

PLC

HMI

SENSOR

ENCODER

COUNTER

INFORMATION

# FC2-81F□, FC2-161F□/321F□

## Features

### Embedded Installation Type Cam Controller

- The embedded installation type of programmable cams enable constant checking of the operating state from a control panel.
- The programmable cams have enhanced features such as advancing, abnormality detection, and a multipurpose communication port.



### Features

#### - Obtained advanced safety certification

The programmable cams can be used in Category 4 applications of EN954-1, safety integrity level 3 (SIL) of IEC61508, and the performance level e of ISO13849-1: 2006. Users can easily and securely create a safe environment that conforms to international standards.

#### - Reliable operation based on high level self-diagnosis

The CPU module and the input-output module are equipped with self-monitoring capabilities that constantly monitor for undervoltage and overvoltage, grasp connection and operation status by test pulse, and crosscheck switching by channel monitoring.

#### - Easy tooling changes

Since the FC2-161F-C-1 can register 8 programs and the FC2-321F-C-1 can register 10 programs, any program can be selected by switching the bank input at the time of tooling change.

#### - Supporting a wide range of industries

The programmable cams are most suited for the timing control of various kinds of filling machines, wrapping machines, coaters, and bottling machines in the food, packaging, and printing industries.

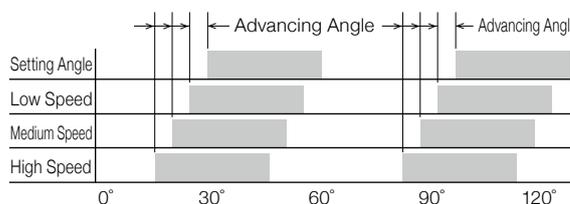
#### - Surface-Mount types also available

Surface-Mount type of programmable cams are available in the FC2-80-C-1/FC2-160-1/FC2-320-1.

#### - Automatic correction of advancing angle (FC2-161F-C-1/FC2-321F-C-1)

If the timing of the machine that changes its rotating speed is controlled by a programmable cam, the difference in operation timing due to actuator delays becomes the problem.

The automatic advancing function corrects this timing difference by outputting the angle equivalent to the operation delay time of the actuator earlier according to the angle calculated from the rotating speed at that time.



[Applications]

- Changing the speed at startup and stopping
- Devices that change speed
- Devices that require speed control

Electronic Counter

Tachometer

Digital Timer

Programmable Cam

FC2-81F□  
FC2-161F□/321F□FC2-80□  
FC2-160□/320□

# FC2-81F□, FC2-161F□/321F□

## Specifications

PLC HMI SENSOR ENCODER COUNTER INFORMATION 

Electronic Counter

Tachometer

Digital Timer

Programmable Cam

FC2-81F□  
FC2-161F□/321F□FC2-80□  
FC2-160□/320□

### General Specifications

Items	FC2-81F-C-1	FC2-161F-C-1	FC2-321F-C-1
Supply Voltage	12/24 V DC		
Power Supply Pressure Fluctuation Range	10.8 to 26.4 V DC		
Power Consumption	5 W	8 W	
Ambient Operating Temperature	-10 to 50°C		
Storage Temperature	-20 to 70°C (No freezing)		
Use / Storage Ambient Humidity	35 to 85% RH (No condensation)		
Surrounding Atmosphere in Place of Use	No corrosive gases		
Vibration Resistance	Endurance: Displacement amplitude: 0.5 mm, frequency: 10 to 55 Hz, 3 axial directions		
Impact Resistance	Endurance: 500 m/s, 3 axial directions		
Noise Resistance	Between power supply terminals: 1.0 kV Pulse width 1μs/start-up 1ns/Square wave pulse	Between power supply terminals: 1.5 kV	
Protective Structure	IP54: Only the surface sheet		
Size (mm)	95 W x 80 H x 66.7 D	140 W x 90 H x 66.7 D	40 W x 90 H x 66.7 D
Weight (g)	300	420	420

### Function/Performance Specifications

Items	FC2-81F-C-1	FC2-161F-C-1	FC2-321F-C-1
Number of Input Points	Starting input: 1 point/ Protection input: 1 point/ Origin input: 1 point	Starting input: 1 point/ Bank input: 3 points/ Protection input: 1 point/ Origin input: 1 point	Starting input: 1 point/ Bank: 4 points/ Protection input: 1 point/ Origin input: 1 point
Encoder Input	H: 7.5 V (OFF)/L: 0 to 2 V (ON)H: 7.5 to 30 V (OFF)/L: 0 to 2 V (ON) Resolution: 360/720 per revolution (Output code: Gray binary)		
Control Input	H: 7.5 V to 30 V (OFF)/L: 0 to 2 V		
Number of Outputs	8 points	16 points	32 points
Output Specifications	NPN open collector Withstanding voltage 35 V or lower / Current 0.1 A or lower		
Number of Output Area Settings	16 settings	64 settings	128 settings
Response Rotating Speed min <sup>-1</sup>	Resolution 360: 300/ Resolution 720: 150	Resolution 360: 1600/ Resolution 720: 800	Resolution 360: 1600/ Resolution 720: 800
Output Response Time	550 μs or less	250 μs or less	250 μs or less
Power Supply Start Time	2 s or less		
Number of Banks	No	8 (Banks 0 to 7)	10 (Banks 0 to 9)
Program Memory	EEPROM		
Resolution	360/720 per revolution (Switched from a DIP switch)		
CW/CCW Direction Switching	Switched from a DIP switch		
RUN Output	ON during normal operation in the operation and adjustment modes (Switched from a DIP switch)		
Display Switching	Angle / Rotating speed (Switched from a DIP switch)		
Origin Correction	Arbitrary point becomes the origin.		
Special Features	Protection function	Protection function, copy function, pulse output function, communication function	
Communication	—	RS-232C Protocol dedicated to FC	
Advancing Function	No	Available	Available
Accessories	Mounting brackets		
Price	Open	Open	Open