PCM-22Q
Queuing Knife Controller
Operators Manual

Customer Services:

EMERSON EMC offers a wide range of services to support our customers' needs. Listed below are some examples of these services.

Service Support (612)-474-8833

Emerson Electronic Motion Control's products are backed by a team of professionals who will service your installation wherever it may be. Our customer service center in Minneapolis Minnesota, is ready to help you solve those occasional problems over the telephone. Our customer service center is available 24 hours a day for emergency service to help speed any problem solving. Also, all hardware replacement parts, should they ever be needed, are available through our customer service organization.

Need on-site help? Emerson EMC provides on-site service, in most cases, the next day. Just call Emerson EMC's customer service center when on-site service or maintenance is required.

Training Services (612)-474-1116

Emerson EMC maintains a highly trained staff of instructors to familiarize customers with Emerson EMC products and their applications. A number of courses are offered, many of which can be taught in your plant upon request.

Application Engineering

An experienced staff of factory application engineers provide complete customer support for tough or complex applications. Our engineers offer you a broad base of experience and knowledge of electronic motion control applications.

EMERSON BBS (612) 474-8835.

PCX Software updates can be obtained from the Emerson BBS. 300 - 9600 Baud, N, 8, 1.

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Overview Of The PCM-22Q

This manual is a supplement to the PCM-22 Rotary Knife Controller Operators Manual 400274-01.

The PCM-22Q Product Queue Application Module is the "Product Queuing" version of our standard PCM-22 Rotary Knife Controller Application Module.

The major difference between the standard PCM-22 module and the PCM-22Q (product queue version) is the way the Master Cycle is handled. The PCM-22Q does **not** track the product in terms of length and phase as with the standard PCM-22, but rather in terms of the zero position as indicated by the master sensor or master encoder.

Queuing Feature

The queue feature is used to store the master encoder positions received from the master sensor or entered with PCX from the Master Cycles screen. The PCM-22Q uses the encoder positions in the queue to position the follower axis for a cut. There are no phase adjustments or error corrections applied to the encoder positions that are entered into the queue.

Defining The Master Position

From the Master Cycles screen in PCX you can choose whether or not the master axis position is defined by sensor.

If your system requires a sensor on the master axis, you must enter a Master Sensor Distance and an Initial Master Length (see "Master Position Defined By Sensor" on page 2 for an explanation of these parameters).

If your system does not require a sensor on the master axis, enter No to the "Master Position Defined By Sensor" parameter then enter one or more (up to eight) Product Lengths into the Master Cycles screen to be cut in sequence. The PCM-22Q will follow each length you enter sequentially then repeat the sequence over and over.

Setting Up The Master Cycle Screen

Master Cycle Number

This parameter identifies the master cycle currently being defined. Up to 32 different master cycles can be defined (0 to 31). Any master cycle can be used with any follower cycle.

Master Position Defined By Sensor

This parameter determines if the product cut position is defined by a master sensor input or by a predetermined sequence of product lengths.

The parameters in this screen change depending on how you answer this question. If you enter **Yes**, you will also need to enter a Master Sensor Distance, Initial Master Length, Master Length Lower Limit and a Master Length Upper Limit. If you enter **No**, you will also need to enter from one to eight product lengths. Each of these parameters are explained on the following pages.

Enter **Yes** if your system uses a sensor to determine each individual cut position. In this mode when a sensor input is detected the master position is entered into a queue. This queue contains the sequence of master positions that the follower axis will be aligned with. A master zero point occurs each with each master sensor input.

Enter **No** if your system does not require a sensor on the master axis. In this mode a sequence of 1 to 8 master lengths is entered and the queue is preloaded with the product lengths entered. A master zero point occurs each time the master axis encoder advances one product length.

Master Sensor Distance

This parameter defines the distance from the master sensor to the center of the follower working segment (cut point).

The Master Sensor Distance **must** be greater than 2 product lengths and no longer than 31 product lengths (due to the size of the queue used, which is 32).

If you want to cut the product at a position other than on the registration mark, the distance from the registration mark to the cut must be factored in to the Master Sensor Distance. Lengthen this value to move the cut after the registration mark; shorten it to move the cut before the registration mark.

Initial Master Length

The initial master length is used to preload the queue when a cycle is started. The number of these preloaded lengths which will be "cut" is determined by the sensor distance and the initial length. If the sensor distance is 3 times the initial length, then the master must move the sensor distance (3 initial lengths) before any actual sensor defined positions arrive at the follower for "cutting". The value entered here is typically the average product length.

Product Length 1-8

The product length(s) entered here are repeatedly executed in sequence. The sequence may be up to 8 lengths and may be as few as 1. A zero value in the length field is used to signify the end of the sequence. When the next length in the queue is found to be zero, the sequence starts over and the Product Length 1 is executed. **There is no phase adjustment in this mode.**

Master Length Upper Limit

This parameter defines a length which is used to determine if a sensor is "missing". If the master moves a distance greater than the upper limit, the *Master Sensor Missing* output (output function #25) is activated, and a position is entered into the queue which corresponds to the current average length.

Master Length Lower Limit

This parameter defines a length which is used to determine that an "extra" sensor has occurred. If a new sensor input indicates a length less than the lower limit, the sensor input is considered invalid and is ignored. The *Extra Master Sensor* output (output function #47) is activated until a valid sensor input is received.

Follower Cycle Screen

There are only two parameters (see below) which are different from or added to the standard PCM-22 when using a PCM-22Q. All other parameters in this screen are explained in the PCM-22 manual, P/N 400274-01.

Follower Cycle Number

This parameter identifies the follower cycle currently being defined. Up to 32 different follower cycles can be defined (0 to 31). Any follower cycle can be used with any master cycle.

Follower Cycles Per Sensor

This parameter is the number of follower cycles that will occur each time the PCM-22Q receives a follower sensor input. This allows you to use a single registration mark for a multiple bladed rotary knife, thus eliminating the need for a registration mark for each knife or cycle.

Input and Output Functions

Input Functions

Input functions *#64 - Master Length Increment*, *#65 - Master Length Decrement*, *#72 - Master Phase Increment*, and *#73 - Master Phase Decrement,* which are available with the standard PCM-22, have been removed from the PCM-22Q. All other input functions are explained in the standard PCM-22 manual (P/N 400274-01).

79   Sensor Distance Increment

This input function allows you to increment the sensor distance "On The Fly". When the PCM-22Q receives an input signal on the input where this function is assigned, the sensor distance is incremented the amount entered in the Length Change Increment parameter located in the Follower Cycles screen.

80   Sensor Distance Decrement

This input function allows you to decrement the sensor distance "On The Fly". When the PCM-22Q receives an input signal on the input where this function is assigned, the sensor distance is decreased the amount entered in the Length Change Increment parameter located in the Follower Cycles screen.

Output Functions

There is one additional output functions (#47) available with the PCM-22Q application module. All other output functions are explained in the standard PCM-22 manual (P/N 400274-01).

47   Extra Master Sensor

This input becomes active when a master input has been determined to be outside the Master Length Lower Limit.