

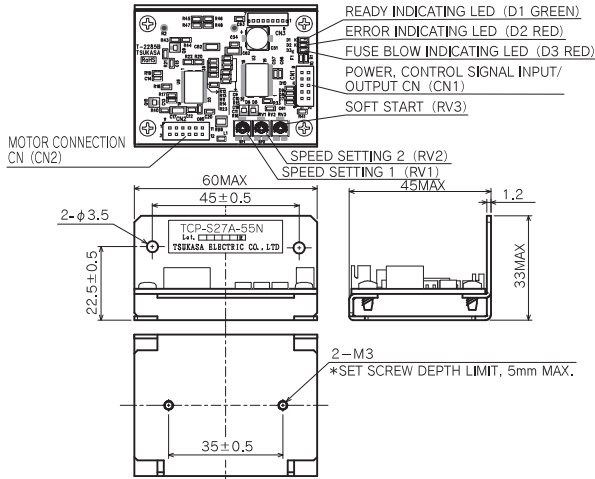
TCP-S27A

BRUSHLESS MOTOR DRIVER.

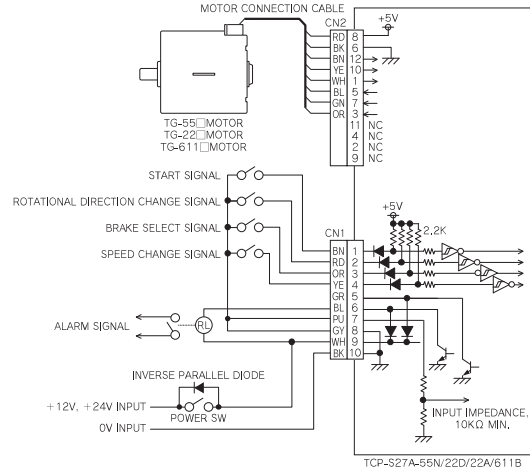
55N 22D 22A 611B



External dimensions, part names



Reference connection diagram



Specification

DRIVER MODEL		TCP-S27A-55N		TCP-S27A-22D	TCP-S27A-22A	TCP-S27A-611B	
APPLICABLE MOTOR	MODEL	TG-55L	TG-55M	TG-55N	TG-22A	TG-611B	
	MAGNETIC POLE SENSOR	HALL IC (RECTANGULAR WAVE OUTPUT)					
SUPPLY VOLTAGE		WITHIN 24 VDC ±10%		WITHIN 12 VDC ±10%	WITHIN 24 VDC ±10%		
CONTROL CIRCUIT CONSUMPTION POWER		1W MAX.					
RATED OUTPUT CURRENT ^{*1}		450mA	600mA	570mA	380mA	190mA	
OVERLOAD DETERMINATION CURRENT		650mA		460mA	230mA	340mA	
CURRENT LIMITING VALUE		3.3A		2.2A			
PWM FREQUENCY		APPROX. 20.0kHz					
SPEED VARIABLE RANGE ^{*2}		200 ~ 3700rpm	200 ~ 6350rpm	200 ~ 8000rpm	200 ~ 4900rpm	200 ~ 6900rpm	
EXTERNAL SPEED COMMAND COEFFICIENT		1800rpm/V ±5%		1200rpm/V ±5%		1500rpm/V ±5%	
SPEED SETTING (ROTATIONAL SPEED SETTING)		DRIVER INTERNAL SETTING : 2 LINES OF RV1 AND RV2 (CHANGEABLE BY SPEED CHANGE INPUT). EXTERNAL SPEED COMMAND INPUT : 1 LINE					
SOFT START SETTING ^{*4}		SETTABLE TO MAX. 1.67 sec/1000 rpm BY RV3. OPERATION AT START AND SPEED COMMAND SPEEDUP (D1 FLICKERS AT OPERATION.)					
SIGNAL INPUT		START INPUT, ROTATIONAL DIRECTION CHANGE INPUT, BRAKE SELECT INPUT, SPEED CHANGE INPUT, EXTERNAL SPEED COMMAND INPUT					
SIGNAL OUTPUT		ROTATION SYNCHRONOUS SIGNAL OUTPUT, ALARM OUTPUT					
PROTECT FUNCTION ^{*5}	OVERLOAD	INTERRUPTS OUTPUT WHEN CURRENT EXCEEDING RATED OUTPUT CURRENT FLOWS CONTINUOUSLY (STATUS HOLD). RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.					
	SENSOR ALARM	INTERRUPTS OUTPUT ON DETECTING ALARM CODE OF SENSOR SIGNAL (STATUS HOLD). RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.					
	MOTOR LOCK	TCP-S27A-55N	INTERRUPTS OUTPUT ON DETECTING MOTOR LOCKING (STATE HOLD). DETECTS THE STOP FOR 2 SEC OR MORE AND MAKES A JUDGMENT OF LOCK WHEN MOTOR CURRENT OF 0.5 A OR OVER FLOWS AT 250 rpm OR OVER OF SPEED COMMAND VALUE. RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.		INTERRUPTS OUTPUT ON DETECTING MOTOR LOCKING (STATE HOLD). DETECTS THE STOP FOR 2 SEC OR MORE AND MAKES A JUDGMENT OF LOCK WHEN MOTOR CURRENT OF 0.2 A OR OVER FLOWS AT 250 rpm OR OVER OF SPEED COMMAND VALUE. RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.		
		TCP-S27A-22D/22A/611B	INTERRUPTS OUTPUT ON DETECTING MOTOR LOCKING (STATE HOLD). DETECTS THE STOP FOR 2 SEC OR MORE AND MAKES A JUDGMENT OF LOCK WHEN MOTOR CURRENT OF 0.2 A OR OVER FLOWS AT 250 rpm OR OVER OF SPEED COMMAND VALUE. RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.				
	SUPPLY VOLTAGE DROP	INTERRUPTS OUTPUT ON DETECTING SUPPLY VOLTAGE DROP (AUTOMATIC RESET).					
	OVERCURRENT	INTERRUPTS OUTPUT ON DETECTING ABNORMAL MOTOR CURRENT (AUTOMATIC RESET).					
	FUSE PROTECT	INTERRUPTS CIRCUIT ON DETECTING ABNORMAL POWER CURRENT. F1 (5 A CHIP FUSE).					
WORK ENVIRONMENT	0 ~ 40°C, 85% RH MAX. (NO DEW ALLOWED.) USED IN ATMOSPHERE SUBJECT TO HEAT CONVECTION.						
STORAGE ENVIRONMENT	-10 ~ 60°C, 85% MAX. (NO DEW ALLOWED.)						
ACCESSORY	MOTOR CONNECTION CABLE ×1 POWER/CONTROL SIGNAL INPUT/OUTPUT CABLE ×1						
WEIGHT	APPROX. 30g (BODY ONLY)						

- *1: The rated output current is continuous allowable current value when the applicable motor is combined, and it is not possible to continuously run the motor exceeding this value.
- *2: The maximum value in the variable speed range is proportional to power voltage. The noted value, the no load rotational speed when the specified supply voltage is inputted, contains the error of ±10%.
- *3: This driver cannot be used for the application where a minus load such as electric power load applies. Turning the motor shaft from the load side or driving a load of big moment of inertia may cause overvoltage by regenerative energy of the motor possibly damaging the driver circuit or the device connected with the same power supply. Check that there is no overvoltage by regenerative energy at commissioning.
- *4: Soft start function is not activated in deceleration but in acceleration.
- *5: Be sure to eliminate the cause of activation of overload and wait that motor and driver temperatures lower before resetting the driver. In the case of motor line short-circuit or ground fault, the driver may stop the motor at overload or motor lock error on detecting the overcurrent. The error LED lights when the overload judgment current is exceeded during normal operation. Use this as a guide to judge the state of load. Replacement or repair is necessary when the fuse blows. Please contact the supplier for inspection or repair.

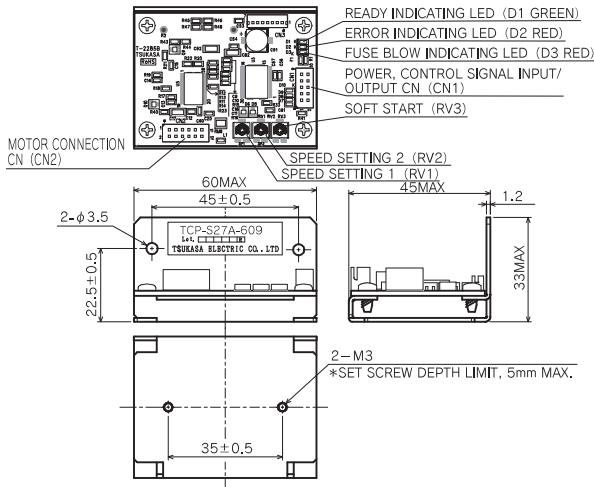
Input/output signal, each display and content of setting

NAME, PIN No.	CABLE COLOR	SIGNAL NAME	CONTENT
CN1 (POWER, CONTROL SIGNAL INPUT/OUTPUT)	1	BN	START INPUT "H": STOP ALARM RESET "L": ROTATION OPERATION
	2	RD	ROTATIONAL DIRECTION CHANGE INPUT ^{*7} "H": CW ROTATION "L": CCW ROTATION
	3	OR	BRAKE SELECT INPUT SELECT THE STOP METHOD WHEN START INPUT IS CHANGED TO "H". "H": FREE RUN STOP SELECT "L": BRAKE STOP SELECT
	4	YE	SPEED CHANGE INPUT "H": RV1 SELECT "L": RV2 SELECT
	5	GR	ROTATION SYNCHRONOUS SIGNAL OUTPUT OUTPUTS PULSE SIGNAL SYNCHRONIZED WITH ROTATION (6 PULSES/ROTATION).
	6	BL	ALARM OUTPUT OUTPUT ON DETECTING OVERLOAD, SENSOR ALARM OR OVERCURRENT. TRANSISTOR ON OUTPUT TRANSISTOR OFF WHEN NORMAL.
	7	PU	EXTERNAL SPEED COMMAND INPUT ^{*6} INPUT VOLTAGE : 0 ~ 5V (12V MAX.) INPUT IMPEDANCE : 10kΩ OR OVER
	8	GY	GND CONTROL INPUT SIGNAL GROUND (SAME POTENTIAL AS CN1-10)
	9	WH	+12V, +24V INPUT
	10	BK	0V INPUT (SAME POTENTIAL AS CN1-8)
CN2 (MOTOR SIGNAL INPUT/OUTPUT)	8	RD	+5V 5V OUTPUT FOR MAGNETIC POLE SENSOR (NOT USABLE FOR OTHER PURPOSES)
	6	BK	GND FOR MAGNETIC POLE SENSOR
	12	BN	A-PHASE SENSOR SIGNAL
	10	YE	B-PHASE SENSOR SIGNAL
	1	WH	C-PHASE SENSOR SIGNAL
	5	BL	A-PHASE COIL
	7	GN	B-PHASE COIL
	3	OR	C-PHASE COIL
	11	—	—
	4	—	—
STATE INDICATING LED	2	—	NOT USED
	1	—	—
	9	—	—
	1	—	—
	2	—	—
ADJUST VR	1	—	—
	2	—	—
	3	—	—
	4	—	—

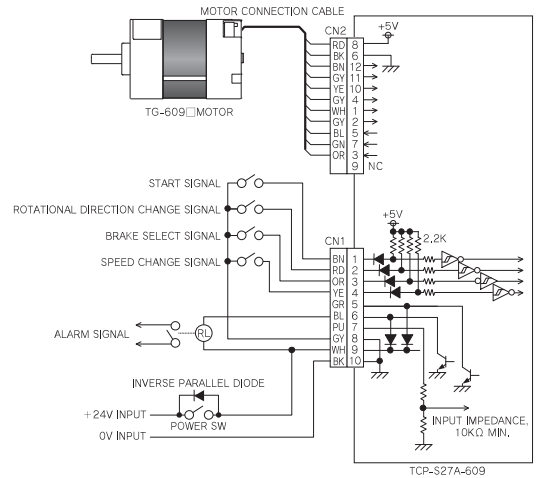
- *6: Rotational direction is that with single motor. Refer to the specification for each geared motor for the direction of geared motor output shaft.
- *7: For motor rotation, any of the highest setting value from RV1, RV2 or speed command input is given priority. When using the external speed command input, set RV1 and RV2 to 0 scale. Connect the external speed command input with the GND terminal when using the internal speed setting VR (RV1, 2).

TCP-S27A 609

External dimensions, part names



Reference connection diagram



Specification

ITEM		TCP-S27A-609	
APPLICABLE MOTOR	MODEL	TG-609A	TG-609B, TG-609C
	MAGNETIC POLE SENSOR	HALL ELEMENT (ANALOG VOLTAGE OUTPUT)	
SUPPLY VOLTAGE		WITHIN 24 VDC ±10%	
CONTROL CIRCUIT CONSUMPTION POWER		1W MAX.	
RATED OUTPUT CURRENT*1		1500mA	
OVERLOAD DETERMINATION CURRENT		1650mA	
CURRENT LIMITING VALUE		6.6A	
PWM FREQUENCY		APPROX. 20.0KHz	
SPEED VARIABLE RANGE*2		100 ~ 3700rpm	100 ~ 3800rpm
EXTERNAL SPEED COMMAND COEFFICIENT		1000rpm/V ±5%	
SPEED SETTING (ROTATIONAL SPEED SETTING)		DRIVER INTERNAL SETTING: 2 LINES OF RV1 AND RV2 (CHANGEABLE BY SPEED CHANGE INPUT) EXTERNAL SPEED COMMAND INPUT: 1 LINE	
SOFT START SETTING*4		SETTABLE TO MAX. 1.67 sec/1000 rpm BY RV3. OPERATION AT START AND SPEED COMMAND SPEEDUP (D1 FLICKERS AT OPERATION.)	
SIGNAL INPUT		START INPUT, ROTATIONAL DIRECTION CHANGE INPUT, BRAKE SELECT INPUT, SPEED CHANGE INPUT, EXTERNAL SPEED COMMAND INPUT	
SIGNAL OUTPUT		ROTATION SYNCHRONOUS SIGNAL OUTPUT, ALARM OUTPUT	
PROTECT FUNCTION*5		OVERLOAD : INTERRUPTS OUTPUT WHEN CURRENT EXCEEDING RATED OUTPUT CURRENT FLOWS CONTINUOUSLY (STATUS HOLD). RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.	
		SENSOR ALARM : INTERRUPTS OUTPUT ON DETECTING ALARM CODE OF SENSOR SIGNAL (STATUS HOLD). RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.	
		MOTOR LOCK : INTERRUPTS OUTPUT ON DETECTING MOTOR LOCKING (STATE HOLD). DETECTS THE STOP FOR 2 SEC OR MORE AND MAKES A JUDGMENT OF LOCK WHEN MOTOR CURRENT OF 1 A OR OVER FLOWS AT 250 rpm OR OVER OF SPEED COMMAND VALUE. RESET AT START INPUT "OPEN" AND ANOTHER POWER ON.	
		SUPPLY VOLTAGE DROP : INTERRUPTS OUTPUT ON DETECTING SUPPLY VOLTAGE DROP (AUTOMATIC RESET).	
		OVERCURRENT : INTERRUPTS OUTPUT ON DETECTING ABNORMAL MOTOR CURRENT (AUTOMATIC RESET).	
		FUSE PROTECT : INTERRUPTS CIRCUIT ON DETECTING ABNORMAL POWER CURRENT. F1 (5 A CHIP FUSE).	
WORK ENVIRONMENT		0 ~ 40C, 85% RH MAX. (NO DEW ALLOWED.) USED IN ATMOSPHERE SUBJECT TO HEAT CONVECTION.	
STORAGE ENVIRONMENT		-10 ~ 60C, 85% MAX. (NO DEW ALLOWED.)	
ACCESSORY		MOTOR CONNECTION CABLE ×1 POWER/CONTROL SIGNAL INPUT/OUTPUT CABLE ×1	
WEIGHT		APPROX. 30g (BODY ONLY)	

- *1: The rated output current is continuous allowable current value when the applicable motor is combined, and it is not possible to continuously run the motor exceeding this value.
- *2: The maximum value in the variable speed range is proportional to power voltage. The noted value, the no load rotational speed when the specified supply voltage is inputted, contains the error of ±10%.
- *3: This driver cannot be used for the application where a minus load such as electric power load applies. Turning the motor shaft from the load side or driving a load of big moment of inertia may cause overvoltage by regenerative energy of the motor possibly damaging the driver circuit or the device connected with the same power supply.
Check that there is no overvoltage by regenerative energy at commissioning.
- *4: Soft start function is not activated in deceleration but in acceleration.
- *5: Be sure to eliminate the cause of activation of overload and wait that motor and driver temperatures lower before resetting the driver. In the case of motor line short-circuit or ground fault, the driver may stop the motor at overload or motor lock error on detecting the overcurrent. The error LED lights when the overload judgment current is exceeded during normal operation. Use this as a guide to judge the state of load. Replacement or repair is necessary when the fuse blows. Please contact the supplier for inspection or repair.

Input/output signal, each display and content of setting

NAME, PIN No.	CABLE COLOR	SIGNAL NAME	CONTENT
CN1 (POWER, CONTROL SIGNAL INPUT/OUTPUT)	1	BN	START INPUT "H" : STOP ALARM RESET "L" : ROTATION OPERATION
	2	RD	ROTATIONAL DIRECTION CHANGE INPUT*7 "H" : CW ROTATION "L" : CCW ROTATION
	3	OR	BRAKE SELECT INPUT SELECT THE STOP METHOD WHEN START INPUT IS CHANGED TO "H". "H" : FREE RUN STOP SELECT "L" : BRAKE STOP SELECT
	4	YE	SPEED CHANGE INPUT "H" : RV1 SELECT "L" : RV2 SELECT
	5	GR	ROTATION SYNCHRONOUS SIGNAL OUTPUT OUTPUTS PULSE SIGNAL SYNCHRONIZED WITH ROTATION (12 PULSES/ROTATION).
	6	BL	ALARM OUTPUT OUTPUT ON DETECTING OVERLOAD, SENSOR ALARM OR OVERCURRENT TRANSISTOR ON OUTPUT TRANSISTOR OFF WHEN NORMAL
	7	PU	EXTERNAL SPEED COMMAND INPUT*8 INPUT VOLTAGE : 0 ~ 5V (12V MAX.) INPUT IMPEDANCE : 10kΩ OR OVER
	8	GY	GND CONTROL INPUT SIGNAL GROUND (SAME POTENTIAL AS CN1-10)
	9	WH	+24 V INPUT
	10	BK	0V INPUT (SAME POTENTIAL AS CN1-8)
CN2 (MOTOR SIGNAL INPUT/OUTPUT)	8	RD	+5V 5V OUTPUT FOR MAGNETIC POLE SENSOR (NOT USABLE FOR OTHER PURPOSES)
	6	BK	GND GND FOR MAGNETIC POLE SENSOR
	12	BN	+A-PHASE
	11	GY	-A-PHASE
	10	YE	+B-PHASE
	4	GY	-B-PHASE
	1	WH	+C-PHASE
	2	GY	-C-PHASE
	5	BL	A-PHASE COIL
7	GN	B-PHASE COIL	
3	OR	C-PHASE COIL	
9	—	NC	NOT USED
STATE INDICATING LED	READY INDICATING LED (D1 : GREEN)		READY STATE (DRIVABLE STATE) : ON AT SOFT START OPERATION : FLICKER ON ACTIVATION OF ALARM : OFF
	ERROR INDICATING LED (D2 : RED)		AT NORMAL OPERATION : OFF AT POWER ON RESET : ON (0.5 sec) DETECTING OVERLOAD JUDGE CURRENT OR HIGHER : ON AT SENSOR ALARM : CONTINUOUS ON DETECTING MOTOR LOCKING : FLICKER ONCE DETECTING OVERLOAD : FLICKER TWICE
	FUSE BLOW LED (D3 RED)		ON AT FUSE BLOWING
ADJUST VR	RV1*7	SPEED SETTING SP1 (SET TO 0 SCALE AT SHIPPING)	
	RV2*7	SPEED SETTING SP2 (SET TO 0 SCALE AT SHIPPING)	
	RV3	SOFT START SETTING SOFTWARE (SET TO 0 SCALE AT SHIPPING)	

- *6: Rotational direction is that with single motor. Refer to the specification for each geared motor for the direction of geared motor output shaft.
- *7: For motor rotation, any of the highest setting value from RV1, RV2 or speed command input is given priority. When using the external speed command input, set RV1 and RV2 to 0 scale. Connect the external speed command input with the GND terminal when using the internal speed setting VR (RV1, 2).