

Add-on modules

Selectivity module

Overview



Selectivity and rapid fault localization in 24 V feeders

The SITOP PSE200U and SITOP select selectivity modules are the optimal expansion for all 24 V power supplies to distribute the load current to several feeders and to monitor it. Overload and short-circuit in one or more feeders is reliably detected and signaled.

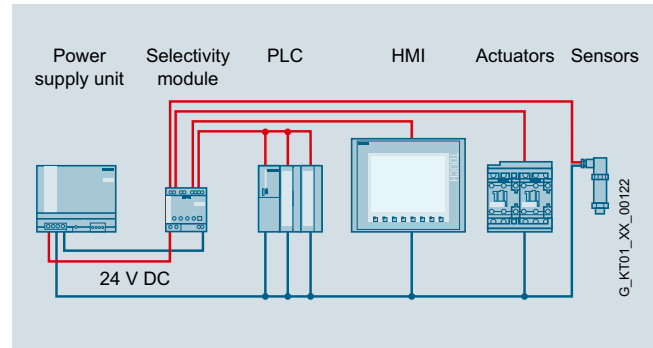
The electronics permit brief current peaks caused, for example, by high inrush currents, but disconnects feeders in the event of an extended overload. This is ensured even on high-resistance lines and in the case of "creeping" short-circuits. In such cases, miniature circuit breakers fail to trip, or trip too late, even if the power supply unit could deliver the required tripping current. The SITOP expansion module continues to supply the intact feeders with 24 V absolutely free of interruptions and feedback – a feature which avoids a possible total system failure.

Benefits

- Reliable shutdown in case of overload regardless of cable lengths or cable cross-sections
- 4 load feeders per module with individually adjustable response threshold from 0.5 – 3 A or 3 – 10 A for each output
- Voltage measuring points for output currents (1 V = 1 A), disconnection of load circuit is not required
- Two versions for remote diagnostics: Group signaling contact or single-channel signaling
- Versions with power limitation of the outputs to 100 VA according to NEC Class 2
- Evaluation via free-of-charge SIMATIC S7 or SIMOTION function blocks (S7-1500/1200/300/400) or via LOGO! Software for modules with single-channel signaling (PSE200U)
- Simple configuration thanks to individual setting of maximum current for every output using potentiometers
- 3-color LEDs for fast on-site fault localization
- Remote reset possible from a central location (PSE200U)
- Simple commissioning thanks to manual switch on/off of outputs (PSE200U)
- Sequential connection of feeders to reduce total inrush current
- Sealable transparent cover over adjusters for currents and times protects against maladjustment (PSE200U)
- Library for visualization in SIMATIC PCS 7

Application

The selectivity module is used in conjunction with 24 V power supplies to distribute the load current over several feeders and to monitor the individual currents. Faults in individual circuits caused by overload or short-circuit are detected and selectively switched off so that further load current paths remain unaffected by the fault. This achieves fast fault diagnostics and minimizes downtimes.



Design

The selectivity module is specially designed for the response of switched-mode power supply units and the 24 V DC feeders to be supplied. Individual setting of the response threshold allows optimum adaptation to the respective feeder.

Function

Monitoring

The current per output is monitored by the selectivity modules; if the set threshold of the output is exceeded, the output is switched off according to a predefined time-current characteristic curve. In addition, the supplying 24 V input voltage is constantly being monitored. As soon as this voltage threatens to fail, the path with a higher current than the set threshold is disconnected immediately. All other feeders continue to be supplied without interruption.

Signaling

Signaling of the faulty feeder takes place by the LEDs on the device as well as via group signaling contact or single-channel signaling. The selectivity module with single-channel signaling outputs the status of the 4 outputs cyclically by means of a serial code which can be read in by a digital PLC input.

Free function blocks for SIMATIC S7-300/400/1200/1500 for STEP 7 and TIA Portal as well as SIMOTION CPUs with SIMOTION SCOUT are available for evaluation. This enables simple integration into the S7 diagnostics and host control or HMI systems. The integration into the LOGO! logic module is also an application example.

More information, as well as the function blocks for download, can be found at:

SIMATIC S7:

<http://support.automation.siemens.com/WW/view/en/61450284>

SIMOTION:

<http://support.automation.siemens.com/WW/view/en/82555461>

LOGO!:

<http://www.siemens.de/logo-anwendungsbeispiele>

Easy visualization in the SIMATIC PCS 7 process control system is made possible by the SITOP library, which contains the function blocks and faceplates for individual channel and common signaling:

<http://support.industry.siemens.com/cs/ww/en/view/109476154>

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Selectivity module

Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA51	6EP1961-2BA61
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U
Type of current supply	Selectivity module, 4 x 3 A Common signal contact	Selectivity module, 4 x 3 A Single-channel signaling	Selectivity module, 4 x 3 A NEC Class 2, Common signal contact	Selectivity module, 4 x 3 A NEC Class 2, Single- channel signaling
Protection and monitoring				
Device protection	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)	Fuse: 5 A per output (not accessible)
Display version for normal operation	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"	Three-color LED per output: green LED for "Output switched through"; yellow LED for "Output switched off manually"; red LED for "Output switched off due to overcurrent"
Design of the switching contact for signaling function	Common signal contact (changeover contact, rating 0.1 A/24 V DC)	Status signal output (pulse/pause signal, can be evaluated via Simatic function block)	Common signal contact (changeover contact, rating 0.1 A/24 V DC)	Status signal output (pulse/pause signal, can be evaluated via Simatic function block)
Safety				
Galvanic isolation between input and output at switch-off	No	No	No	No
Operating resource protection class	Class III	Class III	Class III	Class III
Certificate of suitability				
• CE marking	Yes	Yes	Yes	Yes
• as approval for USA	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259; NEC Class2 (UL1310)	UL-Recognized (UL 2367) File E328600; cULus-Listed (UL 508, CSA C22.2 No. 107.1) File E197259; NEC Class2 (UL1310)
Standard for safety	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178	according to EN 60950-1 and EN 50178
Certificate of suitability relating to ATEX	IECEEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4	IECEEx Ex nA nC IIC T4 Gc; ATEX (EX) II 3G Ex nA nC IIC T4 Gc; cCSAus Class I, Div. 2, Group ABCD, T4
Shipbuilding approval	DNV GL, ABS	DNV GL, ABS	in process: DNV GL, ABS	in process: DNV GL, ABS
Protection class IP	IP20	IP20	IP20	IP20
EMC				
Standard				
• for emitted interference	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B	EN 55022 Class B
• for interference immunity	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2	EN 61000-6-2
Operating data				
Ambient temperature				
• during operation	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C	0 ... 60 °C
- Note	with natural convection	with natural convection	with natural convection	with natural convection
• during transport	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
• during storage	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C	-40 ... +85 °C
Environmental category acc. to IEC 60721	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation	Climate class 3K3, no condensation

Technical specifications (continued)

Article number	6EP1961-2BA11	6EP1961-2BA31	6EP1961-2BA51	6EP1961-2BA61
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U	SITOP PSE200U
Type of current supply	Selectivity module, 4 x 3 A Common signal contact	Selectivity module, 4 x 3 A Single-channel signaling	Selectivity module, 4 x 3 A NEC Class 2, Common signal contact	Selectivity module, 4 x 3 A NEC Class 2, Single- channel signaling
Mechanics				
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals	screw-type terminals
• at input	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²
• at output	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²
• for signaling contact	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 4 mm ²	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 4 mm ²
• for auxiliary contacts	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²
Width of the enclosure	72 mm	72 mm	72 mm	72 mm
Height of the enclosure	80 mm	80 mm	80 mm	80 mm
Depth of the enclosure	72 mm	72 mm	72 mm	72 mm
Installation width	72 mm	72 mm	72 mm	72 mm
Mounting height	180 mm	180 mm	180 mm	180 mm
Net weight	0.2 kg	0.2 kg	0.2 kg	0.2 kg
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Mechanical accessories	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20
MTBF at 40 °C	755 915 h	755 915 h	755 915 h	755 915 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Add-on modules

Selectivity module

Technical specifications (continued)

Article number	6EP1961-2BA21	6EP1961-2BA41	6EP1961-2BA00
Product brand name	SITOP PSE200U	SITOP PSE200U	SITOP select
Type of current supply	Selectivity module, 4 x 10 A Common signal contact	Selectivity module, 4 x 10 A Single-channel signaling	Selectivity module, 4 x 10 A
Mechanics			
Type of electrical connection	screw-type terminals	screw-type terminals	screw-type terminals
• at input	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²	+24 V: 2 screw terminals for 0.5 ... 16 mm ² ; 0 V: 2 screw terminals for 0.5 ... 4 mm ²
• at output	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.5 ... 4 mm ²	Output 1 ... 4: 1 screw terminal each for 0.22 ... 4 mm ²
• for signaling contact	3 screw terminals for 0.5 ... 4 mm ²	1 screw terminal for 0.5 ... 4 mm ²	2 screw terminals for 0.22 ... 4 mm ²
• for auxiliary contacts	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²	Remote reset: 1 screw terminal for 0.5 ... 4 mm ²	-
Width of the enclosure	72 mm	72 mm	72 mm
Height of the enclosure	80 mm	80 mm	90 mm
Depth of the enclosure	72 mm	72 mm	90 mm
Installation width	72 mm	72 mm	72 mm
Mounting height	180 mm	180 mm	190 mm
Net weight	0.2 kg	0.2 kg	0.4 kg
Mounting type	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15	Snaps onto DIN rail EN 60715 35x7.5/15
Product component belonging to	-	-	4x blade-type fuse 15 A
Mechanical accessories	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	Device identification label 20 mm x 7 mm, pale turquoise 3RT1900-1SB20	-
MTBF at 40 °C	540 979 h	540 979 h	378 928 h
Other information	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)	Specifications at rated input voltage and ambient temperature +25 °C (unless otherwise specified)

Ordering data

Article No.

SITOP PSE200U 3 A

4-channel selectivity module
Input: 24 V AC
Output: 24 V DC/3 A per channel
Adjustable response threshold
0.5 ... 3 A

- With common alarm signal
- With single-channel signaling

6EP1961-2BA11
6EP1961-2BA31

SITOP PSE200U 3 A NEC Class 2

4-channel selectivity module
Input: 24 V DC
Output: 24 V DC/3 A per channel
Adjustable response threshold
0.5 ... 3 A

- With common alarm signal
- With single-channel signaling

6EP1961-2BA51
6EP1961-2BA61

SITOP PSE200U 10 A

4-channel selectivity module
Input: 24 V AC
Output: 24 V DC/10 A per channel
Adjustable response threshold
3 ... 10 A

- With common alarm signal
- With single-channel signaling

6EP1961-2BA21
6EP1961-2BA41

SITOP select

4-channel selectivity module
Input: 24 V DC
Output: 24 V DC/10 A per channel
Adjustable response threshold
2 ... 10 A

6EP1961-2BA00

Accessories

Article No.

Device labels

3RT1900-1SB20