

# OPERATING MANUAL FOR OPTIMA

INJkon Optima 1121/NNW/5.3

STREAMLINE CONTROLS

## **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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## PREFACE

INJKon is multi-functional PLC controller incorporating micro controller, making it most versatile and cost effective solution optimally designed to best suit the automation needs of injection molding machines.

For later usage and maintenance of control system, detail study of this operating manual will be recommended.

Features & Specifications are subject to change without prior notice.

### Safety Guidelines

Although utmost care is taken while designing the hardware and the software to ensure the safety during interlock conditions in various operations of the machine, SCPL does not undertake any responsibilities for any damage to the human and or the machine. It is therefore strongly recommended to ensure adherence to all the safety standards while designing and operating the machine.

SCPL strongly recommends following safety measures to ensure the safety of the human & or machine.

- Whenever the human or human body part is expected to interrupt the moving machine part, cut off all the energy electrical, hydraulic and mechanical.
- The moving parts must be covered with guards.  
SCPL provides continuous monitoring of two guards during the mould close operation – front & back.  
The open guard condition, in addition to the PLC monitoring, must also be linked to disconnection of hydraulic and electrical connection to the mould close operation.
- For the machines designed deliberately with minimum or no safety, are made to operate without safety guards. Although SCPL strongly denies such operation, following recommendations are made to ensure best possible safety from the logic of PLC.
  - ❖ SCPL strongly denies use of N/C contact in cycle start input.
  - ❖ In Semi mode, N/C contact mal function can initiate a fresh cycle, i.e. mould closing, which in the machines without guards can be prone to fatal accidents.
  - ❖ SCPL recommends use of two cycle start push buttons with N/O contact, wired in series in the front guard input of the PLC. This will ensure that the operator presses both the push buttons continuously till full mold close, keeping his both hands busy and thereby avoiding his hands in mold close path, and probable fatal accident.
- Light curtain sensors are advised to use, which can be connected to PLC emergency or auto break input. This prevents mold close operation, as long as operator body part is within the light curtain range, logically.
- Hydraulic dump valve is also recommended in the series of mold close operation. Either open guard or separately provided foot switch in conjunction with dump valve, can prevent mold close operation, ensuring safety.
- Emergency push button must be located at one or multiple locations on & around the machine, in such a way that the operator can immediately reach it to stop machine operation, whenever the need arises. Again SCPL recommends electrical disconnection in addition to logical safety provided by the PLC.
- Only skilled and well trained person must be allowed to operate the machine & PLC, who is well aware of safety requirements and associated risk with the operation of the machine & PLC. For semi auto operation, It is never advisable to allow operator to operate the machine & PLC, continuously beyond average working hours, in odd hours like night shifts, adverse ambient light etc.

## સુરક્ષા માર્ગદર્શિકા

ઇન્જેક્શન મોલ્ડિંગ મશીન ના ઘણા ઓપરેશન માં ઇન્ટરલોક પરિસ્થિતિવખતે સુરક્ષા માટે પી.એલ.સી ના હાર્ડવેર તથા સોફ્ટવેર બનાવવામાં ઘણી કાળજી રાખવા છતાં કોઈપણ મશીન પાર્ટ્સ અથવા / અને માણસ ને લગતા નુકશાન ના અમો સ્ટ્રીમ લાઈન કંટ્રોલ્સ પ્રાઇવેટ લિમિટેડ જવાબદાર નથી. તેના માટે અમોમશીનબનાવવા તથા ચલાવવા માટે ના સુરક્ષા નિયમો નો અમલ થાય તેની સખત ભલામણ કરીએ છીએ.

SCPL નીચેના સુરક્ષા નિયમો નો કડક અમલ થાય તેની સખત ભલામણ કરેએ.

૧. જ્યારે માણસ અથવા તો તેના શરીર નો કોઈ પણ ભાગ ચાલુ ઇન્જેક્શન મશીન માં વચ્ચે આવવા જતો હોય ત્યારે બધા જ ઇલેક્ટ્રીકલ , મીકેનિકલ તથા હાઇડ્રોલીક ઉર્જા સ્ત્રોત બંધ થઇ જવા જોઈએ.

૨. મશીનનાહલન ચલન થતાં પુર્જાજેમ કે મોલ્ડ ક્લોઝ દરવાજા થી ઢાંકેલા હોવા જ જોઈએ.

SCPLની કોઈ પણ પી એલ સી આગળતથા પાછળ ના દરવાજાની સ્થિતિ ને મોલ્ડ ક્લોઝ ઓપરેશન દરમિયાન સતત ચકાસણી કરેએ. દરવાજા ખુલ્લા હોવા ની સ્થિતિ માં મોલ્ડક્લોઝ દરમિયાન પી.એલ.સી ની ચકાસણી ઉપરાંત ઇલેક્ટ્રીકલ તથા હાઇડ્રોલીક ઉર્જા સ્ત્રોત બંધ થાય તે મુજબ ની વ્યવસ્થા અચૂક કરવી જોઈએ.

૩. જે મશીન (વર્ટીકલ ઇન્જેક્શન મોલ્ડિંગ મશીન) જાણી જોઈ ને જરાપણઅથવા નહીવત સુરક્ષા પ્રમાણે, એટલે કે આગળ/ પાછળ દરવાજા વગર બનાવેલ હોય તેની અમો SCPL હિમાયત કરતા નથી, તેમ છતાં તેવામશીન માટે અમોનીચે દર્શાવેલ સુરક્ષા વિષયક કડક સૂચનો નો અમલ કરવા ની ભલામણ કરીએ છીએ.

- SCPLસાઇકલ સ્ટાર્ટ ઇનપુટ તરીકે ઇલેક્ટ્રિકલ N/C કોન્ટેક્ટકદીનહિ વાપરવા ની સલાહ આપે છે.
- સેમી ઓટો મોડ માં, N/C કોન્ટેક્ટ ના ખામીયુક્ત કાર્ય થી ફરીથી નવી સાઇકલ શરુ થઇ જવાની સંભાવના રહેલી છે. જેમકે મોલ્ડ ક્લોઝ થવો , કે જે દરવાજા વગર ના મશીન માં મોટો જીવલેણ અકસ્માત કરાવી શકે છે.
- SCPL બે સાઇકલ સ્ટાર્ટ પુશ બટન કે જેમાં N/O કોન્ટેક્ટ વાપરેલ હોય તથા તે બંનેસીરીઝમાં આગળ ના દરવાજા ના પી.એલ.સી ઇનપુટ માં લગાવેલ હોવા જોઈએ તેવું સુચન કરે છે , જેથી મશીન ઓપરેટર ને બંને સાઇકલ સ્ટાર્ટ પુશ બટન મોલ્ડ ક્લોઝ થાય નહિ ત્યાં સુધી દબાવી રાખવા પડશે જેથી જીવલેણ અકસ્માત થવા ની સંભાવના નિવારી શકાય છે.

૪. SCPLપ્રકાશ ના પડદા વાળા સેન્સર (Light Curtain) વાપરવા ની સલાહ આપે છે, જે પી.એલ.સી ના ઈમરજન્સી કોન્ટેક્ટ અથવા તો ઓટો સાઇકલ બ્રેક ઇનપુટ સાથે કનેક્ટ કરી શકાય છે. જે મશીન ઓપરેટર ના શરીર ના કોઈપણ અંગપ્રકાશ ના પડદા વાળા સેન્સર (Light Curtain) ના વિસ્તાર માં અવતાજ મોલ્ડ ક્લોઝ ઓપરેશન ને બંધ કરી દે છે.

૫. અમે હાઇડ્રોલિકડમ્પ વાલ્વ કે જે મોલ્ડ ક્લોઝ ના વાલ્વ ની સીરીઝ માં લગાવવા થી મળતી સુરક્ષા ની પણ ભલામણ કરીએ છીએ. ઓપન ગાર્ડ અથવા અલગ થી મુકેલ Foot સ્વીચ(પગ વડે દબાવવા ની સ્વીચ ) ને ડમ્પ વાલ્વ સાથે લગાવવા થી સુરક્ષા ની જરૂરીયાત વખતે મોલ્ડ ક્લોઝ રોકી શકાય છે.

૬. ઈમરજન્સી પુશ બટન ને મશીન માં એક અથવા એક કરતા વધારે જગ્યા એ લગાવવા થી ઓપરેટર તેની અકસ્માત સમય ની સ્થિતિ માં જલ્દી થી તેને દબાવી ને મશીન રોકી શકે છે.ફરી વખત SCPL પી.એલ.સી દ્વારા મળતી સુરક્ષા ઉપરાંત ઇલેક્ટ્રીકલ જોડાણ કાપવા ની ભલામણ કરે છે.

૭. ફક્ત કુશળ તથા તાલીમબદ્ધ માણસો ને જ મશીન તથા પી.એલ.સી ને ઓપરેટ કરવા દેવા કે જેઓ મશીન તથા પી.એલ.સી ના સંચાલન ને લગતા જોખમ તથા તેને લગતી સુરક્ષા જરૂરીયાત થી વાકેફ હોય.

સેમી ઓટો મોડની કામગીરી વખતે ઓપરેટરે ક્યારેપણ સરેરાશ કામ ના કલાકો ઉપરાંત રાતપાળી તથા ખરાબ પ્રકાશ ની સ્થિતિ માં સતત કામ કરવા નું સલાહ ભર્યું નથી.

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## **(A) SPECIFICATIONS**

### **INPUT**

#### **Power :**

Voltage -- 230vac + 10%vac  
Frequency -- 49-50 Hz Consumption -- 30VA Max.

#### **Control :**

Thermocouple -- J / K type Isolated Ungrounded  
Proximity/ -- NPN (NO type)  
Limit switches 10-30 Vdc 50 mA Max.

### **OUTPUT**

For Solenoids -- For 230VAC 2 Amp. Max. - SSR Output  
-- For 24VDC - 2 Amp. Max. - MOSFET Driver Output  
For Heater Contactors -- SSR Output 2 Amp max 230Vac

### **ENVIRONMENT**

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

## (B) INTRODUCTION

INJKON is a complete proven & reliable control system for Injection Molding Machine. System consists of two units.

1. MMI unit (Operating panel)
2. SMPS (POWER SUPPLY)

### **(1) Operating Panel :**

This is small lightweight Display unit with soft touch keypad & LCD display, digital input, digital output and temperature section.

This package has some obvious advantages over existing conventional Electrical Systems. This occupies lesser space than conventional system. The simplicity of wiring from solenoids to systems or limit switches to system and from Thermocouples to system makes it easier and less time consuming for commissioning. This system has no moving parts, so periodical maintenance is drastically reduced and there for reliability is definitely improved. Function like suck back ON-OFF, Heating ON-OFF and Cycle Time Interlock makes this system much more superior than the conventional system.

## (C) FEATURES

- ❖ Inherently reliable high speed Micro controller based technology C8051F120 CPU.
- ❖ Offers up to 12 digital inputs, Up to 20 digital outputs, 8-zone time Proportional controlled Temperature Controllers, timers, Extensive feather touch membrane keypad for user interface for manual/Semi auto/fully auto functions of the machine.
- ❖ Latest E2PROM Technology ensures security of programmed parameters.
- ❖ User friendly programming through an extensive membrane keypad for easy operator interface (Details of manual mode operations available is appended on separate sheet)
- ❖ Six digit shot counter to count Number of Pieces.
- ❖ Facility for counting cycle time helpful in production analysis.
- ❖ Three different programs for Ejector operations provide to suit the operational needs with various molds.
- ❖ Thermocouple "Open" & "Reverse" conditions are self detected and are displayed as "OPN" and "REV" respectively.
- ❖ Programmable High & Low limits for all temperature zones.
- ❖ Automatic cold junction compensation for Thermocouple inputs.
- ❖ Mold Safety interlock provided in case of abnormal pressure rise while the mold is getting closed (For that pressure switch input has to be provided.)
- ❖ Inbuilt interlocks for Low & High temperature, Front and/or Back guards, Maximum Cycle Time, Emergency stop etc.
- ❖ Operating Input/output diagnosis.



## **(D) SCOPE OF SUPPLY**

Streamline Controls to provide:

1. Hand Panel.
2. Operating Manual.

## **(E) PROGRAMMING OF THE SYSTEM**

The system will be programmed to suit your application by us.

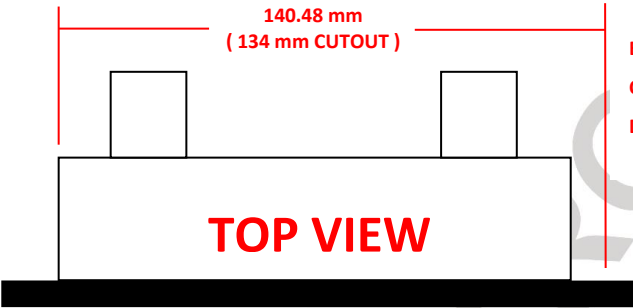
STREAMLINE CONTROLS



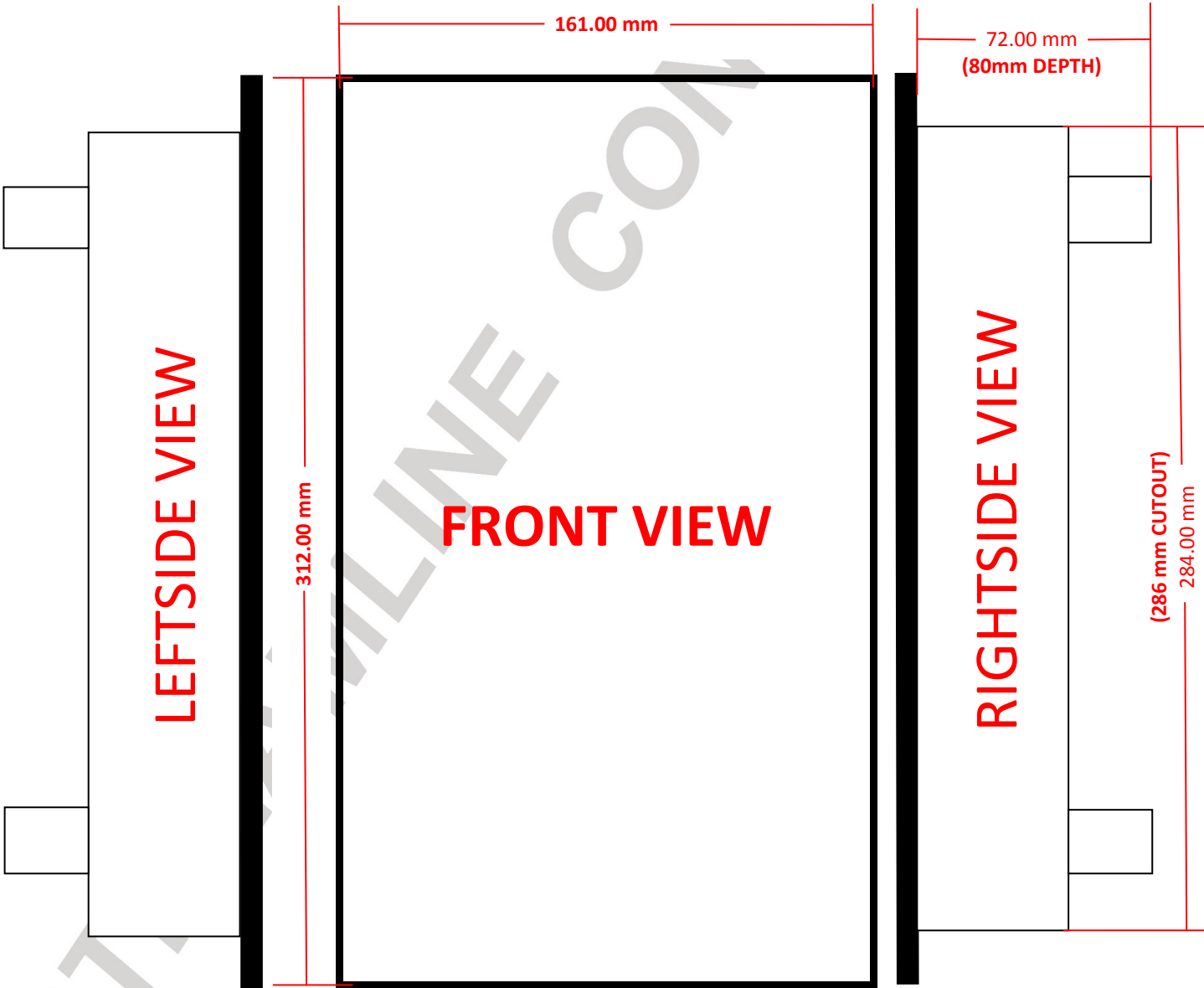


**(F) MECHANICAL DIMENSIONS**

Operating Box -- Depth X Width X Height  
80 mm X 134 mm X 284 mm



BAZEL DIMENSIONS : 312 mm X 161 mm  
CUTOUT DIMENSIONS : 284 mm (H) X 134 mm (W)  
DEPTH : 80 mm (D)

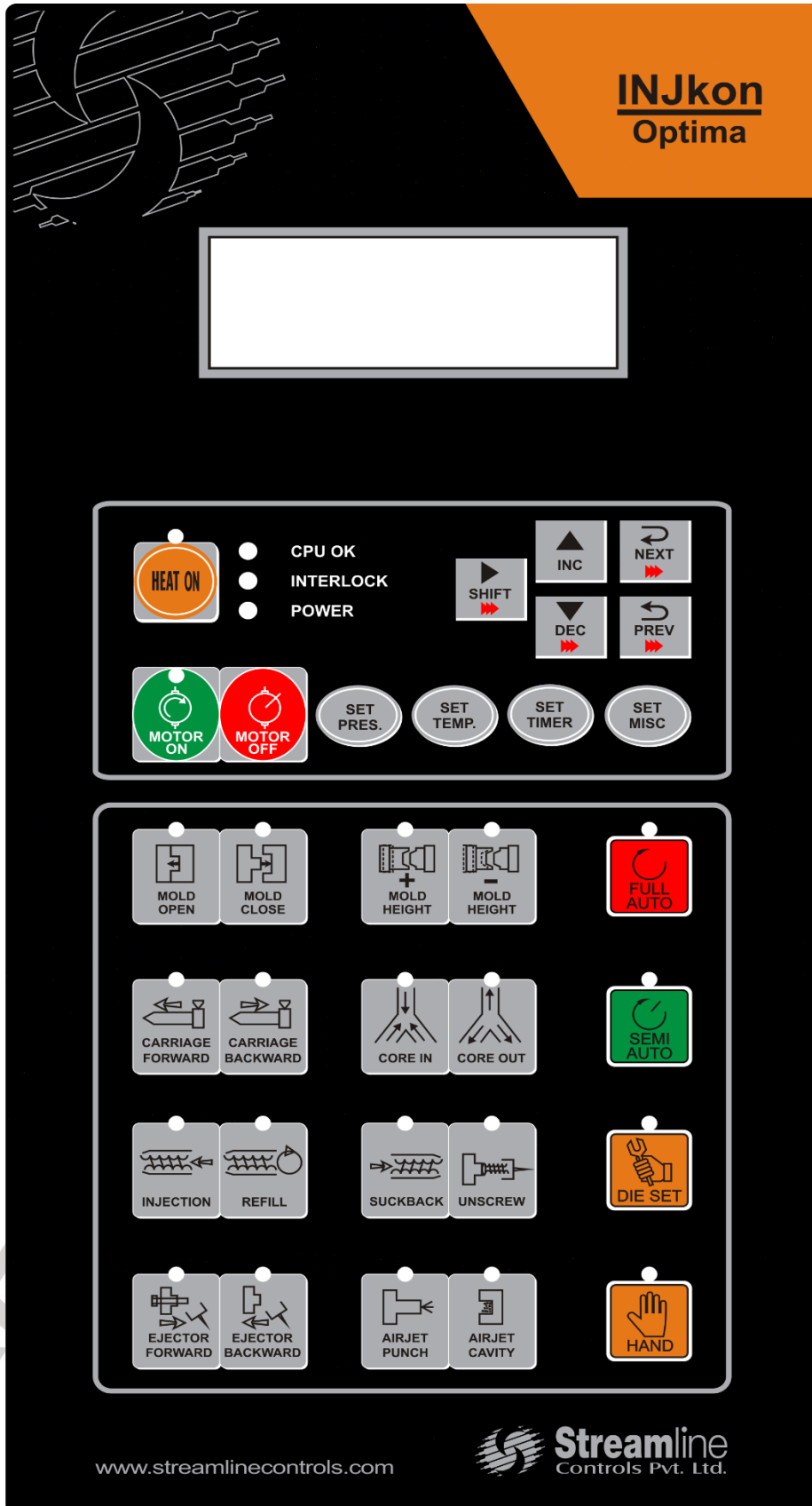


**LEFTSIDE VIEW**

**RIGHTSIDE VIEW**

**(G) OPERATING PANEL DISCRPTION**

**Front Key Board Sticker**

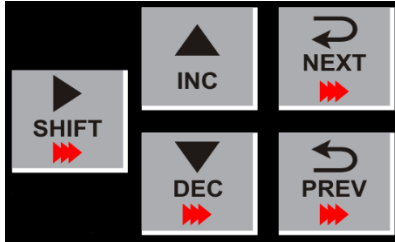


STREAMLINE



**Key's Description**

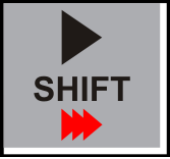
**1. Cursor Key**





**2. Manu Selector**





**1. Cursor Key**

- 

Press this key to move cursor from left to right direction for parameter setting in any menu. With help of this key you should toggle your screen from shot counter to proportional to RPM counter to shot counter
- 


To increase parameter value in any menu  
Also use for function on/Off  
Rolls up temperature channel display in temperature channel freez status.
- 


To decrease parameter value in any menu.  
Also use for function on/Off.  
Press this key to show percentage output in normal temperature display.
- 

For Data input confirmation ,Save parameter & shift to next parameter.  
Toggle the screen from normal display to Digital input or Digital output display.
- 

For shift to previous parameter.  
Alarm reset for all mode.  
Freezes to scroll temperature channel display at current channel.

**2. Manu Selector**

- 

**SET PRES.** key to do set all Function's Pressure.
- 



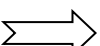
**SET TEMPERATURE** key for set all zones set point.



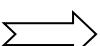
   **SET TIMER** key for set all function's timer.



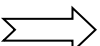
   **SET MISC** key to do set on / off for selectable function



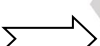
**NOTE:IF PROGRAMME LOCK KEY INPUT IS DEFINED IN APPLICATION AND “ON” THEN ABOVE KEY ARE DISABLED**

### 3. Operating Mode Selector

   Machine operating at fully automatic production mode.  
Re-started by cycle delay timer.

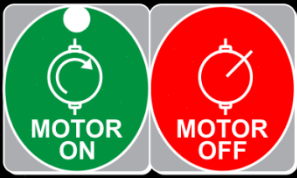
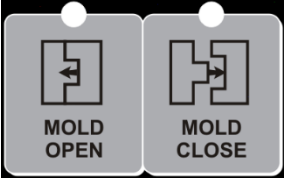
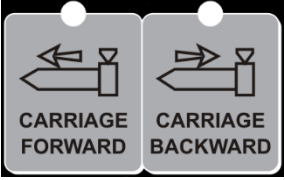
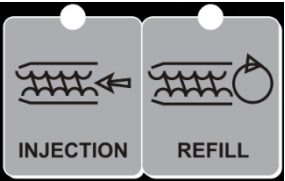
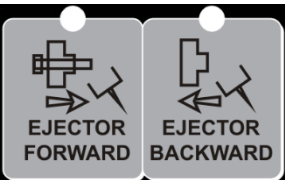
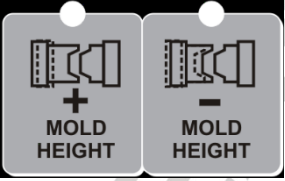
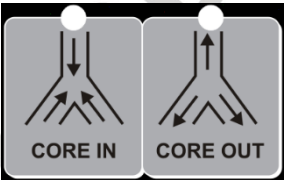
   Operate machine in semi-auto recycling and  
Re-started by front safety door open and close again.

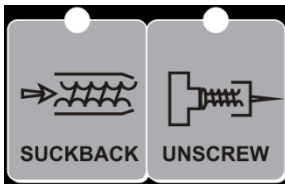
   For select mold adjustment function.  
In this mode fast approach function is not activate for mold open & close.

   Operating machine by manual key.

   Press this key to start or stop the heating.

#### 4. Manual Operation Key

➔		➔	<p><b><u>MOTOR ON Key</u></b> Press for activate of motor on action manually.</p> <p><b><u>MOTOR OFF Key</u></b> Press for activate Motor off action manually.</p>
➔		➔	<p><b><u>MOLD OPEN Key</u></b> Press for activate of mold opening action manually.</p> <p><b><u>MOLD CLOSE Key</u></b> Press for activate of mold clamping action manually.</p>
➔		➔	<p><b><u>CARRIAGE FORWARD Key</u></b> Press for activate of Carriage Forward action manually.</p> <p><b><u>CARRIAGE BACKWARD Key</u></b> Press for activate of Carriage Backward action manually.</p>
➔		➔	<p><b><u>INJECTION Key</u></b> Press for activate of Injection action manually. (Disable by any zone of barrel temperature is lower than alarm low setting).</p> <p><b><u>REFILL Key</u></b> Press for activate of Refill action manually. (Disable by any zone of barrel temperature is lower than alarm low setting).</p>
➔		➔	<p><b><u>EJECTOR FORWARD Key</u></b> Press for activate of Ejector Forward action manually.</p> <p><b><u>EJECTOR BACKWARD Key</u></b> Press for activate of Ejector Backward action manually.</p>
➔		➔	<p><b><u>MOLD HEIGHT + Key</u></b> Press for activate of Mold Height + action manually. (Work only in Die set mode)</p> <p><b><u>MOLD HEIGHT - Key</u></b> press for activate of Mold Height - action manually. (Work only in Die set mode)</p>
➔		➔	<p><b><u>CORE IN Key</u></b> Press for activate of Core In action manually.</p> <p><b><u>Core Out Key</u></b> Press for activate of Core Out action manually.</p>

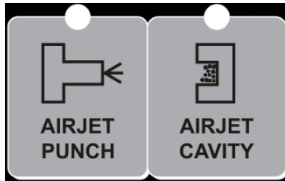


**SUCK BACK Key**

Press for activate of Suck Back action manually.  
(Disable by any zone of barrel temperature is lower than alarm low setting)

**UNSCREW Key**

Press for activate of unscrew action manually.



**AIR JET PUNCH Key**

Press for activate of Air Jet Punch action manually.  
(For moveable platen).

**AIR JET CAVITY Key**

Press for activate of Air Jet Cavity action manually.  
(For fix platen).

**NOTE:- (Slide Key is made programmable through Keypcode set in Application)**

## **(H) MANUAL MODE OF OPERATIONS**

- |                     |                       |
|---------------------|-----------------------|
| 1. MOLD OPEN        | 12. MOLD CLOSE        |
| 2. CARRIAGE FORWARD | 13. CARRIAGE BACKWARD |
| 3. EJECTOR FORWARD  | 14. EJECTOR BACKWARD  |
| 4. INJECTION        | 15. REFILL            |
| 5. CORE IN (I)      | 16. CORE OUT (I)      |
| 6. SUCK BACK        | 17. UNSCREW           |
| 7. CORE IN (II)     | 18. CORE OUT (II)     |
| 8. AIRJET PUNCH     | 19. AIRJET CAVITY     |
| 9. MOLD HEIGHT (+)  | 20. MOLD HEIGHT (-)   |
| 10. MOTOR ON        | 21. MOTOR OFF         |
| 11. SLIDE IN        | 22. SLIDE OUT         |

## **(I) PRECAUTIONS**

**To prevent damage from human and machine, please obey the following safety caution.**

- Equipment must be operating under correct power. (Install a voltage stabilizer while need)
- Earth terminal must be connected to qualified terminal.
- All electrical elements with EARTH terminal, it is necessary for users to connect with the EARTH terminal.
- The high power cables should be separated from the low power cables to avoid interferes.
- TO prevent fire or hazard shock, do not expose the unit to rain or moistly place.
- Please understand the operating process before use.
- When system shut down, wait 10 seconds for re-start.
- Thermocouples used for this system must be isolated (ungrounded) Fe/ k ,J type.
- The wiring of each zone starting from thermocouple of heater must be verified.  
For ex: first zone thermocouple must be connected to first channel of the system and heater of first zone  
Must be connected to heater 1 of the system.
- The limit switch and solenoids wiring must be done as per given wiring diagram.
- If the proximity switches are used then use only NPN-NO type proximity switches.

## (I) SETTING PROCEDURES

### (1) SET PRESSURE :

SET PRESSURE					
Press <b>SET PRESSURE</b> key					
Third line of LCD show function's name and it's set value.					
Select require zone using <b>NEXT/ PREV</b> key					
Set require time using <b>INC, DEC</b> and <b>SHIFT</b> key.					
On pressing <b>NEXT</b> key the set value will be saved and display will show the next function.					
List of timer parameters are given below.					
No	Message	Description	Range	Default Value	Level
1	Mold Close	Set Mold Close function operating pressure proportional output	0-100 bar	030	User
2	Mold Safty	Set Mold Safety function operating pressure proportional output	0-100 bar	030	User
3	Locking Tonnage	Set Locking Tonnage function operating pressure proportional output	0-100 bar	030	User
4	Dieset m.Close	Set Dieset M.Close function operating pressure proportional output	0-100 bar	030	User
5	Carr.Forwd	Set Carr.Forward function operating pressure proportional output	0-100 bar	030	User
6	Carr.Bakwd	Set Carr.Backward function operating pressure proportional output	0-100 bar	030	User
7	Pre-Inject	Set Pre-Injection function operating pressure proportional output	0-100 bar	030	User
8	Intrusion	Set Intrusion function operating pressure proportional output	0-100 bar	030	User
9	Inject 1	Set Injection 1 function operating pressure proportional output	0-100 bar	030	User
10	Inject 2	Set Injection 2 function operating pressure proportional output	0-100 bar	030	User
11	Inject 3	Set Injection 3 function operating pressure proportional output	0-100 bar	030	User
12	Inject 4	Set Injection 4 function operating pressure proportional output	0-100 bar	030	User
13	Inject Hld	Set Injection Hold function operating pressure proportional output	0-100 bar	030	User
14	Suckback1	Set Suckback 1 function operating pressure proportional output	0-100 bar	030	User
15	Suckback 2	Set Suckback 2 function operating pressure proportional output	0-100 bar	030	User
16	Refill 1	Set Refill 1 function operating pressure proportional output	0-100 bar	030	User



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17	Refill 2	Set Refill 2 function operating pressure proportional output	0-100 bar	030	User
18	Refil Dely	Set Refill Delay function operating pressure proportional output	0-100 bar	030	User
19	Intensifier	Set Intensifier function operating pressure proportional output	0-100 bar	030	User
20	cooling	Set Cooling function operating pressure proportional output	0-100 bar	030	User
21	Decompression	Set Decompression function operating pressure proportional output	0-100 bar	030	User
22	Mold Open	Set Mold Open function operating pressure proportional output	0-100 bar	030	User
23	Dieset m.Open	Set Dieset M.Open function operating pressure proportional output	0-100 bar	030	User
24	Mold Height +	Set Mold Height + function operating pressure proportional output	0-100 bar	030	User
25	Mold Height -	Set Mold Height - function operating pressure proportional output	0-100 bar	030	User
26	Ejct Forward1	Set Ejct..Forward 1 function operating pressure proportional output	0-100 bar	030	User
27	Ejct Forward2	Set Ejct..Forward 2 function operating pressure proportional output	0-100 bar	030	User
28	Ejct Backward	Set Ejct.Backward function operating pressure proportional output	0-100 bar	030	User
29	Unscrew	Set Unscrew function operating pressure proportional output	0-100 bar	030	User
30	Core 1 In	Set Core1 In function operating pressure proportional output	0-100 bar	030	User
31	Core 1 Out	Set Core1 Out function operating pressure proportional output	0-100 bar	030	User
32	Lubrication	Set Lubrication function operating pressure proportional output	0-100 bar	030	User
33	Slide In	Set Slide In function operating pressure proportional output	0-100 bar	030	User
34	Slide Out	Set Slide Out function operating pressure proportional output	0-100 bar	030	User



**(2) TEMPERATURE CONTROLLERS :**

Here two different levels of programming is provided.

- 1. Operator Level.
- 2. Engineers Level.

In case of operator level only set value of temperature can be changed where as in case of other level all Other parameters can be changed.

**1. Operator Level**

SET TEMPERATURE						
<b>In case of operator level</b>						
Press <b>SET TEMP.</b> key						
First line of LCD shows TEMPERATURE C.						
Second line of LCD shows zone number & set temperature.						
Select require zone using <b>NEXT/ PREV</b> key..						
Set require temperature using <b>INC, DEC</b> and <b>SHIFT</b> key.						
On pressing <b>NEXT</b> key the set value will be saved and display will show the next function.						
List of temperature parameters are given below.						
Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
1	Temperature C	Zone 1	Zone 1 set temperature	0-500 C	200 C	User
2	Temperature C	Zone 2	Zone 2 set temperature	0-500 C	200 C	User
3	Temperature C	Zone 3	Zone 3 set temperature	0-500 C	200 C	User
4	Temperature C	Zone 4	Zone 4 set temperature	0-500 C	200 C	User
5	Temperature C	Zone 5	Zone 5 set temperature	0-500 C	200 C	User
6	Temperature C	Zone 6	Zone 6 set temperature	0-500 C	200 C	User
7	Temperature C	Zone 7	Zone 7 set temperature	0-500 C	200 C	User
8	Temperature C	Zone 8	Zone 8 set temperature	0-500 C	200 C	User

**2. Engineers Level**

SET TEMPERATURE						
<b>In case of Engineer level</b>						
Press <b>SET TEMP</b> key and keep it pressed for at least ten seconds.						
First line of LCD shows parameter name.						
Second line of LCD shows zone number & parameter value.						
Select require zone using <b>NEXT/ PREV</b> key..						
Set require temperature using <b>INC, DEC</b> and <b>SHIFT</b> key.						
On pressing <b>NEXT</b> key the set value will be saved and display will show the next function.						
On pressing set temp key the zone number can be changed. Again pressing the <b>NEXT</b> key the different parameter of the same zone can be checked.						
List of temperature parameters are given below.						

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
1	Temperature C	Zone 1	Zone 1 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 1	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 1	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 1	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 1	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 1	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 1	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 1	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
2	Temperature C	Zone 2	Zone 2 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 2	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 2	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 2	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 2	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 2	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 2	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 2	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
3	Temperature C	Zone 3	Zone 3 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 3	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 3	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 3	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 3	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 3	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 3	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 3	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
4	Temperature C	Zone 4	Zone 4 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 4	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 4	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 4	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 4	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 4	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 4	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 4	Blower Operating Point	0-999 C	005 C	Engineer

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Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
5	Temperature C	Zone 5	Zone 5 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 5	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 5	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 5	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 5	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 5	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 5	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 5	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
6	Temperature C	Zone 6	Zone 6 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 6	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 6	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 6	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 6	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 6	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 6	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 6	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
7	Temperature C	Zone 7	Zone 7 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 7	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 7	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 7	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 7	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 7	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 7	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 7	Blower Operating Point	0-999 C	005 C	Engineer

Zone No.	Message In First Line	Message In Second Line	Description	Range	Default Value	Level
8	Temperature C	Zone 8	Zone 8 set temperature	0-500 C	200 C	Engineer
	Prop. Band C	Zone 8	Proportional band	0-100 C	030 C	Engineer
	Integr. Time Sec	Zone 8	Integral time	0-999 Sec	900 Sec	Engineer
	Derivt. Time Sec	Zone 8	Derivative time	0-999 Sec	000 Sec	Engineer
	Cycle Time Sec	Zone 8	Cycle time	0-200 Sec	15 Sec	Engineer
	Alarm Low C	Zone 8	Alarm low	0-200 C	025 C	Engineer
	Alarm High C	Zone 8	Alarm High	0-999 C	025 C	Engineer
	Blower Point C	Zone 8	Blower Operating Point	0-999 C	005 C	Engineer

**(3) SET TIMER :**

SET TIMER					
Press <b>SET TIMER</b> key					
Third line of LCD show function's name and it's set value.					
Select require zone using <b>NEXT/ PREV</b> key					
Set require time using <b>INC, DEC</b> and <b>SHIFT</b> key.					
On pressing <b>NEXT</b> key the set value will be saved and display will show the next function.					
List of timer parameters are given below.					
No	Message	Description	Range	Default Value	Level
1	Mold Close	Mold close slow time	0-999.9 Sec	001.0 Sec	User
2	Mold Safty	Mold safety time	0-999.9 Sec	002.0 Sec	User
3	Ton1 Tim	Locking Tonnage1 time	0-999.9 Sec	003.0 Sec	User
4	Ton2 Tim	Locking Tonnage2 time	0-999.9 Sec	003.0 Sec	User
5	Carr.Forwd	Carriage Forward time	0-999.9 Sec	001.0 Sec	User
6	Pre-Inject	Pre Injection time	0-999.9 Sec	001.0 Sec	User
7	Flow Inj	Flow Injection time	0-999.9 Sec	001.0 Sec	User
8	Intrusion	Intrusion time	0-999.9 Sec	001.0 Sec	User
9	Inject Dely	Injection delay	0-999.9 Sec	001.0 Sec	User
10	Inject 1	Injection 1 time	0-999.9 Sec	001.0 Sec	User
11	Inject 2	Injection 2 time	0-999.9 Sec	001.0 Sec	User
12	Inject 3	Injection 3 time	0-999.9 Sec	001.0 Sec	User
13	Inject 4	Injection 4 time	0-999.9 Sec	001.0 Sec	User
14	Inject Hld	Injection Hold time	0-999.9 Sec	001.0 Sec	User
15	Sukbk1 Dely	Suck back 1 Delay	0-999.9 Sec	001.0 Sec	User
16	Sukbk1 Tim	Suck back 1 Time	0-999.9 Sec	001.0 Sec	User
17	CarrBk Dely	Carriage backward delay	0-999.9 Sec	003.0	User
18	Intens Dely	Intensifier delay	0-999.9 Sec	001.0	User
19	Intens Tim	Intensifier time	0-999.9 Sec	001.0	User
20	Air Cavity	Air Cavity time	0-999.9 Sec	001.0	User
21	Refil Dely	Refill delay	0-999.9 Sec	001.0	User
22	Refil Time	Refill time	0-999.9 Sec	001.0	User
23	Sukbk2 Dely	Suck back 2 Delay	0-999.9 Sec	001.0	User
24	Sukbk2 Time	Suck back 2 time	0-999.9 Sec	001.0	User
25	Cool Time	Cool time	0-999.9 Sec	005.0	User
26	Carr.Bakwd	Carriage backward time	0-999.9 Sec	001.0	User
27	Mold Open	Mold open slow time	0-999.9 Sec	001.0	User
28	Ejct Dely	Ejector delay	0-999.9 Sec	000.5	User

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29	Ejct Forwd	Ejector Forward time	0-999.9 Sec	002.0	User
30	Ejct Hold	Ejector Hold time	0-999.9 Sec	000.5	user
31	Ejct Bakwd	Ejector Backward time	0-999.9 Sec	002.0	User
32	Air Punch	Air Punch time	0-999.9 Sec	001.0	User
33	Cycle Dely	Cycle delay	0-999.9 Sec	005.0	User
34	Cycle Time	Cycle time	0-999.9 Sec	999.9	Supervisor
35	Core 1 In	Core 1 In time	0-999.9 Sec	001.0	User
36	Core 1 Out	Core 1 Out time	0-999.9 Sec	001.0	User
37	Core 2 In	Core 2 In time	0-999.9 Sec	001.0	User
38	Core 2 Out	Core 2 Out time	0-999.9 Sec	001.0	User
39	Lub. On	Lubrication On time	0-999.9 Sec	001.0	User
40	Lub. Delay	Lubrication delay	0-999.9 Min	001.0	User
41	To Heat On	To Heat On delay	0-999.9 Sec	010.0	Supervisor
42	Prop On Dly	Delay between direction valve & prop.On time	0-999.9 Sec	000.1	Supervisor
43	Unscr Dely	Unscrew Delay Time	0-999.9 Sec	001.0	User
44	Unscr Time	Unscrew Time	0-999.9 Sec	001.0	User
45	Mast On Dly	Master ON Delay	0-999.9 Sec	001.0	User
46	Tot Inj Tim	Total Injection time	0-999.9 Sec	001.0	User
47	Ejkb@MClS	Ejector Backward before mold close Time	0-999.9 Sec	001.0	User
48	Mast Off Dly	Master Off Delay	0-999.9 Sec	001.0	User
49	Mcls Tot Tim	Mold close Total Time	0-999.9 Sec	001.0	User
50	Piecefall Tim	Piecefall Time	0-999.9 Sec	001.0	User
51	Slide In Fast	Slide In Fast Time	0-999.9 Sec	001.0	User
52	Slide In Tot	Slide In Total Time	0-999.9 Sec	001.0	User
53	Slide Out Fast	Slide Out Fast Time	0-999.9 Sec	001.0	User
54	Slide Out Tot	Slide Out Total Time	0-999.9 Sec	001.0	User
55	Cor1 P Dly	Core 1 partial out delay	0-999.9 Sec	001.0	User
56	Cor1 P Tim	Core 1 partial out time	0-999.9 Sec	001.0	User
57	Cor2 P Dly	Core 2 partial out delay	0-999.9 Sec	001.0	User
58	Cor2 P Tim	Core 2 partial out time	0-999.9 Sec	001.0	User
59	AirCav1 Dely	Air Cavity 1 delay	0-999.9 Sec	001.0	User
60	AirCav1 Tim	Air Cavity 1 time	0-999.9 Sec	001.0	User
61	AirCav2 Dely	Air Cavity 2 delay	0-999.9 Sec	001.0	User
62	AirCav2 Tim	Air Cavity 2 time	0-999.9 Sec	001.0	User
63	InjBost Dely	Injection Boost delay time	0-999.9 Sec	001.0	User
64	InjBost Tim	Injection Boost On time	0-999.9 Sec	001.0	User



**(4) SET MISCELLANEOUS :**

SET miscellaneous					
Press <b>SET MISC</b> key					
Third line of LCD show function's name and it's set value/status.					
Select require zone using <b>NEXT/ PREV</b> key					
Set require time using <b>INC, DEC</b> and <b>SHIFT</b> key.					
On pressing <b>NEXT</b> key the set value will be saved and display will show the next function.					
List of timer parameters are given below.					
No	Message	Description	Range	Default Value	Level
1	Mold Safty	Mold Safety Operation On/Off	On / Off	Off	Supervisor
2	MClS Bost	Mold Close Boost Option	0000-0003	0000	Supervisor
3	Lock Ton2	Locking Tonnage 2 On/Off	On / Off	Off	User
4	Auto Carrg	Auto Carriage	0000-0003	0000	Supervisor
5	Carr W Inj	Carriage With Injection Function	On / Off	On	Supervisor
6	Flow Inj	Flow Injection Option On/Off	On / Off	Off	Supervisor
7	Inj. Boost	Injection Boost Option	0000-0002	0000	Supervisor
8	Refil Boost	Refill Boost On/Off	0000-0002	0000	Supervisor
9	RPM Intlk	RPM Interlock On/Off	On / Off	Off	Supervisor
10	LoRPM Scrw	Minimum RPM limit to operate screw	0-20	0000	Supervisor
11	PPR Screw	Screw pulse per revolution	0-4	0001	Supervisor
12	Intrusion	Intrusion On/Off	On / Off	Off	Supervisor
13	Suckback2	Suck Back 2 On/Off	On / Off	On	Supervisor
14	Decomp On	Decompression On/Off	On / Off	Off	Supervisor
15	Ejct Prog	Ejector Operating Program	0-2	0002	Supervisor
16	Ejct Shot	Ejector Shot	0-5	0001	User
17	EjBak I/L	Ejector backward interlock On/Off	On / Off	Off	Supervisor
18	Core 1 On	Core 1 On/Off	On / Off	Off	Supervisor
19	Core 2 On	Core 2 On/Off	On / Off	Off	Supervisor
20	Cor In Pos	Core In Position	0000-0002	0000	Supervisor
21	CorOut Pos	Core Out Position	0000-0002	0000	Supervisor
22	Core 1 I/L	Core 1 interlock On/Off	On / Off	Off	Supervisor
23	Core 2 I/L	Core 2 interlock On/Off	On / Off	Off	Supervisor
24	Clamp Advnc	Clamp advance On/Off	On / Off	Off	Supervisor
25	Slide	Slide Option	0000-0003	0000	Supervisor
26	% Heat Zn1	Set Temperature of % Heating Zone 1	0-100%	0000	User
27	% Zn1 CyTm	Cycle time of % Heating Zone 1	0-100Sec	0000	User
28	% Heat Zn2	Set Temperature of % Heating Zone 2	0-100%	0000	User

29	% Zn2 CyTm	Cycle time of % Heating Zone 2	0-100Sec	0000	User
30	Purge Mode	Purge Mode On/Off	On / Off	Off	Supervisor
31	TestIn/Out	Test Mode On/Off	On / Off	Off	Supervisor
32	Test Temp	Test Temperature Mode On/Off	On / Off	Off	Supervisor
33	Count Rst	Reset the Shot Counter	On / Off	Off	User
34	Maxm Pres	Maximum Pressure Setting	0-100bar	100 bar	Supervisor
35	Ton1 Tim	Tonnage 1 timer On/Off	On / Off	Off	Supervisor
36	Ton2 Tim	Tonnage 2 timer On/Off	On / Off	Off	Supervisor
37	Mold Memry	Mold Memory Selection	0-25	0000	Supervisor
38	Cor In Inj	Core in with injection time	On/Off	Off	Supervisor
39	Cor In1 I/L	Core 1 In Interlock On/Off	On/Off	Off	Supervisor
40	Cor In2 I/L	Core 2 In Interlock On/Off	On/Off	Off	Supervisor
41	EjBk @Mcls	Ejector Backward with Mold Close	On/Off	Off	Supervisor
42	Fast Appro	Fast Approach	On/Off	On	Supervisor
43	Ej.Plate	Ejector Plate back interlock On/Off	On/Off	Off	Supervisor
44	Mopnl WEj	Mold Open Interlock for Ejector	On/Off	On	Supervisor
45	Carr W Ref	Carriage With Refil Function	On / Off	On	Supervisor
46	LOD Default	Load Default	On/Off	Off	Supervisor
47	Piecefall	Piece fall On/Off	On/Off	On	Supervisor

**STANDARD EJECTOR PROGRAM :**

1. Program **00** : Ejector is **DISABLE**.
2. Program **01** : **EJECTOR FORWARD** only after **MOLD FULLY OPEN**.
3. Program **02** : **EJECTOR FORWARD/HOLD/BACKWARD** after **MOLD FULLY OPEN**  
i.e. Full Shot after mold gets fully open.  
No. of shots is programmable.

**CORE IN POSITION :**

1. Program **00** : **CORE IN** before **MOLD CLOSE**
2. Program **01** : **CORE IN** In Between **MOLD CLOSE**
3. Program **02** : **CORE IN** after **MOLD CLOSE**

**CORE OUT POSITION :**

1. Program **00** : **CORE OUT** before **MOLD OPEN**
2. Program **01** : **CORE OUT** In Between **MOLD OPEN**
3. Program **02** : **CORE OUT** after **MOLD OPEN**





**AUTO CARRIAGE :**

1. Program **00** : Auto carriage is **DISABLE**.
2. Program **01** : Automatic carriage backward after **INJECTION**
3. Program **02** : Automatic carriage backward after **REFILL**.
4. Program **03** : Automatic carriage backward after **SUCKBACK**.

**SLIDE OPTION :**

1. Program **00** : Slide is **DISABLE**.
2. Program **01** :
  - **SLIDE IN** Working in 1<sup>st</sup> cycle after **MOLD OPEN**
  - **SLIDE OUT** Working in 2<sup>nd</sup> cycle after **MOLD OPEN**  
 i.e. cycle is working like 1<sup>st</sup> mold close than injection,refill,suckback,mold open than **SLIDE IN** after that ejector and cycle get over same as in next cycle 1<sup>st</sup> mold close than injection,refill,suckback,mold open than **SLIDE OUT** than ejector and 2<sup>nd</sup> cycle gets over  
**(THIS OPTION WORKING FOR DOUBLE MOLD DIE)**
3. Program **02** :
  - **SLIDE IN** Working in 1<sup>st</sup> cycle before **MOLD CLOSE** and cycle gets over after **MOLD OPEN**
  - **SLIDE OUT** Working in 2<sup>nd</sup> cycle before **MOLD CLOSE** and cycle gets over after **MOLD OPEN**  
 i.e. cycle is working like 1<sup>st</sup> **SLIDE IN** than ejector at slide out side than mold close,injection,refill,suckback and cycle get over after mold open same as in next cycle 1<sup>st</sup> **SLIDE OUT** than ejector at slide in side than mold close,injection,refill,suckback and cycle gets over after mold open  
**(THIS OPTION WORKING FOR DOUBLE MOLD DIE)**
4. Program **03** : In every cycle **SLIDE IN** working before **MOLD CLOSE** and **SLIDE OUT** working after **MOLD OPEN** than ejector and cycle gets over  
**(THIS OPTION WORKING FOR SINGLE MOLD DIE)**

## **(K) DESCRIPTION OF TEST MODES**

### **1. INPUT TEST MODE:**

- This mode is useful for testing of each input. (Limit switch Or proximity switch or push button).
- This mode is enabled when **TEST IN/OUT** is **ON** .(GO TO **SET MISC** and then on the **TEST IN/OUT** mode).
- First two line of LCD display shows the input, which is being tested.
- When Input is sensed LCD display shows its particular count on LCD.  
**For Ex:** When we apply first input on input card LCD display will show 0 (Zero).  
 i.e. every input has it's own count. Please refer list of inputs & outputs for more information. Every input is provided with particular count.
- Changes in the input status as per sensing of input indicates that the wiring and electronic path of that input is functioning correctly.
- During this mode no other cycle function can operate.
- To disable the test mode made off the **TEST IN/OUT** in **SET MISC MENU**.

### **2. OUTPUT TEST MODE:**

- This mode is useful for testing each output of the system.
- This mode is enabled when **TEST IN/OUT** is **ON** (GO TO **SET MISC** menu and then **ON** the **TEST IN/OUT** mode .) first line of LCD shows output being checked. When any output is activated, its particular count is shown on LCD. Please refer list of inputs & outputs for more information. Every output is provided with particular count.
- The output can be made **ON** or **OFF** using **SHIFT** key.
- The O/P under test can be changed using **INC/DEC** key.
- If the O/P goes **ON** and **OFF** as per the status show on the display, we can say that the wiring & electronic path of the system for that O/P is correct.
- During this mode all other functions are disabled.
- To disable the test mode made off the **TEST IN/OUT** in **SET MISC** menu.

### **3.TEMPERATURE TEST MODE:**

This mode is useful for testing individual temp loop

This mode can be enabled by making Test Temp. in **SET MISC.** menu **ON**.

During this mode only one channel is displayed.

The zone under testing can be changed using **INC** or **DEC** key.

To disable the **test TEMP.** mode made off the **Test TEMP.** in set misc menu.

During this test mode all other functions are disabled

#### **Calibration Method For Temperature**

##### **Procedure**

- Step 1:** Press Set temp Key & Power ON the PLC
- Step 2:** Insert mili volt generator in zone 1 or link in zone 1(+ and -)of " Temperature card "and set 0 mV in it and verify the actual room temp. in " CH 0 ACT Temp " if not achieved Set " Offset by **INC/DEC** key & Press " **Next**" to Save.
- Step 3:** Set 10 mV thru mili volt generator Verify " CH 0 ACT Temp "
- Step 4:** If not achieved the said value ( it should be  $185 * m.v + \text{Room Temperature value}$  ) in "CH 0 ACT Temp " , set it in " Gain " Value [To toggle Gain / Offset by Set Temp. & Set Value by **INC/DEC** Key & Press **Next** to Save.
- Step 5:** Then Power OFF PLC & ON the PLC.



## Calibration Method For Pressure

### Procedure

- Step 1:** Put MMI power off
- Step 2:** **PREV KEY** long press until power on.
- Step 3:** Than press **SET TIMER** key
- Step 4:** Next Next to parameter **P LoLimit 0000** and **P HiLimit 4000**.
- Step 5:** Put the low count and hi count in of pressure in the parameter so that the pressure is reach as customer wants so that the molding machine can generate, and use, large force and check the pressure in pressure gauge.
- Step 6:** The minimum count is 0000 and the maximum count is 4000 so put the count manually in **P LoLimit 0000** and **P HiLimit 4000** so that the pressure Rich hi limit in molding machine.
- Step 7:** If in molding machine the pressure is beyond the limit so decrease the count **PHiLm** and if in molding machine the pressure is less so increase the count to rich the hi limit.

## Customer PASSWORD can unlock by

### Procedure

- Step 1:** Put MMI power off
- Step 2:** **PREV KEY** long press until power on.
- Step 3:** Than press **SET TIMER** key
- Step 4:** Next Next to last parameter **PWard**.
- Step 5:** Enter password from application list.
- Step 6:** Press next next
- Step 7:** The password is unlock.

## **(L) FUNCTIONAL DESCRIPTIONS**

### **(1) MOLD SAFETY :**

Heating off function can be enabled or disabled using HEAT OFF, key. When heating off is active HOFF indicate in second line of display. And all output of heater goes OFF. When heating is ON is active PV indicate in second line of display. And all heater outputs operate as per control action of temp. Controller.

### **(2) HEAT ON / OFF:**

Heating off function can be enabled or disabled using **HEAT OFF**, key. When heating off is active **HOFF** indicate in second line of display. And all output of heater goes OFF. When heating is **ON PV** indicate in second line of display. And all heater outputs operate as per control action of temp. Controller.

### **(3) HAND :**

System (after power on) starts in HAND MODE. In this mode all the functions (like mold open, mold close, unit forward etc) can be done using different function keys.

For ex. : Mold can be opened using mold open key. When any interlock appears during cycle the machine transferred into hand mode.

### **(4) SEMI AUTO :**

On pressing SEMI AUTO key cycle starts. Cycle stops after completion of one cycle. Here cycle can be restarted by opening and closing of front guard.

### **(5) FULLY AUTO :**

On pressing AUTO key the auto cycle starts. Here after completion of one cycle, cycle delay timer starts after completion of cycle delay cycle restarts.

## (N) INTERLOCKS

It is a one type of alarm system which activate when cycle or any other function does not operate properly because of those abnormal condition it indicate INTERLOCK.

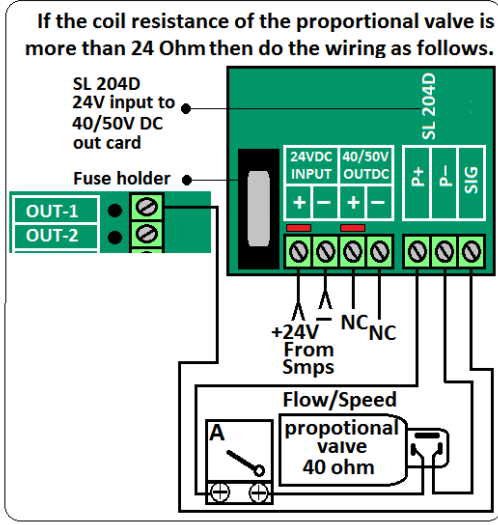
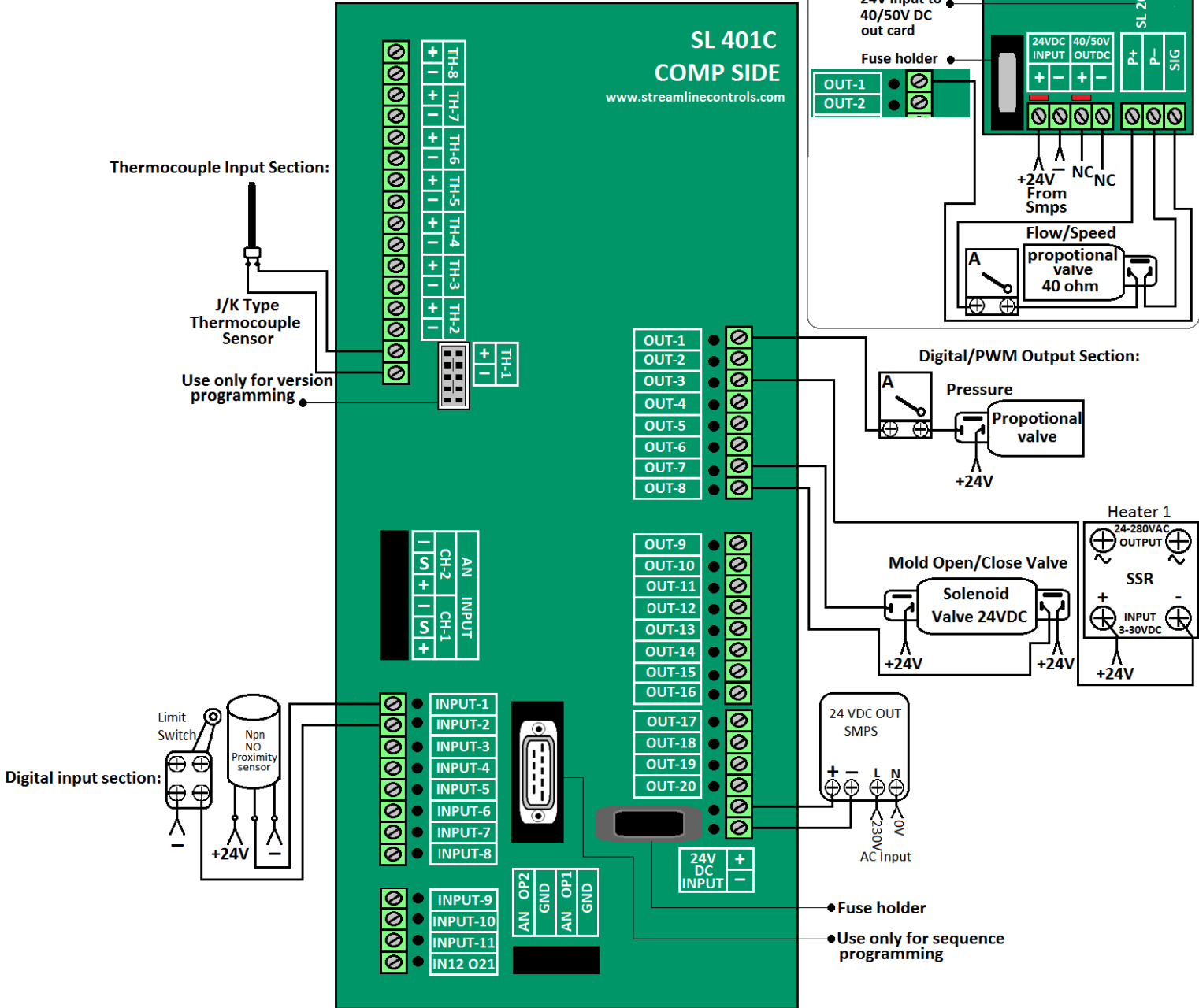
Following are the different interlock messages.

Sr.No.	Operation	Interlocks Messages On Screen	Description Of Messages	Type Of Mode		
				Hand	Semi Auto	Fully Auto
1	Mold Open	IL Mold Open End	Mold fully open end		Y	Y
		IL Mold Open/Clos On	Mold open close limits on	Y	Y	Y
2	Mold Close	IL Mold Close End	Mold fully Close end		Y	Y
		IL Mold Safty Tm Ovr	Mold Safety time over	Y	Y	Y
		IL Mold Open/Clos On	Mold open close limits on	Y	Y	Y
3	Unit Forward	IL Carriage For End	Carriage Forward End	Y	Y	Y
4	Unit Backward	IL Carriage Back End	Carriage Backward End	Y	Y	Y
5	Injection	IL Temperature Low	Temperature is low	Y	Y	Y
		IL Temperature High	Temperature is High	Y	Y	Y
6	Refill	IL Refill End	Refill End	Y	Y	Y
		IL Temperature Low	Temperature is low	Y	Y	Y
		IL Temperature High	Temperature is High	Y	Y	Y
		IL RPM too Low.	Screw RPM is low	Y	Y	Y
7	Suck Back	IL Temperature Low	Temperature is low	Y	Y	Y
		IL Temperature High	Temperature is High	Y	Y	Y
		IL Suckback End	Suck back End	Y	Y	Y
8	Ejector Forward	IL Eje Forward End	Ejector Forward end	Y	Y	Y
9	Ejector Backward	IL Eje Backward End	Ejector Backward end	Y	Y	Y
		IL Ejector Not Back	Ejector not back	Y	Y	Y
10	Core 1 In	IL Core 1 In End	Core 1 in End	Y	Y	Y
11	Core 1 Out	IL Core 1 Out End	Core 1 out End	Y	Y	Y
		IL Core 1 not Out	Core 1 not out	Y	Y	Y
12	Core 2 In	IL Core 2 In End	Core 2 in End	Y	Y	Y
13	Core 2 Out	IL Core 2 Out End	Core 2 out End	Y	Y	Y
		IL Core 2 not Out	Core 2 not out	Y	Y	Y
14	Mold Height Min.	IL Mold Hght Min End	Mold Height minimum End	Y	Y	Y
		IL Mold Height Min.	Mold Height minimum	Y	Y	Y
15	Mold Height Max.	IL Mold Hght Max End	Mold Height maximum End	Y	Y	Y
		IL Mold Height Max.	Mold Height maximum	Y	Y	Y
16	Slide	IL Slid In End	Slide in End	Y	Y	Y
		IL Slid Out End	Slide out End	Y	Y	Y
		IL Slid Not In Posi	Slide not in position	Y	Y	Y
17	Temperature	IL Temperature Low	Temperature is low	Y	Y	Y
		IL Temperature High	Temperature is High	Y	Y	Y
		IL Oil Temp. High	Oil temperature is high	Y	Y	Y
18	Common	IL Front Guard Open	Front door open	Y	Y	Y
		IL Back Guard Open	Rear door open	Y	Y	Y
		IL Cycle Time Over	Cycle time over	Y	Y	Y
		IL Emergency Press	Emergency press	Y	Y	Y
		IL Motr not on Delta	Hydraulic motor not on Delta	Y	Y	Y
19	Die Set	IL DieSet Mode On	Die set mode is on		Y	Y
20	Piecefal	IL Piecefal error	Piecefall error			Y

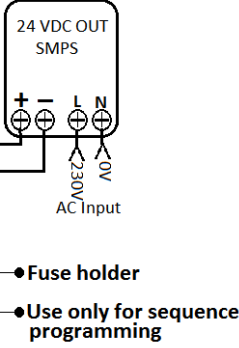
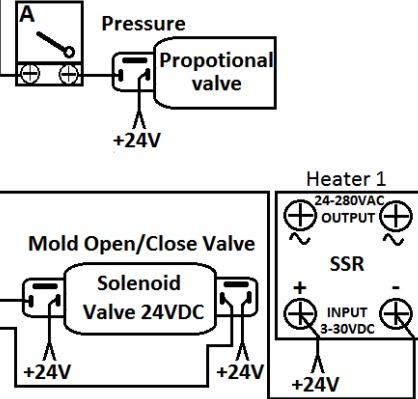


**(N) WIRING DIAGRAM**

Wiring Diagram: Below is an example of how to do wiring.  
 (View Digital output name, digital input name, analog input name, analog output name and thermocouple input name according to programming sequence code.)



Digital/PWM Output Section:



STRE

## OUR PRODUCT RANGE

- Dedicated Controller for Plastic Injection molding Machines
- Dedicated Controller For Blow Molding Machine
- Dedicated Controller For Pet Stretch Molding Machine
- Dedicated Controller For Hopper Loader
- AC Servo Motor Drive
- DC Stepper Drive
- Dedicated Controller For Bag Making Machine
- Dedicated Controller For Sticker Labeling Machine
- Dedicated Controller For Grinding Machine
- Dedicated Controller For Dozing Application
- Dedicated Controller For Pad Printing Machine
- Dedicated Controller For Jet Dyeing Machine
- Application Specific Packages
- All Servo Pick & Place Robot For IMM
- Time/Temperature Based Profile Generator
- Multi Channel Temperature Controller
- 2/3/4 Axes Motion Controllers ( Using DC stepper / AC Servo Drives).