



GUCHEN
Electronics

Technical Specification of
SY1 Series
Metal Connector

Shenzhen Guchen Electronic Co., Ltd.

2024-01

Email address: ec@guchen.com
T: 86-0755-28013472
Website: <https://www.guchen-connector.com>

Address: 2A, Building 2, Hongji Xindu, Guanxing East Road, Longhua District,
Shenzhen
M: 86 15517589079

Change History

DATE	CHAPT.	BEFORE	AFTER
2022.10.28	ALL		Update the new template
2023.03.21	2, 3		Add new material number
2023.07.12	2, 3		Add new specifications and models 15 and 16
2024.01.26	4, 5		Add new specifications and model (2-core 4mm ² plug modification)

Note:

Changes to this specification will not be notified to customers as long as they do not reduce product performance or change product status.

Customers will not be notified when the following changes are involved:

- 1) Product models are added, and the original model products remain unchanged;
- 2) Changes to the explanatory text in the specifications will not affect product use, product assembly etc.
- 3) Changes when the promised technical parameters of the product are increased and the promised performance is improved.

1. Product Overview



The SY1 series connector is a circular metal connector suitable for the connection between devices such as new energy vehicle motor controllers, integrated controllers, and PDUs. The product features an aluminum alloy shell, offering advantages such as multiple key positions for error prevention, high strength, excellent shielding performance, high wiring efficiency, and convenient and reliable plugging and unplugging. Additionally, the product has a secondary locking function for reliable locking, supports corrugated tube assembly, and eliminates the need for the heat shrink tubing process.

Model Naming:

Series	SY1 Series	SY1	-	3	T	P	H	-	2.5	C	W	F	A	-01
Separator	-													
Core No.	2 Core, 3 Core													
Type	T-Plug, Z-Socket													
Shielding	Default-No Shielding, P-Shielding													
HVIL	Default-No HVIL; H-With HVIL													
Separator	-													
Cable Speci.	2.5mm ² /4mm ² /6mm ²													
Plug Cable	Default-Single-core Cable; C-Multi-core Cable													
Plug Type	Default-Straight Plug; W-90° Plug													
Socket Type	Default - Socket without mounting error prevention; F - Socket with mounting error prevention; U - Socket with flying lead													
Key	A, B, C, D, E													
Re-model	Default; -01; -02;....													

2. Available Models

S/N	Model	Part No.	Description	Mated Models
1.	SY1-2TP-2.5CA	21G0-00006-A	2×2.5mm ² Multi-core straight plug	SY1-2Z-2.5A
2.	SY1-2TP-2.5CWA	21G0-00009-A	2×2.5mm ² Multi-core 90° plug	
3.	SY1-2Z-2.5A	21G0-00007-A	2×2.5mm ² Socket	SY1-2TP-2.5CA SY1-2TP-2.5CWA
4.	SY1-3TP-2.5CA	21G0-00002-A	3×2.5mm ² Multi-core straight plug	SY1-3Z-2.5A
5.	SY1-3TP-2.5CWA	21G0-00008-A	3×2.5mm ² Multi-core 90° plug	
6.	SY1-3TP-2.5A	21G0-00210-A	3×2.5mm ² Single-core Straight plug	
7.	SY1-3TP-2.5WA	21G0-00479-A	3×2.5mm ² Single-core 90° plug	
8.	SY1-3Z-2.5A	21G0-00003-A	3×2.5mm ² Socket	SY1-3TP-2.5CA SY1-3TP-2.5CWA SY1-3TP-2.5A SY1-3TP-2.5WA
9.	SY1-2TP-2.5A	21G0-00209-A	2×2.5mm ² Single-core Straight plug	SY1-2Z-2.5A-02 SY1-2Z-4A SY1-2Z-6A
10.	SY1-2TP-4A-01	21G0-12135	2×4mm ² Single-core Straight plug (re-model)	
11.	SY1-2TP-4A	21G0-00213-A	2×4mm ² Single-core Straight plug	
12.	SY1-2TP-6A	21G0-00087-A	2×6mm ² Single-core Straight plug	
13.	SY1-2TP-4WA	21G0-00211-A	2×4mm ² Single-core 90° plug	
14.	SY1-2TP-2.5CA-02	21G0-00149-A	2×2.5mm ² Multi-core straight plug (re-model)	
15.	SY1-2TP-4CA	21G0-00143-A	2×4mm ² Multi-core straight plug	
16.	SY1-2Z-2.5A-02	21G0-00212-A	2×2.5mm ² Socket (re-model)	SY1-2TP-2.5A SY1-2TP-4A SY1-2TP-6A SY1-2TP-4WA SY1-2TP-2.5CA-02 SY1-2TP-4CA
17.	SY1-2Z-4A	21G0-00144-A	2×4mm ² Socket	SY1-2TP-2.5A SY1-2TP-4A SY1-2TP-6A SY1-2TP-4WA SY1-2TP-2.5CA-02 SY1-2TP-4CA
18.	SY1-2Z-6A	21G0-00088-A	2×6mm ² Socket	SY1-2TP-2.5A SY1-2TP-4A SY1-2TP-6A SY1-2TP-4WA SY1-2TP-2.5CA-02 SY1-2TP-4CA
19.	SY1-FJ	21G0-00002-FJ	Socket plug	Compatible with all socket products

Note:

- All models listed have five key positions: A, B, C, D, and E. For different key positions, replace the "A" in the model number with the desired letter. Only plugs and sockets with the same key position can be mated.
- Items 1-8 use stamped terminals suitable only for 2.5mm² wires.
- Items 9-17 use machined terminals with round pins and holes. Plugs and sockets with different wire gauges can be used together as needed. The rated current corresponds to the lowest rated current-carrying capacity of the plug and socket.
- Items 3, 8, and 16-18 are socket products; the rest are plug products.

Email address: ec@guchen.com

T: 86-0755-28013472

 Website: <https://www.guchen-connector.com>

Address: 2A, Building 2, Hongji Xindu, Guanxing East Road, Longhua District, Shenzhen

M: 86 15517589079

3. Related Wire Cross Sections

S/N	MODEL	Compatible Cables		
		Specification (mm ²)	Compatible Wire Gauge	REMARKS
1.	SY1-2TP-2.5CA	2×2.5	Φ11±0.3mm	Shielded multi-core wire
2.	SY1-2TP-2.5CWA	2×2.5	Φ11±0.3mm	Shielded multi-core wire
3.	SY1-2Z-2.5A	2.5	Φ3.6±0.2mm	Unshielded single-core wire
4.	SY1-3TP-2.5CA	3×2.5	Φ11±0.3mm	Shielded multi-core wire
5.	SY1-3TP-2.5CWA	3×2.5	Φ11±0.3mm	Shielded multi-core wire
6.	SY1-3TP-2.5A	2.5	Φ5.6±0.2mm	Shielded single-core wire
7.	SY1-3TP-2.5WA	2.5	Φ5.6±0.2mm	Shielded single-core wire
8.	SY1-3Z-2.5A	2.5	Φ3.6±0.2mm	Unshielded single-core wire
9.	SY1-2TP-2.5A	2.5	Φ5.6±0.2mm	Shielded single-core wire
10.	SY1-2TP-4A-01	4	Φ5.7±0.2mm	Shielded single-core wire
11.	SY1-2TP-4A	4	Φ7.3±0.2mm	Shielded single-core wire
12.	SY1-2TP-6A	6	Φ7.7±0.2mm	Shielded single-core wire
13.	SY1-2TP-4WA	4	Φ5.9±0.2mm	Shielded single-core wire
14.	SY1-2TP-2.5CA-02	2×2.5	Φ11±0.3mm	Shielded multi-core wire
15.	SY1-2TP-4CA	2×4	Φ12.3±0.3mm	Shielded multi-core wire
16.	SY1-2Z-2.5A-02	2.5	Φ3.6±0.2mm	Unshielded single-core wire
17.	SY1-2Z-4A	4	Φ4.6±0.2mm	Unshielded single-core wire
18.	SY1-2Z-6A	6	Φ5.0±0.2mm	Unshielded single-core wire

4. Compatible Terminals

S/N	MODEL	DESCRIPTION	Rated Current	Compatible Contacts (to be ordered separately)	REMARKS
1.	SY1-2TP-2.5CA	2×2.5mm ² Multi-core straight plug	20A	4050-07061 (2PCS)	Stamped socket
2.	SY1-2TP-2.5CWA	2×2.5mm ² Multi-core 90° plug		4050-07061 (2PCS)	Stamped socket
3.	SY1-2Z-2.5A	2×2.5mm ² Socket		4050-07226 (2PCS)	Stamped pin
4.	SY1-3TP-2.5CA	3×2.5mm ² Multi-core straight plug		4050-07061 (3PCS)	Stamped socket
5.	SY1-3TP-2.5CWA	3×2.5mm ² Multi-core 90° plug		4050-07061 (3PCS)	Stamped socket
6.	SY1-3TP-2.5A	3×2.5mm ² Single-core straight plug		4050-07061 (3PCS)	Stamped socket
7.	SY1-3TP-2.5WA	3×2.5mm ² Single-core 90° plug		4050-07061 (3PCS)	Stamped socket
8.	SY1-3Z-2.5A	3×2.5mm ² Socket		4050-07226 (3PCS)	Stamped pin
9.	SY1-2TP-2.5A	2×2.5mm ² Single-core straight plug	20A	4050-07222 (2PCS)	Machined socket
10.	SY1-2TP-4A-01	2×4mm ² Single-core straight plug (re-model)	32A	4050-07062 (2PCS)	Machined socket
11.	SY1-2TP-4A	2×4mm ² Single-core straight plug	32A	4050-07062 (2PCS)	Machined socket
12.	SY1-2TP-6A	2×6mm ² Single-core straight plug	40A	4050-07223 (2PCS)	Machined socket
13.	SY1-2TP-4WA	2×4mm ² Single-core 90° plug	32A	4050-07062 (2PCS)	Machined socket
14.	SY1-2TP-2.5CA-02	2×2.5mm ² Multi-core straight plug (re-model)	20A	4050-07222 (2PCS)	Machined socket
15.	SY1-2TP-4CA	2×4mm ² Multi-core straight plug	32A	4050-07062 (2PCS)	Machined socket
16.	SY1-2Z-2.5A-02	2×2.5mm ² Socket(re-model)	20A	4050-07219 (2PCS)	Machined pins
17.	SY1-2Z-4A	2×4mm ² Socket	32A	4050-07220 (2PCS)	Machined pins

Email address: ec@guchen.com

T: 86-0755-28013472

 Website: <https://www.guchen-connector.com>

Address: 2A, Building 2, Hongji Xindu, Guanxing East Road, Longhua District, Shenzhen

M: 86 15517589079

18	SY1-2Z-6A	2×6mm ² Socket	40A	4050-07221 (2PCS)	Machined pins
----	-----------	---------------------------	-----	-------------------	---------------

Note:

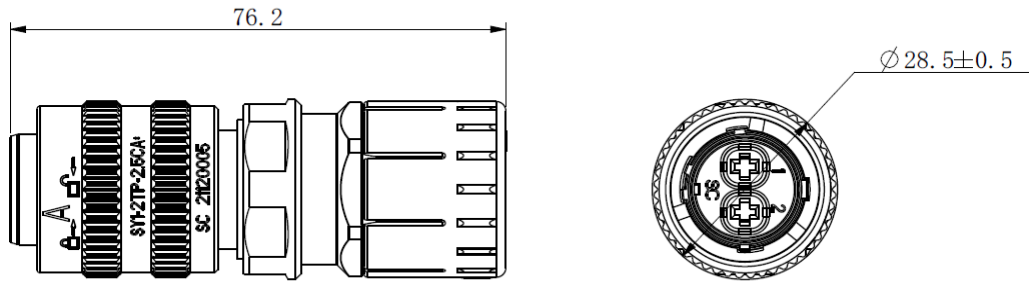
- Both plug and socket contacts use crimp termination.
- The connectors' corresponding contacts must be ordered separately. The number of contacts required for plugs and sockets corresponds to the number of circuits. Please refer to the table for the part numbers of different models, contacts, and parts.
- When ordering, consider the need for additional contacts due to process requirements (e.g., crimp testing, crimp damage).
- The terminal types for plugs and sockets must be consistent. Sockets fitted with stamped pins can only be paired with plugs fitted with stamped pins, and sockets fitted with machined pins can only be paired with plugs fitted with machined pins.

5. Product Performance

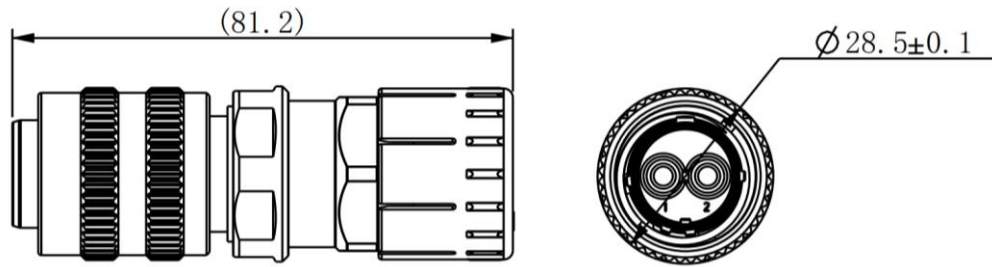
Mechanical Performance	
Mechanical life	50 mating cycles
Vibration	Complies with USCAR V2 vibration grade
Electrical Performance	
Rated Current	20A(2.5 mm ²)/32A(4 mm ²)/40A(6 mm ²)
Surge Current	40A/64A/80A, duration 1 minute, temperature rise ≤ 55K
Rated Voltage	1000V
Withstand Voltage	3000VAC (after plug and socket mating)
Insulation Resistance	5000M
Environmental Resistance Performance	
Protection Level	IP68, IP69K (after plug and socket mating)
Working Temp.	-40℃ ~ +125℃
Flame Retardent	Material UL94 V0 (sealing parts HB)
Salt Spray	Zinc-nickel alloy plated products meet 504 hours of neutral salt spray testing
Main Material	
Housing	Aluminum alloy with zinc-nickel plating
Insulation	PA66
Sealing	Silicone Rubber
Shielding	Copper Alloy
Contacts	Silver-plated copper alloy (stamped terminals), gold-plated copper alloy (machined terminals)

6. Product Dimension

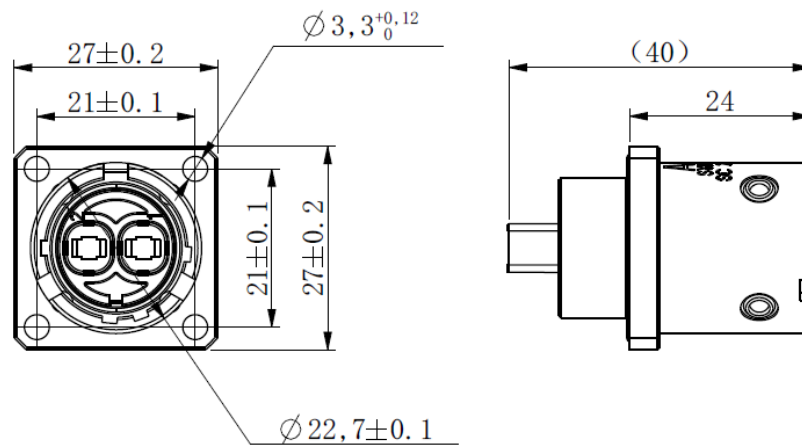
Dimensional specifications are based on the A-key plug and socket.
 Dimensions for other key positions are identical.
 Tolerance for unspecified dimensions is ±0.5.



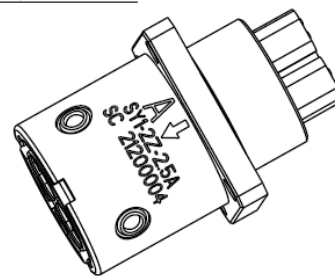
SY1-2/3TP-2.5CA(-02)

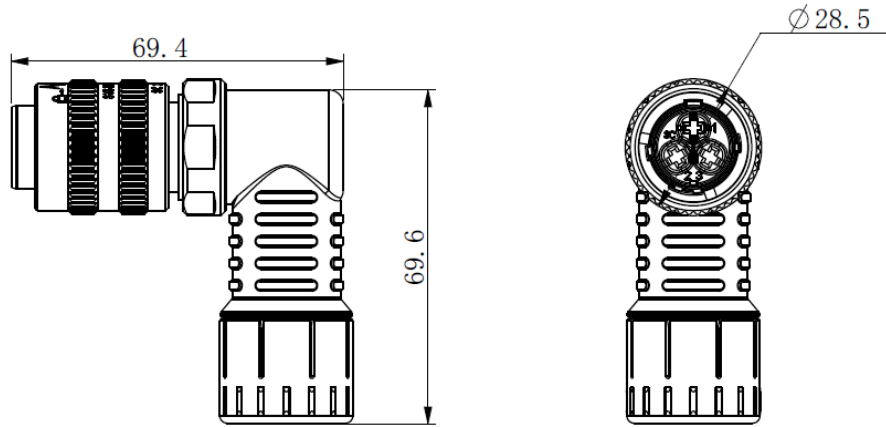


SY1-2TP-4CA

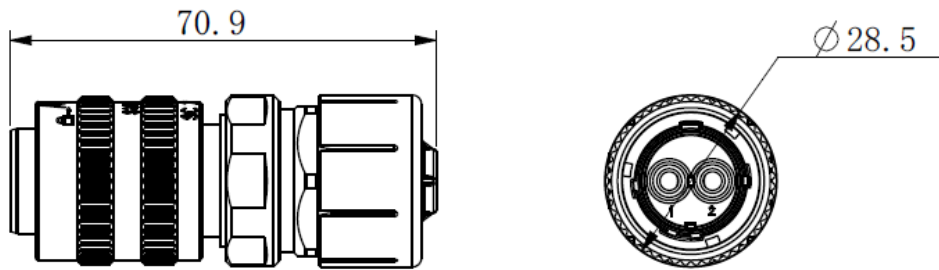


SY1-2/3Z-2.5A

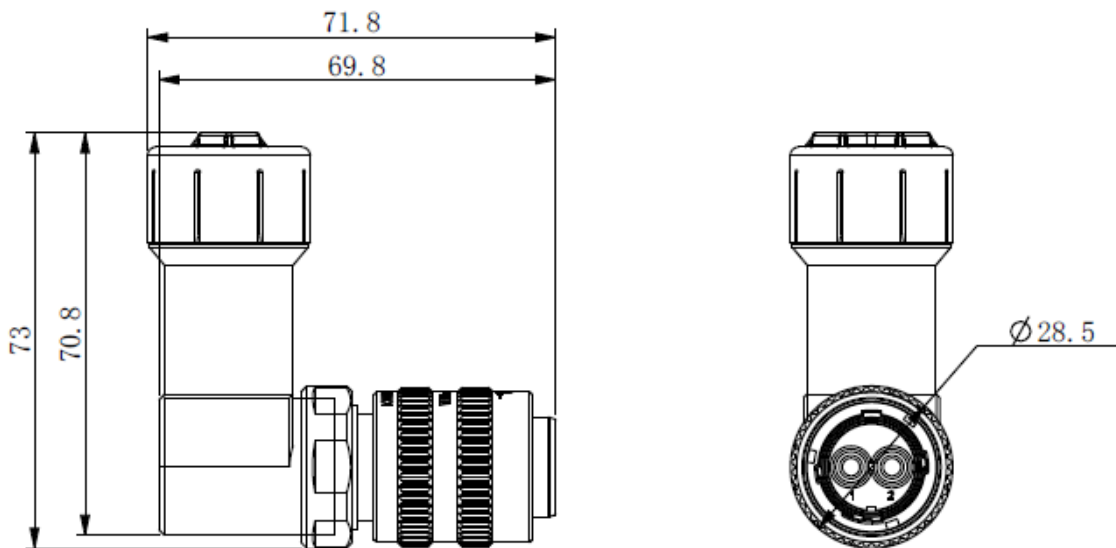




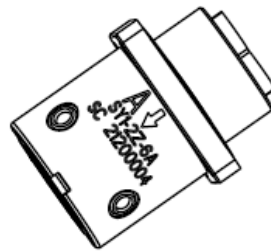
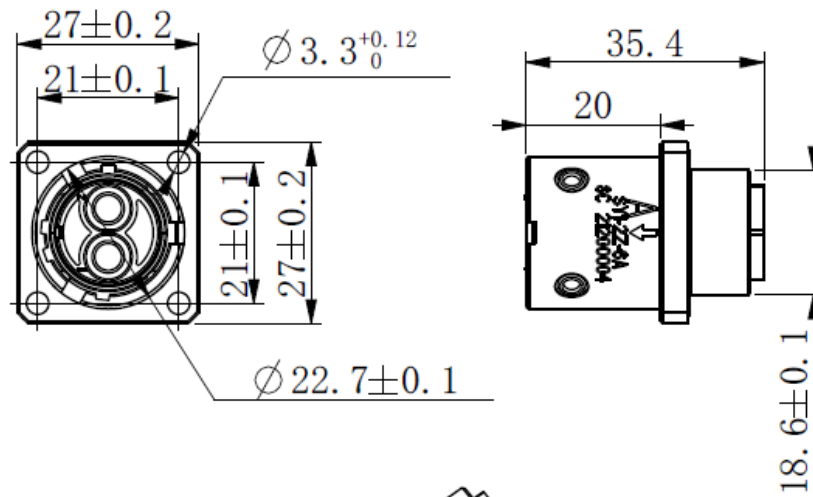
SY1-2/3TP-2.5CWA



SY1-2TP-4A/6A

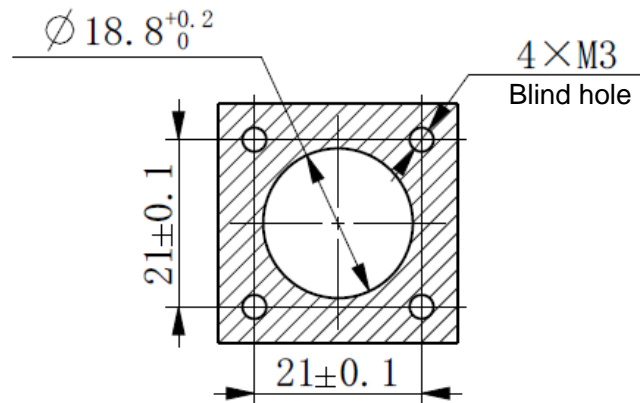


SY1-2TP-4WA



SY1-2Z-4A/6A

7. Mounting Panel



Recommended panel flatness: no greater than 0.1 mm
Surface roughness Ra: no greater than 3.2