

Motortronics®

ROTARY ENCODERS

FA-CODER®



OIH35

SmartAbs®





Semi-absolute encoder to output data of 20bit (16bit) /Single Turn, by turning the input shaft by about 0.6° after the power-on.

APPLICATION

- Machine Tools Robots
- Measuring Instruments
- High-accuracy Angular indexing Equipment
- Semiconductor Manufacturing Equipment

FEATURES

- 16bit, 20bit in a small package
- Serial Data Transmission (Bi-direction Serial Communication)
- 20, 16bit/ Turn, Multi-Turn, 16bit.
- Fail-Check Operation
- Even during power outage. Multi-Turn data are backed up by external battery and built-in capacitor
- Dedicated serial signal receiver IC, AU5561N1 (Sold separately) is available.

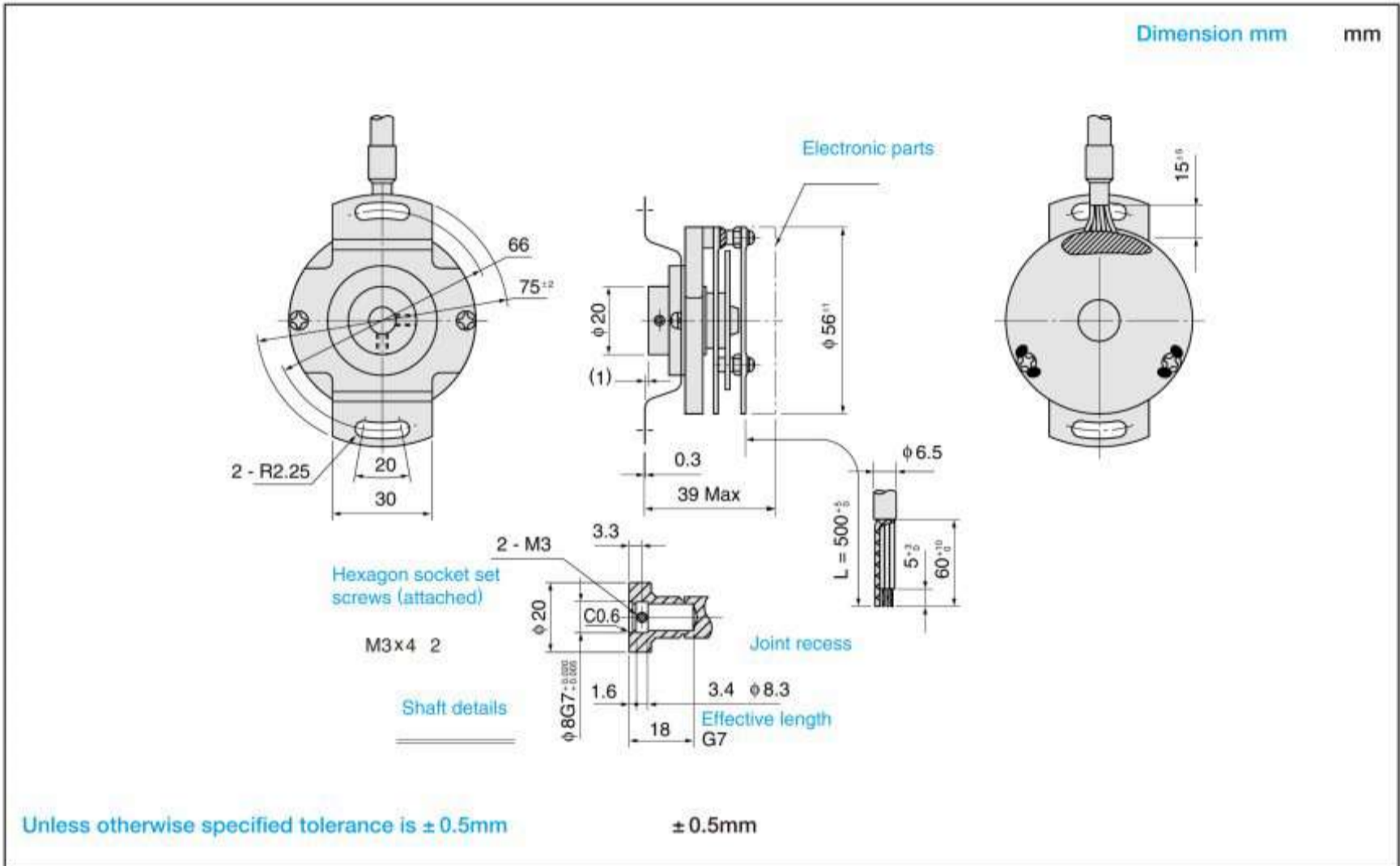


TS5647 TS5648

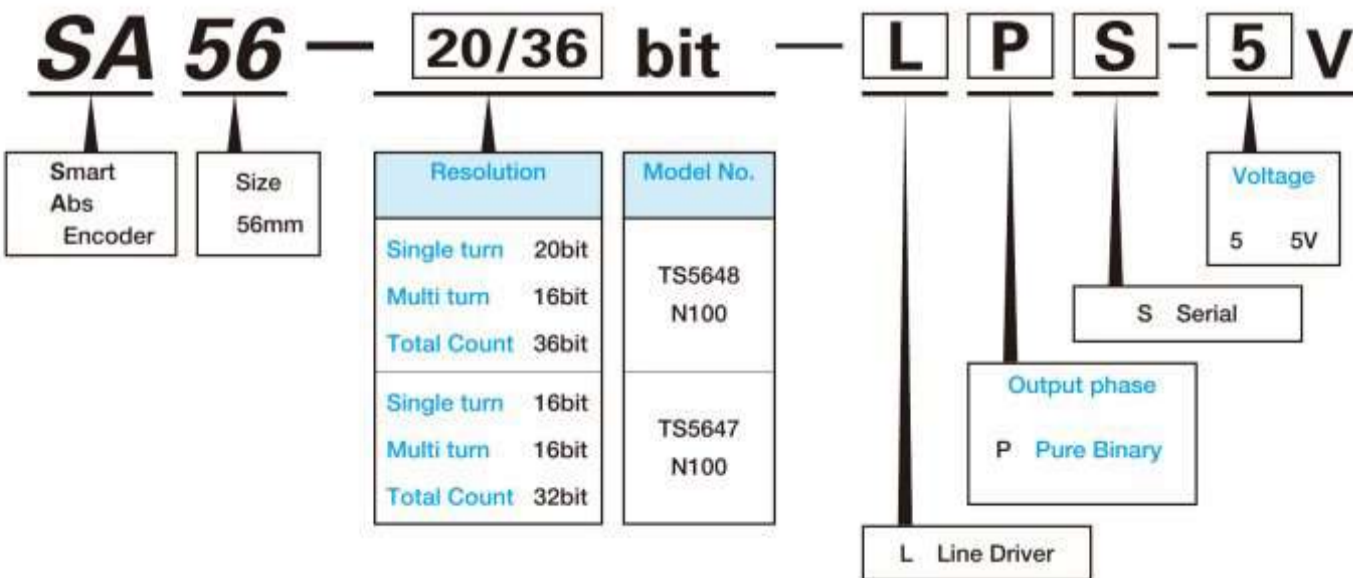
SA56 Series

ABSOLUTE

MULTI-TURN



DESIGNATE THE NAME OF FUNCTION WHEN ORDERING



For special cases, please consult us.

SPECIFICATIONS

20 or 16bit/turn and 16bit/65,536 turns
total 36 or 32 bit
Before the shaft turned by about 0.6° after power supplied,
effective resolution remains 5bit only.

Electrical Spec.	
Resolution	Absolute Signal 20 or 16bit 36 or 32bit 16bit 65,536 5bit 0.6° 20bit or 16bit
Output Phase	Pure Binary Code
Supply Voltage	DC+5V ^{5%} _{10%}
Consumption Current	250mA Max Battery Operation 50µA Max 300µA Typ
Output Form	Line Driver Source Current SN65C1168 20mA Max Sink Current 20mA Max
Max. Response Frequency	Absolute Signal 52MHz TS5648 3.2MHz TS5647
Serial Data Transfer Cycle	38.4µs 66.4µs Note Including time for a request. Time depends on the ID Codes. 2.5Mbit/sec Start-Stop transmission. ID 2.5Mbit/sec.

External Battery VB recommended TOSHIBA Lithium Battery ER6V
VB ER6V

Mechanical Spec.	
Starting Torque	4.9 x 10 ⁻³ N · m 50gf · cm Max
Moment of Inertia	1 x 10 ⁻⁵ kg · m ² 100g · cm ² Max
Maximum Rotating Speed	5,000min ⁻¹ 5,000rpm Max
Mounting Tolerances	Radial Play 0.05mm TIR Max
	Axial End Play 0.2mm Max
	Shaft Inclination 0.1° Max
Operating Temp. Range	-10 +70°C
Storage Temp. Range	-20 +85°C
Protective Construction	Not Enclosed
Vibration	49m/s ² 5G 5 - 2,000Hz for 9hours 49m/s ² 5G 5 - 2,000Hz 9
Shock	980m/s ² 100G 11msec, 3times 980m/s ² 100G 11msec, 3
Mass	0.6kg Max

Fully absolute data of 20bit (16bit) /Single Turn by turning
the input shaft by about 0.6° after the power-on.
0.6°

20bit 16bit

OTHER FUNCTIONS

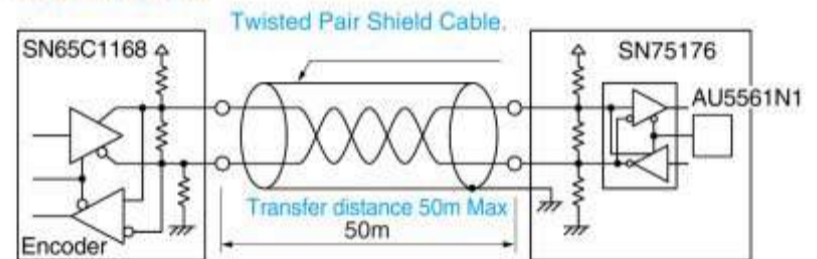
Data Output according to Request Codes	Following data are serially output in accordance with the Request Codes ID0 ID7. ID0 ID7 Single-turn 20or 16bit Multi-turn 16bit
Reset	10 consecutive requests of ID7 shall reset error signals. 3 consecutive requests of IDC shall clear Multi-turn data and reset error signals. ID 10 IDC
Battery Error	Error signals to notify data destruction due to malfunction of battery, etc.
External Battery Alarm	Error signal to notify external battery's voltage gets below 3.25 ± 0.15V 3.25 ± 0.15V
Data Error Check	Error signal to notify single turn or multi turn data has been abnormal.

CONNECTION TABLE

COLOR	FUNCTION
BEIGE	VB Battery
LIGHT BLU	SD Serial Data
GRY	CASE GND
BLK	GND
WHT	DC V
BRN	GND
VLT	\overline{SD} Serial Data

CIRCUIT AT OUTPUT STAGE (EXAMPLE)

Line Driver Output



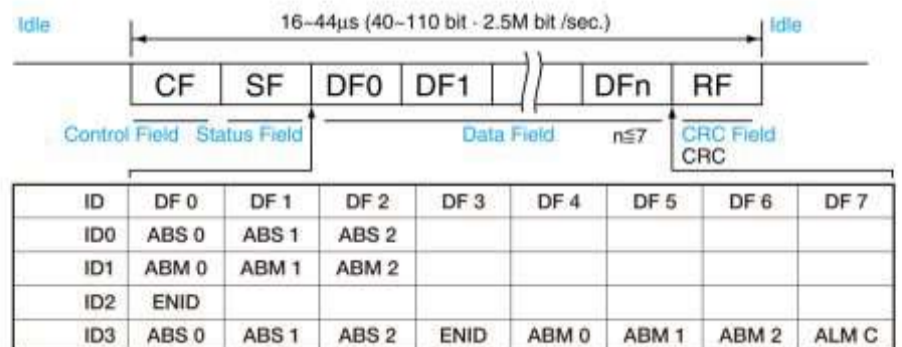
Note that transfer distance depends much on ambient condition.

Receiving IC AU5561N1 is separately necessary.
Please refer to the operation manual for AU5561N1.

IC AU5561N1
AU5561N1 801100401E50

Use transmission cable after verifying effects of impedance characteristics, etc.

SERIAL DATA (EXAMPLE)



ENID : Encoder I.D ABS : Single Turn Data ABM : Multi-turn Data

ROTARY ENCODERS

FA-CODER®

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Digital techniques in business industry have been greatly advanced. Among these, necessity for converting analog like rotating value, shaft angle position, etc. to digital has been increased as measurement for physical value and automation for control system are advanced. Encoders, at present, have been widely used for factory automations, measurements, office automation devices, medical equipment, aviations and universal fields.

Various kinds of encoders (FA-CODER® as trade mark) from small to high resolution are available to meet all of the requirements. High performance encoders supported by these high disk producing techniques are available.

