

OPERATING MANUAL
FOR CONTROL
SYSTEM OF BLOW
MOLDING 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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PREFACE

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

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

We would be glad to assist your queries.

Specifications are subject to change without prior notice.

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(A) SPECIFICATIONS:

Input

Power:

Voltage	--	0-24Vac
Frequency	--	49-50 Hz
Consumption	--	30 VA Max.

Control:

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

Output

For Solenoids	--	For 230VAC - 2Amp. Max. - SSR Output or
	--	For 24VDC - 2 Amp. Max. – MOSFET Driver Output
For Heater	--	For 230VAC - 2Amp. Max. - SSR Output or
	--	For 24VDC - 2 Amp. Max. – MOSFET Driver Output

Environment

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

MECHANICAL DIMENSIONS (All are in MM)

Operating Box	--	Depth X Width X Height 95 mm X 133 mm X 280 mm
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(B) INTRODUCTION

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

- (1) MMI unit
- (2) C.V.T. (Optional)/Transformer

(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 Heating ON-OFF and Cycle Time Interlock makes this system much more superior than the conventional system.

(C) FEATURES

- Inherently reliable Micro controller based technology 8051 / 100MHz CPU.
- Offers up to 64 digital inputs, Up to 64 digital outputs, 8zone time Proportional controlled Temperature Controllers, timers, Extensive feather touch membrane keypad for user interface for manual/Set/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)
- Five digit counters to count Number of Pieces.
- Facility for counting cycle time helpful in production analysis.
- 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.
- Inbuilt interlocks for Low & High temperature, Right and/or Left doors, Maximum Cycle Time, Emergency stop, Hydro motor overload and many others.
- Built in 25 nos. mold memory.
- Operating Input/Output diagnosis.

(D) SCOPE OF SUPPLY

SCPL to provide:

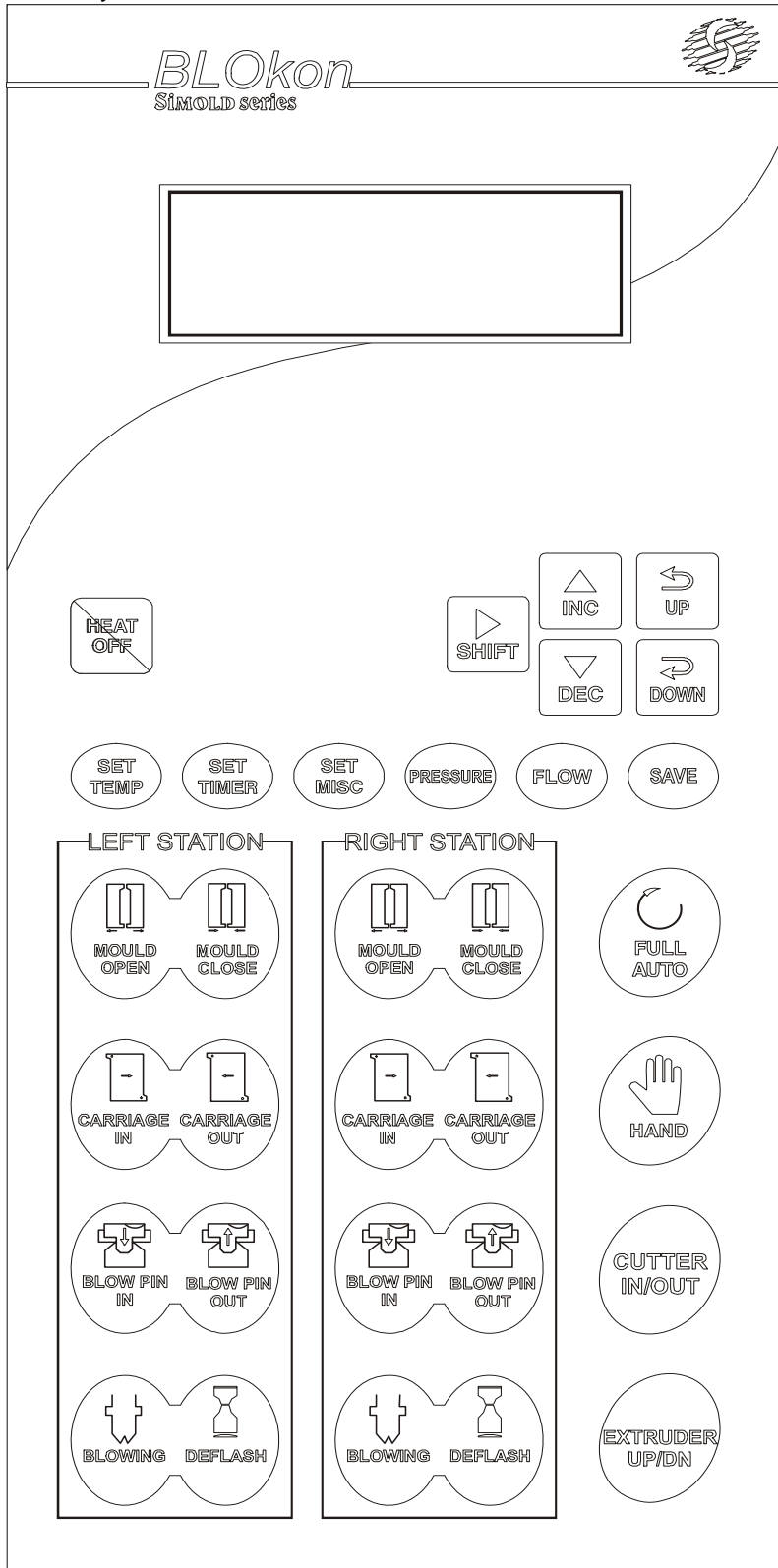
- 1 Hand Panel.
- 2 Input & Output cards.
- 3 Inter connecting cables.
- 4 Operating Manual.

(E) PROGRAMMING OF THE SYSTEM

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






Operating Panel Description :

Front key board Sticker









KEY'S DESCRIPTION




1. CURSOR KEY

-  PROG. MODE: Push this key to move cursor from left to right direction for parameter setting in any menu.
ONLINE MODE: Also use for open the password menu in online display.
-  PROG. MODE: To increase parameter value in any menu
Also use for function on/off.
-  PROG. MODE: To decrease parameter value in any menu.
Also use for function on/off.
ONLINE MODE: Alarm reset for all mode.
-  PROG. MODE: For shift to previous parameter.
-  PROG. MODE: For shift to next parameter.

2. MENU SELECTOR

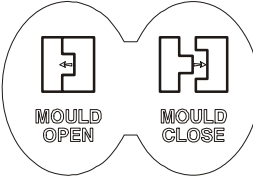
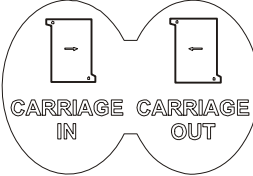
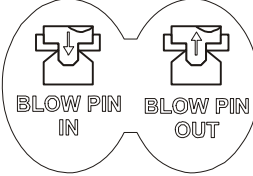
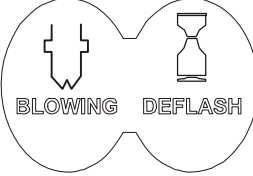
-  Set temperature key to set all zones set point.
-  Set timer key to set all function's timer.
-  Set misc key to set On/ Off for selectable function.
-  Set pressure key to set all function's proportional pressure.
-  Set flow key to set all function's proportional flow.
-  Save key to save set parameter.
Also use for scroll online display

3. OPERATING MODE SELECTOR

-  Push this key to start or stop the heating.
-  Machine operating at fully automatic production mode.
Restarted by cycle delay timer.
-  Operating machine by manual key.

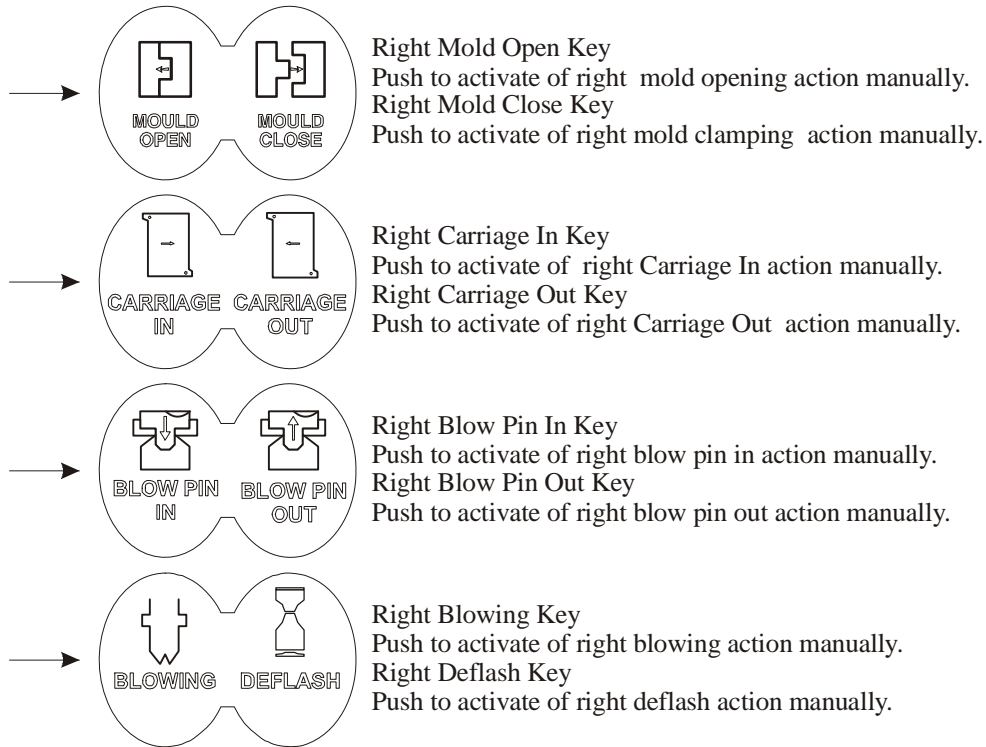
4. Manual Operation Key

Left Station

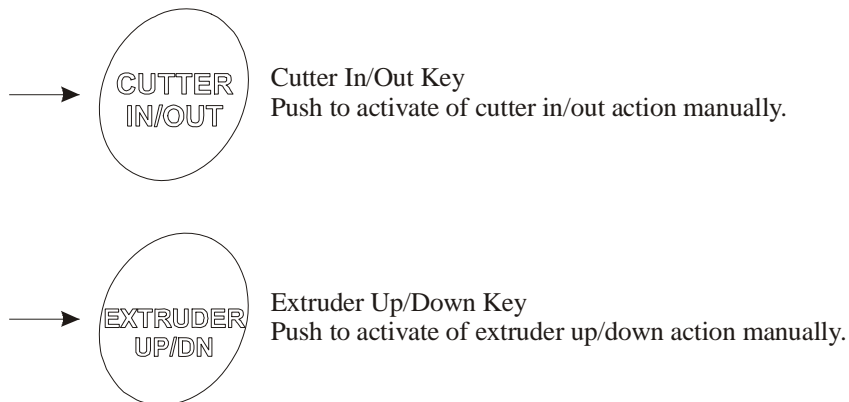
-  Left Mold Open Key
Push to activate of left mold opening action manually.
Left Mold Close Key
Push to activate of left mold clamping action manually.
-  Left Carriage In Key
Push to activate of left Carriage In action manually.
Left Carriage Out Key
Push to activate of left Carriage Out action manually.
-  Left Blow Pin In Key
Push to activate of left blow pin in action manually.
Left Blow Pin Out Key
Push to activate of left blow pin out action manually.
-  Left Blowing Key
Push to activate of left blowing action manually.
Left Deflash Key
Push to activate of left deflash action manually.

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Right Station



Common Functions



(G) MANUAL MODE OF OPERATIONS

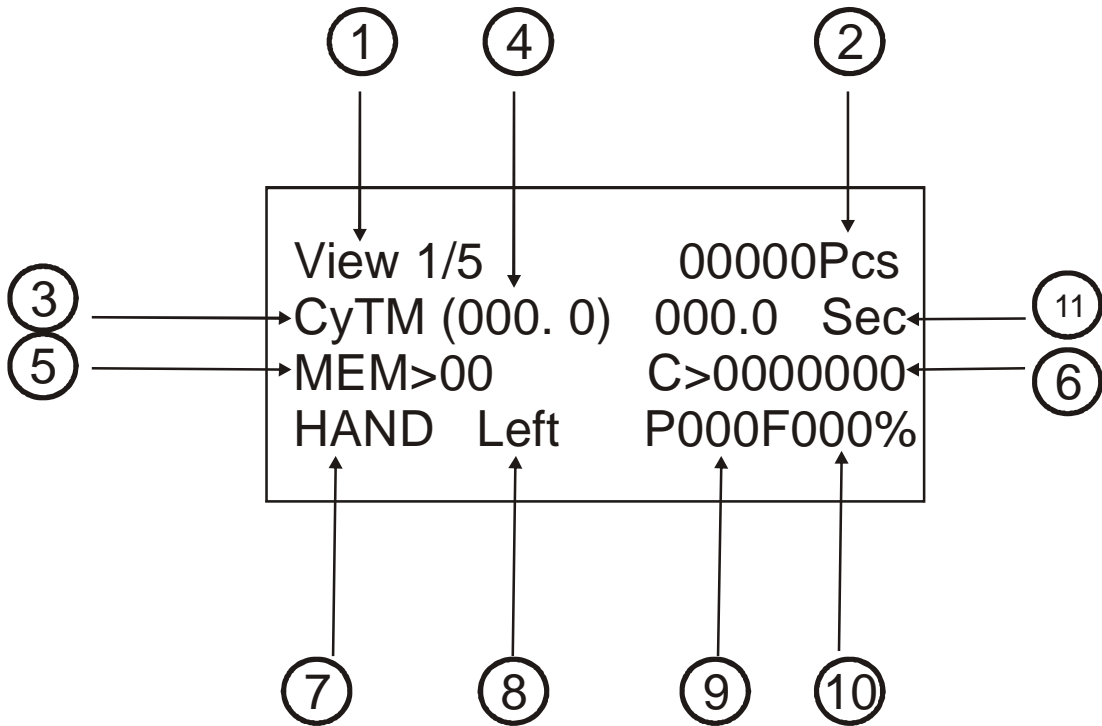
1. Left Mould Open
2. Left Mould Close
3. Left Carriage In
4. Left Carriage Out
5. Left Blow Pin In
6. Left Blow Pin Out
7. Left Blowing
8. Left Deflash
9. Right Mould Open
10. Right Mould Close
11. Right Carriage In
12. Right Carriage Out
13. Right Blow Pin In
14. Right Blow Pin Out
15. Right Blowing
16. Right Deflash
17. Cutter in/out
18. Extruder up/down

(H) 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 interfere.
- 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 10seconds for re-start.
- Thermocouples used for this system must be isolated (ungrounded) Fe/k 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 1of 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 PNP-NO type proximity switches.

(I) Online View Screen Description: View Screen 1:

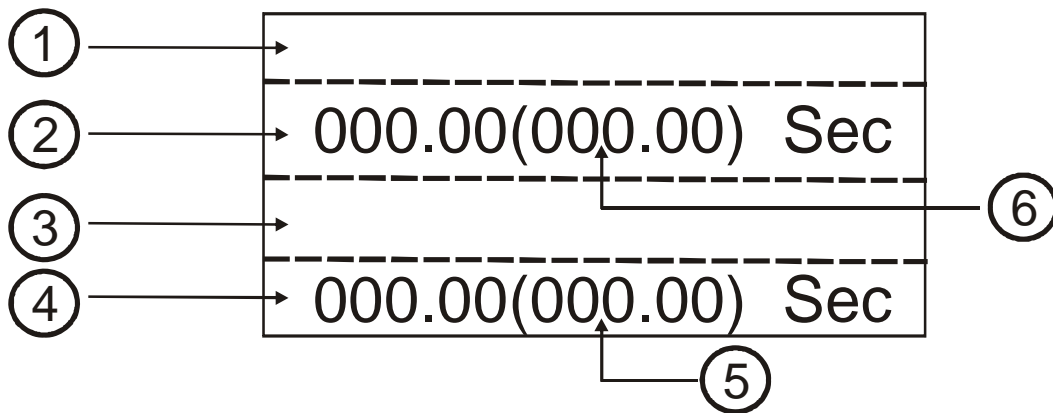


Description of Page

Screen Number	Display View	Description
1	View 1/5	No. of Display View
2	00000Pcs	Display Batch Counter
3	CyTM	Display Cycle Time
4	(000.0)	Display Previous cycle time
5	MEM>00	Display Memory count
6	C>0000000	Display Totlizer counter
7	HAND	Display select mode
8	LEFT	Display select station
9	P000	Display pressure setting
10	F000%	Display flow setting
11	000.0 SEC	Display current cycle time

View Screen 2

To go this page press save key in view screen1

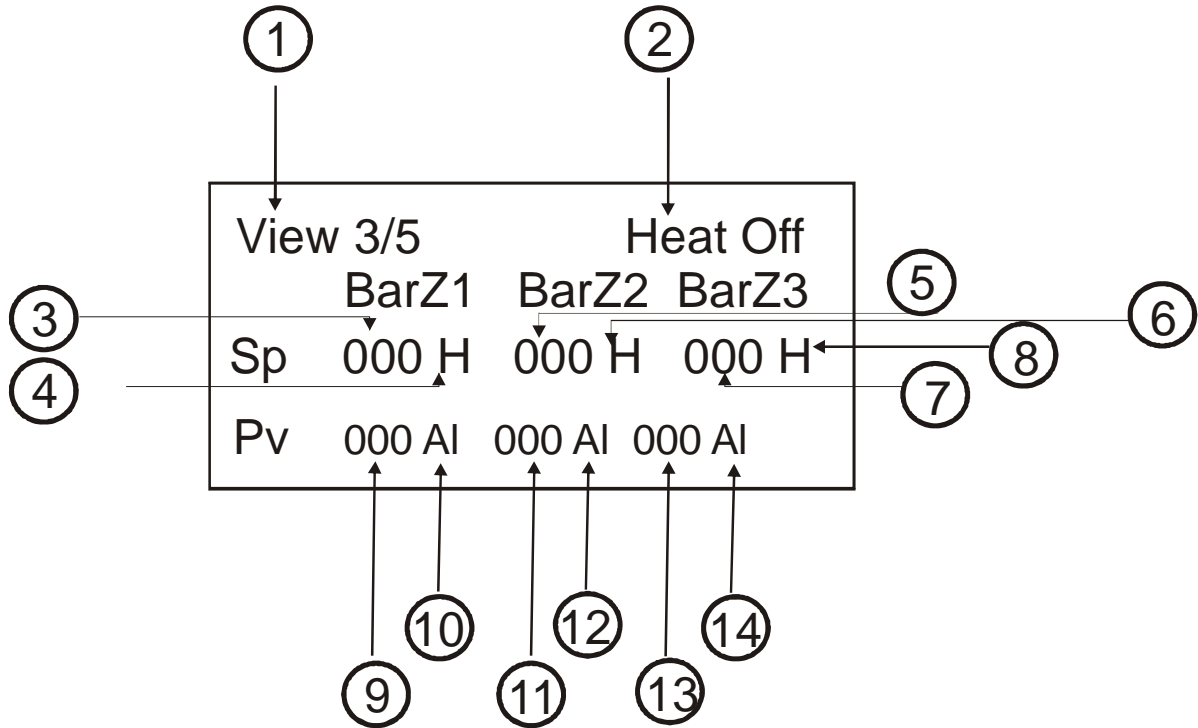


Description of Page

Screen Number	Display View	Description
1		Display online function's message Or Display left station interlock message
2	000.00	Display actual time of left station's function
3		Display online function's message Or Display right station interlock message
4	000.00	Display actual time of right station's time
5	(000.00)	Display set time of left station's function
6	(000.00)	Display set time of right station's function

View Screen 3

To go this page press save key in view screen2

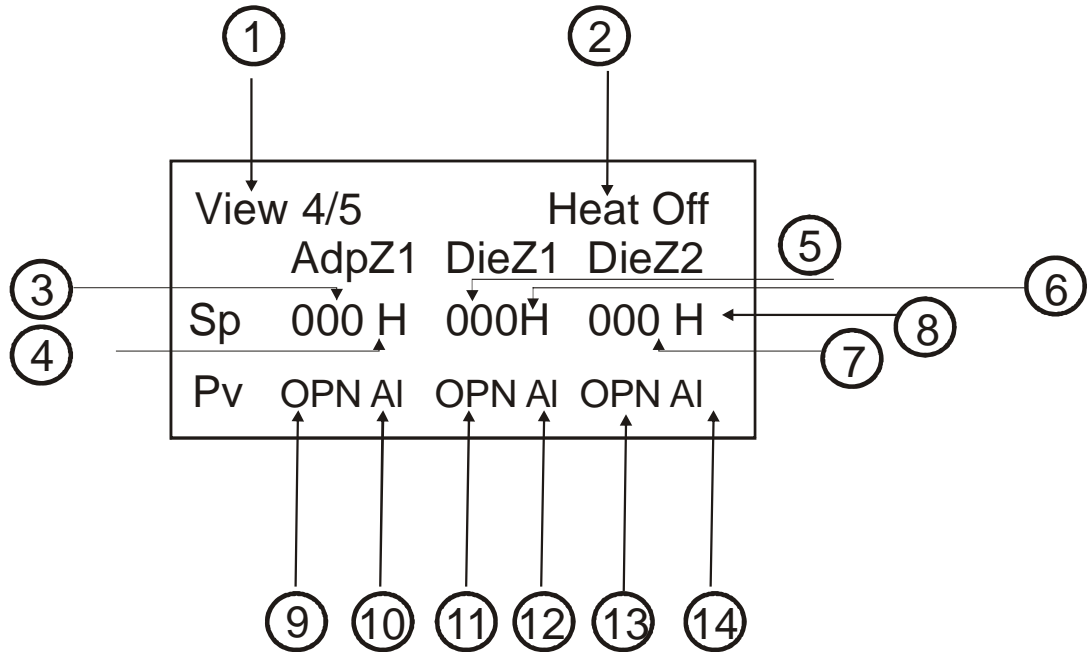


Description of Page

Screen Number	Display View	Description
1	View 3/5	No. of Display View
2	Heat Off	Display heating off or on
3	000	Display barrel zone 1 set temperature
4	H	Display heater or blower on status
5	000	Display barrel zone 2 set temperature
6	H	Display heater or blower on status
7	000	Display barrel zone 3 set temperature
8	H	Display heater or blower on status
9	000	Display barrel zone 1 actual temperature
10	AI	Display alarm low or high status
11	000	Display barrel zone 2 actual temperature
12	AI	Display alarm low or high status
13	000	Display barrel zone 3 actual temperature
14	AI	Display alarm low or high status

View Screen 4

To go this page press save key in view screen3

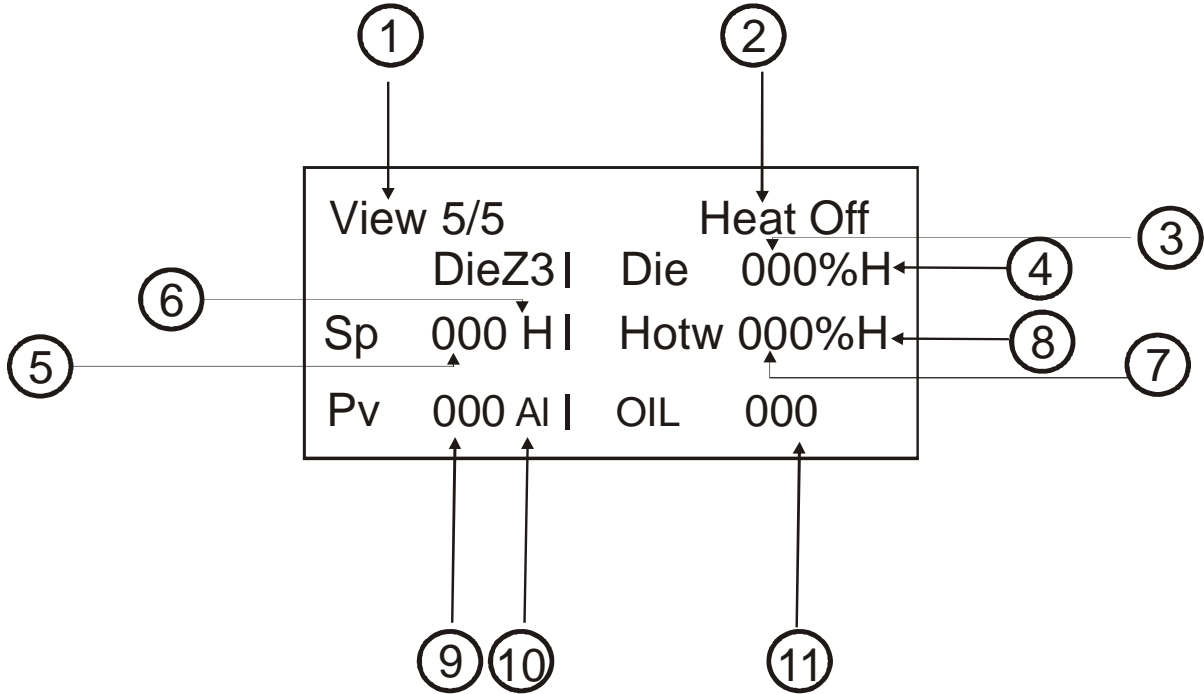


Description of Page

Screen Number	Display View	Description
1	View 4/5	No. of Display View
2	Heat Off	Display heating off or on
3	000	Display adapter zone 1 set temperature
4	H	Display heater or blower on status
5	000	Display die zone 1 set temperature
6	H	Display heater or blower on status
7	000	Display die zone 2 set temperature
8	H	Display heater or blower on status
9	000	Display adapter zone 1 actual temperature
10	AI	Display alarm low or high status
11	000	Display die zone 2 actual temperature
12	AI	Display alarm low or high status
13	000	Display die zone 3 actual temperature
14	AI	Display alarm low or high status

View Screen 5

To go this page press save key in view screen4



Description of Page

Screen Number	Display View	Description
1	View 5/5	No. of Display View
2	Heat Off	Display heating off or on
3	000%	Display die ring set temperature
4	H	Display heater or blower on status
5	000	Display die zone 3 set temperature
6	H	Display heater or blower on status
7	000	Display hot wire set temperature
8	H	Display heater or blower on status
9	000	Display die zone 3 actual temperature
10	AI	Display alarm low or high status
11	000	Display oil temperature

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(J)List of Programmable Parameters				
Set Temperatures				
Press set TEMP key.				
First line of LCD will show " Set Temperatures".				
Second, third and forth lines of LCD show zone number and set temp.				
Select require zone using UP/ DOWN key.				
Set require temperature using INC, DEC and SHIFT key.				
On pressing SAVE key the set value will be saved.				
List of temperature parameter is given below.				
No.	Message	Description	Range	Level
1	SetTmp Z1 C	Set Temperature of Barrel Zone 1	0-400 C	User
2	SetTmp Z2 C	Set Temperature of Barrel Zone 2	0-400 C	User
3	SetTmp Z3 C	Set Temperature of Barrel Zone 3	0-400 C	User
4	SetTmp Z4 C	Set Temperature of Adapter Zone 1	0-400 C	User
5	SetTmp Z5 C	Set Temperature of Die Zone 1	0-400 C	User
6	SetTmp Z6 C	Set Temperature of Die Zone 2	0-400 C	User
7	SetTmp Z7 C	Set Temperature of Die Zone 3	0-400 C	User
8	SetTmp DR %	Set Temperature of Die Ring	0-100 %	User
9	SetTmp HW %	Set Temperature of Hot Wire	0-100 %	User
10	SetTmp Ol C	Set Temperature of Oil	0-100 C	User
11	Zone 1	Zone 1 On/Off	On/Off	User
12	Zone 2	Zone 2 On/Off	On/Off	User
13	Zone 3	Zone 3 On/Off	On/Off	User
14	Zone 4	Zone 4 On/Off	On/Off	User
15	Zone 5	Zone 5 On/Off	On/Off	User
16	Zone 6	Zone 6 On/Off	On/Off	User
17	Zone 7	Zone 7 On/Off	On/Off	User
18	Die Ring	Die Ring On/Off	On/Off	User
19	Hot Wire	Hot Wire On/Off	On/Off	User
20	Oil Temp	Oil Temperature On/Off	On/Off	User
21	LoAlrm Z1	Low Alarm of Zone 1	0-400 C	User
22	LoAlrm Z2	Low Alarm of Zone 2	0-400 C	User
23	LoAlrm Z3 C	Low Alarm of Zone 3	0-400 C	User
24	LoAlrm Z4 C	Low Alarm of Zone 4	0-400 C	User
25	LoAlrm Z5 C	Low Alarm of Zone 5	0-400 C	User
26	LoAlrm Z6 C	Low Alarm of Zone 6	0-400 C	User
27	LoAlrm Z7 C	Low Alarm of Zone 7	0-400 C	User
28	HiAlrm Z1 C	High Alarm of Zone 1	0-400 C	User
29	HiAlrm Z2 C	High Alarm of Zone 2	0-400 C	User
30	HiAlrm Z3 C	High Alarm of Zone 3	0-400 C	User
31	HiAlrm Z4 C	High Alarm of Zone 4	0-400 C	User
32	HiAlrm Z5 C	High Alarm of Zone 5	0-400 C	User
33	HiAlrm Z6 C	High Alarm of Zone 6	0-400 C	User
34	HiAlrm Z7 C	High Alarm of Zone 7	0-400 C	User
35	BloPont Z1 C	Blower Point of Zone 1	0-100 C	User
36	BloPont Z2 C	Blower Point of Zone 2	0-100 C	User
37	BloPont Z3 C	Blower Point of Zone 3	0-100 C	User
38	BloPont Z4 C	Blower Point of Zone 4	0-100 C	User
39	BloPont Z5 C	Blower Point of Zone 5	0-100 C	User
40	BloPont Z6 C	Blower Point of Zone 6	0-100 C	User

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41	BloPont Z7 C	Blower Point of Zone 7	0-100 C	User
42	ProBand Z1 C	Proportional Band of Zone 1	0-100 C	Supervisor
43	ProBand Z2 C	Proportional Band of Zone 2	0-100 C	Supervisor
44	ProBand Z3 C	Proportional Band of Zone 3	0-100 C	Supervisor
45	ProBand Z4 C	Proportional Band of Zone 4	0-100 C	Supervisor
46	ProBand Z5 C	Proportional Band of Zone 5	0-100 C	Supervisor
47	ProBand Z6 C	Proportional Band of Zone 6	0-100 C	Supervisor
48	ProBand Z7 C	Proportional Band of Zone 7	0-100 C	Supervisor
49	IntGain Z1 S	Integral Gain of Zone 1	0-1000 Sec	Supervisor
50	IntGain Z2 S	Integral Gain of Zone 2	0-1000 Sec	Supervisor
51	IntGain Z3 S	Integral Gain of Zone 3	0-1000 Sec	Supervisor
52	IntGain Z4 S	Integral Gain of Zone 4	0-1000 Sec	Supervisor
53	IntGain Z5 S	Integral Gain of Zone 5	0-1000 Sec	Supervisor
54	IntGain Z6 S	Integral Gain of Zone 6	0-1000 Sec	Supervisor
55	IntGain Z7 S	Integral Gain of Zone 7	0-1000 Sec	Supervisor
56	CyTime Z1 S	Cycle Time of Zone 1	0-100 Sec	Supervisor
57	CyTime Z2 S	Cycle Time of Zone 2	0-100 Sec	Supervisor
58	CyTime Z3 S	Cycle Time of Zone 3	0-100 Sec	Supervisor
59	CyTime Z4 S	Cycle Time of Zone 4	0-100 Sec	Supervisor
60	CyTime Z5 S	Cycle Time of Zone 5	0-100 Sec	Supervisor
61	CyTime Z6 S	Cycle Time of Zone 6	0-100 Sec	Supervisor
62	CyTime Z7 S	Cycle Time of Zone 7	0-100 Sec	Supervisor
63	CyTime DR S	Cycle Time of Die Ring	0-100 Sec	Supervisor
64	CyTime HW S	Cycle Time of Hot Wire	0-100 Sec	Supervisor

Set Timers

Press set **TIMER** key.
First line of LCD will show " Set Timers".
Second, third and fourth lines of LCD show timer's name and its set value.
Select require timer using UP/ DOWN key.
Set require timer using INC, DEC and SHIFT key.
On pressing SAVE key the set value will be saved.
List of timer parameter is given below.

No.	Message	Description	Range	Level
0	Blow time	Blow time	0-100.00 sec	
	Exhaust Tm	Exhaust Time	0-100.00 sec	
	Cycle Dely	Cycle Delay	0-10 Sec	
	Paris Ontm	Parison Time	0-10 Sec	
	Cutter Dly	Cutter Delay	0-10 Sec	
	Cutr Impls	Cutter Impulse	0-10 Sec	
	CarIn Fast	Carriage In fast time	00-10 Sec	
	CarOut Fas	Carriage Out fast time	00-10 Sec	
	CarOut End	Carrige out end time	00-10 Sec	
	MClos Fast	Mold Close Time	00-10 Sec	
	MOpen Fast	Mold Open Time	00-10 Sec	
	Mclos Dely	Mold Close Delay Time	00-10 Sec	
	Tonnag Tim	Tonnage time	00-10 Sec	
	Blopin Dly	Blow Pin In Delay	00-10 Sec	
	Blopin Fas	Blow Pin In Fast Time	00-10 Sec	

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	Blopin Int	Blow Pin In Intermediate Time	00-10 Sec	
	Blopin Slo	Blow Pin In Slow Time	00-10 Sec	
	BloPout DI	Blow Pin Out Delay Time	000-100 Sec	
	Blow delay	Blow Delay	000-100 Sec	
	Eject Time	Ejector Time	000-100 Sec	
	BIPOut Rel	Blow Pin Out Release Time	00-10 Sec	
	Deflash In	Deflesh In Time	00-10 Sec	
	DefOut Dly	Deflash OutDly	00-10 Sec	
	Deflash Mov	Deflash move time	00-10 Sec	
	Cy Ovr Tim	Cycle Over Time (Limit for Total Cycle Time)	00-10 Sec	

Password Entry

Press **Shift** key in any of online display.
It is require to exit from any menu at the time of password entry.
First line of LCD will show " Enter Password".
Second line of LCD show Enter Password and it's value.
Set require password value using INC, DEC and SHIFT key.
On pressing SAVE key the set value will be saved.
List of password entry parameter is given below.

No.	Message	Description	Range	Level
1	Entr Paswd	Enter Password	0-9999	User

Set Miscellaneous

Press set **MISC** key.
First line of LCD will show " Set Miscellaneous".
Second, third and forth lines of LCD show function's name and it's value/status.
Select require function using UP/ DOWN key.
Set require value/ status using INC, DEC and SHIFT key.
On pressing SAVE key the set value will be saved.
List of miscellaneous parameter is given below.

No.	Message	Description	Range	Level
1	Set Mode	Set Mode to activate	On / Off	User
2	Cutter	Cutter Operation On/Off	On / Off	User
3	Memory No	Active Memory No.	0-25	Supervisor
4	Motor Cont	Motor count activate	On / Off	
5	Deflesh	Deflesh Operation On/Off	On / Off	User
6	Batch Count	Batch Counter On/Off	On / Off	User
7	Batch Count	5 Digit Batch Counter	0-65535	User

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(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.

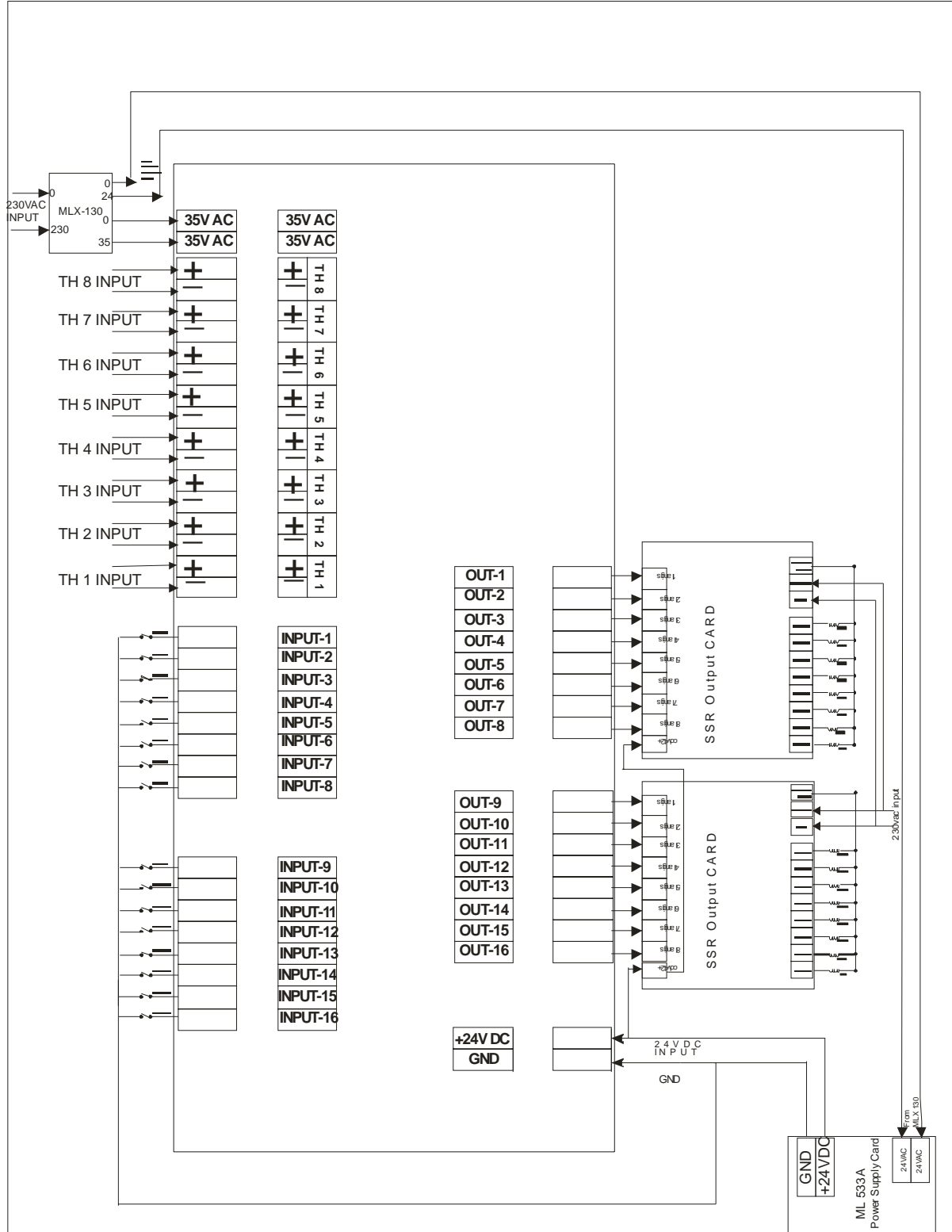
Sr.No.	Operation	Interlocks Messages On Screen	Description Of Messages	Type Of Mode	
				Hand	Fully Auto
1	Left Mold Open	IL.Lt MOpen End	Left Mold fully open end	y	y
		IL.Lt Mold Not Open	Left Mold is not fully open		y
		IL.Lt Mld Opn/Cls On	Left Mold open and close input on	y	y
2	Left Mold Close	IL.Lt Mclose End	Left Mold fully Close end	y	y
		IL.Lt Blow Pn no Out	Left Blow pin is not out	y	y
		IL.Lt Mld Opn/Cls On	Left Mold open and close input on	y	y
3	Left Carriage In	IL.Lt Cariage In End	Left Carriage in end	y	y
		IL Lt Blo Pn no Out	Left Blow pin is not out	y	y
		IL.Rt Station no Out	Right station is not out	y	y
		IL.Lt Carr In/Out On	Left carriage in and out input is on	y	y
4	Left Carriage Out	IL.Lt Carige Out End	Left Carriage out end	y	y
		IL.Lt Cariage no Out	Left Carriage is not out	y	y
		IL Lt Blo Pn no Out	Left Blow pin is not out	y	y
		IL.Lt Carr In/Out On	Left carriage in and out input is on	y	y
5	Left Blow Pin In	IL Lt Cariage no Out	Left Carriage is not out	y	y
6	Left Blow Pin Out	IL.Lt Blo Pn Out End	Left Blow pin out end	y	y
7	Right Mold Open	IL.Rt MOpen End	Right Mold fully open end	y	y
		IL.Rt Mold Not Open	Right Mold is not open		y
		IL.Rt Mld Opn/Cls On	Right Mold open and close input on	y	y
8	Right Mold Close	IL.Right Mclose End	Right Mold fully Close end	y	y
		IL.Rt Blo Pin no Out	Right Blow pin is not out	y	y
		IL.Rt Mld Opn/Cls On	Right Mold open and close input on	y	y
9	Right Carriage In	IL.Rt Cariage In End	Right Carriage in end	y	y
		IL R Blo Pn no Out	Right Blow pin is not out	y	y
		IL.Lt Station no Out	Left station is not out	y	y
		IL.Rt Carr In/Out On	Right carriage in and out input is on	y	y
10	Right Carriage Out	IL.Rt Carige Out End	Right carriage out end	y	y
		IL.Rt Cariage no Out	Right carriage is not out	y	y
		IL Rt Blo Pn no Out	Right Blow pin is not out	y	y
		IL.Rt Carr In/Out On	Right carriage in and out input is on	y	y
11	Right Blow Pin In	IL Rt Cariage no Out	Right Carriage is not out	y	y
12	Right Blow Pin Out	IL.Rt Blo Pn Out End	Right Blow pin out end	y	y
13	Emergency	IL.Emergency Press	Press Emergency Push Button	y	y
14	Hydro Motor	IL.Hyd Motor Not On	Hydro motor is not on	y	y
15	Hydro Motor Overload	IL.Hyd Motr Ovr load	Hydro motor is overload	y	y
16	Left Safety Door	IL.Lt Safty door Opn	Left safety door open	y	y
17	Right Safety Door	IL.Rt Safty door Opn	Right safety door open	y	y
18	Cycle Time Over	IL.Cycle Time Exceed	Actual cycle time is exceed from set cycle time		y
19	Batch Count	IL.Batch Count Over	Set batch count is over		y
20	Extruder	IL.Extruder Up End	Extruder up end	y	y

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		IL.Extruder Dn End	Extruder down end	y	y
		IL.Extrudr Motr Trip	Extruder motor is trip	y	y
21	Heating	IL.Low Temperature	Temperature is Low	y	y
		IL.High Temperature	Temperature is High	y	y
		IL.Oil Temp High	Oil Temperature is high	y	y

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Wiring Diagram (IN case of 230vac out put)



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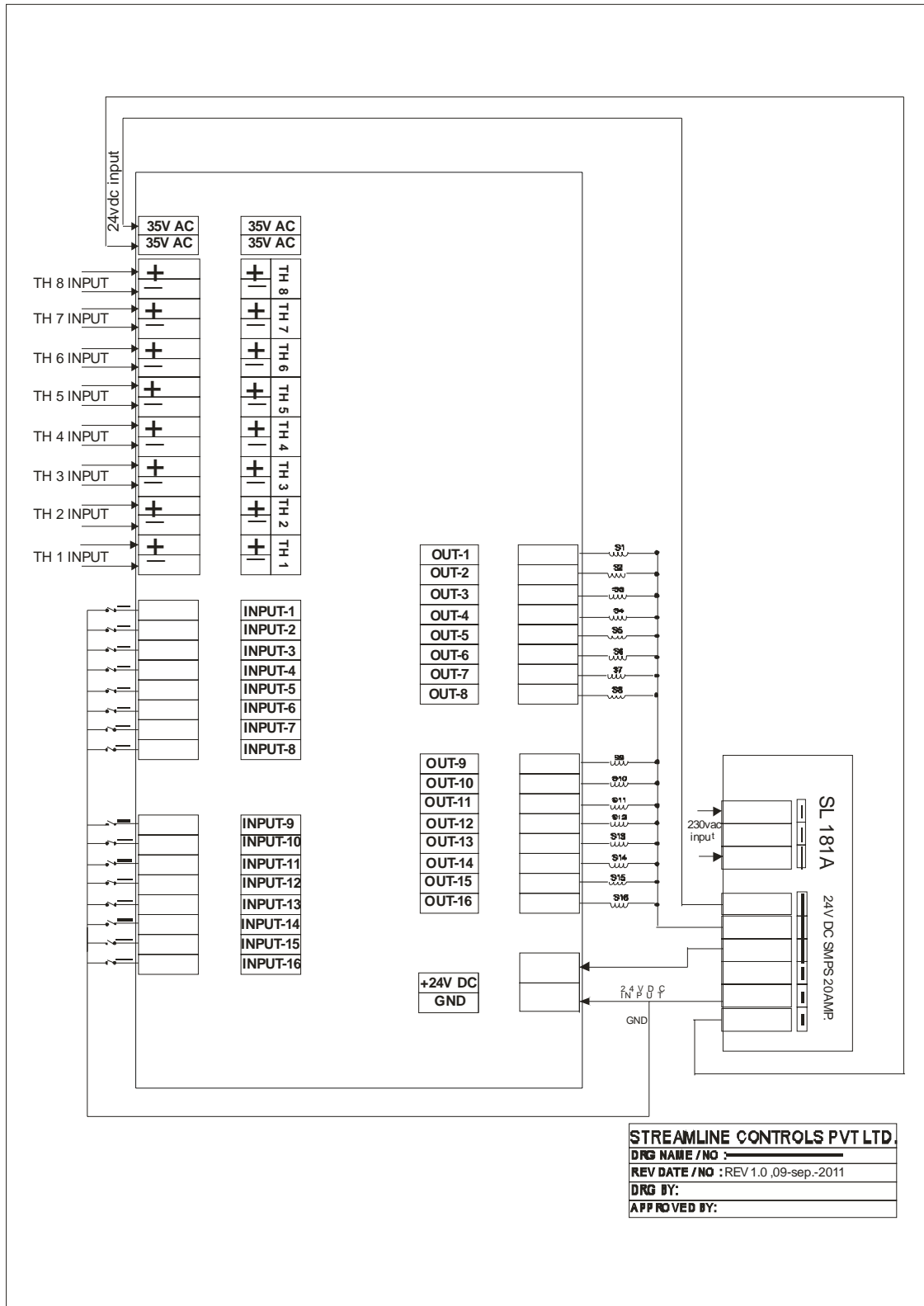
DRG NAME / NO : wiring diagram of optima 230vac output

REV DATE / NO : REV 1.0 ,09-sep-2011

DRG BY:

APPROVED BY:

IN case of 24vdc output



STREAMLINE CONTROLS PVT LTD.
 DRG NAME / NO : _____
 REV DATE / NO : REV 1.0 ,09-sep.-2011
 DRG BY : _____
 APPROVED BY : _____

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- Dedicated Controller for Plastic Injection/Blow molding Machines
- DC Stepper Drives
- PID Temperature Controllers - 6 CH/1CH
- Profile Generator
- Pre Programmable Logic Controllers - PPLCs
- Digital Timers & Counters
- Dedicated Controller for Plastic Bag /Pouch Making Machines
- Dedicated Controller for Food / Pharma labeling Machines
- Dedicated Controller for Grinding Machines
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