TOSHIBA

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TOSVERT VF-A7/P7

Special Monitoring Function Reference Manual (Motor counter dummy PG and Position pulse)

Toshiba Schneider Inverter Corporation

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1.Introduction

Thank you for purchasing the Toshiba industrial inverter "TOSVERT VF-A7/P7".
This instruction manual explains the monitor output functions of the VF-A7/P7: Motor counter dummy PG (function No. 22) and Position pulse (function No. 23).

2.Functions

With the monitor output function "Motor counter dummy PG (function No. 22)," you can count and read out the motor encoder output. Also you can use it to check the direction of rotation of the motor and the encoder wiring.
With "Position pulse (function No. 23)," you can count and read out position command pulses.

3.Related parameters

Monitor FM/AM/Pulse output function selection

Function No.	Commu-nication No.	Function	Unit	Monitor output selection	Trip pretension	Meter output selection	Vector control			V/f Constant
							Speed control	Torque control	Position control	
22	FE33	Motor counter dummy PG	1count	22	○ (possible)	22	●/●	●/●	–/●	●
23	FE34	Position pulse	1count	23	○ (possible)	23	–/–	–/–	–/●	–

Sensorless vector/vector with sensor
●: valid, –: invalid

4.Action

4.1. Monitor output function - Motor counter dummy PG (function No. 22)

[Parameter settings]

Title	Function	Adjustment range	Default setting
Pt	Motor control mode selection	0~9	0~9
FM5L	FM terminal meter selection	0~32	22 (Motor counter dummy PG)
F670	AM terminal meter selection		
F672	Optional analog terminal #1 meter selection		
F674	Optional analog terminal #2 meter selection		
F676	FP terminal meter selection		
F367	Number of PG input pulses	1~9999	Set according to the encoder
F378	Motor counter data selection	0: Depends on encoder 1: Count of 256/revolution 2: Count of 512/revolution 3: Count of 1024/revolution 4: Count of 2048/revolution 5: Count of 4096/revolution	Set according to specifications

∗ To use this function, it is necessary to connect the motor encoder output terminal (two-phase) to the input terminal of an optional VECOO1Z, VECOO2Z or VECOO3Z.

Specifying the above parameters makes it possible to send the motor counter dummy PG to the monitor output terminal used (FM, AM, MON1, MON2 or FP). (To adjust the meter (gain), use its adjustment parameter: FM, F671, F675 or F677.)
Motor counter dummy PG serves as a free-run counter that counts from 0 to 65535 and automatically returns to 0 when the count of 65535 is reached. The counter is incremented when the motor is running in the forward direction, while it is decremented when the motor is running in the reverse direction.

1) If motor counter data selection (F378) = 0
   Motor counter dummy PG outputs one pulse from the encoder as the count of one.
2) If motor counter data selection (F378) = any number between 1 and 5
   As the count, the motor counter dummy PG outputs the number of pulses per revolution from the encoder that has been normalized according to the motor counter data selection setting (F378). The output at that time can be expressed by the following equation.

$$\text{Motor counter dummy PG output} = \frac{\text{Pulses from the encoder}}{\text{Number of PG inut pulses (F367)}} * \text{Motor counter data selection (F378)}$$

■ Meter fixed output (function No. 30) corresponds to the count of 65535.
■ The count displayed in the status monitor mode is 1/100 of the actual count.
■ In the case of a single-phase encoder, the counter is always incremented even when the motor is running in the reverse direction.

4.2. Monitor output function - Position pulse (function No. 23)

[Parameter settings]

Title	Function	Adjustment range	Default setting
PL	Motor control mode selection	0~9	9 (Position control)
FMSL	FM terminal meter selection	0~32	23 (Position pulse)
F670	AM terminal meter selection		
F672	Optional analog terminal #1 meter selection		
F674	Optional analog terminal #2 meter selection		
F676	FP terminal meter selection		
F367	Number of PG inut pulses	1~9999	Set according to the encoder
F370	Electronic gear	100~4000 pulses/revolution	Set according to specifications

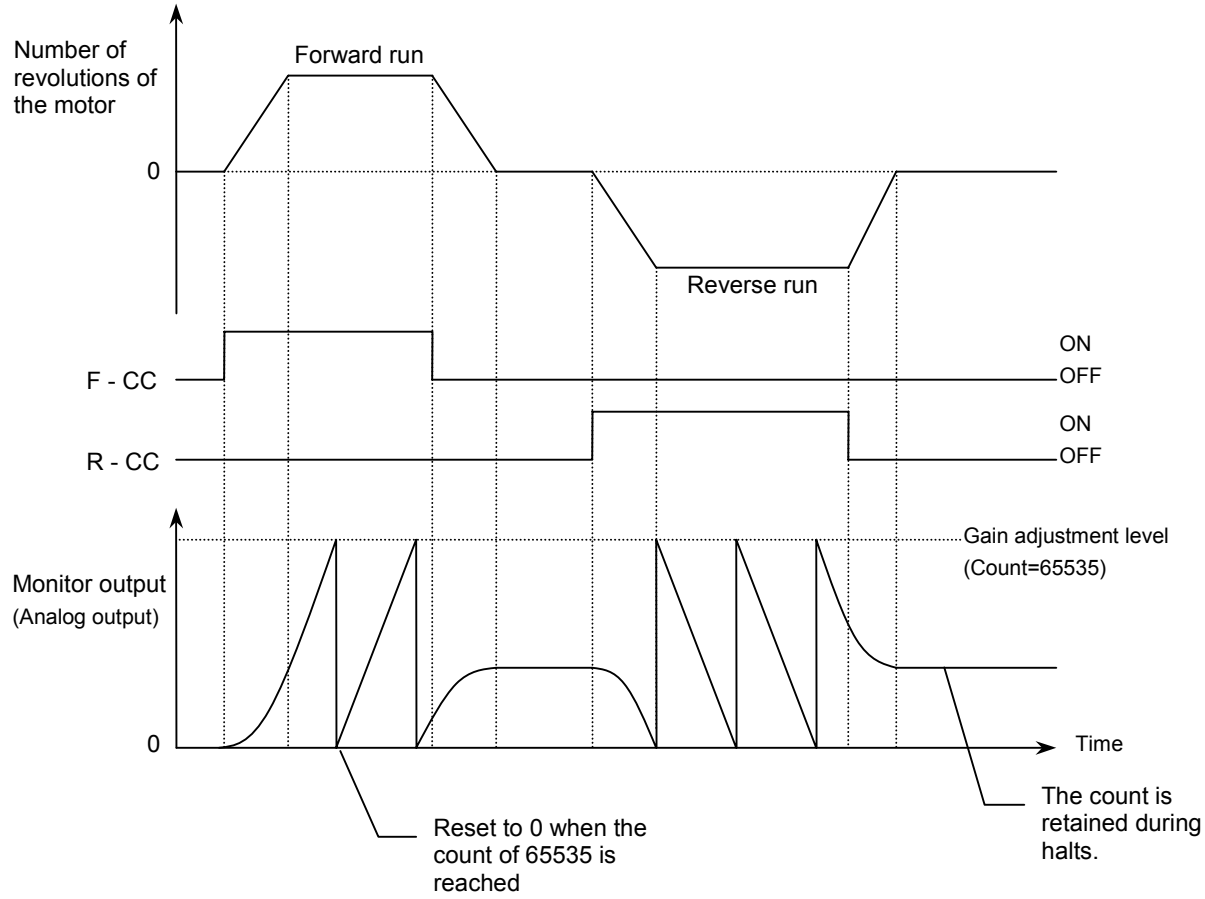
∗ To use this function, it is necessary to exercise position control, using an optional VECOO1Z.

Specifying the above parameters makes it possible to send position pulses to the monitor output terminal used (FM, AM, MON1, MON2 or FP). (To adjust the meter (gain), use its adjustment parameter: FM, F671, F675 or F677.) Position pulse output refers to the monitor output of position command pulses to the CCW/CCWN and CW/CWN terminals of the optional VECOO1Z. The counter starts to increment when a forward run command is entered, while it starts to decrement when a reverse run command is entered.

■ Meter fixed output (function No. 30) corresponds to the count of 65535.
■ The count displayed in the status monitor mode is 1/100 of the actual count.

5.Examples of use

5.1. Monitor output function - Motor counter dummy PG (function No. 22)



5.2. Monitor output function - Position pulse (function No. 23)