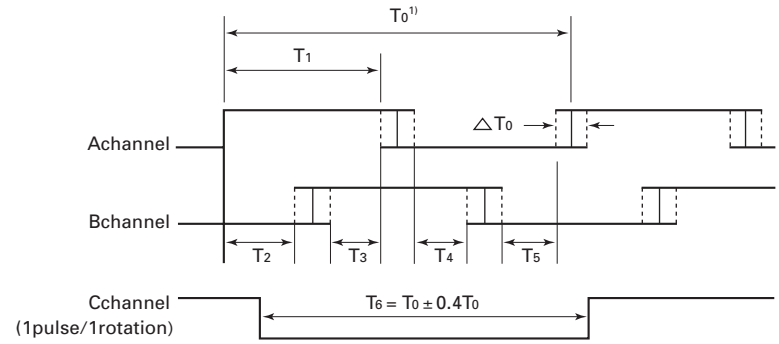
Built-in optical encoder

■Standard specifications

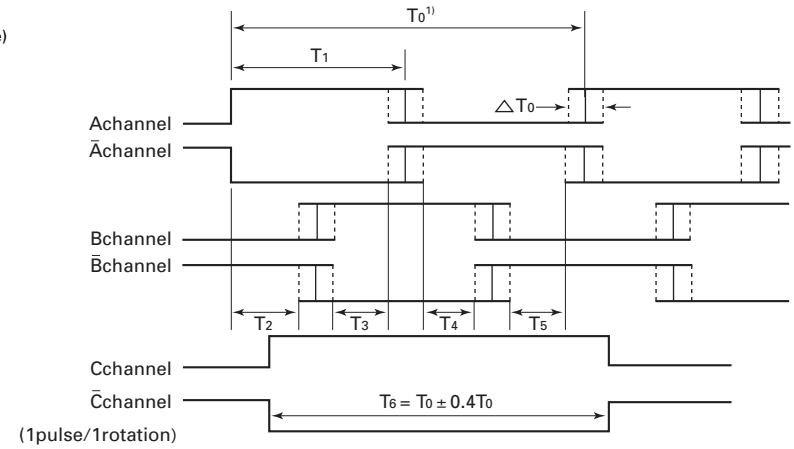
Applicable motor type		T4・T5・T7・T8 type	
Output pulse number	P/R	200,500,1000	200,500,1000,2000,2500
Output circuit system		Open collector	Line driver
Channel number		3	
Input voltage	V.DC	+5±10%	
Power demand	mA	70max	160mA max
Output circuit voltage	V.DC	+30max (When output transistor off)	V_{OH}=2.4min,V_{OL}=0.5max at I_O=±20mA
Output circuit current	mA	20max	20max
Response frequency	kHz	0～300	0～300
Pulse duty cycle		$T_1=1/2T_0\pm1/8T_0$	
Output mutual phase difference		$T_{2\sim5}=1/4T_0\pm1/8T_0$	
Flutter		$(T_{0max}-T_{0min})/T_0\leqq0.08$	
Working temperature		−10℃～+85℃ (at encoder atmosphere)	
Light emitting element		Infrared light emitting diode	
Light receiving element		Photo diode	
Inertia	kg・m²(GD²/4) (lb・in²)	200P/R : 0.0003×10^{-4} (102.52×10^{-4}), 500・1000・1024・2000・2500P/R : 0.0008×10^{-4} (27.34×10^{-4})	
Weight	Kg (lbs)	0.25 (0.55)	

■Output waveform

● Open collector output (When the encoder rotates counterclockwise viewed from the motor output shaft side)



● Line driver output (When the encoder rotates counterclockwise viewed from the motor output shaft side)



1)"T_0" is the average value of each cycle during one encoder rotation at a constant speed.
T_0 : 360-degree electrical angle.

■External leads

Lead color	Open collector	Line driver
Red	+DC5V	+DC5V
Black	GND(0V)	GND(0V)
Shield	Case earth	Case earth
Blue	A channel output	A channel output
Brown	—	$\overline{A}$ channel output
Green	B channel output	B channel output
Purple	—	$\overline{B}$ channel output
White	—	C channel output
Yellow	C channel output	$\overline{C}$ channel output

Notice

1) Never apply shock in the thrust direction when handling the encoder.
2) Do not test encoder insulation resistance and dielectric strength to avoid damaging the electronic circuits.