

***OPERATING
MANUAL FOR
CONTROL
SYSTEM OF BAG
MAKING MACHINE***

Business Mission

Streamline Controls Pvt. Ltd. (SCPL) is in the business of providing electronic & computerized automation solution for different industries so as to enhance the quality and productivity. Our motto is to provide indigenous, reliable and proven products & hence to ensure consistent performance. Our concept of value to the customers is to supply indigenous control systems designed with latest technology, developed through extensive R & D, incorporating state of art technology (world technology trend), manufactured under strictest quality control system and duly tested, at competitive prices, delivered in time and supported by service teams.

We feel it to be our responsibility to ensure that our business operates at a reasonable profit, as profit provides opportunity for R&D, growth and job security. Therefore we are dedicated to profitable growth - growth as a company and growth as an individual.

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(A) SYSTEM SPECIFICATIONS :

Input

Power:

Voltage	--	0-24VAC \pm 2%
Frequency	--	49-50 Hz
Consumption	--	10VA Max.

Control:

1.Proximity	--	NPN (NO type) 10-30 Vdc-50Ma Max
2.Limit switches	--	NO TYPE

Output

Output Signal:	--	24VDC 250mA. (Max).
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Environment

Temperature	--	0°C to 55°C
Humidity	--	5 to 95% RH non-condensing

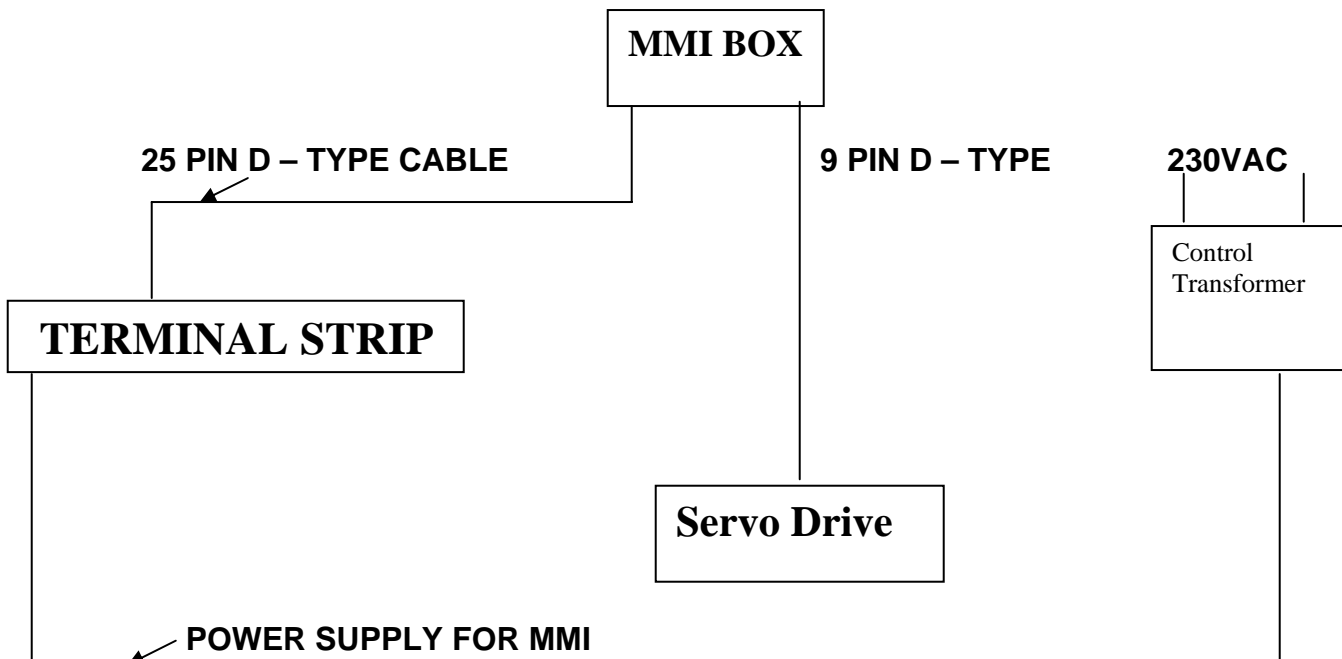
MECHANICAL DIMENSIONS

OVERALL DIMENSION--	Depth X Width X Height
	65 mm 146 mm 146 mm
PANEL CUTOUT SIZE --	140mmX140mm

(B) BAGkon UNIT CONSIST OF FOLLOWING ITEMS

1. Display unit : This is housing of 144x144mm size with 16 x 2 LCD & 24 keys.
2. Terminal Strip : This is the terminal strip to connect external solenoids & limit OR Proximity switches to *BAGkon*
3. Cable Set : There are 2 cables to interconnect Display unit, terminal strip & servo Drive with each other.
5. Control Transformer: *BAGkon* is provided with Control Transformer with 230VAC Input(optional).

(C) BLOCK DIAGRAM



(D) **FRONT KEY BOARD OPERATION**



OPERATING MODE SELECTOR

1. RUN : Push this key to toggle between RUN and JOG (inching) mode. Also use this key to acknowledge/reset error.
2. DRIVE ON : This key is used to enable the servo drive.
3. MARK : Push this key to enable or disable the *MARK* function.
4. TEST : Push this key to enter into the *TEST* function.

PROGRAM MODE SELECTOR

- 5. SET LENGTH : Push this key to enter into SET *LENGTH* menu.
- 6. SET SPEED : Push this key to enter into SET *SPEED* menu.
- 7. SET TIMER : Push this key to enter into SET *TIMER* menu.
- 8. PASSWORD : Push this key to open password entry menu.

NUMERICAL KEYS

- 9. 1 : PRG Mode: Push this key to set digit value 1
RUN Mode: Not in use.
- 10. 2 : PRG Mode: Push this key to set digit value 2
RUN Mode: Push this key to increment the length by one mm.
- 11. 3 : PRG Mode: Push this key to set digit value 3
RUN Mode: Not in use.
- 12. 4 / TOTAL : PRG Mode: Push this key to set digit value 4
RUN Mode: Push this key to display totalizer counter.
Keep this key pressed for 10 seconds to reset the totalizer counter.
- 13. 5 : PRG Mode: Push this key to set digit value 5
RUN Mode: Not in use.
- 14. 6 / BATCH : PRG Mode: Push this key to set digit value 6
RUN Mode: Push this key to display batch counter.
Keep this key pressed for 10 seconds to reset the batch counter.
- 15. 7 : PRG Mode: Push this key to set digit value 7
RUN Mode: Not in use.
- 16. 8 : PRG Mode: Push this key to set digit value 8
RUN Mode: Push this key to decrement the length by one mm.
- 17. 9 : PRG Mode: Push this key to set digit value 9
RUN Mode: Not in use.
- 18. 0 : PRG Mode: Push this key to set digit value 0
RUN Mode: Not in use.
- 19. NEXT/STATUS : PRG Mode: Push this key to Saves current parameter & move to next parameter
RUN Mode: Switches menus (i) Regular menu (ii) Input / Output menu (iii) Speed menu (iv) Online Cycle Status menu
- 20. PREV / VIEW : PRG Mode: Push this key to go back to previous parameter
RUN Mode: Push this key to view all parameter & it's set value
- 21. CLEAR/ERRST : PRG Mode: Push this key for clearing input data zero
RUN Mode: Push this key to reset the errors.

FUNCTIONAL KEYS

22. CNTR PAUSE : Push this key for stop batch counter in run mode. Again push this key to Start the counter.
Keep this key pressed for 10 seconds to reset the batch counter.
23. SINGLE STROKE : Push this key to run motor for set length & set speed for one stroke only
24. F1 : Spare Key

(E) FUNCTIONAL DESCRIPTION

-System operates in two modes

1. MANUAL MODE 2. AUTO MODE

IN JOG MODE:

In this mode servomotor 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).
In this mode output can be checked in TEST mode function.

IN RUN MODE

- In RUN MODE system operates in two functional modes
 1. PLAIN MODE
 2. MARK MODE
- Upper line of display shows 'RUN'
- On applying start signal to proxi-start input, servomotor starts running. Motor moves for set length at set speed.
- If mark sensor input is enabled "MARK" is displayed in upper line of display. (If mark sensor is ENABLED, 'MARK' is displayed and if MARK SENSOR IS DISABLED, 'PLAIN' is displayed.) Servomotor stops as soon as MARK SENSOR input is received. If MARK SENSOR input is not received then motor should stop at set length.
- If mark sensor is disabled then servomotor should stop at set length.
- After stopping of servo motor *CUT*, *D-PUNCH* etc output operates for their corresponding set time in SET DELAY menu.
- After all the output goes off system waits for next start.
- Now if input configuration is set to '5' then motor restarts after cycle delay, set in SET DELAY menu. If input configuration is set to '3' then system waits for start input goes off (proximity switch). For other than '3' & '5' system starts as per explained in programmers guide.

(F) HOW TO PROGRAM

To enter into Program mode, press **SET LENGTH/SET TIMER/SET SPEED**.

The upper line of LCD shows parameter name in the upper line and lower line shows parameter value.

The cursor blinks on last significant digit.

Use **CLEAR** key to clear entered data.

Set required value using 0-9 numerical keys.

Use **NEXT** to save the current parameter & to switch to the next parameter.

Use **PREV** to switch to the previous parameter.

Use **SET LENGTH/SET TIMER/SET SPEED** key again to exit.

To see the list of programmable parameters kindly refer the given sheet as per sequence code.

(G) Description of Input Configuration: Decides different configuration for the start / error conditions as follows.

- 0 :** The system awaits transition of *START* Signal from Off to On to start the motor. Speed Error is disabled.
- 1 :** The system awaits transition of *START* Signal from Off to On to start the motor. If the *START* Signal transition from Off to On takes place during the motor run, *SPEED ERROR* is generated & the system is halted.
- 2 :** The system awaits transition of *START* Signal from Off to On to start the motor. If the *START* Signal turns off during the motor run, *SPEED ERROR* is generated & the system is halted.
- 3 :** The system awaits transition of *START* Signal from On to Off to start the motor. If the *START* Signal turns on during the motor run, *SPEED ERROR* is generated & the system is halted.
- 4 :** The system awaits transition of *START* Signal from Off to On to start the motor. If the *STOP* Signal turns on during the motor run, *SPEED ERROR* is generated & the system is halted.
- 5 :** The system awaits for the *CYCLE DELAY time* to start the motor. Speed Error is not generated.

(H) List of INPUTS and OUTPUTs

H.1) Available on terminal strip :

- 1. PROXI-IN This is the start input. Stepper 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. Stepper 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. Stepper 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 see the list of INPUT1 to INPUT5, kindly refer the given sheet as per sequence code.

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

To see the list of OUTPUT1 to OUTPUT8, kindly refer the given sheet as per sequence code.

H.2) Available in 9 pin d type connector for servo interface.

- 1) Servo ON output : this output is used to enable or disable the servo.
- 2) Servo trip reset output: this output is used to reset the drive if tripped during running (optional).
- 3) Servo trip Input : input from drive trip (optional)(normally close).
- 4) Ch-A and CH-B output: quadrature output to drive servo.

(I) OUTPUT TEST MODE

Press TEST key.

Before outputs are activated



After outputs are activated



1. On pressing 0 key SLOW/OUT1 OUTPUT should be ON and display shows **1**.
2. On pressing 1 key OUT2 OUTPUT should be ON and display shows **2**.
3. On pressing 2 key STOP/OUT3 OUTPUT should be ON and display shows **3**.
4. On pressing 3 key OUT4 OUTPUT should be ON and display shows **4**.
5. On pressing 4 key OUT5 OUTPUT should be ON and display shows **5**.
6. On pressing 5 key OUT6 OUTPUT should be ON and display shows **6**.
7. On pressing 6 key OUT7 OUTPUT should be ON and display shows **7**.
8. On pressing 7 key OUT8 OUTPUT should be ON and display shows **8**.
9. On pressing 8 key OUT9 OUTPUT should be ON and display shows **9**.
10. On pressing 9 key OUT10 OUTPUT should be ON and display shows **A**.
11. On pressing NEXT key OUT11 OUTPUT should be ON and display shows **B**.
12. On pressing PREV key OUT12 OUTPUT should be ON and display shows **C**.
13. On pressing CLEAR key OUT13 OUTPUT should be ON and display shows **D**.

(J) ERROR MESSAGES

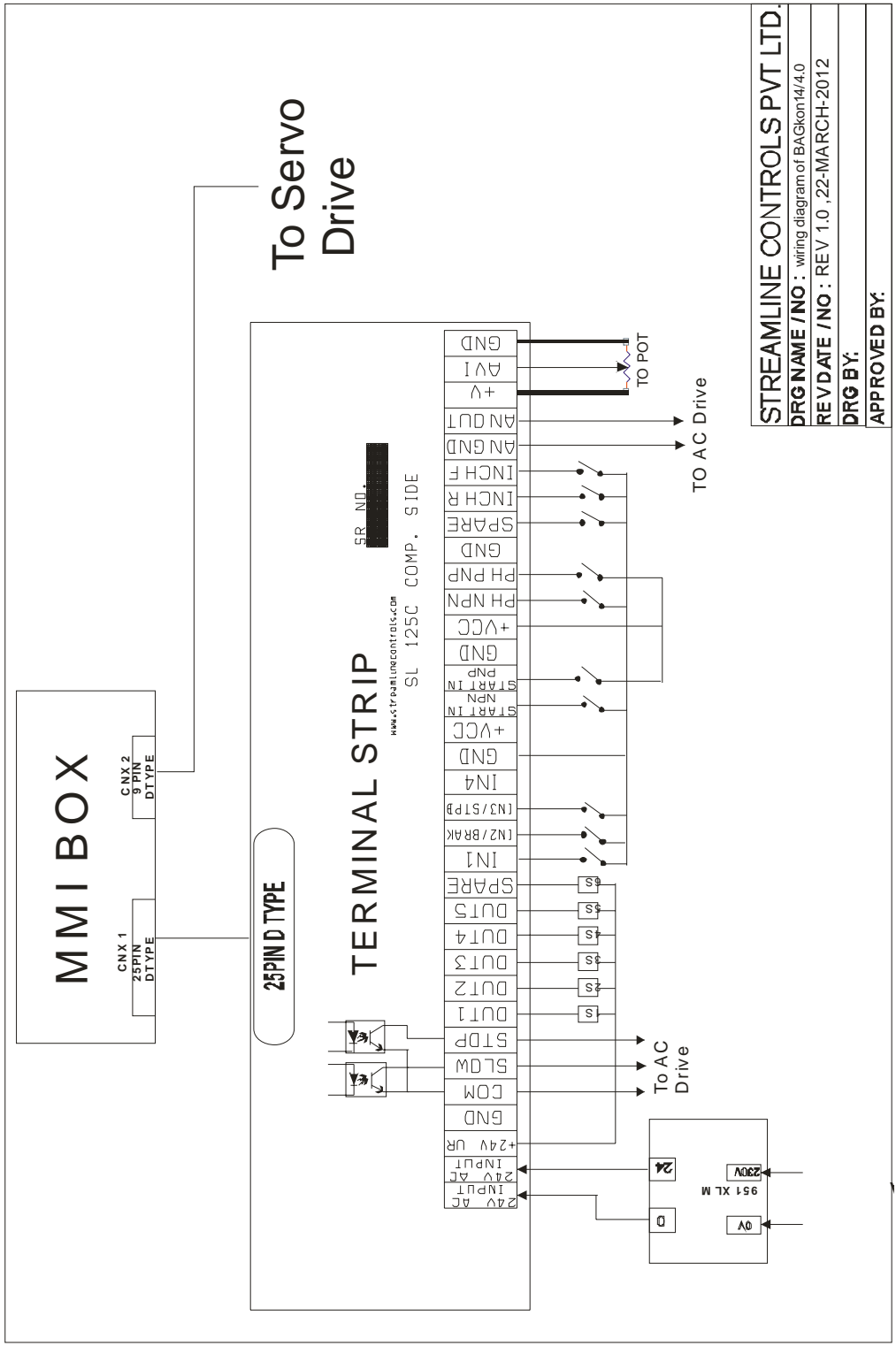
There are two types of error messages

1. **MARK SENSOR ERROR**
When the MARK SENSOR is enabled and MARK SENSOR input is not received for more then set *MISSING MARK* count continuously then MARK SENSOR error occurs.
2. **HIGH SPPED ERROR**
When input configuration is set other then 0 or 5 and start command is received before stepper motor stops for more then high-speed error count continuously then high-speed error occurs.

(K) COMMISSIONING TIPS

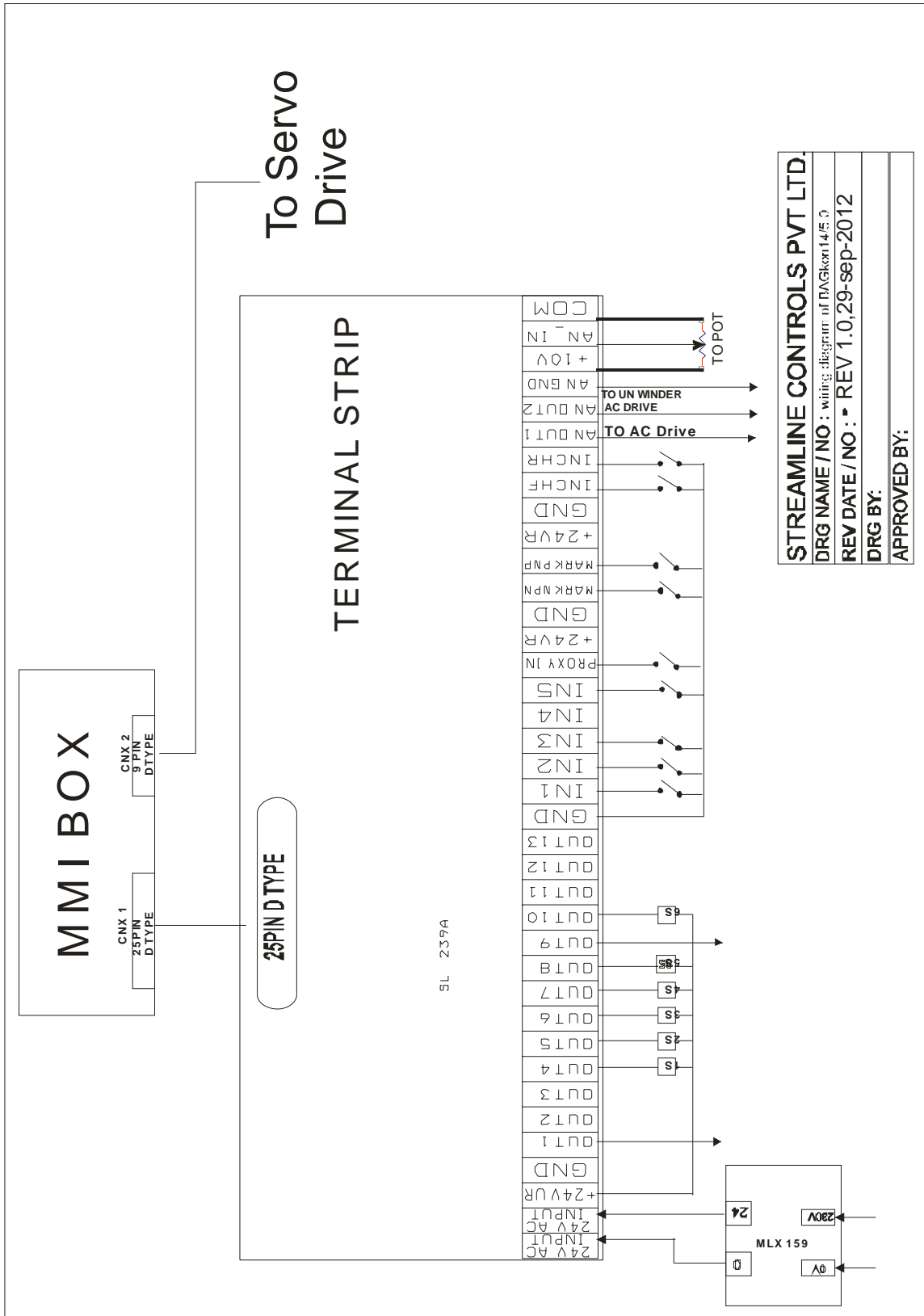
- Tuning of servo drive with machine must be done before commissioning of controller.
- Set servo command pulse input as in **Quadrature Pulse** mode.
- Match set length & actual length by setting **PPR & RATIO MM** parameters in controller and **Gear RATIO** parameter in servo drive. (It is advisable to set **PPR** parameter not more than **800** pulse)
- Understand the following formula clearly
$$\text{No of output pulses} = \frac{\text{Set Length}}{\text{Ratio mm/10}} \times \text{PPR}$$
- At the time of commissioning set acceleration, deceleration, start speed, end speed properly for maximum length & then switch to auto speed function on.
- To enable mark function please check
 - (1) Draw length is equal to set length.
 - (2) Mark sensor is of **NPN-NO** type.
 - (3) Output of mark sensor should go low at the instant of sensing spot.
 - (4) Set length should be 5 to 6 mm higher than the actual job length.
 - (5) Set mark window to 10 to 15 mm. it can be reduced slowly after satisfactory operation of machine.
 - (6) **MARK** sensor must be set such that when **MARK** appears in front of sensor. The 'MARK' led in terminal strip should remain on.
- Value of parameter **R** (In 3rd Status menu) shows the running time of servo motor in milliseconds for set length. Try to reduce this value by speed menu parameters (run speed, acceleration, deceleration, start speed, end speed)
- Start proxy must be set such that when sensed by object on shaft, the '2' in i/o status menu is seen.

(L) Wiring Diagram (In case of SL125A terminal).

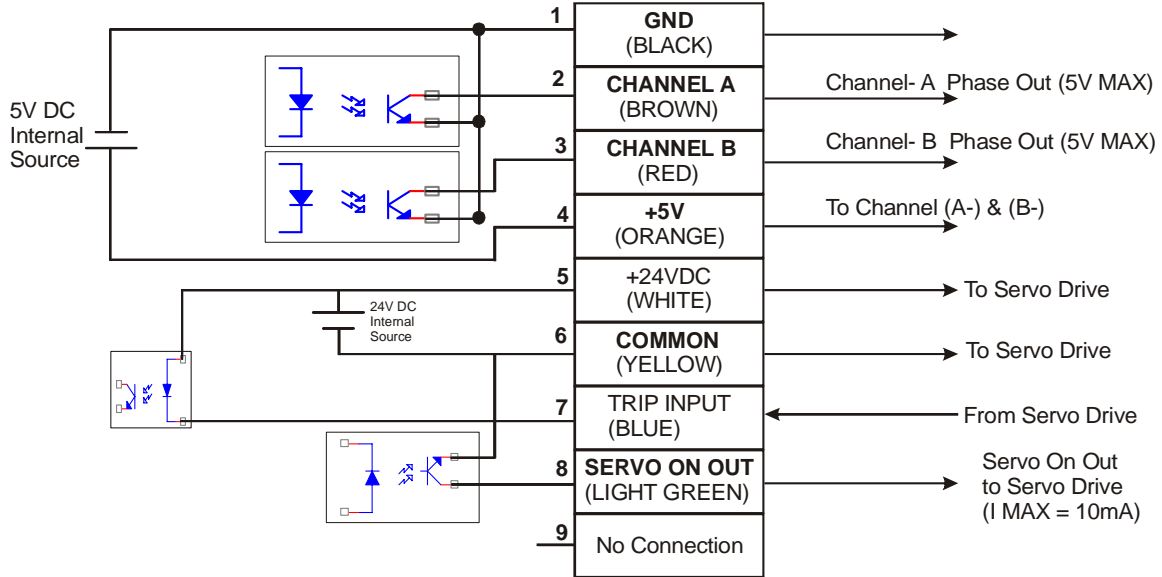


STREAMLINE CONTROLS PVT LTD.
 DRG NAME /NO : wiring diagram of BAGkon14/4.0
 REV/DATE /NO : REV 1.0 , 22-MARCH-2012
 DRG BY:
 APPROVED BY:

(M) Wiring Diagram (In case of SL239A Terminal strip).



CNX 2 Connector Detail



**Color Code For CNX 2 (Servo Connector)
(9 pin connector with loose wires):**

PIN NO	Description	COLOUR CODE
1	GND for Pulse output.	Black
2	CH A	Brown
3	CH B	Red
4	+5V DC	Orange
5	+24VR	Yellow
6	Common	Green (Light)
7	Servo Trip Input	Blue
8	Servo enable out to servo drive.	Violate
9	Servo trip reset output	Grey