Electro Cam Corp.

PLµS Controls Div.

Use of Positions and Groups
by Resolver Based PLµS™ Controllers

The following information explains the use of Positions and Groups by the Electro Cam Corp. PLµS Controllers.

Resolver Position - The position output by the resolver. Loss of power does not affect this value.

Machine Position - With the PLµS controllers you have the ability to jog the machine to any desired physical position, and then simply by using a programming function, set the controller to display (and reference to) this position. The machine position value may be entered directly, or the machine offset (relative to resolver position) may be entered. Machine position and offset are unaffected by loss of power.

Machine Offset - A fixed number calculated by the PLµS controller representing the difference between machine position and resolver position. The number is displayed and can be altered by the user. It is generally used for archival purposes so the machine position can be reset without jogging the machine to a known position.

Absolute Offset - An alternative term for Machine Position.

Shaft Position - Another term for Machine Position.

Preset Position - A group position that indicates a position defined by the reset. The position value becomes any position value defined by the reset when an input signal is received.

Group Position - Controllers with Internal High Speed Logic capabilities (sometimes called Groups & Modes) can divide their outputs into groups. Each group of outputs can maintain its own position, independent of other groups. Depending on the mode of operation the group is set to, the group position may function like machine position, or, in Modes 1 and 2, it may be reset to a preset value (normally zero) when it receives an input signal. This input is generated by a switching device (photoeye, proximity switch, or similar electronic device) that is used to detect the leading edge of a product. This input is used primarily to control processes where the products are not evenly spaced, creating a floating zero that changes in relation to the machine position every time the controller receives the input signal.

Position changes triggered by inputs are not kept in permanent memory. When power is cycled, group positions for groups operating in modes 1 and 2 will revert to machine position.

On controllers where this is a global function (PS-5101, 5111, and 5121 DO NOT have Groups & Modes), all outputs are reset to a position with a value of "0" when the leading edge of the input signal is received.

See diagrams on the page 2 for further explanation.

Fig. 1
This diagram shows Resolver Position, Machine Position, and Group Position immediately following machine setup.

Fig. 2
This diagram shows the machine at the same position, just after the Group Position has reset to the Preset position.

Fig. 3
This diagram shows how the respective positions would be after a Power Cycle, without the machine having changed position.

Fig. 4
This diagram shows the three positions after the machine has moved 185° through the machine cycle.
Resolver Position = 185°
Machine Position = 18°
Group Position = 168°

Fig. 5
This diagram shows the machine in the same position as shown in Fig. 4, after a power cycle has occurred. Note that Resolver and Machine Positions remain the same, but Group Position that was at 168° is now at 18°.
Resolver Position = 185°
Machine Position = 18°
Group Position = 18°