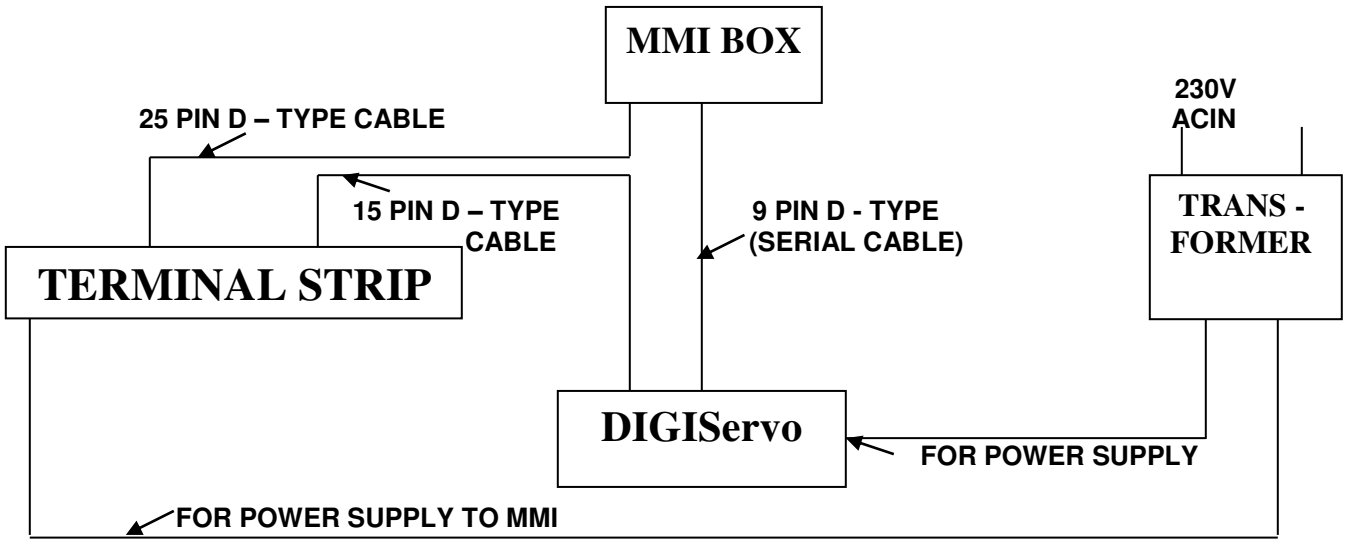
OPERATING MANUAL FOR LABKON

INDEX

LABKON with Servo Drive UNIT CONSIST OF FOLLOWING ITEMS

1.	Display unit (MMI BOX)	:	This is 144 x 144 boxes with 16 x 2 BIG LCD & 24 keys keypad.
2.	DIGISERVO	:	This is the drive unit to drive the servo motor. This is mounted on the plate with 230VACoperated Fan.
3.	Terminal Strip	:	This is the terminal strip to connect external Solenoids, Limit OR Proximity switches & Label Sensor to *LABKON*
4.	Cable Set	:	There are 4 cables to interconnect Display unit, Terminal Strip & drive with each other.
5.	TRANSFORMER	:	*LABKON* is provided with TRANSFORMER with 230 V Input.

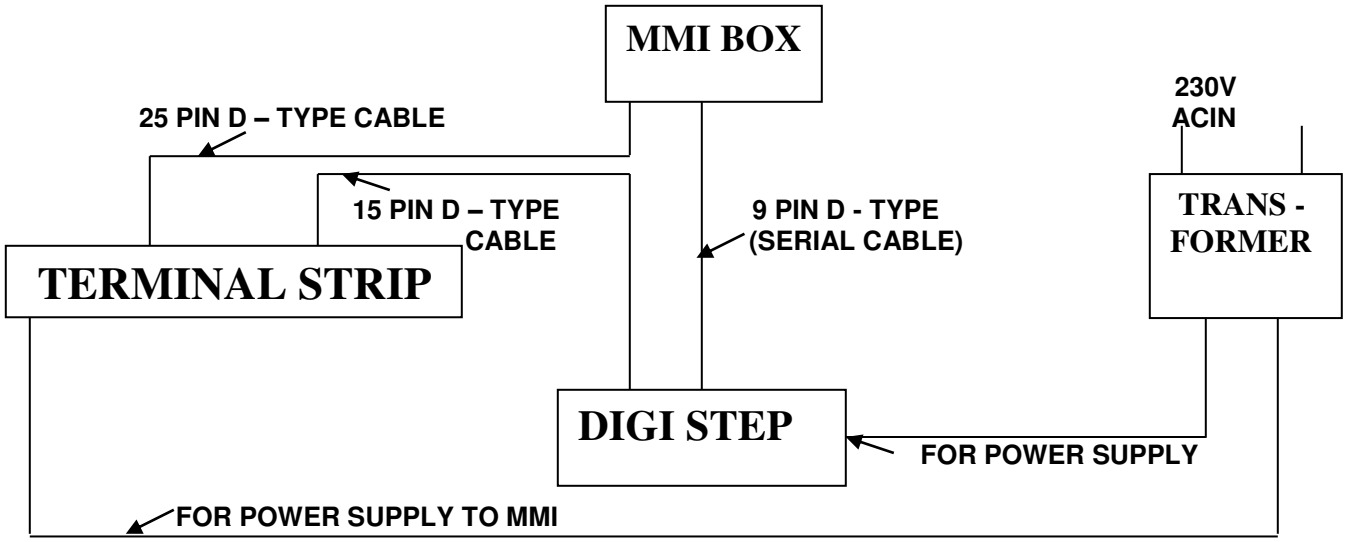
BLOCK DIAGRAM



LABKON with Stepper Drive UNIT CONSIST OF FOLLOWING ITEMS

1.	Display unit (MMI BOX)	:	This is 144 x 144 boxes with 16 x 2 BIG LCD & 24 keys keypad.
2.	DIGISTEP (DC Stepper Drive)	:	This is the drive unit to drive the stepper motor. This is mounted on the plate with 230VACoperated Fan
3.	Terminal Strip	:	This is the terminal strip to connect external Solenoids, Limit OR Proximity switches & Label Sensor to *LABKON*
4.	Cable Set	:	There are 4 cables to interconnect Display unit, Terminal Strip & drive with each other.
5.	TRANSFORMER	:	*LABKON* is provided with TRANSFORMER with 230 input.

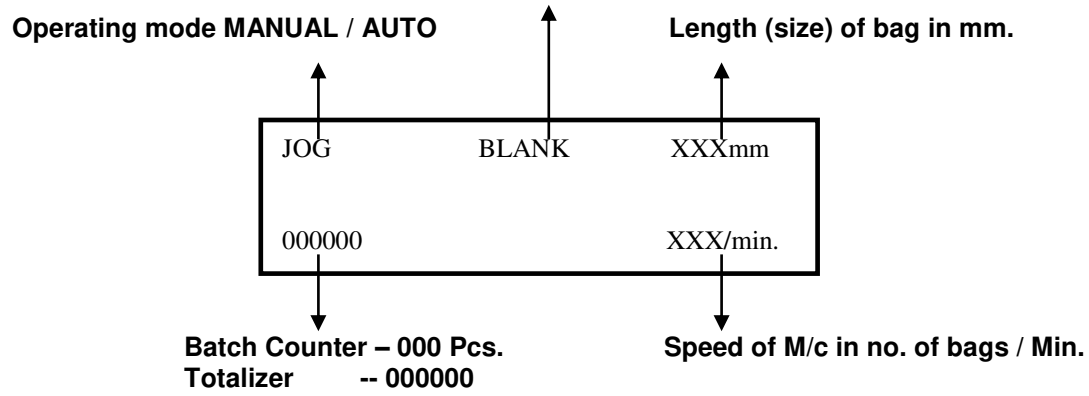
BLOCK DIAGRAM



FUNCTIONAL DESCRIPTION

DISPLAY:

Type of bag MARK / BLANK



-System operates in two modes

1. MANUAL MODE 2. AUTO MODE

IN MANUAL MODE:

- At the time of power ON (system stays in MANUAL mode) In MANUAL mode Upper line in LCD shows **'***JOG* `.
- In this mode servo motor can be moved either in forward direction or in reverse direction as per input applied at the terminal strip (i.e. at INCH FOR or INCH REV) or directly from keys on MMI.

IN AUTO MODE :-

- Upper line of display shows '*RUN*`
- On applying start signal to proxi-start input, servo motor starts running. Motor moves for set length at set speed.
- After starting of servo motor *RIBBEN output* operates as per set time.
- IF LABEL SENSOR INPUT IS ENABLED (This can be seen in Upper line of display. If LABEL SENSOR IS ENEBLED,'LABEL' is displayed and if LABEL SENSOR IS DISABLED, 'PLAIN' is displayed.) Servo motor stops as soon as LABEL SENSOR input is received. If LABEL SENSOR input is not received then motor will stop at set length.
- IF LABEL SENSOR IS DISABLED then servo motor will stop at set length.
- After stopping of servo motor *PRINT* Output operates as per set time.
- After the output goes off system waits for next start.
- Now if input configuration is set to *'5*' then motor restarts after cycle time set in timar menu.
- If input configuration is set to '1' then system waits for start input (proximity switch).
- For other then '1' & '5' system starts as per explained in programmers guide.

DISPLAY STATUS: IN NORMAL RUNNING MODE DISPLAY SHOWS '*NORMAL STATUS'.*

1.

XXX	YYYY	ZZZZ
PPPP		*QQQQ*

XXX SHOWS AUTO OR MANU MODE

YYYY SHOWS MARK OR PLAIN

ZZZZ SHOWS SET LENGTH

PPPP SHOWS BATCH COUNTER / TOTALIZER

QQQQ SHOWS SHOTS/ MIN

2. On pressing *SAVE* key display shows `I/O STATUS MENU` in MANUAL MODE & AUTO MODE.

First line shows the status of INPUTS & second line shows the status of OUTPUTS

I
O

- I/O STATUS MENU is useful to monitor START, LENGTH STOP, and PHOTOCELL STOP INPUT signals or PRINT & RIBBEN OUTPUT signal.
- START INPUT is given to the MMI at that time in INPUT STATUS MENU **2** shown
- LENGTH STOP INPUT: when LABEL SENSOR not in used & in counter menu LABEL SENSOR is OFF at that time servo motor stop at its Set Length so servo stop at its Length in `I/O STATUS MENU`E 'input shows.
- PHOTOCELL STOP INPUT: when LABEL SENSOR used & in counter menu LABEL SENSOR is ON while LABEL SENSOR is sensed in LABEL WINDOW at that time Servo motor stop at its photocell stop. This input is ` F ` in `I/O STATUS MENU`.
- When servo stop at PHOTOCELL STOP in I/O STATUS MENU inputs EF shows.

3. On pressing *SAVE* key display shows `I/O STATUS MENU` in MANUAL MODE & AUTO MODE.

On pressing *SAVE* key again display shows *'SPEED STATUS'* menu.

R:>	AAA	BBBB
	CCCC	*DDDD*

AAA	⟶	Shows servo motor actual running time in milli seconds.
BBBB	⟶	Not Used
CCCC	⟶	Shows actual frequency input given by synchronization pot (potentiometer) which is used for speed variation of servo motor & conveyer. Its unit is HZ
DDDD	⟶	shows actual speed of servo motor set by synchronization pot

- On pressing *SAVE* key again display shows *NORMAL STATUS.*

HOW TO PROGRAM

Parameter SET 1 (Length settings):

- To enter, SET LENGTH key this will allow to set operator level settings. To set superviser level parameters enter into that particular level using PASSWORD key.
- The upper line of LCD shows parameter name, and Lower line shows Parameter value.
- Use **0 to 9** to set the required value. (CLEAR key will make display value to zero)
- Use NEXT to save the current parameter & to switch to the next parameter.
- Use PREV to switch to the previous parameter.
- Use **SET LENGTH** key again to exit.

List of Programmable Parameter:

NO.	Message On LCD	Description	Parameter Description			Pa Operating ssword Level
			Range	Unit	Default	
1	Lable+Gap (mm)	Length to run in millimeters.	0000- 9999	mm	0200	Operator Level Supervisor Level
2	Label Sensor	To enable / disable the lable sensor function.	On / Off	Function	Off	Operator Level Supervisor Level
3	Label Window (mm)	When Label Sensor is On, the sensor input is active only for the distance in label window before the set length.	0000-9999	mm	0008	Operator Level Supervisor Level
4	Batch Count	Batch Counter preset value. The batch counter resets on reaching this Count. On setting value 0 disables the counter & output.	0000-9999 Auto Reset on overflow.	Number	10	Operator Level Supervisor Level
5	Total Batches	When put to on, reset the 3-digit total batches counter reset to 1.	0000-9999	Number	0100	Supervisor Level
6	Batch Over Warn	Batch Over Warning output turns on this many counts Warn before the completion of Batch Count. The output turns off on completion of batch count. On setting value 0 disables the counter & output.	0000-9999 Auto Reset on overflow.	Number	05	Supervisor Level
7	Cutter Count	Not used in Labeling Machine.	--	--	--	Supervisor Level
8	Punch count	Not used in Labeling Machine.	--	--	--	Supervisor Level
9	Batch Reset	When put to on, reset the 4-digit batch counter reset to 1.	On / Off	Function	Off	Supervisor Level
10	Totalizer Reset	When put to On, resets the 6-digit Totalizer to 0.	On / Off		Off	Operator Level Supervisor Level
11	Reset tot Batches	When put to on, reset the 3-digit total batches counter reset to 1.	On / Off		Off	Supervisor Level
12	Missing Label	When Label Sensor is On, the system waits Missing Label no of missing Label before generating Label Sense Error. The counter resets on receipt of mark or on error generation.	00-99	Number	05	Supervisor Level

13	Speed Err Count	When system is running on input configuration 1 to 4 at that time if system receives start input during run time the high-speed error generated. The error is reset by error-reset input.	00-99	Number	10	Supervisor Level
14	Ratio MM	Total linear travel in ten revolutions of the motor.	0000-9999	mm	1320	Supervisor Level
15	Max. Stroke/min	Set maximum operating stroke of machine	0000-0150	Stroke/Min	0250	Supervisor Level
16	% Pull Run Ratio	It is the ratio of run time to sealer time.	000-100	Percentage	60	Supervisor Level
17	Default Loading	If set to On, Factory set values of all the parameters get loaded.	On / Off		Off	Supervisor Level
18	Auto Speed	If is set to ON then servo motor's speed is set automatically according to set length.	On / Off		On	Supervisor Level
19	Auto Stroke Speed	If it is ON then machine's stroke is set automatically according to set length.	On / Off		On	Supervisor Level
20	Input Config.	Decides different configuration for the start / error conditions of the system. Description of each configuration is given below.	0000-0005	Number	0000	Supervisor Level
21	Config OUTPUT 1	It should configure the output as per required.	00-34	Number	06	Supervisor Level
22	Config OUTPUT 4	It should configure the output as per required.	00-34	Number	04	Supervisor Level
23	Config OUTPUT 5	It should configure the output as per required.	00-34	Number	08	Supervisor Level
24	Config INPUT 1	It should configure the input as per required.	00-22	Number	01	Supervisor Level
25	Config INPUT 2	It should configure the input as per required.	00-22	Number	02	Supervisor Level
26	Config INPUT 3	It should configure the input as per required.	00-22	Number	11	Supervisor Level
27	Config INPUT 4	It should configure the input as per required.	00-22	Number	13	Supervisor Level
28	Config OUTPUT 6	It should configure the output as per required.	00-34	Number	09	Supervisor Level
29	Config OUTPUT 8	It should configure the output as per required.	00-34	Number	00	Supervisor Level
30	Config OUTPUT 9	It should configure the output as per required.	00-34	Number	30	Supervisor Level
31	Config OUTPUT 10	It should configure the output as per required.	00-34	Number	31	Supervisor Level
32	Config OUTPUT 11	It should configure the output as per required.	00-34	Number	02	Supervisor Level
33	Config INPUT 5	It should configure the input as per required.	00-22	Number	22	Supervisor Level
34	Password Level 1	Set user level password	0000-9999	Number	0000	Supervisor Level
35	Password Level 2	Set supervisor level password	0000-9999	Number	9999	Supervisor Level
36	StopOn Tot Batch	Not used in Labeling Machine.	On / Off	Function	Off	Supervisor Level

37	StopOn Batch Ovr	Not used in Labeling Machine.	On / Off	Function	Off	Supervisor Level
38	Variable Strt Dly	If it On Start delay will very according to Machine Stroke	On / Off	Function	Off	Supervisor Level

Parameter SET 2 (Timer settings) :

- To enter, SET TIMER key this will allow to set Operator level settings. To set supervisor level parameters enter into that particular level using PASSWORD key.
- The upper line of LCD shows parameter name, and Lower line shows Parameter value.
- Use **0 to 9** to set the required value. (CLEAR key will make display value to zero)
- Use NEXT to save the current parameter & to switch to the next parameter.
- Use PREV to switch to the previous parameter.
- Use **SET TIMER** key again to exit.

List of Programmable Parameter:

NO.	Message On LCD	Description	Parameter Description			Operating Password Level
			Range	Unit	Default	
1	Cycle Delay Sec	With Input configuration option 5, time between two consecutive Cycles.	00.00 to 10.00	Second	00.00	Operator Level Supervisor Level
2	Start Delay Sec	Before start of motor run, the output for the start delay operates for Start delay Time.	00.00 to 10.00	Second	00.00	Operator Level Supervisor Level
3	Print On Time	On completion of motor run, the output for the print operates for print on Time.	00.00 to 10.00	Second	00.00	Operator Level Supervisor Level
4	Hole Punch Dly	Not Used in Labeling Machine.	00.00 to 10.00	Second	00.00	Supervisor Level
5	Hole Punch Tim	Not Used in Labeling Machine.	00.00 to 10.00	Second	00.00	Supervisor Level
6	Vnotch Time	Not Used in Labeling Machine.	00.00 to 10.00	Second	00.00	Supervisor Level
7	BtchOvr Tim Sec	Not Used in Labeling Machine.	00.00 to 10.00	Second	00.00	Supervisor Level
8	Ribon On Time	The Ribbon output turns on with the running of motor & operates for the Ribbon on Time.	00.00 to 10.00	Second	00.00	Operator Level Supervisor Level
9	ErrOut Time Sec	The Alarm output turns off with the occurrence of error & it operates for the Error Time. Value 0 turns the error O/P permanently off until manual reset of the error	00.00 to 10.00	Second	00.00	Supervisor Level
10	Output Delay Sec	Output will on after output delay sec time.	00.00 to 10.00	Second	00.00	Supervisor Level

Parameter SET 3 (Speed settings):

- To enter, SET SPEED key, this will allow to set operator level settings. To set supervisor level parameters enter into that particular level using PASSWORD key.
- The upper line of LCD shows parameter name, and Lower line shows Parameter value.
- Use **0 to 9** to set the required value. (CLEAR key will make display value to zero)
- Use NEXT to save the current parameter & to switch to the next parameter.
- Use PREV to switch to the previous parameter.
- Use **SET SPEED** key again to exit.

List of Programmable Parameter:

NO.	Message On LCD	Description	Parameter Description			Operating Password Level
			Range	Unit	Default	
1	Machine :Strk/Min	Machine strike per minute.	0000-1000		180	Operator Level
2	Run Speed (RPM)	Maximum speed of the motor.	0000- 1200	(RPM)	2000	Supervisor Level
3	Start Speed (RPM)	Starting speed of the motor.	0000- 1200	(RPM)	0080	Supervisor Level
4	Start Steps	No. of Steps the motor run at Start Speed before accelerating to the run Speed.	0000- 9999		0000	Supervisor Level
5	Accel. Time Sec	Time to accelerate the motor from the Start Speed to the Run Speed.	00.00-99.99	Second	00.20	Supervisor Level
6	End Speed (RPM)	End speed of the motor.	0000- 1200	(RPM)	0060	Supervisor Level
7	End steps	No. of Steps the motor run at End Speed after decelerating to Stop.	0000-9999		0150	Supervisor Level
8	Decel. Time Sec	Time to decelerate the motor from the run speed to end Speed.	00.00-99.99	Second	00.25	Supervisor Level
9	Run Direction	Decides the direction of motor. On-Forward Off-Reverse	On / Off		On	Supervisor Level
10	Inch Speed(RPM)	Maximum speed of the motor during Inching.	0000- 1200	(RPM)	0020	Operator Level Supervisor Level
11	Photo Speed (RPM)	Speed of the motor during Mark Window.	0000-1200	(RPM)	0060	Supervisor Level
12	Machine Min Spd%	Not in used	000-100		10	Supervisor Level

Configure mode:
Parameter Set:

NO.	Message On LCD	Parameter Description			Operating Password Level
		Range	Unit	Default	
1	Holding gain	0000-0010	Number	0005	Supervisor Level
2	Speed prop. Gain	0000-0500	Number	0350	Supervisor Level
3	Speed int. Gain	0000-0500	Number	0350	Supervisor Level
4	Crnt Pr Gain Hold	0000-2000	Number	1000	Supervisor Level
5	Crnt Pr Gain Run	0000-2000	Number	0500	Supervisor Level
6	Curnt Intg Gain	0000-0100	Number	0050	Supervisor Level

LIST OF INPUTS & OUTPUTS

OUTPUTS : All outputs are of 24v open collector type are capable of driving 100mA load. (One can connect pneumatic valves of 24 V coil directly.)

1. PRINT : This is the output which can be used to operate PRINTER after servo Motor completes its travel. The duration for which the output remains ON is adjustable by PRINT ON TIME in timer menu.

2. RIBBEN : This is the output which can be used to operate RIBBEN after servo starting its travel. The duration for which the output remains ON is adjustable by RIBBEN ON TIME in timer menu.

INPUTS :

1. PROXI-IN This is the start input. servo motor starts running as soon as start Input is received. This is N-P-N NO type input. For this input 10 – 30 VDC N-P-N NO type switch can be used.

2. PH IN NPN This is the mark sensor input.servo motor stops as per this input. For this NPN type photocell (Mark Sensor) can be used.

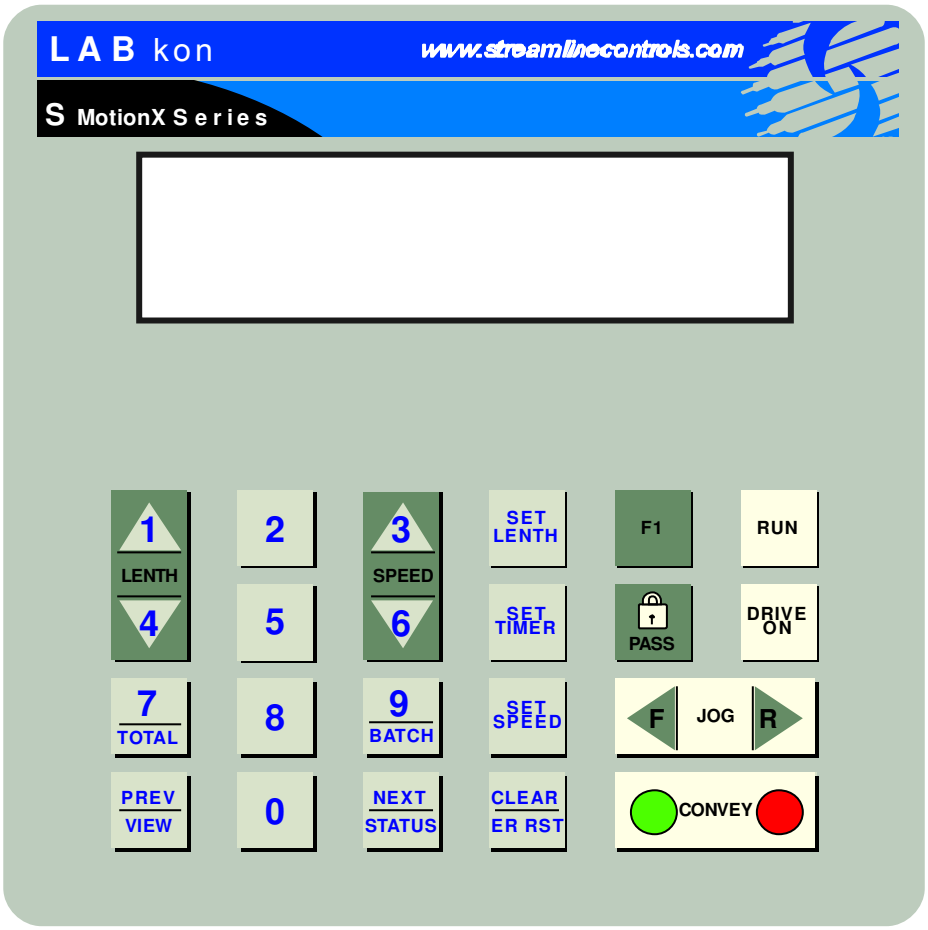
3. PH IN PNP This is the mark sensor input.servo motor stops as per this input. For this NPN type photocell (Mark Sensor) can be used.

4. INCHF On applying this input motor jogs in forward direction.

5. INCHR On applying this input motor jogs in reverse direction.

To activate any above inputs, input terminal is to be connected with GND.

FRONT KEY BOARD OPERATION



1. 1. **OPERATING MODE SELECTOR**

1. RUN : Push this key for toggle between RUN and JOG (inching) mode. Also use this key to acknowledge error message.
2. DRIVE ON : Push this key for Enable or Disable servo drive.

2. **PROGRAM MODE SELECTOR**

3. SET LENGTH : Push this key for enter in SET *LENGTH* menu.
4. SET SPEED : Push this key for enter in SET *SPEED* menu.
5. SET TIMER : Push this key for enter in SET *TIMER* menu.
6. PASSWORD : Push this key to open password entry menu.

3. **NUMERICAL KEYS**

7. 1 / Length Inc : PRG Mode: Push this key to set digit value1
   RUN Mode: Increment Length.
8. 2 : PRG Mode: Push this key to set digit value 2
   RUN Mode: Push this key for increments length.

9. 3 / Speed Inc : PRG Mode: Push this key to set digit value 3
RUN Mode: Increment Speed.

10. 4 / Length Dec : PRG Mode: Push this key for set digit value 4
RUN Mode: Decrement Length.

11. 5 : PRG Mode: Push this key to set digit value 5
RUN Mode: Not in use.

12. 6 / Speed Dec : PRG Mode: Push this key for set digit value 6
RUN Mode: Decrement Speed.

13. 7 / TOTAL : PRG Mode: Push this key to set digit value 7
RUN Mode: Push this key for display totalizer counter.
Keep press this key for acknowledge Totalizer counter till to reset counter on display.

14. 8 : PRG Mode: Push this key to set digit value 8
RUN Mode: Push this key for decrements length.

15. 9 / BATCH : PRG Mode: Push this key to set digit value 9
RUN Mode: Push this key for display batch counter.
Keep press this key for acknowledge Total Batches Over message till to reset message on display

16. 0 : PRG Mode: Push this key to set digit value 0
RUN Mode: Not in use.

17. NEXT/STATUS : PRG Mode: Push this key for save current parameter & switches to next parameter
RUN Mode: Switches menus (I) Regular menu (ii) Input / Output menu (iii) Speed menu (IV) Online Cycle Status menu

18. PREV / VIEW : PRG Mode: Push this key for switch to previous parameter
RUN Mode: Push this key to view all parameter & it's set value

19. CLEAR/ERRST : PRG Mode: Push this key for clearing input data zero
RUN Mode: Push this key for reset errors.

4. FUNCTIONAL KEYS

20. JOG F : Push this key Inching forward servo Motor.

21. JOG R : Push this key Inching Reverse servo Motor.

22. F1 : Spare Key

23. Conveyor On : Push this key to On conveyor Output.

24. Conveyor Off : Push this key to Off Conveyor Output.

ERROR MESSAGES

There are two types of error messages

- **LABEL SENSOR ERROR**
  When the LABEL SENSOR is enabled and LABEL SENSOR input is not received for more then set *MISSING LABEL* count continuously then LABEL SENSOR error occurs.

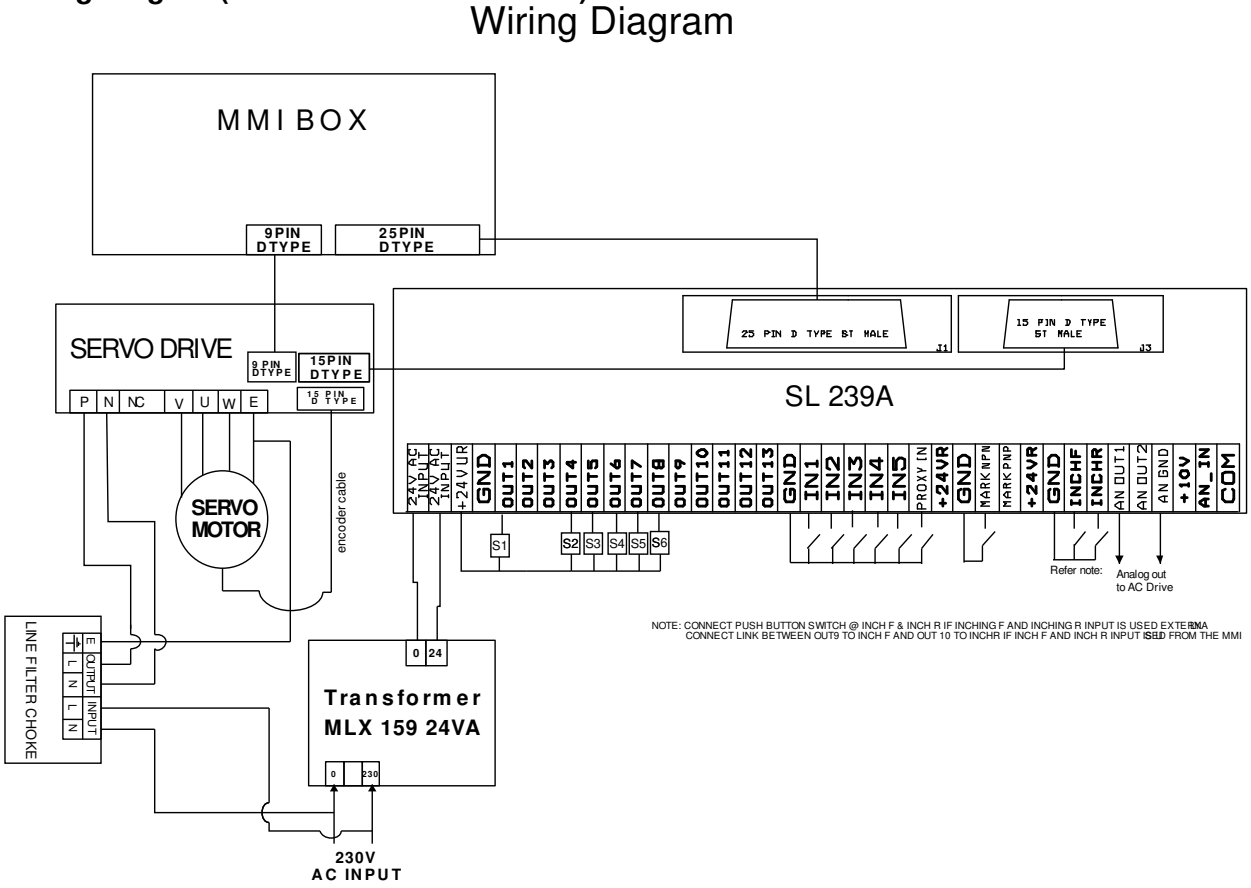
- **HIGH SPEED ERROR**

  When input configuration is set other then 5 and start command is received before servo motor stops for more then high-speed error count continuously then high-speed error occurs.

HOW TO VERIFY LABEL SENSOR FUNCTION

- Set label sensor enabled
- Set label sensor out side the job such that *MARK* led on digiservo drive remains on
- Run the machine
- Label sensor error should not appear anytime and the length of the job should be (set length) – (LABEL window)
- Now set the sensor such that *MARK* led on digiservo drive remains off
- Run the machine
- *LABEL* sensor error should appear after missing mark count
- The length of the job should be equal to set length

Wiring Diagram(LABkon with Servo Drive)



Wiring Diagram(LABkon with Stepper Drive)