

OPO

User Guide



Thank you for choosing our company and our product for your facility.
We suggest that you read this entire guide before using your new control system, along with all of the original manufacturer's operating documentation.

**If you need help or have questions,
please feel free to contact us at the email address below:**

support@RobeyControls.com

or see our website at:

www.RobeyControls.com

This document reflects the OP0 using firmware:

Version 1.00+

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Table of Contents

Keyboard overview	4
System start-up	5
Components on the operator panel (overview)	6
Components on the operator panel (detail)	7
Carrier or Carrier + Position entry modes	8
Optional support for PartPic inventory control software	9
EStop and other annunciators	10
Button Plate, EStop, Green Reset, Pilot Light and JOG Stick	11
System setup option.....	12
System setup parameter list	13
System Error Messages	14

Keyboard overview

The OP0 system is a keypad and display used for the operator to control the carousel in a Robey Controls system. It allows the operator to perform a number of basic machine control functions including:

- Direct selection of carrier level numbers, by using the ten-key keypad
- Manual up and down rotation of the carousel
- Restarting when errors occur
- Monitoring the system's safety status, by means of the 'traffic light' and the display information



The OP0 contains a 2x12 oLED display to show information to the operator during operation, including:

- Present carrier level
- Position and depth levels as an option
- Quantity and P/N information when connected to PartPic software and interfaced to the PC
- Present Error codes, including Error numbers and Error descriptions

The display has a screen-saver mode and will go to sleep after a period of inactivity. Pressing any key will restore the display.

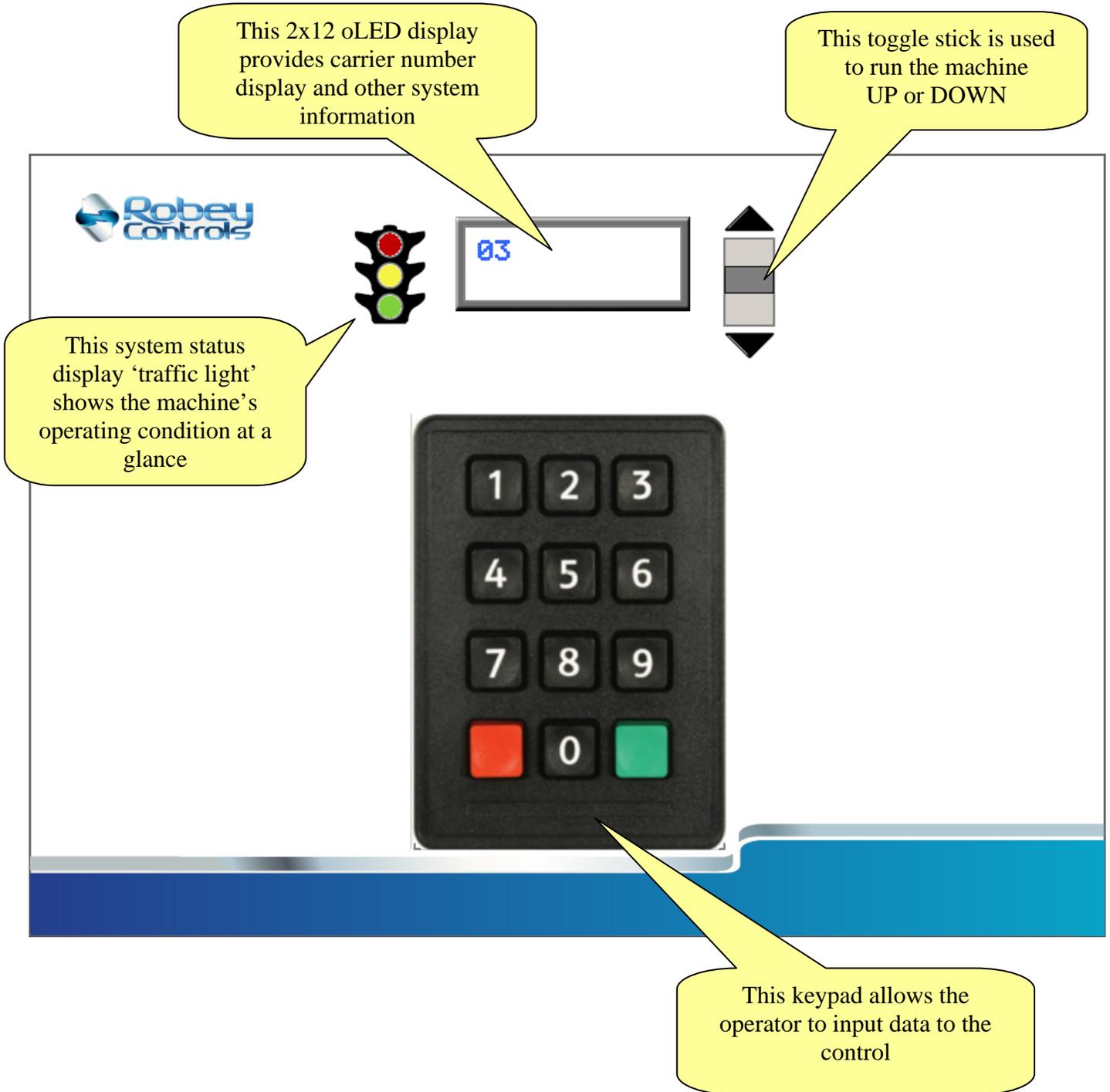
System start-up

The OP0 system starts by showing the manufacturer's name and then waits for the main control to be 'ready':

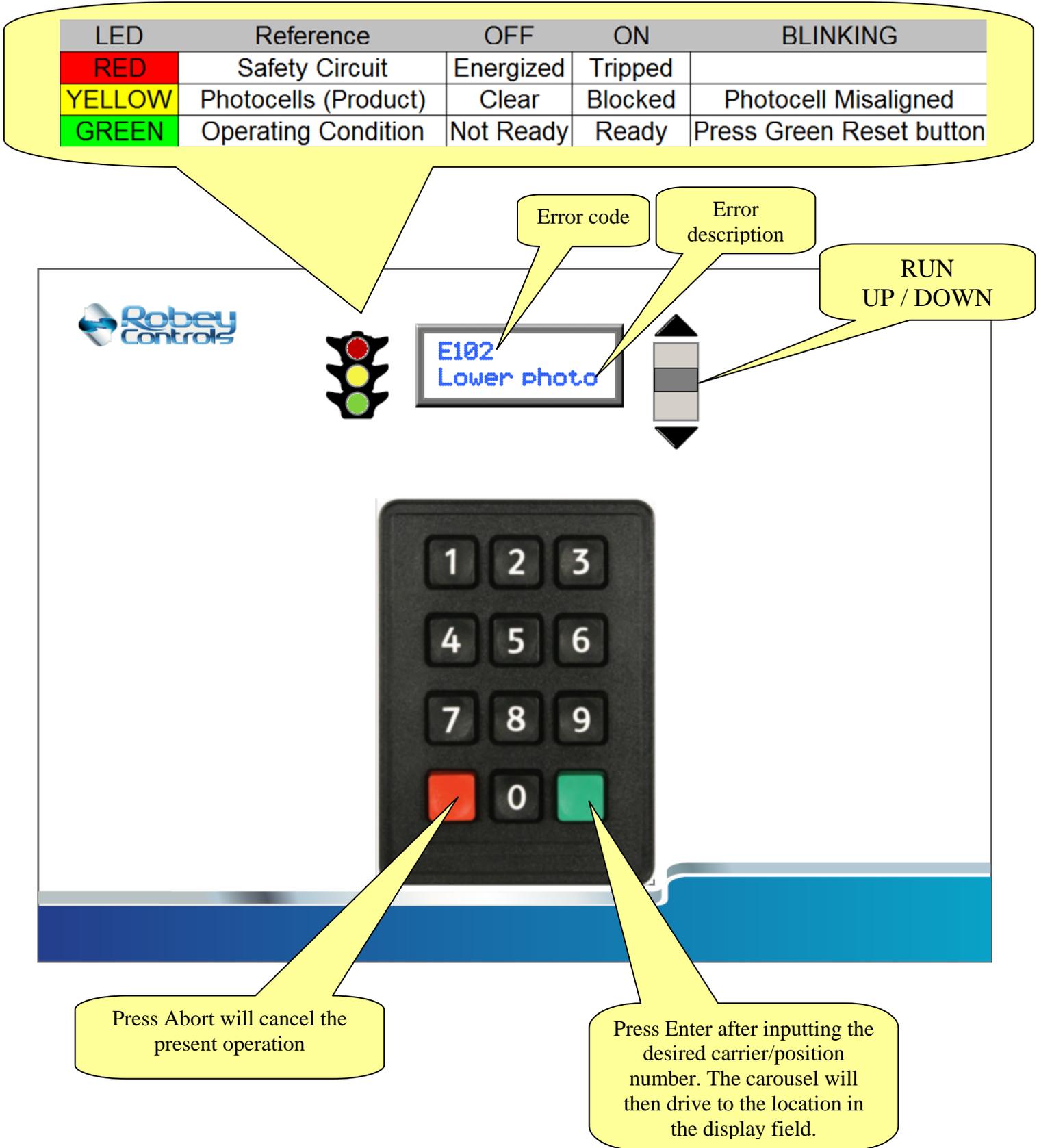


Components on the operator panel (overview)

The OP0 user-interface is an operator panel used for controlling the carousel. It also provides helpful feedback on the machine's operating status.



Components on the operator panel (detail)



Carrier or Carrier + Position entry modes

The keypad has two basic operating modes: Carrier entry or Carrier+Position entry. The different modes are configured in the SETUP menu step #15.

- **Carrier Entry:**

Using the number keys 0-9, enter a 1- or 2-digit carrier (level).

1 = Drive to Carrier 1
23 = Drive to Carrier 23

- **Carrier + Position Entry:**

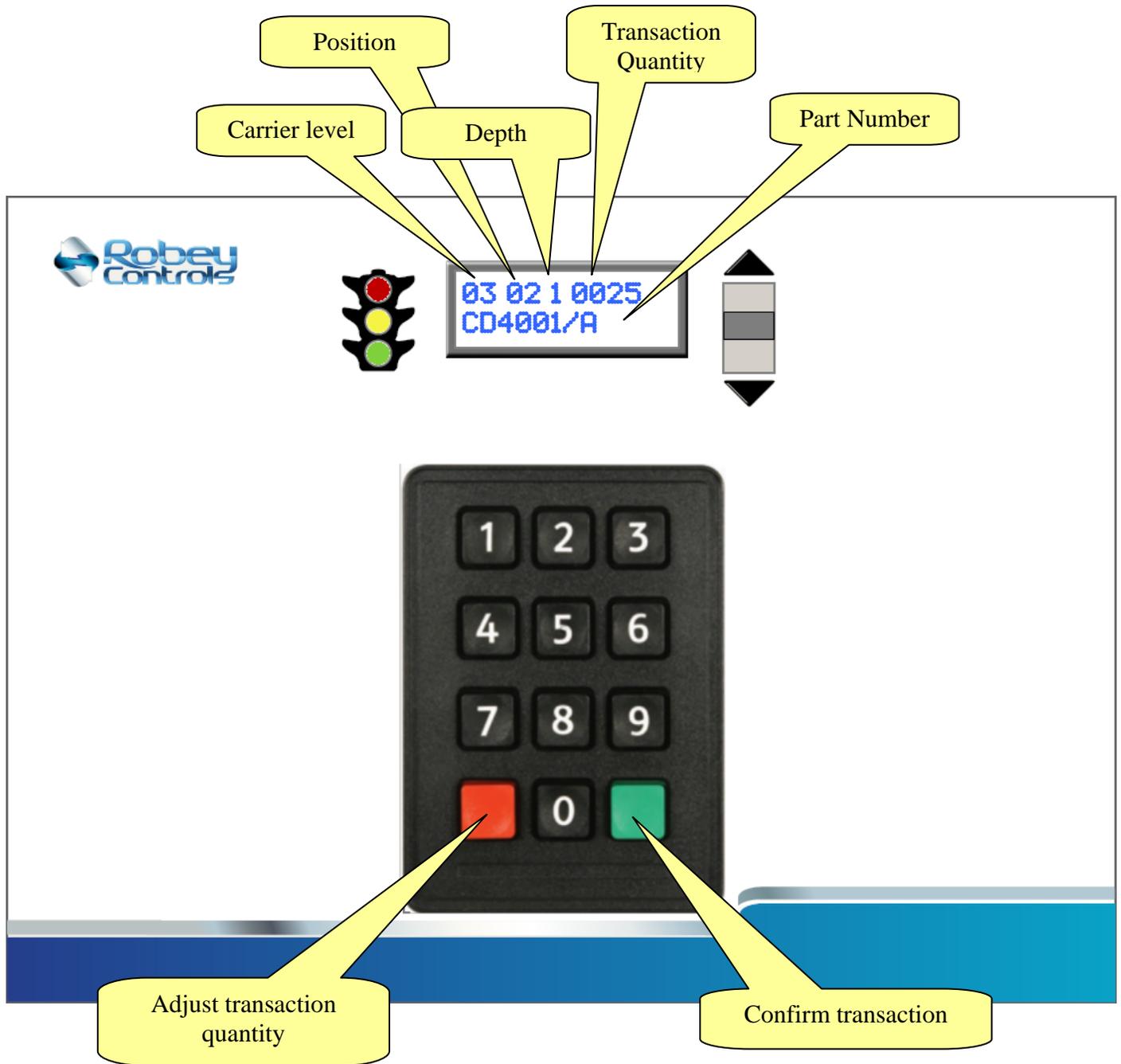
Using the number keys 0-9, enter a 1- or 2-digit carrier (level) followed by a 2-digit position.

1 = Drive to Carrier 1
12 = Drive to Carrier 12
12 3 = Drive to Carrier 12 and show Position 03
12 34 = Drive to Carrier 12 and show Position 34



Optional support for PartPic inventory control software

The OP0 user-interface supports PartPic, the Windows based PC software package used for controlling the inventory in the storage carousel. When used in this mode, some of the operating conditions change as shown below:



EStop and other annunciators

Each system normally includes push-buttons and indicator lamps for interface with the operator. These button-plates include an emergency stop button, safety reset button with green status indicator light, white pilot (control power on) light, and an optional joystick for up and down control of the machine.

There are typically two mounting locations for these button-plates including vertical and horizontal mounting configurations, but they both perform the same basic functions.

Mounting options

EMERGENCY STOP
Press this button (smack it!) anytime the machine appears to be operating in an unsafe manner!



Horizontal Mount
Typically used for retrofits on carousels produced with an overhead “front-case” from 1985 – today.

Vertical Mount
Typically used for retrofits on carousels produced with MP-Controls from 1983 - 1985

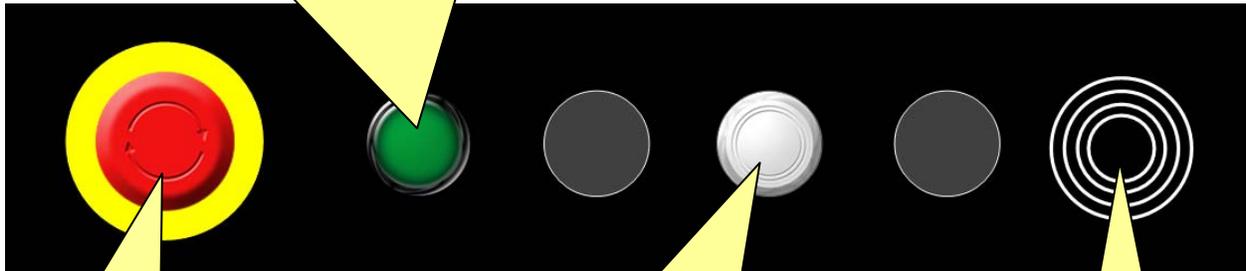
Reset Button/indicator

This GREEN button is pressed to energize the machine's safety system when the operator is ready to use the system and has confirmed that the machine is safe to operate.

It will illuminate GREEN when the safety system is ready for operation.

It will blink when the control system is ready to be reset, indicating that it should be pressed when the operator is ready.

OFF	Not Ready	The unit has a safety violation, and is not ready to be reset.
BLINKING	Waiting	The unit is ready to be reset; push the button when the machine is clear for operation.
ON	Ready	The unit is reset and ready to operate.



Emergency Stop (EStop)

Smack (press hard and quick) this button any time that you or another operator are in harms-way, or the machine is not behaving as expected

To release, twist the button clock-wise until it pops out.

Pilot Light

The 'Pilot Light' indicates that the controller has control voltage (power); basically showing that it is switched ON.

Joystick Control

The joystick can be used to move the machine UP or DOWN
The machine must be 'Ready' for this to function.

System setup option

Access to the SETUP options is available primarily to the installer, by any of the following methods:

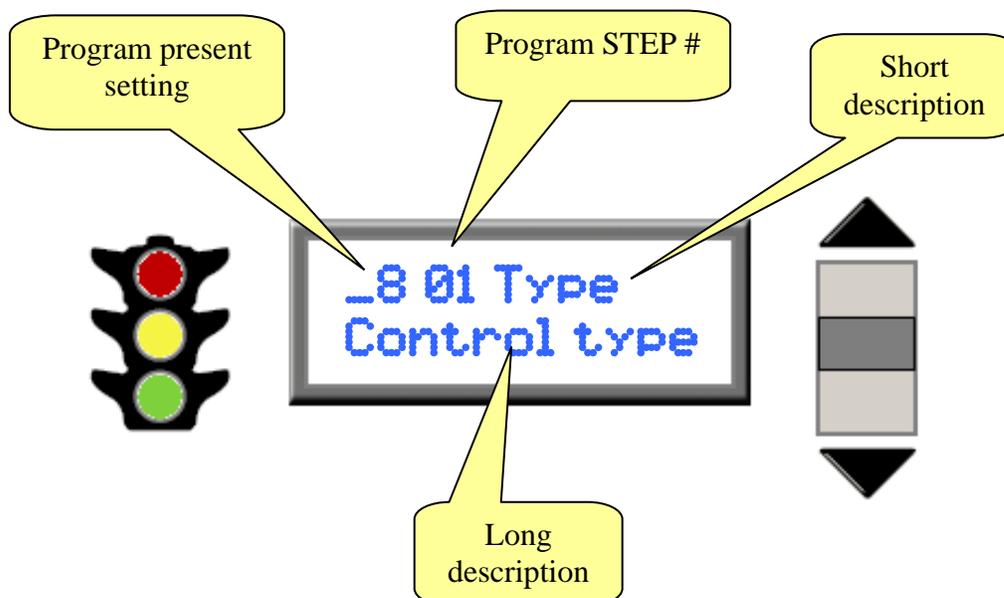
- Power-on the machine with the '0' button held
- Power-on the machine with the RED button held
- Hold the '9' key and toggle the 'UP' selector

Upon entry to the SETUP menu, the system will request a Password for further access before proceeding to the parameter setup pages. The password is only available to trained and experienced technicians as it is used for access to sensitive machine control parameters!



System setup parameter list

If the password is correctly entered then the system will present the various SETUP table options using the following format on the display:



Step #	Short Description	Long Description
00	PWord	Enter code (to access setup options)
01	Type	Control type: 1=HCX, 2=VCX, 4=RCX, 8=SCX
02	Stops	Total Stops (number of stop levels)
03	Err In	Error input module type:0=X61, 1=EIN, 2=GS94, 99=None
04	Stop1	Stop on 1 LED
05	Blink	Blink Position LED:0=No, 1=Yes
06	AC/DC	Motor type:0=AC, 1=DC
07	Drive	Motor drive type:0=CONTACTOR, 1=VFD
08	SlowEn	Slow enable:0=N, 1=Y
09	Count	Counter type:0=Dual-Prox, 1=Single-Prox
10	PNP?	Counter type:0=NPN, 1=PNP
11	Lock?	Monitor key switch: 0=N, 1=Y
12	Up/Dn?	Lock Up/Dn switch:0=N, 1=Y
13	PCell1	Photocell #1 input:0=Photocell, 1=Light-Bar, 99=OFF
14	PCell2	Photocell #2 input:0=Photocell, 99=OFF
15	PMode?	Position entry mode:0=CC, 1=CC+PP, 2=CC+PP+D

Appendix A

System Error Messages

Error #	Error	Description
1	Photocell 1	The beam on carousel #1, left side is interrupted.
2	Photocell 2	The beam on carousel #1, right side is interrupted.
3	Photocell 3	The beam on carousel #2, left side is interrupted.
4	Photocell 4	The beam on carousel #2, right side is interrupted.
5	Photocell 5	The beam on carousel #3, left side is interrupted.
6	Photocell 6	The beam on carousel #3, right side is interrupted.
7	Photocell 7	The beam on carousel #4, left side is interrupted.
8	Photocell 8	The beam on carousel #4, right side is interrupted.
20	Out of range...	The value entered is not in the valid range for this device.
21	Wrong travel direction	The machine appears to be traveling incorrectly. Contact maintenance.
30	Run timeout	The machine ran for too long without stopping. Contact maintenance.
31	Count timeout	The machine ran for too long without seeing a counter. Contact maintenance.
39	PLC Battery low warning	The battery in the controller is low. Contact maintenance.
40	VFD Over Current	The motor controller sensed too much current. Contact maintenance.
41	VFD Over Voltage	The motor controller sensed too much voltage. Contact maintenance.
42	VFD Over Temp	The motor controller is too hot. Contact maintenance.
43	VFD Overload	The motor controller is overload. Contact maintenance.
44	VFD Overload 1	The motor controller is overload. Contact maintenance.
45	VFD Overload 2	The motor controller is overload. Contact maintenance.
46	VFD stopped	The motor controller has a problem. Contact maintenance.
47	VFD CPU Failure 1	The motor controller has a problem. Contact maintenance.
48	VFD CPU Failure 2	The motor controller has a problem. Contact maintenance.
49	VFD CPU failure 3	The motor controller has a problem. Contact maintenance.
50	VFD H/W Protection Failure	The motor controller has a problem. Contact maintenance.
51	VFD Overcurrent Accel	The motor controller required too much current while starting. Contact maintenance.
52	VFD Overcurrent Decel	The motor controller required too much current while stopping. Contact maintenance.
53	VFD Overcurrent idle	The motor controller required too much current while idle. Contact maintenance.
54	VFD Ground Fault	The motor controller has a problem. Contact maintenance.
55	VFD Low Voltage	The motor controller has insufficient incoming voltage. Contact maintenance.
56	VFD 3~ Power Loss	The motor controller does not detect all phases of power. Contact maintenance.
57	VFD Ext'l base block	The motor controller has a problem. Contact maintenance.
58	VFD Auto adjust (cFA) failure	The motor controller has a problem. Contact maintenance.
59	VFD S/W protection	The motor controller has a problem. Contact maintenance.
60	VFD interface?	The motor controller cannot be found. Contact maintenance.
70	E-Stop button?	The Emergency stop button appears to be pressed. Twist to release it when ready.
101	Photocell 1	The beam on the carousel top is interrupted.
102	Photocell 2	The beam on the carousel bottom is interrupted.
103	Photocell 3	The beam on the carousel () is interrupted.
104	Photocell 4	The beam on the carousel () is interrupted.
120	Out of range...	The value entered is not in the valid range
130	Door Left	The left side of the sliding door is out of position
131	Door Right	The right side of the sliding door is out of position
132	Access Panel	The lower service panel is not closed properly
133	Hand Crank	The access area for the motor hand-crank is not secured.

134	EStop Button	The Emergency stop button #1 appears to be pressed. Twist to release.
135	EStop Button 2	The Emergency stop button #2 appears to be pressed. Twist to release. Check VSX:X6 if Button #2 does not exist.
136	Check VSX:X7	Special Input #7 () appears to be violated.
137	Check VSX:X8	Special Input #8 () appears to be violated.
138	Check motor temp/overload	The motor appears to be too hot, or the over-current sensor has tripped. Call maintenance.
139	Check motor temp	The motor appears to be too hot. Call maintenance.
140	Light Curtain	The Light Curtain seems to be tripped. Clear obstruction and press reset.
141	Light Curtain K2	The Light curtain has a redundancy error. Cycle power or call maintenance.
142	Light Curtain K1	The Light curtain has a redundancy error. Cycle power or call maintenance.
144	SoftStart failure	The motor starter has failed. Call maintenance
145	K1 Contactor fail	Safety contactor not operating correctly. Contact maintenance.
146	K2 Contactor fail	Safety contactor not operating correctly. Contact maintenance.
147	K3 Contactor fail	DOWN contactor not operating correctly
148	K4 Contactor fail	Brake contactor not operating correctly
149	PLC Battery low	The battery in the controller is low. Contact maintenance.
150	Press RESET	Press the Green RESET button to activate safety system
151	VSX Module?	The Vertical Safety Interface module can not be found. Call maintenance
152	Drive Hot, Stand by...	The motor controller is too hot and is cooling down, stand by until it resets.
153	Stop resistor?	The dynamic braking resistor (big green resistor) is not detected.
154	VFD Faulted	The Variable Frequency Drive indicates a fault.
155	24V Power Supply?	The power supply in the controller is not detected.
156	Door not ready	The door is not open, or neither side is in the proper run position.
157	SRM?	The Safety Relay Module is not detected.
158	System Startup	The system has restarted and requires the Green Reset button to be pressed, after confirming that the machine is safe to operate, including checking the surrounding area. Make sure that maintenance is not working inside the unit! The SYS-CHECK routine must now be performed. See 'SYS-CHECK' description elsewhere in this manual
160	Safety Check Due Now!	The parameter settings for the Motor data between the setup page and the actual VFD do not match. Call for service
161	VFD Motor parameters do not match	The parameter settings for the Motor accel & decel rates between the setup page and the actual VFD do not match. Call for service
162	VFD Ramp parameters do not match	The Motor control can not be detected. Call for service.
163	VFD Not Found	The controller has been set to factory defaults.
198	PLC Initialized	The controller has been started.
199	System start	The optional PartPic Part Number server is not found
200	PN Server not found	



www.RobeyControls.com
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Providing technology under your control at an affordable price

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