

D-CON SERIES

SYNCHRO / DC CURRENT CONVERTER

SLDC SA420

INSTRUCTION MANUAL

Many thanks for your purchase of SLDC SA420.
Before use of this product, be sure to familiarize
yourselves with this inspection manual.

TAKUWA CORPORATION

CONTENTS	Page
<Safety Precautions>	3
1. General	8
2. Type Designation	8
3. Connection Method	8
4. Each Component Name	9
5. Operating Flow	10
6. Operational Precautions	11
7. Specification	11
8. Outline Drawing	12

Caution for operating this product !!

- ① Make wiring connection properly.
- ② Never disassemble this machine. (it may cause an accident such as an electric shock or damage)
- ③ Be careful that the interior of this machine is always kept from foreign matter entering.

SAFETY PRECAUTIONS

Before use (installation, operation, maintenance, inspection, etc.), be sure to familiarize yourselves this Cautionary Note and all other related documents to operate the Product properly. Do not operate it till you will not understand the acknowledge of the equipment, safety information and other precautions thoroughly.

After reading this document, be sure to keep it in such a place which is always visible from the operator. This document is classified into two ranks of safety precautions: "WARNING" and "CAUTION".

WARNING !! When mis-operated, there may occur a seriously dangerous situation, which may cause an accidental death or major injury.



CAUTION !! When mis-operated, there may a dangerous situation, which may medium or minor injury or cause only material damage.



Even an accident given in "CAUTION" may result in serious one depending on situations.

Note that either of them indicates important content to be always observed.



WARNING !!

(General)

- In no case use any instrument other than an explosionproof transmitter in explosive ambient. It may cause explosion, fire, injury, etc.
- Do not work in hot-line condition; make sure that power is turned OFF before proceeding to work. It may cause an electrical shock.
- Transport, installation, piping, wiring, operation, maintenance and inspection should be performed only by qualified engineer in charge of electrical work or equivalent who possesses qualification and special knowledge. Otherwise it may cause such an accident as an electrical shock, injury, fire, etc.

(Piping and wiring)

- Wiring connection between each unit and between a unit and power cable should be made according to the wiring connection diagram and Supply Specification. Always tighten any connecting screws firmly. Otherwise, it may cause an electrical shock or fire. On the other hand, keep unused terminals not connected. Otherwise, it may cause such an accident as damage to units, fire, electrical shock.



CAUTION !!

(Piping and Wiring)

- When measuring insulation resistance, do not touch a terminal. It may cause electrical shock.
- Insulation resistance test may affect another unit. With the system shut down, perform this test under the guidance of a specialist able to judge the influence on another unit.
It may cause electrical shock, malfunction, damage to the Product.
- Perform wiring connection according to the Technical Standard for Electrical Equipment and Internal Wiring Provisions. It may cause burning and fire. After finishing insulation resistance, check whether the performance of each unit is output properly. Otherwise, it may cause malfunction, burning or injury.

(Operation)

- If there occurs any trouble, immediately stop operation. It may cause electrical shock, injury, fire, etc.”
- After installation and adjustment, avoid adjustment during operation. It may cause not only unstable operation, but also damage to a unit, injury, etc.

(Maintenance and Inspection)

- When measuring insulation resistance, do not touch a terminal. It may cause electrical shock.
After finishing insulation resistance, check whether the performance of each unit is output properly. Otherwise, it may cause malfunction, burning or injury.

(Repair and Disassembly)

- Repair and disassembly should be performed by technical expert. It may cause electrical shock, injury, fire, etc.

(Disposal)

- When discarding the product, dispose it as general industrial wastes.



CAUTION!!

(General)

- In the installation location of the equipment, leave an sufficient space necessary for safe and proper maintenance and inspection. Otherwise, it may cause electrical shock or injury.
- In no case use the equipment out of the relevant specification. Otherwise, it may cause electrical shock, injury or damage.
- When used in combination with receiver and converter, be sure to observe a specified combination. It may cause fire or malfunction.
- In no case use the equipment in corrosive and inflammable ambient, or near combustibles. It may cause explosion, fire, or damage.
- In no case use the equipment in any condition and place other than specified in the specification and catalog (water-proof or drip-proof construction) . It may cause fire and damage.
- Do not insert the finger(s) and anything in openings. It may cause electrical shock, injury, fire, etc.
- Never use any damaged unit. It may injury, fire, etc.
- When performing installation, inspection, etc. at a height, be sure to take appropriate measures beforeh and for preventing equipment and parts from dropping. It may cause injury due to dropping.
- Any product reconstructed by Customer should be out of TAKUWA CORPORATION guarantee.
- Do not detach an nameplate. Keep it visible always .

(Transport · Carrying)

- During carrying the equipment, pay careful attention to drop, falling down, etc. It may cause a serious accident.
For any unit with eye bolts, be sure to use these bolts. After attaching it to the machine, however, in no case lift the whole machine with these bolts (of the unit).
Before lifting the unit down, check the mass of equipment according to the nameplate, packing case, outline drawing, catalog, etc. Avoid lifting any equipment in weight exceeding the rated load capacity of a hoist. It may cause damage and drop of a bolt, injury and damage due to falling down.



CAUTION !!

(Storage)

- Avoid storing the equipment in such a place as exposed to weather or water drops, or subjected to harmful gas and liquid placed near therefrom.
- Avoid storing the equipment in such a place as exposed to direct sunlight or as the ambient condition is out of specified range of temperature and humidity. It may cause damage.

(Unpacking)

- After checking the top of packing case, proceed to unpacking. Otherwise it may cause injury or damage.
- Check whether the contents are as ordered. Installing a wrong product may cause injury, damage, etc.

(Installation and Adjustment)

- Do not get on the equipment or do not place anything on the equipment. It may cause injury, damage, etc.
- In no case leave any combustibles around the equipment. It may cause a fire.
- Do not operate the equipment at higher than the operating temperature. It may cause a fire and a burn.
- When coupling a transmitter (including water level gauge, opening gauge, etc.) with a load or a drive shaft, pay attention to centering, parallelism of belt tension pulley, etc. On the other hand, in direct coupling, pay attention to the coupling precision.
For belting adjust the belt tension properly. In addition, before starting operation, tighten clamp bolts for pulley and coupling firmly. It may cause injury due to scattered pieces or damage to a unit.
- Be sure to provide a rotary part with cover to prevent an accident due to touch. It may cause injury.
- For water level gauge, opening gauge, transmitter with key on the main spindle, keep the main shafts from being rotated with use of keys. It may cause malfunction and injury.
- Before coupling to the machine, make sure that each gauge rotates in normal direction. It may cause injury or damage to a unit.
- Do not touch the key slots at the spindle end of water level gauge, opening gauge, transmitter, etc. by bare hand. It may cause injury.
- Do not apply any force exceeding the specified load and the thrust load to the main spindle. It may cause injury, damage or malfunction.

 **WARNING !!**

(Piping and wiring) - cont'd

- Do not bend, pull and insert cables and lead wires by force. It may cause electrical shock, fire, or abnormal function of the equipment.

(Installation and adjustment)

- Be sure to ground any unit provided with grounding terminal reliably. The grounding resistance should be 1000Ω or less (higher than 3-rd class)
- Install the equipment referring to the detail of applicable range specified in such technical materials as Catalog and Supply Specification, since there may occur an accident as drop or malfunction of the equipment.
- Before starting operation, make sure that protective devices have been wired properly and are actuated normally. Otherwise, it may cause such an accident as injury, fire or damage.

(Operation)

- In wiring connection, do not start operation with the cover removed. After finishing wiring connection, replace the cover in position. It may cause electrical shock.
- During operation, in no case access or come to contact with any rotary part (shaft, drum, pulley, etc.), messenger wire and spring. It may cause an accident due to being caught in, resulting in injury.
- In case of power failure, be sure to turn power OFF. It may cause injury.
Before turning power ON again, be sure to perform initial adjustment to make sure that all the units function reliably and normally.

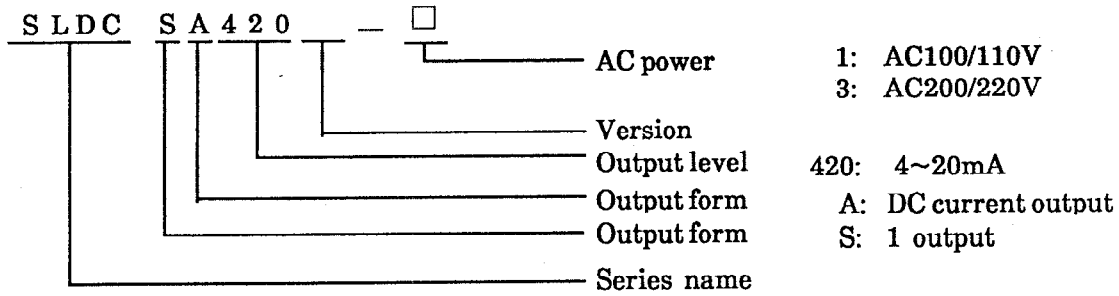
(Maintenance and Inspection)

- Perform wiring connection between each unit and between a unit and power cable according to the wiring connection diagram and Supply Specification. It may cause electrical shock or fire.
- Maintenance and inspection related to loosened screws of terminal block, grease exchange, etc. should be performed by technical expert having special knowledge.
It may cause electrical shock or an accident due to be being caught in.

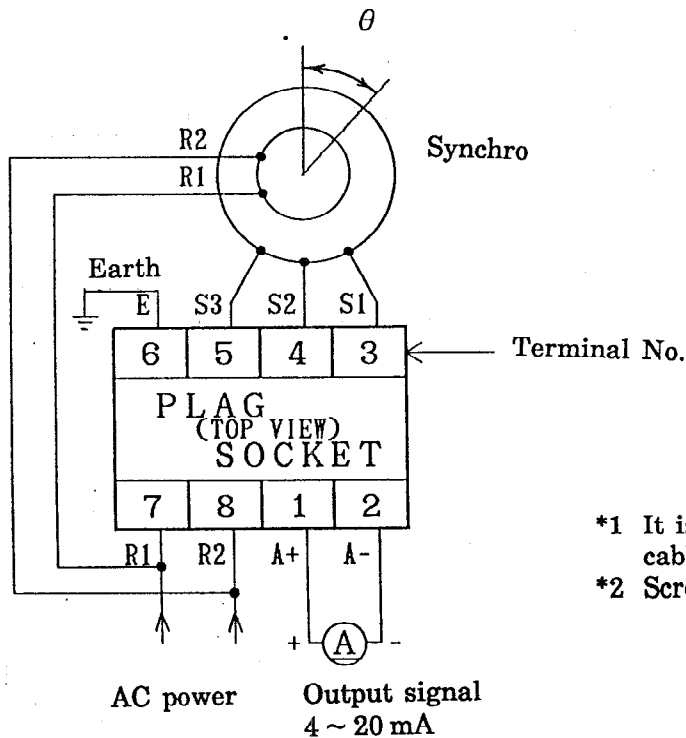
1. General

SLDC SA420 is a converter designed to receive synchro signals corresponding to the rotational angle from synchro transmitter, convert them to 4 ~ 20mA conforming to International Uniform Standard Signal for Instruments and supply them.

2. Type Designation



3. Connection Method

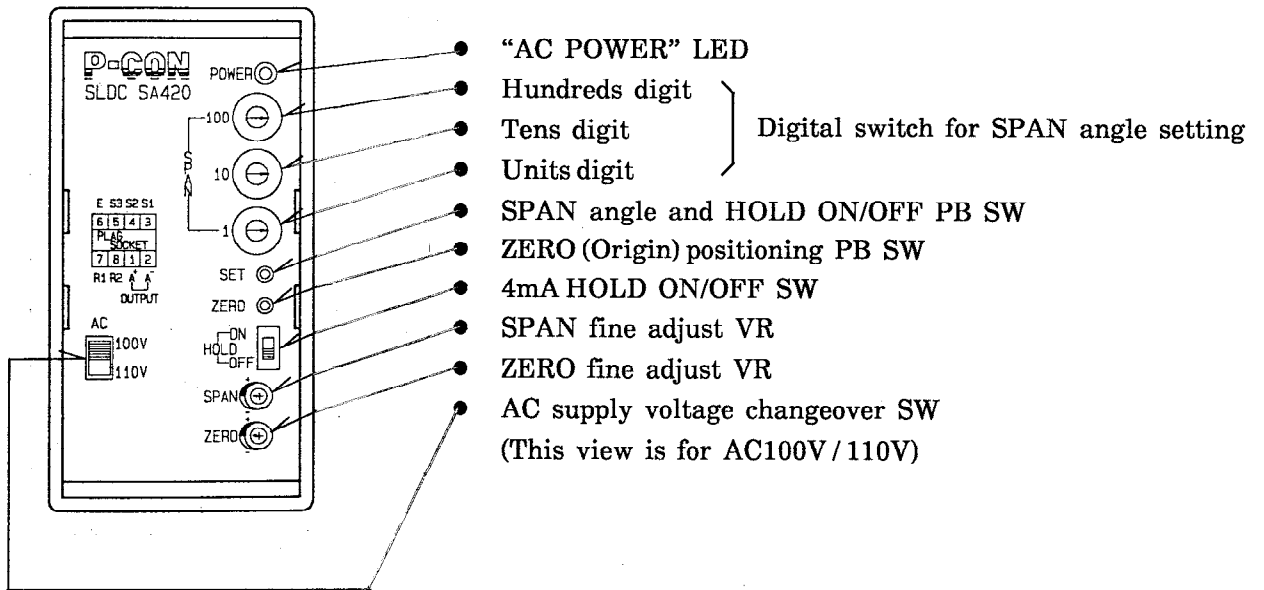


- *1 It is recommended that the output signal cable should be of shielded type.
- *2 Screw used for terminal block: M3.5

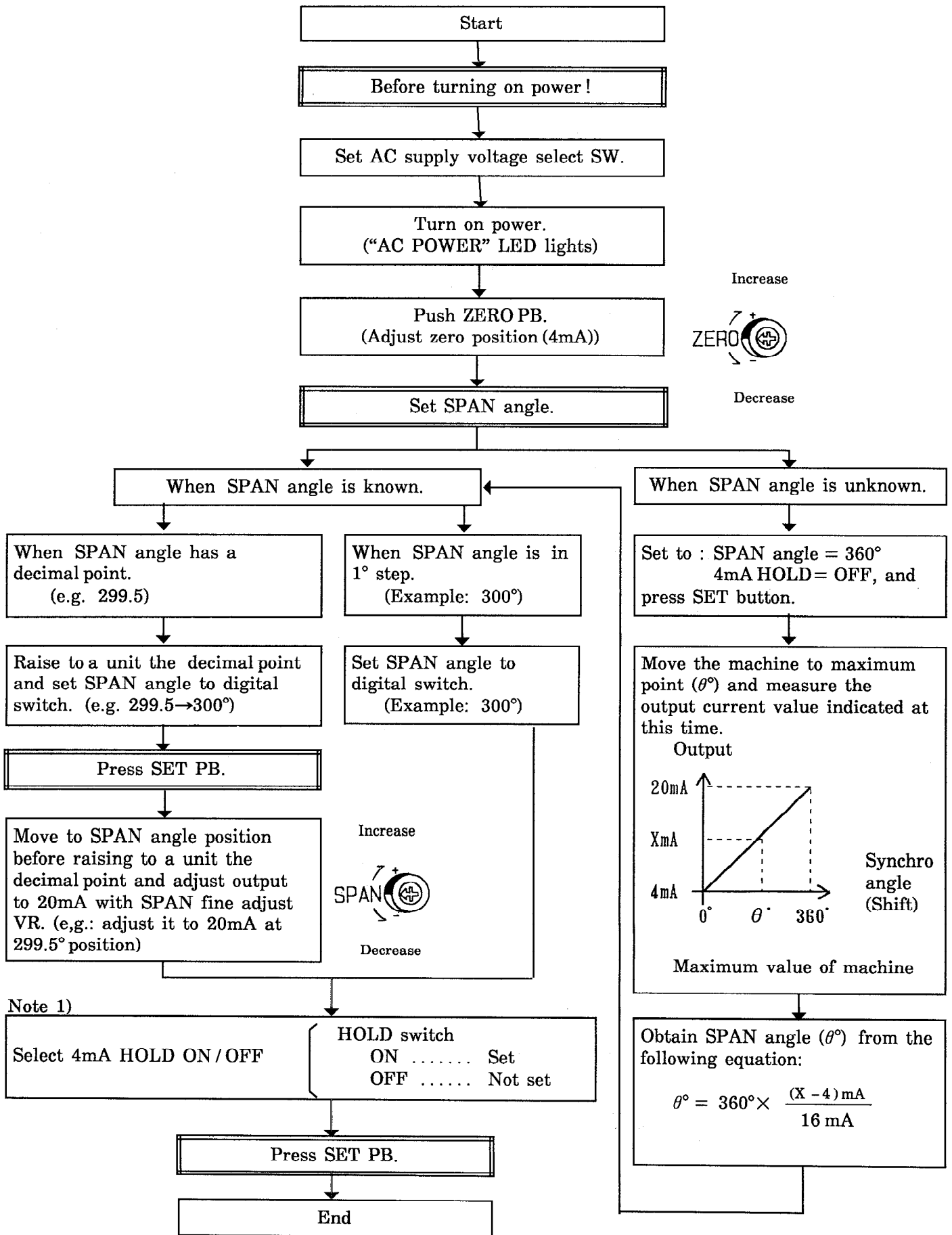
Caution!

- ★ Before wiring connection, be sure to turn off power and then do wiring as required referring to the wiring connection diagram.
 - Be sure to connect R1, R2 to the power source of the same phase as one exciting the synchro.

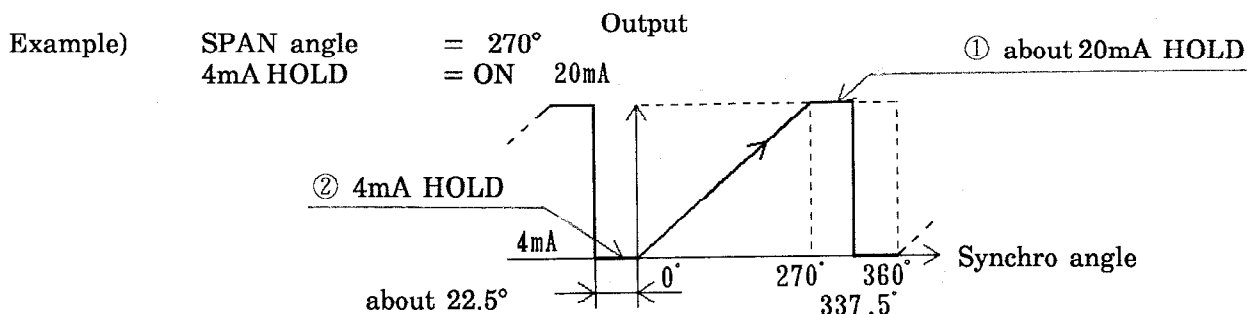
4. Each Component Name



5. Operating Flow



Note 1) When setting SPAN angle to 360° or less, the output is held at about 20mA between the set angle and 360°.
 On the other hand, when setting 4mA HOLD switch to ON, the output is held to 4mA from 0° to -22.5° (at synchro angle).



Note 2) When SPAN angle is changed, be sure to press SET PB.

6. Operational Precautions

- ① According to AC supply voltage, be sure to switch AC changeover SW.
- ② When measuring dielectric strength and insulation resistance, be sure to disconnect grounding (E) terminal.

7. Specifications

Basic Specifications

Items	Specification
1. Supply voltage	AC100V/110V ± 10%, 50/60Hz AC200V/220V ± 10%, 50/60Hz
2. Power consumption	7VA or less
3. Operating temperature	0~50°C, humidity: 30~90%RH (however, to be free from dew condensation)
4. Material and color of case	Black plastic
5. Construction	Plug-in construction
6. Outline dimensions	49(W) × 94(H) × 105.5(D)
7. Weight	Less than 500g
8. Accessories	Socket × 1 8PFA1: by OMRON Terminal screw: M3.5
9. Mounting	Mounting to DIN rail or direct mounting

*The outline dimensions and weight do not include the dimensions and weight of socket (accessory).

Characteristic specification

Item	Specification
1. Input signal	Synchro 3-wire signal, max. AC 90V, 50/60 Hz
2. Input impedance	180K Ω or more
3. Output signal	DC4 ~ 20mA/synchro angle Synchro angle is adjustable to 60° ~ 360°
4. Load resistance	350 Ω or less
5. Accuracy	$\pm 0.5\%$ F.S.
6. Temperature coefficient	$\pm 0.015\%$ F.S/ $^{\circ}$ C
7. Tracking rate	Max.20r/min (rpm) (at synchro transmission input shaft)
8. Transmission distance between synchro transmitter and converter	Max. 1 Km
9. SPAN angle setting function	SPAN angle setting range: 60° ~ 360° (the angle is set in 1° step.)
10 ZERO adjust function	ZERO point can be adjusted (to origin) at any point (4mA)
11 Hold function	Holds output signal at 4mA from 0° to -22.5° (at synchro angle)

Note) When SPAN angle is set to less than 360°, it is held at about 20mA between the set angle and 360°.

8. Outline Drawing

