RW600 is a numerical multifunction protection relay for connection to voltage transformers. It can be used in distribution systems, on transformers and for electrical machines. If the SIPROTEC 7RW600 detects any deviation from the permitted voltage, frequency or overexcitation values, it will respond according to the values set. The SIPROTEC 7RW600 can be used for the purposes of system decoupling and for load shedding if ever there is a risk of a system collapse as a result of inadmissibly large frequency drops. Voltage and frequency thresholds can also be monitored.

The SIPROTEC 7RW600 voltage, frequency and overexcitation relay can be used to protect generators and transformers in the event of defective voltage control, of defective frequency control, or of full load rejection, or furthermore islanding generation systems.

This device is intended as a supplement to Siemens substation systems and for use in individual applications. It has two voltage inputs (V; V_x) to which a variety of functions have been assigned. While input V serves all of the implemented functions, input V_x is exclusively dedicated to the voltage protection functions. The scope of functions can be selected from three ordering options.

Function overview

Line protection
- Voltage protection
- Frequency protection

Generator protection
- Voltage protection
- Frequency protection
- Overexcitation protection

Transformer protection
- Voltage protection
- Overexcitation protection

Power system decoupling
- Voltage protection
- Frequency protection

Load shedding
- Frequency protection
- Rate-of-frequency-change protection

Status measured values

Monitoring functions
- Hardware
- Software
- Event logging
- Fault recording
- Continuous self-monitoring

Hardware
- Auxiliary voltages:
  – 24, 48 V DC
  – 60, 110, 125 V DC
  – 220, 250 V DC, 115 V AC
- Local operation
- LCD for setting and analysis
- Housing for
  – Flush-mounting 1/6 19-inch 7XP20;
  – Surface-mounting 1/6 19-inch 7XP20

Communication ports
- Personal computer
- Via RS485 – RS232 converter
- Via modem
- SCADA
  – IEC 60870-5-103 protocol
- Bus-capable

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Application

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Applications

ANSI	IEC	Protection functions
(27)	$V<, t; t = f(V<)$	Undervoltage protection
(59) (59N)	$V>>, t; V>, t$	Overvoltage protection
(81) (81R)	$f>; f<; \left\|\frac{df}{dt}\right\|>; +\frac{df}{dt}$	Frequency protection, rate-of-frequency-change protection
(24)	$\frac{V}{f}>, t; \frac{V}{f} = f(t)$	Overexcitation protection

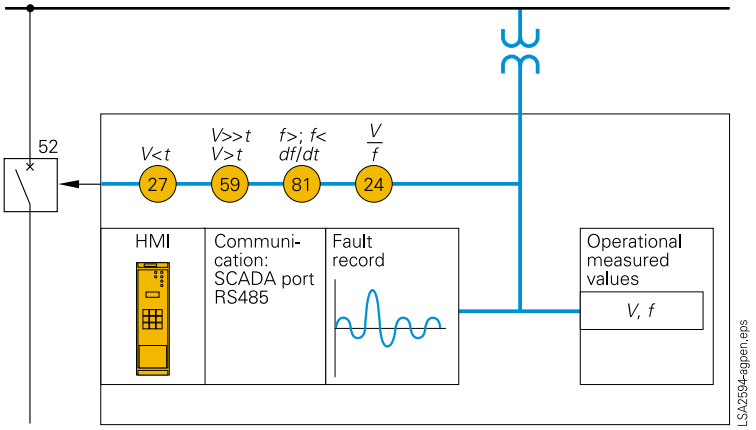


Fig. 11/71 Function diagram

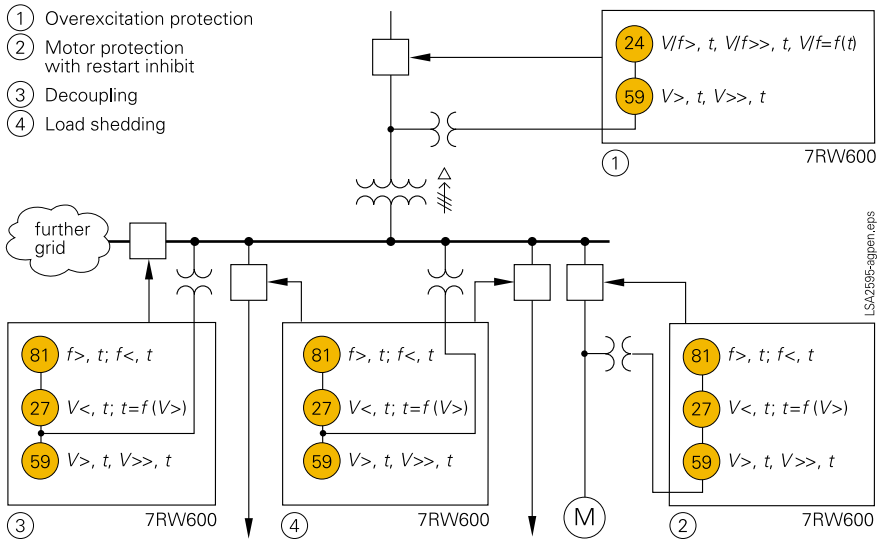


Fig. 11/72

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Construction

The SIPROTEC 7RW600 relay contains, in a compact form, all the components needed for:

- Acquisition and evaluation of measured values
- Operation and display
- Output of messages, signals and commands
- Input and evaluation of binary signals
- Data transmission (RS485) and
- Auxiliary voltage supply.

The SIPROTEC 7RW600 receives AC voltages from the primary voltage transformer. The secondary rated voltage range, 100 to 125 V, is adapted internally on the device.

There are two device variants available:

- The first version, for panel flush mounting or cubicle mounting, has its terminals accessible from the rear.
- The second version for panel surface mounting, has its terminals accessible from the front.



Fig. 11/73
Rear view of surface-mounting case

Protection functions

Overvoltage protection

The overvoltage protection has the function of detecting inadmissible overvoltages in power systems and electrical machines and, in such event, it initiates system decoupling or shuts down the generators.

Two voltage measuring inputs (V, V_x) are provided on the unit. These must be connected to two phase-to-phase voltages. The input voltages are processed separately in two two-stage protective functions. From these, two principle connection variants are derived.

Fig. 11/76, Fig. 11/77, and Fig. 11/78, on page 11/75, show the following connection examples:

Fig. 11/76:
Separated connection, used for overvoltage protection and earth-fault detection

Fig. 11/77:
Two-phase connection to a voltage transformer

Fig. 11/78:
Alternative V connection

Undervoltage protection

The main function of the undervoltage protection is protecting electrical machines (e.g. pumped-storage power generators and motors) against the consequences of dangerous voltage drops. It separates the machines from the power system and thus avoids inadmissible operating states and the possible risk of stability loss. This is a necessary criterion in system decoupling.

To ensure that the protection functions in a physically correct manner, when used in conjunction with electrical machines, the positive-sequence system must be evaluated.

The protection function can be blocked, via a binary input, causing a drop in energizing power. The auxiliary contact of the circuit-breaker can be used for this purpose with the circuit-breaker open. Alternatively, undervoltage acquisition can be activated on a conductor-separated basis ($V<$,$V_x<$).

Additionally, it is possible to use an inverse-time undervoltage protection function for motor protection. The tripping time depends in the undervoltage drop. A time grading is possible.

Frequency protection

The frequency protection can be used to protect against overfrequency or against underfrequency. It protects electrical machines and plants/substations against adverse effects in the event of deviations in the rated speed (e.g. vibration, heating, etc.), detects and records frequency fluctuations in the power system, and disconnects certain loads according to the thresholds set. It can also be used for the purposes of system decoupling, and thus improves the availability of in-plant power generation.

The frequency protection function is implemented via voltage input V. From the sampled voltage, the frequency is measured by means of various filter functions. The system thus remains unaffected by harmonics, ripple control frequencies and other disturbances.

The frequency protection function operates over a wide frequency range (25-70 Hz).

It is implemented (optionally for overfrequency or for underfrequency) on a four-stage basis; each stage can be individually delayed. The frequency stages can be blocked either via the binary input or by an undervoltage stage.

Rate-of-frequency-change protection

The rate-of-frequency-change protection calculates, from the measured frequency, the gradient of frequency change df/dt. It is thus possible to detect and record any major active power overloading in the power system, to disconnect certain consumers accordingly, and to restore the system to stability. Unlike frequency protection, rate-of-frequency-change protection already reacts before the frequency threshold is undershot. To ensure effective protection settings, power system studies are recommended. The rate-of-frequency-change protection function can also be used for the purposes of system decoupling.

The rate-of-frequency-change protection function is implemented on a four-stage basis; each stage can be individually delayed. It detects and records any negative or positive frequency gradient. The measured result is generally released as soon as the rated frequency is undershot or overshot.

Rate-of-frequency-change protection can also be enabled by an underfrequency or overfrequency stage.

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Protection functions

Overexcitation protection

The overexcitation protection detects and records any inadmissibly high induction

$$(B \sim \frac{V}{f})$$

in electrical equipment, e.g. generators or transformers, that may occur as a result of a voltage increase and/or frequency drop. Increased induction of this nature may lead to saturation of the iron core, excessive eddy current losses, and thus to inadmissible heating.

It is recommended to use the overexcitation protection function in power systems subject to large frequency fluctuations (e.g. systems in island configuration or with weak infeed) and for electrical block units that are separated from the system.

The overexcitation protection function calculates, from the maximum voltage (V, V_x) and the frequency, the ratio V/f. This function incorporates an independent warning and tripping stage and a curve which is dependent on and adaptable to the object to be protected and which takes due account of the object's thermal behavior. Incorrect adaptation of the voltage transformer is also corrected. The overexcitation protection function is effective over a broad frequency range (25 to 70 Hz) and voltage range (10 to 170 V).

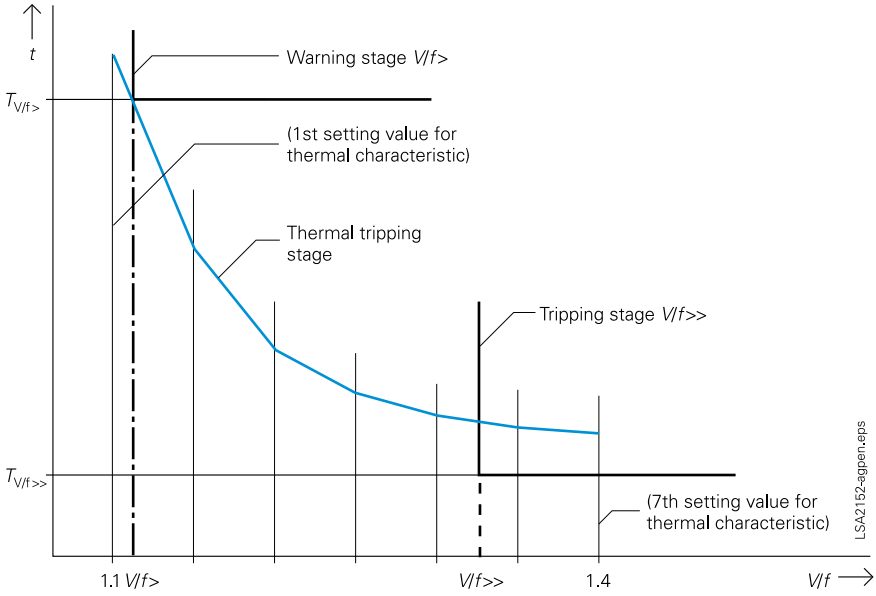


Fig. 11/74 Tripping range of overexcitation protection

Features

Serial data transmission

The SIPROTEC 7RW600 relay is fitted with an RS485 port, via which a PC can be connected, thus providing, in conjunction with the DIGSI operating and analysis program, a convenient tool for configuring and parameter setting. The DIGSI program (which runs under MS-Windows) also performs fault recording and fault evaluation. The SIPROTEC 7RW600 relay can also be linked, via the appropriate converters, either directly or over an optoelectronic connection (optical fiber) to the interface of the PC or substation control system (IEC 60870-5-103 protocol).

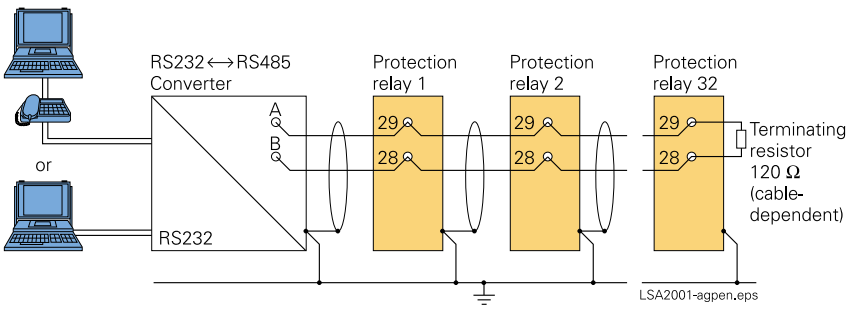


Fig. 11/75 Wiring communication
For convenient wiring of the RS485 bus, use bus cable system 7XV5103 (see part 15 of this catalog)

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Connection diagrams

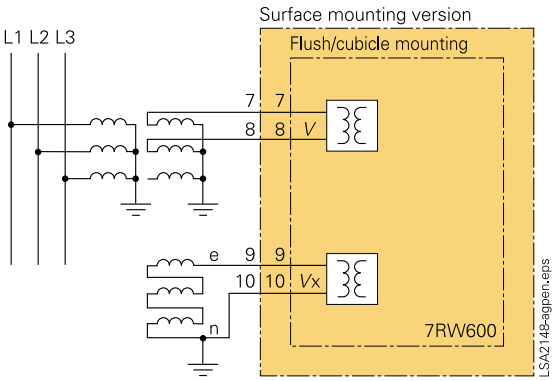


Fig. 11/76
Connection of a phase-to-phase voltage *V* and a displacement voltage V_x

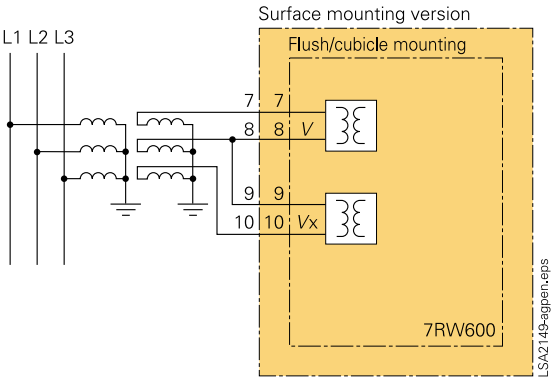


Fig. 11/77
Connection of two phase-to-phase voltages *V* to one voltage transformer set

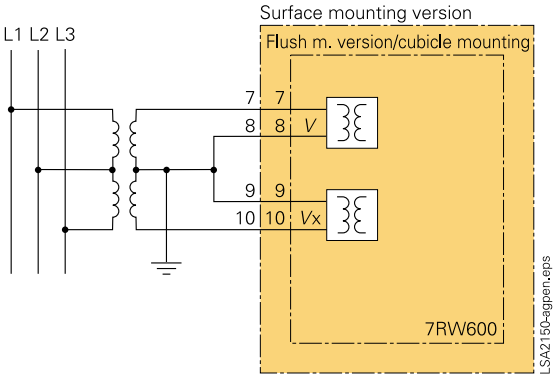


Fig. 11/78
Connection to voltage transformers in *V*-configuration

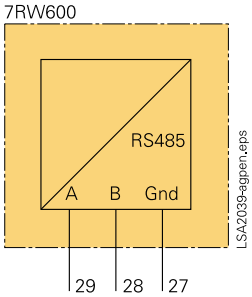


Fig. 11/79
Communication port

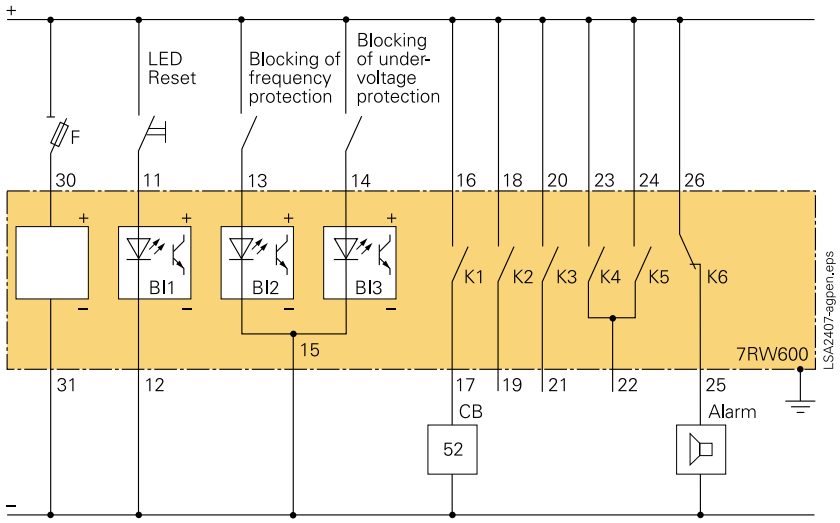


Fig. 11/80
Typical auxiliary voltage wiring

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Technical data

Hardware	
Measuring circuits (v.t. circuits)	
Rated voltage V_N	100 to 125 V
Rated frequency f_N	50 or 60 Hz
Dynamic range	170 V
Power consumption	≤ 0.2 VA
Thermal overload capacity, continuous for ≤ 10 s	 200 V 230 V
Power supply via integrated DC/DC converter	
Rated auxiliary voltage V_{aux}	24/48 V DC 60/110/125 V DC 220/250 V DC, 115 V AC
Maximum ripple at rated voltage	≤ 12 %
Power consumption Quiescent Energized	 Approx. 2 W Approx. 4 W
Maximum bridging time following failure of auxiliary voltage	≥ 20 ms at V_{AUX} (24 V DC) ≥ 50 ms at V_{AUX} (110 V DC)
Binary inputs	
Number	3
Voltage range	24 to 250 V DC
Current consumption, independent of operating voltage	Approx. 2.5 mA
2 switching thresholds (adjustable)	17 V, 75 V
Command contacts	
Number of relays, total Number of relays with 2-channel energization	6 2
Contacts per relay (K1 to K5) Contact for relay (K6)	1 NO contact 1 NC contact or 1 NO contact (set via jumper)
Switching capacity Make Break	 1000 W/VA 30 W/VA
Switching voltage	250 V (AC/DC)
Permissible current, continuous 0.5 s	 5 A 30 A
LEDs	
Ready-to-operate (green)	1
Marshallable displays (red)	4
Fault indication (red)	1

Serial port (isolated)	
Type	RS485
Test voltage	2 kV AC for 1 min
Connections	Data cable at housing, two data wires, one frame reference for connection of a PC or similar
Transmission speed	At least 1200 baud, max. 19 200 baud
Unit design	
Case 7XP20	For dimensions, see dimension drawings, part 17
Weight Flush mounting/cubicle mounting Surface mounting	 Approx. 4 kg Approx. 4.5 kg
Degree of protection to IEC 60529/EN 60529	IP 51

Electrical test	
Specifications	
Standards	IEC 60255-5, ANSI / IEEE C37.90.0
Insulation tests	
Voltage test (routine test) All circuits except auxiliary voltage and RS485 Auxiliary voltage and RS485 only	 2.0 kV (rms), 50 Hz 2.8 kV DC
Voltage test (type test) Over open command contacts	 1.5 kV (rms), 50 Hz
Impulse withstand capability (SWC) test (type test) All circuits, class III	5 kV (peak); 1.2 / 50 µs; 0.5 J 3 positive and 3 negative impulses at intervals of 5 s
Test crosswise: Measurement circuits, pilot-wire connections, power supply, binary inputs, class III, (no tests crosswise over open contacts, RS485 interface terminals)	
EMC tests, immunity; type tests	
Standards	IEC 60255-22 (product standard) EN 50082-2 (generic standard) DIN VDE 0435, Part 303
High-frequency test IEC 60255-22-1, class III and DIN VDE 0435 Part 303, class III	2.5 kV (peak), 1 MHz, τ = 15 µs, 400 shots/s duration 2 s
Electrostatic discharge IEC 60255-22-2, class III and IEC 61000-4-2, class III	4 kV/6 kV contact discharge, 8 kV air discharge, both polarities, 150 pF, R_i = 330 Ω
Irradiation with RF field Non-modulated, IEC 60255-22-3 (report), class III Amplitude-modulated, IEC 61000-4-3, class III Pulse-modulated, IEC 6100-4-3, class III	 10 V/m, 27 to 500 MHz 10 V/m, 80 to 1000 MHz, 80 % AM, 1 kHz 10 V/m, 900 MHz, repetition frequency 200 Hz, duty cycle 50 %

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Technical data

EMC tests, immunity; *type tests*	
Fast transients IEC 60255-22-4 and IEC 61000-4-4, class III	2 kV, 5/50 ns, 5 kHz, burst length 15 ms, repetition rate 300 ms, both polarities, R_i = 50 Ω, duration 1 min
Conducted disturbances induced by radio-frequency fields, amplitude-modulated, IEC 61000-4-6, class III	10 V, 150 kHz to 80 MHz, 80 % AM, 1 kHz
Power frequency magnetic field IEC 61000-4-8, class IV	30 A/m continuous, 50 Hz 300 A/m for 3 s, 50 Hz 0.5 mT; 50 Hz
Oscillatory surge withstand capability ANSI/IEEE C37.90.1 (common mode)	2.5 kV to 3 kV (peak), 1 MHz to 1.5 MHz, decaying oscillation, 50 shots per s, duration 2 s, R_i = 150 to 200 Ω
Fast transient surge withstand capability ANSI/IEEE C37.90.1 (common mode)	4 to 5 kV, 10/150 ns, 50 shots per s, both polarities, duration 2 s, R_i = 80 Ω
Radiated electromagnetic interference ANSI/IEEE C37.90.2	10 to 20 V/m, 25 to 1000 MHz, amplitude- and pulse-modulated
High-frequency test Document 17C (SEC) 102	2.5 kV (peak, alternating polarity), 100, 1, 10 and 50 MHz, decaying oscillation, R_i = 50 Ω
EMC tests, emission; *type tests*	
Standard	EN 50081-* (generic standard)
Conducted interference voltage, aux. voltage only CISPR 11, EN 55022, DIN VDE 0878 Part 22, limit value, class B	150 kHz to 30 MHz
Interference field strength CISPR 11, EN 55011, DIN VDE 0875 Part 11, limit value, class A	30 to 1000 MHz

Mechanical stress tests	
Vibration, shock stress and seismic vibration	
During operation	
Standards	IEC 60255-21 and IEC 60068-2
Vibration IEC 60255-21-1, class 2 IEC 60068-2-6	Sinusoidal 10 to 60 Hz: ± 0.035 mm amplitude 60 to 150 Hz: 0.5 *g* acceleration Sweep rate 1 octave/min 20 cycles in 3 orthogonal axes
Shock IEC 60255-21-2, class 1 IEC 60068-2-27	Half-sinusoidal acceleration 5 *g*, duration 11 ms 3 shocks in each direction of 3 orthogonal axes
Seismic vibration IEC 60255-21-3, class 1 IEC 60068-2-59	Sinusoidal 1 to 8 Hz: ± 4 mm amplitude (horizontal axis) 1 to 8 Hz: ± 2 mm amplitude (vertical axis) 8 to 35 Hz: 1 *g* acceleration (horizontal axis) 8 to 35 Hz: 0.5 *g* acceleration (vertical axis) Sweep rate 1 octave/min 1 cycle in 3 orthogonal axes
During transport	
Standards	IEC 60255-21 and IEC 60068-2
Vibration IEC 60255-21-1, class 2 IEC 60068-2-6	Sinusoidal 5 to 8 Hz: ± 7.5 mm amplitude; 8 to 150 Hz: 2 *g* acceleration Sweep rate 1 octave/min 20 cycles in 3 orthogonal axes
Shock IEC 60255-21-2, class 1 IEC 60068-2-27	Half-sinusoidal acceleration 15 *g*, duration 11 ms, 3 shocks in each direction of 3 orthogonal axes
Continuous shock IEC 60255-21-2, class 1 IEC 60068-2-29	Half-sinusoidal acceleration 10 *g*, duration 16 ms, 1000 shocks in each direction of 3 orthogonal axes

Climatic stress tests	
Temperatures	
Recommended temperature during service	–5 to +55 °C (legibility may be impaired > +55 °C)
Temperature tolerances: During service During storage During transport (storage and transport in standard works packaging)	 –20 to +70 °C –25 to +55 °C –25 to +70 °C
Humidity	
Permissible humidity stress It is recommended to arrange the units in such a way that they are not exposed to direct sunlight or pronounced temperature changes that could cause condensation	Annual average ≤ 75 % relative humidity, on 30 days during the year 95 % relative humidity, condensation not permitted!

Functions	
Undervoltage protection	
Setting range $V<$, $V_x<V_p<$	20 to 120 V (in steps of 1 V)
Delay times	0 to 60 s (in steps of 0.01 s) or ∞ (i.e. non-effective)
Time multiplier for inverse characteristic	0.1 to 5 s
Pickup time	≤ 50 ms
Reset time	≤ 50 ms
Reset ratio	1.05
Tolerances Voltage pickup Delay times	 3 % of setting value or 1 V 1 % of setting value or 10 ms
Overvoltage protection	
Setting range $V>$, $V>>$ $V_x>$, $V_x>>$	 20 to 170 V (in steps of 1 V) 10 to 170 V (in steps of 1 V)
Delay times	0 to 60 s or ∞ (in steps of 0.01 s)
Pickup time	≤ 50 ms
Reset time	≤ 50 ms
Reset ratio	0.95
Tolerances Voltage pickup Delay times	 3 % of setting value or 1 V < 1 % of setting value for $V > V_n$ 1 % of setting value or 10 ms

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Technical data

Frequency protection

Number of frequency stages $f>$ or $f<$	4
Setting range $f>$ or $f<$	40 to 68 Hz (in steps of 0.01 Hz)
Delay times	0 to 60 s or ∞ (in steps of 0.01 s)
Undervoltage blocking	20 to 100 V or ∞ (in steps of 1 V)
Pickup time $f>$, $f<$	Approx. 100 ms
Reset times $f>$, $f<$	Approx. 100 ms
Reset difference	Approx. 20 mHz
Reset ratio (undervoltage blocking)	1.05
Tolerances	
Frequencies $f>$, $f<$	5 mHz at $f = f_N$ and $V = V_N$ 10 mHz at $f = f_N$
Undervoltage blocking	3 % of setting value or 1 V
Delay times	1 % of setting value or 10 ms

Rate-of-frequency-change protection

Number of rates-of-frequency-changing stages	4
Setting range $\frac{df}{dt}$	0.4 to 10 Hz/s or ∞ (in steps of 0.1 Hz/s)
Delay times	0 to 60 s or ∞ (in steps of 0.01 s)
Undervoltage blocking	20 to 100 V or ∞ (in steps of 1 V)
Pickup time $\frac{df}{dt}$	Approx. 200 ms
Reset ratio pickup $\frac{df}{dt}$	Approx. 0.6
Reset ratio (undervoltage blocking)	1.05
Tolerances	
Changes of frequencies $\frac{df}{dt}$	
In the 45 to 50 Hz range	100 mHz/s at $f_N = 50$ Hz and $V = V_N$
In the 54 to 60 Hz range	150 mHz/s at $f_N = 60$ Hz and $V = V_N$
Undervoltage blocking $V<$	3 % of setting value or 1 V
Delay times	1 % of setting value or 10 ms

Overexcitation protection

Warning stage $\frac{V / V_N}{f / f_N}$	1 to 1.2 (in steps of 0.01)
Tripping stage $\frac{V / V_N}{f / f_N}$	1 to 1.4 (in steps of 0.01)
Delay times, warning and tripping stages	0 to 60 s, or ∞ (in steps of 0.01 s)
Curve values V/f	1.1 / 1.15 / 1.2 / 1.25 / 1.3 / 1.35 / 1.4
Associated delay times	0 to 20000 s (in steps of 1 s)
Cooling-down time	0 to 20000 s (in steps of 1 s)
Voltage transformer adaption factor	0.5 to 2 (in steps 0.01)
Pickup response time (stage curve)	≤ 50 ms
Reset time (stage curve)	≤ 60 ms
Reset ratio	0.95
Tolerances	
Overexcitation V/f	3 % of setting value
Delay times (stage curve)	1 % of setting value or 10 ms
Delay times (dependent curve)	5 % with respect to V/f value ± 0.5 s

Fault recording

Instantaneous value fault record	
Measured values	V, V_x
Pattern	1.00 ms (50 Hz) 0.83 ms (60 Hz)
Fault record duration	Max. 5 s
Start signal	Tripping, energization, binary input, PC
R.m.s. fault record	
Measured values	V, V_x, f-f_N
Pattern	10 ms (50 Hz) 8.3 ms (60 Hz)
Fault record duration	Max. 50 s
Starting signal	Tripping, energization, binary input, PC

Operational measured values

Measured values	V, V_x, V_1, V/f, f
Measuring range voltage	0 to 170 V
Tolerance	≤ 2 V or 5 %
Measuring range overexcitation	0 to 2.4
Tolerance	≤ 5 %
Measuring range frequency	25 to 70 Hz
Tolerance	≤ 0.05 Hz or 5 MHz at $f = f_N$

CE conformity

This product is in conformity with the Directives of the European Communities on the harmonization of the laws of the Member States relating to electromagnetic compatibility (EMC Council Directive 89/336/EEC) and electrical equipment designed for use within certain voltage limits (Council Directive 73/23/EEC).

This unit conforms to the international standard IEC 60255, and the German standard DIN 57435/Part 303 (corresponding to VDE 0435/Part 303).

The unit has been developed and manufactured for application in an industrial environment according to the EMC standards.

This conformity is the result of a test that was performed by Siemens AG in accordance with Article 10 of the Council Directive complying with the generic standards EN 50081-2 and EN 50082-2 for the EMC Directive and standard EN 60255-6 for the "low-voltage Directive".

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Selection and ordering data

Description	Order No.
7RW600 numerical voltage, frequency and overexcitation protection relay	*7RW6000-☐☐A☐0-☐☐A0*
Rated auxiliary voltage	
24, 48 V DC	*2*
60, 110, 125 V DC	*4*
220, 250 V DC, 115 V AC	*5*
Unit design	
For panel surface mounting, terminals on the side	*B*
For panel flush mounting/cubicle mounting, terminals on the rear	*E*
Languages	
English	*0*
German	*1*
Spanish	*2*
French	*3*
Scope of functions	
Voltage and frequency protection	*0*
Voltage, frequency and rate-of-frequency-change protection	*1*
Voltage and overexcitation protection	*2*
Serial system interface	
With RS485 port	*D*

Accessories

DIGSI 4	
Software for configuration and operation of Siemens protection units running under MS Windows 2000/XP Professional Edition device templates, Comtrade Viewer, electronic manual included as well as "Getting started" manual on paper, connecting cables (copper)	
Basis Full version with license for 10 computers, on CD-ROM (authorization by serial number)	*7XS5400-0AA00*
Professional DIGSI 4 Basis and additionally SIGRA (fault record analysis), CFC Editor (logic editor), Display Editor (editor for default and control displays) and DIGSI 4 Remote (remote operation)	*7XS5402-0AA00*
SIGRA 4	
(generally contained in DIGSI Professional, but can be ordered additionally) Software for graphic visualization, analysis and evaluation of fault records. Can also be used for fault records of devices of other manufacturers (Comtrade format). Running under MS Windows 2000/XP Professional. Incl. templates, electronic manual with license for 10 PCs. Authorization by serial number. On CD-ROM.	*7XS5410-0AA00*
*Converter RS232 - RS485**	
With communication cable for the SIPROTEC 7RW600 numerical voltage, frequency and overexcitation relay; length 1 m With plug-in power supply unit 230 V AC	*7XV5700-0☐☐00* [1]
With plug-in power supply unit 110 V AC	*7XV5700-1☐☐00* [1]
Converter, full-duplex FO cable, RS485, with built-in power supply unit	
Auxiliary voltage 24 - 250 V DC and 110 / 230 V AC	*7XV5650-0BA00*
Manual for 7RW600	
English	*C53000-G1176-C117-4*

1) Possible versions see part 15, 7XV57 RS232-RS485 Converter

* RS485 bus system up to 115 kbaud RS485 cable and adaptor 7XV5103-☐AA☐☐see part 15

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Connection diagrams

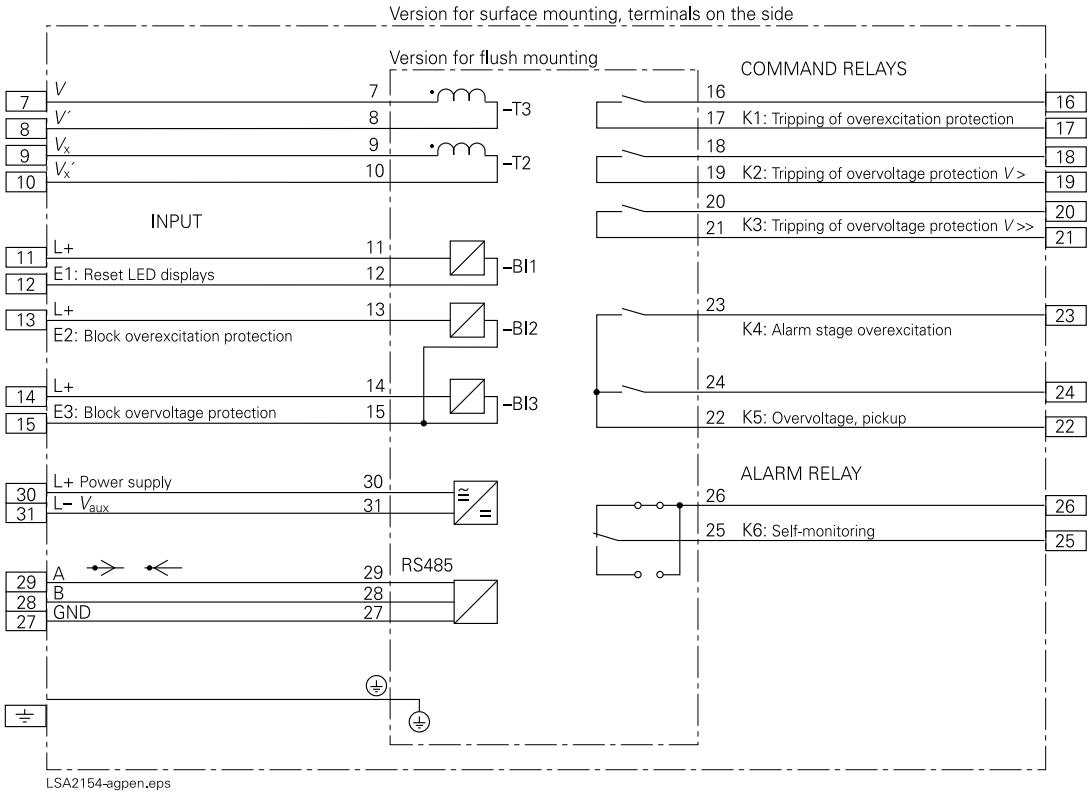


Fig. 11/81
Connection circuit diagram of 7RW600 voltage and frequency protection with presetting of marshallable binary inputs and command contacts. (Ordering Code: 7RW600x-xBxxx-; 7RW600x-xExxx-).

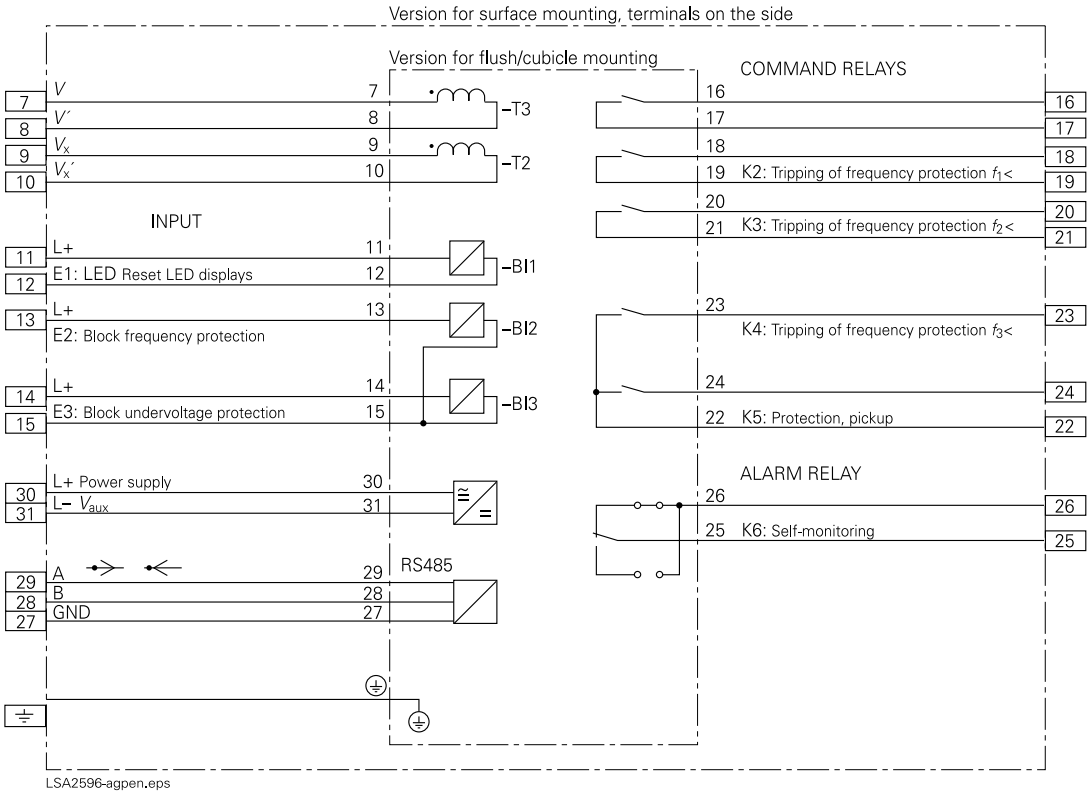
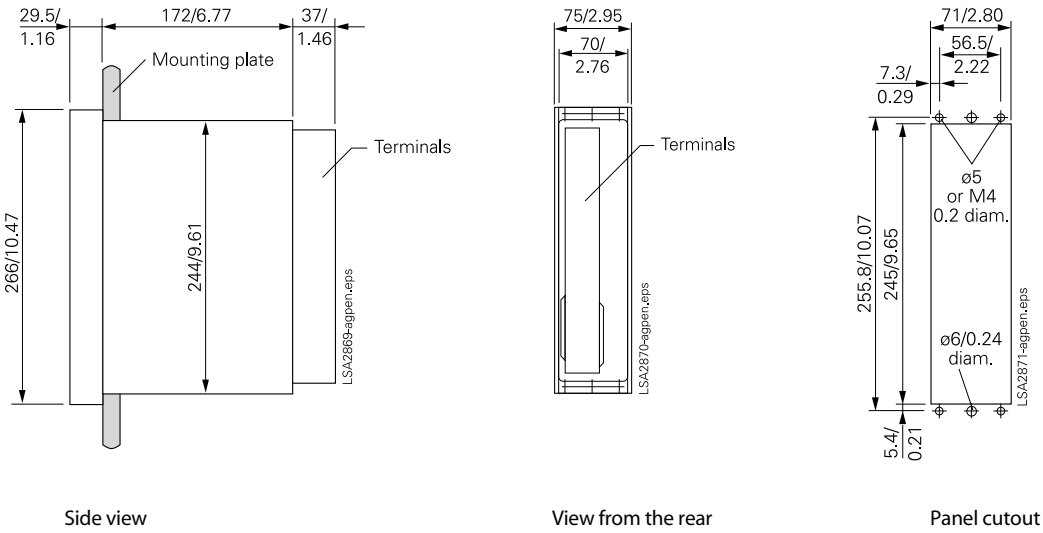


Fig. 11/82
Connection circuit diagram of 7RW600 voltage and overexcitation protection with presetting of marshallable binary inputs and command contacts. (Ordering Code: 7RW600x-xBxxx-; 7RW600x-xExxx-).

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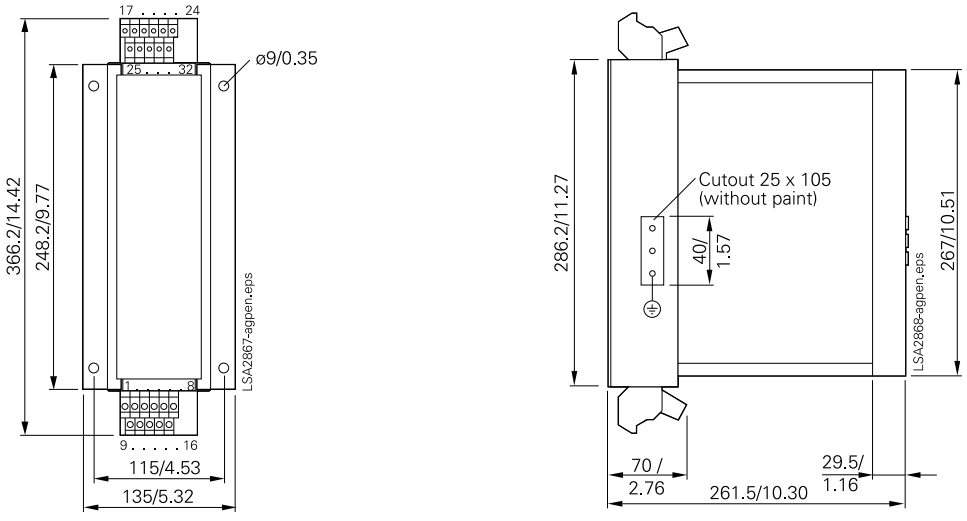
Dimension drawings in mm / inch

Dimension drawings for 1/6 x 19" housing (7XP20)



Side view | View from the rear | Panel cutout

Fig. 17/15
Housing for panel flush mounting/
cubicle mounting, terminals at rear (1/6 x 19")



Front view | Side view

Fig. 17/16
Housing for surface mounting,
terminals at top and bottom (1/6 x 19")

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Dimension drawings in mm / inch

Dimension drawings for 1/6 x 19" housing (7XP20)

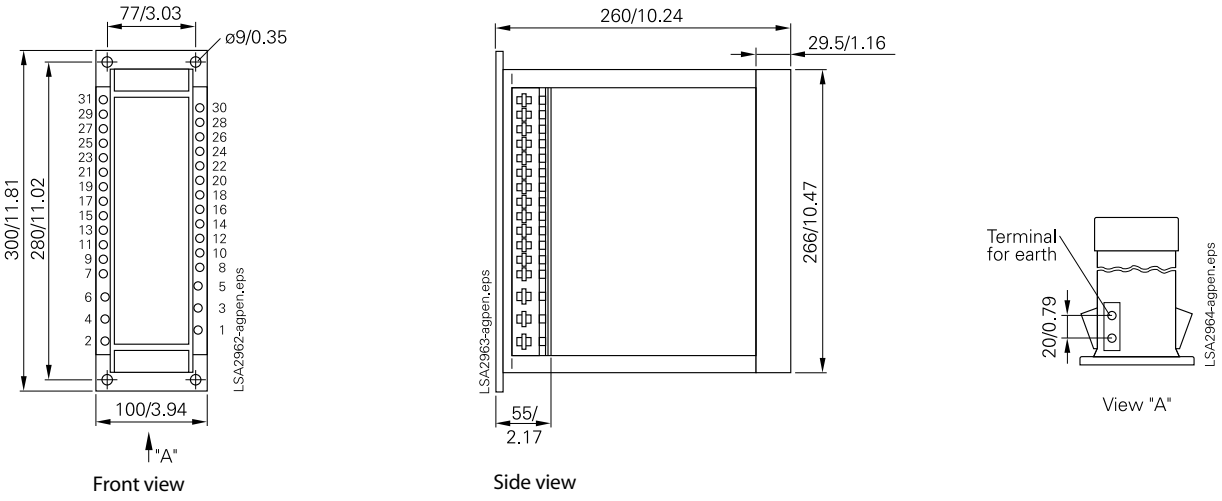


Fig. 17/17
Housing for panel surface mounting,
terminals on the side (1/6 x 19")

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