SIEMENS

SIPLUS SM 1222 digital output modules

Overview

- Digital outputs as a supplement to the integral I/O of the CPUs
- For flexible adaptation of the controller to the corresponding task
- For subsequent expansion of the system with additional outputs
- From +60 °C to +70 °C, max. 50% of the inputs can be controlled simultaneously

Note:

SIPLUS extreme products are based on SIMATIC standard products. The contents listed here were taken from the respective standard products. SIPLUS extreme-specific information was added.

Application

Digital output modules permit the output of digital signals from the controller to the process.

This provides users with the following advantages:

- Optimum adaptation:
  With signal modules which can be mixed as desired, users can adapt their controllers exactly to the relevant task. This avoids superfluous investments. Modules with 8, 16, and 32 input/output channels are available.
- Flexibility:
  If the task is expanded subsequently, the controller can be upgraded. Updating of the user program is extremely simple.

Function

The SM 1222 digital output signal modules convert the internal signal level of the SIMATIC S7-1200 Controller into the external signal level required for the process.

Technical specifications

Article number	**6AG1222-1BF32-2XB0**	**6AG1222-1BF32-4XB0**	**6AG1222-1BH32-2XB0**	**6AG1222-1BH32-4XB0**
	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 8DQ	SIPLUS S7-1200 SM 1222 16DQ	SIPLUS S7-1200 SM 1222 16DQ
General information				
Product type designation	SM 1222, DQ 8x24 V DC/0.5 A	SM 1222, DQ 8x24 V DC/0.5 A	SM 1222, DQ 16x24 V DC/0.5 A	SM 1222, DQ 16x24 V DC/0.5 A
Supply voltage				
permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V
Input current				
from backplane bus 5 V DC, max.	120 mA	120 mA	140 mA	140 mA
Power loss				
Power loss, typ.	1.5 W	1.5 W	2.5 W	2.5 W
Digital outputs				
Number of digital outputs	8	8	16	16
• in groups of	1	1	1	1
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Limitation of inductive shutdown voltage to	typ. (L+) -48 V	typ. (L+) -48 V	typ. (L+) -48 V	typ. (L+) -48 V
Switching capacity of the outputs				
• with resistive load, max.	0.5 A	0.5 A	0.5 A	0.5 A
• on lamp load, max.	5 W	5 W	5 W	5 W
Output voltage				
• Rated value (DC)	24 V	24 V	24 V	24 V
• for signal "0", max.	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load	0.1 V; with 10 kOhm load
• for signal "1", min.	20 V DC	20 V DC	20 V DC	20 V DC
Output current				
• for signal "1" rated value	0.5 A	0.5 A	0.5 A	0.5 A
• for signal "0" residual current, max.	10 µA	10 µA	10 µA	10 µA
Output delay with resistive load				
• "0" to "1", max.	50 µs	50 µs	50 µs	50 µs
• "1" to "0", max.	200 µs	200 µs	200 µs	200 µs
Total current of the outputs (per group)				
horizontal installation				
— up to 50 °C, max.	4 A; Current per mass	4 A; Current per mass	8 A; Current per mass	8 A; Current per mass
Relay outputs				
Switching capacity of contacts				
— with inductive load, max.	0.5 A	0.5 A	0.5 A	0.5 A
— on lamp load, max.	5 W	5 W	5 W	5 W
— with resistive load, max.	0.5 A	0.5 A	0.5 A	0.5 A
Cable length				
• shielded, max.	500 m	500 m	500 m	500 m

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Article number	6AG1222-1BF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ	6AG1222-1BF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ	6AG1222-1BH32-2XB0 SIPLUS S7-1200 SM 1222 16DQ	6AG1222-1BH32-4XB0 SIPLUS S7-1200 SM 1222 16DQ
● unshielded, max.	150 m	150 m	150 m	150 m
Interrupts/diagnostics/status information				
Diagnostics function	Yes	Yes	Yes	Yes
Alarms				
● Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
● Monitoring the supply voltage	Yes	Yes	Yes	Yes
Diagnostics indication LED				
● for status of the outputs	Yes	Yes	Yes	Yes
● for maintenance	Yes	Yes	Yes	Yes
Potential separation				
Potential separation digital outputs				
● between the channels, in groups of	1	1	1	1
● between the channels and backplane bus	500 V AC	500 V AC	500 V AC	500 V AC
Degree and class of protection				
IP degree of protection	IP20	IP20	IP20	IP20
Ambient conditions				
Free fall				
● Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation				
● min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
● max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
● At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C
Ambient temperature during storage/transportation				
● min.	-40 °C	-40 °C	-40 °C	-40 °C
● max.	70 °C	70 °C	70 °C	70 °C
Altitude during operation relating to sea level				
● Installation altitude above sea level, max.	5 000 m	5 000 m	5 000 m	5 000 m
● Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax -20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m)
Relative humidity				
● With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *

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Article number	6AG1222-1BF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ	6AG1222-1BF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ	6AG1222-1BH32-2XB0 SIPLUS S7-1200 SM 1222 16DQ	6AG1222-1BH32-4XB0 SIPLUS S7-1200 SM 1222 16DQ
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology				
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
connection method / header				
required front connector	Yes	Yes	Yes	Yes
Mechanics/material				
Enclosure material (front)				
• Plastic	Yes	Yes	Yes	Yes
Dimensions				
Width	45 mm	45 mm	45 mm	45 mm
Height	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm
Weights				
Weight, approx.	180 g	180 g	220 g	220 g

Article number	6AG1222-1HF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1HF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1XF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1XF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ RLY
General information				
Product type designation	SM 1222, DQ 8x relay/2 A	SM 1222, DQ 8x relay/2 A	SM 1222, DQ 8x relay/2 A	SM 1222, DQ 8x relay/2 A
Supply voltage				
permissible range, lower limit (DC)	20.4 V	20.4 V	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V	28.8 V	28.8 V
Input current				
from backplane bus 5 V DC, max.	120 mA	120 mA	140 mA	140 mA
Digital outputs				
• from load voltage L+, max.	11 mA/relay coil	11 mA/relay coil	16.7 mA/relay coil	16.7 mA/relay coil
Power loss				
Power loss, typ.	4.5 W	4.5 W	5 W	5 W
Digital outputs				
Number of digital outputs	8	8	8	8
• in groups of	2	2	1	1
Short-circuit protection	No; to be provided externally	No; to be provided externally	No; to be provided externally	No; to be provided externally
Switching capacity of the outputs				
• with resistive load, max.	2 A	2 A	2 A	2 A
• on lamp load, max.	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
Output voltage				
• Rated value (DC)	5 V DC to 30 V DC	5 V DC to 30 V DC	5 V DC to 30 V DC	5 V DC to 30 V DC
• Rated value (AC)	5 V AC to 250 V AC	5 V AC to 250 V AC	5 V AC to 250 V AC	5 V AC to 250 V AC
Output current				
• for signal "1" rated value	2 A	2 A		

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Article number	6AG1222-1HF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1HF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1XF32-2XB0 SIPLUS S7-1200 SM 1222 8DQ RLY	6AG1222-1XF32-4XB0 SIPLUS S7-1200 SM 1222 8DQ RLY
● for signal "1" permissible range, max.			2 A	2 A
Output delay with resistive load				
● "0" to "1", max.	10 ms	10 ms	10 ms	10 ms
● "1" to "0", max.	10 ms	10 ms	10 ms	10 ms
Total current of the outputs (per group)				
horizontal installation				
— up to 50 °C, max.	10 A; Current per mass	10 A; Current per mass	2 A; Current per mass	2 A; Current per mass
Relay outputs				
● Number of relay outputs	8	8	8	8
● Rated supply voltage of relay coil L+ (DC)	24 V	24 V	24 V	24 V
● Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts				
— with inductive load, max.	2 A	2 A	2 A	2 A
— on lamp load, max.	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
— with resistive load, max.	2 A	2 A	2 A	2 A
Cable length				
● shielded, max.	500 m	500 m	500 m	500 m
● unshielded, max.	150 m	150 m	150 m	150 m
Interrupts/diagnostics/status information				
Diagnostics function	Yes	Yes	Yes	Yes
Alarms				
● Diagnostic alarm	Yes	Yes	Yes	Yes
Diagnoses				
● Monitoring the supply voltage	Yes	Yes		
Diagnostics indication LED				
● for status of the outputs	Yes	Yes	Yes	Yes
● for maintenance	Yes	Yes	Yes	Yes
Potential separation				
Potential separation digital outputs				
● between the channels	Relay, dry contact	Relay, dry contact	Relays	Relays
● between the channels, in groups of	2	2	1	1
● between the channels and backplane bus	1 500 V AC for 1 minute	1 500 V AC for 1 minute	1 500 V AC for 1 minute	1 500 V AC for 1 minute
Permissible potential difference				
between different circuits	750 V AC for 1 minute	750 V AC for 1 minute	750 V AC for 1 minute	750 V AC for 1 minute
Degree and class of protection				
IP degree of protection	IP20	IP20	IP20	IP20
Standards, approvals, certificates				
Marine approval			Yes	Yes
Ambient conditions				
Free fall				
● Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package		
Ambient temperature during operation				
● min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
● max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 4 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
● At cold restart, min.	-25 °C	0 °C	-25 °C	0 °C
Ambient temperature during storage/transportation				
● min.	-40 °C	-40 °C	-40 °C	-40 °C
● max.	70 °C	70 °C	70 °C	70 °C
Altitude during operation relating to sea level				
● Installation altitude above sea level, max.	2 000 m	2 000 m	2 000 m	2 000 m
● Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m);	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m);	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m);	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m);

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Article number	6AG1222-1HF32-2XB0	6AG1222-1HF32-4XB0	6AG1222-1XF32-2XB0	6AG1222-1XF32-4XB0
	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY
	above 2 000 m max. 132 V AC	above 2 000 m max. 132 V AC	above 2 000 m max. 132 V AC	above 2 000 m max. 132 V AC
Relative humidity				
● Operation at 25 ℃ without condensation, max.			95 %	95 %
● With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance				
Coolants and lubricants				
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems				
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea				
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology				
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark				
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating				
● Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
● Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection	Yes; Type 1 protection
● Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
● Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
connection method / header				
required front connector	Yes	Yes	Yes	Yes
Mechanics/material				
Enclosure material (front)				
● Plastic	Yes	Yes	Yes	Yes
Dimensions				
Width	45 mm	45 mm	45 mm	45 mm
Height	100 mm	100 mm	100 mm	100 mm
Depth	75 mm	75 mm	75 mm	75 mm
Weights				

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Article number	6AG1222-1HF32-2XB0	6AG1222-1HF32-4XB0	6AG1222-1XF32-2XB0	6AG1222-1XF32-4XB0
	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY	SIPLUS S7-1200 SM 1222 8DQ RLY
Weight, approx.	190 g	190 g	310 g	310 g

Article number	6AG1222-1HH32-2XB0	6AG1222-1HH32-4XB0
	SIPLUS S7-1200 SM 1222 16DQ RLY	SIPLUS S7-1200 SM 1222 16DQ RLY
General information		
Product type designation	SM 1222, DQ 16x relay/2 A	SM 1222, DQ 16x relay/2 A
Supply voltage		
permissible range, lower limit (DC)	20.4 V	20.4 V
permissible range, upper limit (DC)	28.8 V	28.8 V
Input current		
from backplane bus 5 V DC, max.	135 mA	135 mA
Digital outputs		
• from load voltage L+, max.	11 mA/relay coil	11 mA/relay coil
Power loss		
Power loss, typ.	8.5 W	8.5 W
Digital outputs		
Number of digital outputs	16	16
• in groups of	1	1
Short-circuit protection	No; to be provided externally	No; to be provided externally
Switching capacity of the outputs		
• with resistive load, max.	2 A	2 A
• on lamp load, max.	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
Output voltage		
• Rated value (DC)	5 V DC to 30 V DC	5 V DC to 30 V DC
• Rated value (AC)	5 V AC to 250 V AC	5 V AC to 250 V AC
Output current		
• for signal "1" rated value	2 A	2 A
Output delay with resistive load		
• "0" to "1", max.	10 ms	10 ms
• "1" to "0", max.	10 ms	10 ms
Total current of the outputs (per group)		
horizontal installation		
— up to 50 °C, max.	10 A; Current per mass	10 A; Current per mass
Relay outputs		
• Number of relay outputs	16	16
• Rated supply voltage of relay coil L+ (DC)	24 V	24 V
• Number of operating cycles, max.	mechanically 10 million, at rated load voltage 100 000	mechanically 10 million, at rated load voltage 100 000
Switching capacity of contacts		
— with inductive load, max.	2 A	2 A
— on lamp load, max.	30 W with DC, 200 W with AC	30 W with DC, 200 W with AC
— with resistive load, max.	2 A	2 A
Cable length		
• shielded, max.	500 m	500 m
• unshielded, max.	150 m	150 m
Interrupts/diagnostics/status information		
Diagnostics function	Yes	Yes
Alarms		
• Diagnostic alarm	Yes	Yes
Diagnoses		
• Monitoring the supply voltage	Yes	Yes
Diagnostics indication LED		
• for status of the outputs	Yes	Yes
• for maintenance	Yes	Yes
Potential separation		
Potential separation digital outputs		
• between the channels	Relays	Relay, dry contact
• between the channels, in groups of	4	4
• between the channels and backplane bus	1 500 V AC for 1 minute	1 500 V AC for 1 minute
Permissible potential difference		
between different circuits	750 V AC for 1 minute	750 V AC for 1 minute
Degree and class of protection		
IP degree of protection	IP20	IP20
Ambient conditions		
Free fall		
• Fall height, max.	0.3 m; five times, in product package	0.3 m; five times, in product package
Ambient temperature during operation		
• min.	-40 °C; = Tmin (incl. condensation/frost); start-up @ -25 °C	-20 °C; = Tmin (incl. condensation/frost); start-up @ 0 °C
• max.	70 °C; = Tmax; Tmax > +60 °C number of simultaneously activated outputs 8 (no adjacent points) for horizontal mounting position	60 °C; = Tmax
• At cold restart, min.	-25 °C	0 °C
Ambient temperature during storage/transportation		

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• min.	-40 °C	-40 °C
• max.	70 °C	70 °C
Altitude during operation relating to sea level		
• Installation altitude above sea level, max.	2 000 m	2 000 m
• Ambient air temperature-barometric pressure-altitude	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 132 V AC	Tmin ... Tmax at 1 140 hPa ... 795 hPa (-1 000 m ... +2 000 m) // Tmin ... (Tmax - 10 K) at 795 hPa ... 658 hPa (+2 000 m ... +3 500 m) // Tmin ... (Tmax - 20 K) at 658 hPa ... 540 hPa (+3 500 m ... +5 000 m); above 2 000 m max. 132 V AC
Relative humidity		
• With condensation, tested in accordance with IEC 60068-2-38, max.	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)	100 %; RH incl. condensation/frost (no commissioning under condensation conditions)
Resistance		
Coolants and lubricants		
— Resistant to commercially available coolants and lubricants	Yes; Incl. diesel and oil droplets in the air	Yes; Incl. diesel and oil droplets in the air
Use in stationary industrial systems		
— to biologically active substances according to EN 60721-3-3	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request	Yes; Class 3B2 mold, fungus and dry rot spores (with the exception of fauna); Class 3B3 on request
— to chemically active substances according to EN 60721-3-3	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 3C4 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-3	Yes; Class 3S4 incl. sand, dust, *	Yes; Class 3S4 incl. sand, dust, *
Use on ships/at sea		
— to biologically active substances according to EN 60721-3-6	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request	Yes; Class 6B2 mold and fungal spores (excluding fauna); Class 6B3 on request
— to chemically active substances according to EN 60721-3-6	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *	Yes; Class 6C3 (RH < 75 %) incl. salt spray acc. to EN 60068-2-52 (severity degree 3); *
— to mechanically active substances according to EN 60721-3-6	Yes; Class 6S3 incl. sand, dust; *	Yes; Class 6S3 incl. sand, dust; *
Usage in industrial process technology		
— Against chemically active substances acc. to EN 60654-4	Yes; Class 3 (excluding trichlorethylene)	Yes; Class 3 (excluding trichlorethylene)
— Environmental conditions for process, measuring and control systems acc. to ANSI/ISA-71.04	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)	Yes; Level GX group A/B (excluding trichlorethylene; harmful gas concentrations up to the limits of EN 60721-3-3 class 3C4 permissible); level LC3 (salt spray) and level LB3 (oil)
Remark		
— Note regarding classification of environmental conditions acc. to EN 60721, EN 60654-4 and ANSI/ISA-71.04	* The supplied plug covers must remain in place over the unused interfaces during operation!	* The supplied plug covers must remain in place over the unused interfaces during operation!
Conformal coating		
• Coatings for printed circuit board assemblies acc. to EN 61086	Yes; Class 2 for high reliability	Yes; Class 2 for high reliability
• Protection against fouling acc. to EN 60664-3	Yes; Type 1 protection	Yes; Type 1 protection
• Military testing according to MIL-I-46058C, Amendment 7	Yes; Discoloration of coating possible during service life	Yes; Discoloration of coating possible during service life
• Qualification and Performance of Electrical Insulating Compound for Printed Board Assemblies according to IPC-CC-830A	Yes; Conformal coating, Class A	Yes; Conformal coating, Class A
connection method / header		
required front connector	Yes	Yes
Mechanics/material		
Enclosure material (front)		
• Plastic	Yes	Yes
Dimensions		
Width	45 mm	45 mm
Height	100 mm	100 mm
Depth	75 mm	75 mm
Weights		
Weight, approx.	260 g	260 g

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