SERVO MOTOR
DRIVEN
Bottom/Side sealing & Cutting Machine, Pouching machine
CONTROLLER
(USER MANUAL V.0.2)

PRS AUTOMATION

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USER INTERFACE

- ➢ LCD for display different data and setting the different parameter.
- ➢ Keypad with 20 keys for a user friendly operation.
- ➢ Four LEDs to indicate status of different input signal.

- ❑ **START/DRAW LED:** First LED on the controller is named as "START". Whenever controller receive START/DRAW proxy signal for servo to run (To perform a new stroke), this LED glows.

- ❑ **SEALER LED:** Second LED on the controller is named as "SEALER". Whenever controller receive sealer proxy signal this LED glows.

- ❑ **FEED LED:** Third LED on the controller is named as "FEED". Whenever controller receive un-winder proxy signal, this LED glows.

- ❑ **MARK LED:** Fourth LED on the controller is named as "MARK". Whenever controller receive MARK SENSOR SIGNAL (Photo cell signal) , this LED glows.

- ❑ **KEY FROM '0 TO 9':** Keys in first and second rows are indicated as 1,2,3……9,0. These keys are used to enter value of different parameter.

- ❑ **SET LENGTH:** There is a key on the controller named "SET LENGTH". This key is used to set the length of the bag in millimeter (mm).

  After pressing this key display shows:

  SET LENGTH
  0250.0

  Enter desired value of length using 0 to 9 keys and press enter.

- ❑ **SET SPEED:** There is a key on the controller named "SET SPEED". This key is used to set the speed of either servo motor (Manual mode) or Speed of Machine (Auto mode).
  After pressing this key display shows

  - • If controller is in AUTO mode display will show……

    MACHINE SPEED
    100
    STROKE/MINUTE

  Generally same value is entered in this parameter like entered in "MAX MACHINE SPEED" in Machine Parameter. But if you don't want to run the machine at this maximum speed, you can enter here desired value, but it should not be greater than "MAX MACHINE SPEED". This is required only when you want to limit servo speed by limiting the machine speed (Stroke/Minute) in AUTO mode.

- If controller is in MANUAL mode display will show……

SET SPEED: 050%

Here you can directly set the desired Servo Speed. Maximum speed of servo motor is 100%. You can't enter value more than 100.

Enter desired value of SPEED using 0 to 9 keys and press enter.

❑ **SETBATCH:** There is a key on the controller named "SET BATCH". This key is used to set the number of count in one batch. (Note: This is the same key as key '5')

Press this key and display will show………..

COUNT IN BATCH
9999

Once counting reaches to this value, counting resets to zero and Batch count increments by one. If solenoid and conveyer relay is enabled, relay will perform its operation before starting a new batch. (For this relay operation please refer CONVEYOR ON TIME and BARRIER ON TIME settings).

Enter desired value of "COUNT IN BATCH" using 0 to 9 keys and press enter.

❑ **FOR:** There is a key (at third row fourth column) on the controller named "FOR". This key is used to rotate servo motor in forward direction (JOG OPERATION). The user can set desired value of speed. Please see JOG SPEED function setting for more detail.

NOTE: This JOG function is enable only during the stop condition of machine. i.e. When "STP" is displayed in the LCD at the right bottom.

❑ **REV:** There is a key (at third row fifth column) on the controller named "REV". This key is used to rotate servo motor in reverse direction (JOG OPERATION). The user can set desired value of speed. Please see JOG SPEED function setting for more detail.

NOTE: This JOG function is enable only during the stop condition of machine. i.e. When "STP" is displayed in the LCD at the right bottom.

❑ **INCH:** There is a key (at fourth row third column) on the controller named "INCH". This key is used to perform one stroke of set length.

NOTE: This INCH function is enable only during the stop condition of machine. i.e. When "STP" is displayed in the LCD at the right bottom.

❑ **AUTO/MANUAL:** There is a key (at fourth row second column) on the controller named "AUTO/MANUAL". This key is used to change function from AUTO and MANUAL.
In AUTO mode speed of servo motor automatically will adjust according to the speed of main A.C. motor, where as in MANUAL mode, speed of the servo motor is set by the operator. In manual mode servo motor speed will be independent of the main A.C. motor speed.

❑ **MARK:** There is a key (at fourth row fourth column) on the controller named "MARK". This key is used to enable or disable "MARK SENSOR" function.
If "MARK SENSOR" function is activated, controller will seek for "MARK SIGNAL" from colour sensor at the every end of jump during mark window. (Please refer "SET MARK WINDOW" for more detail). Servo controller will stop the servomotor as soon as it gets mark signal during mark window. If controller will not receive mark signal continuously for three stroke, it will generate the error (MARK SENSOR ERROR).

If "MARK SENSOR" function is disabled controller will not seek for any mark signal. It will stop the servomotor exactly at the SET LENGTH.

❑ **RESET/BACK:** There is a key (at fourth row fifth column) on the servo controller named "RESET/BACK".
This key is used to reset any error. On pressing first time it resets the buzzer. While pressing second time it resets the present error. This key is also used to reset different counter at time. Like. Total batch, Total count, No of stroke completed in current batch etc. To reset this counters RESET key is required to hold continuously for 3-4 seconds.

There are mainly two kinds of parameter setting.

1) **USER PARAMETER.**
It's a parameter, which is set by the operator (USER) according to requirement.

2) **MACHINE PARAMETER**
This parameter is set by machine manufacturer(OEM). Operator is strictly advised to do not modify this parameter.

❖ USER PARAMETER.

Display shows "USER PARAMETER" after pressing "SET". Once display shows this press ENTER

Display will show………..

ADVANCE COUNT
005

It is used to produce buzzer sound at several counts before current batch completes. For e.g. "COUNT IN BATCH" is set to 500 and "ADVANCE COUNT" is set to 005, buzzer will start at counting of 495 and will off at the completion of the current batch.

Enter desired value of ADVANCE COUNT using 0 to 9 keys and press enter.

Display will show………..

SET REVERSE LENGTH

02.0

There are some application which require small reverse movement of servomotor before performing starting actual stroke. According to requirement user can set appropriate value (in mm) to this parameter.

Enter desired value of SET REVERSE LENGTH using 0 to 9 keys and press enter.

Display will show………..

JOG SPEED: 002%

To rotate servo motor in Forward and Reverse direction there are two special keys are given in the keypad with name "FOR" & "REV". Speed of the servo motor Reverse & Forward is entered in this parameter i.e. JOG SPEED. Minimum value is 1% and maximum value is 100%.

Enter desired value of **JOG SPEED** using 0 to 9 keys and press enter.

Display will show………..

MARK SENSOR = OFF

This parameter is used to Enable/Disable mark(colour) function. Keep it "ON" only if you are producing the printed bag and also using the mark(colour) sensor. Keep it OFF if you are producing the plain bag even if you have mark(colour) sensor installed in your machine. Press AUTO/MANUAL key to Enable(ON) or Disable(OFF) the mark functionality. Press "ENTER" key Once you set ON/OFF for MARK SENSOR.
If you will select "OFF" for MARK SENSOR and press "ENTER", you will come out of the "USER PARAMETER".

If you will select "ON" for MARK SENSOR and press "ENTER",
Display will show………..

SET MARK WINDOW

05.0

(This parameter settings will appear only if you have Enabled(ON) the MARK SENSOR)
Mark(COLOUR) sensor will be checked for the appropriate colour only during these span of the length.
E.g. If you have set the length 200mm and MARK WINDOW 5.0mm, mark (colour) signal will be checked only between 195mm and 200mm.
Note: Keep higher value of the MARK WINDOW if the position of mark (colour) is more irregular. But don't keep very high value of the MARK WINDOW unnecessarily as high value may cause the the detection of undesired same mark (colour) printed on bag and also may decrease the machine speed.

Enter desired value of **MARK WINDOW** using 0 to 9 keys and press enter.

Display will show………..

MARK SPEED: 002%

To stop servo motor more precisely at MARK(COLOUR), we rotate the servo motor slowly in the span of "MARK WINDOW".

Enter desired value of **MARK SPEED** at which MARK (COLOUR) signal has to be detected and press enter.

Once you will press "ENTER" you will come out of the "USER PARAMETER" settings.

❖ MACHINE PARAMETER

To enter in to the MACHINE PARAMETER, first press "SET" key and then press "AUTO/MANUAL" key. "MACHINE PARAMETER" will appear on the display.
Press "ENTER" and Display will show…………

ENTER PASSWORD

█ ▁ ▁ ▁

ENTER 1234.
Display will show………..

SERVO DIR = 0

FOR=1   REV=0.

This parameter is used to set the direction of the servo motor. Simply you can set opposite value (Set '0' if its '1'. OR Set '1' if its '0') using key '1' and '0', if servo motor is running in opposite direction.
Press "ENTER" and Display will show…………

CIR = 250.0

This parameter is used to enter the circumference (3.14*diameter) of the rubber role, which is drawing the plastic material.

Enter desired value of CIR using 0 to 9 keys and press enter.
Display will show………..

ACC TIME
048

This parameter is used to define the acceleration time of the servo motor.
(Minimum value is 012 & Maximum value is 130)

Enter desired value of **ACC TIME** using 0 to 9 keys and press enter.
Display will show………..

DECE TIME
048

This parameter is used to define the deceleration time of the servo motor.
(Minimum value is 012 & Maximum value is 130)

Enter desired value of **DECE TIME** using 0 to 9 keys and press enter.

Display will show………..

SET PULLEY RATIO
02.00

This parameter is used to define the pulley ratio.

PULLEY RATIO = <u>No. of teeth in the pulley fitted to the rubber role (Drawing the plastic material)</u>
No. of teeth in the pulley fitted to the Servo motor Shaft

Enter desired value of **PULLEY RATIO** using 0 to 9 keys and press enter.
Display will show………..

SEALER PROXY = 1
(IN STOP MODE)
ENABLE (ON) = 1
DISABLE (OFF) = 0

This parameter gives you freedom of either enabling or disabling the SEALER PROXY signal in stop mode.

If this parameter is set to 1, SEALER PROXY signal is enabled in stop mode. So in stop mode controller will issue 2nd speed command to main motor as long as sealer signal is not available (i.e. Sealer LED is off). It will stop the motor only if sealer signal is available (i.e. Sealer LED is ON)

If this parameter is set to 0, SEALER PROXY signal is disabled in the stop mode. So SEALER PROXY signal will be checked only once when stopping the machine. Controller will not issue 2nd speed command again even if SEALER PROXY signal will disappear during the stop mode.

Note: This parameter is especially useful when AC drives is not able to stop the main motor instantly due to machine's high speed even if stop command is already given by the controller once SEALER PROXY signal is received. This results stopping the sealer anywhere. Not assuring the stopping of the sealer at the top.

Enter desired value of using 0 and 1 keys and press enter.

Display will show………..

DRAW PROXY = 1
(IN STOP MODE)
ENABLE (ON) = 1
DISABLE (OFF) = 0

This parameter gives you freedom of either enabling or disabling the DRAW/START PROXY signal in stop mode.

If this parameter is set to 1, DRAW/START PROXY signal is enabled in stop mode. So in stop mode if controller will get a DRAW/START signal, servo will run by servo motor by SET LENGTH value.

If this parameter is set to 0, DRAW/START PROXY signal is disabled in stop mode. So in stop mode even if controller will get a DRAW/START signal, servo will not run.

Note: This parameter is especially useful when AC drives is not able to stop the main motor instantly due to machine's high speed even if stop command is already given by the controller. And even after getting the stop command cutter and sealer hits the same material more than one time.

Enter desired value of using 0 and 1 keys and press enter.
Display will show………..

BASE SPEED = 001%

This parameter is used to define the starting speed of the servo motor. Normally it is set to 001%. BASE SPEED is increased only if the load of the machine is comparatively less, to increase the machine speed.

Enter desired value of **BASE SPEED** using 0 to 9 keys and press enter.
Display will show………..

MAX MACHINE SPEED
200
STROKE / MINUTE
(ONLY FOR AUTO MODE)

Enter the machine's maximum speed in this parameter. This parameter is required for the AUTO mode of operation in which servo speed will be calculated automatically by the controller.
Procedure to know machine maximum speed:
If you AC drive is used for the main motor, set POT to maximum value to make machine run at its maximum speed. Please note down the ST/MIN value displayed by the controller. Then enter this value to this "MAX MACHINE SPEED" parameter and press ENTER.

Display will show………..

AUTO TIME FACTR: 065

This parameter is used to define the AUTO RUN TIME FACTOR of servo motor. This parameter is used only for the AUTO mode operation. If machine is running in manual mode, this parameter doesn't has any effect on the performance. It is set to 065% in factory setting. If shorter bag is being produced in auto mode than desired, value of the AUTO TIME FACTOR need to be reduced appropriately. But it should not be reduced too much, as too small value will reduce the machine speed/production rate.