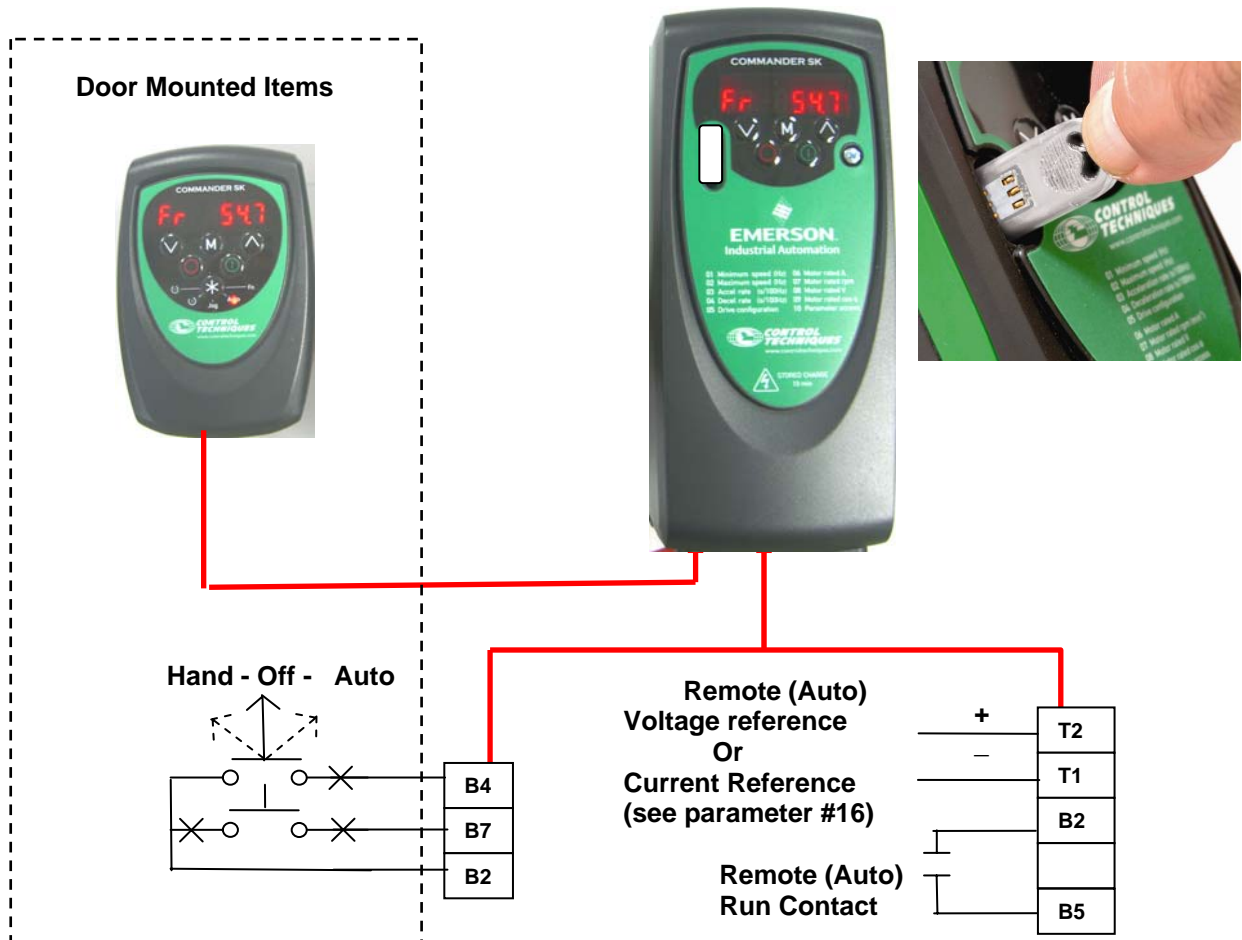


The Application Note is pertinent to the Commander SK Family

### Commander SK with Hand - Off - Auto Switch Control Logic Stick Required



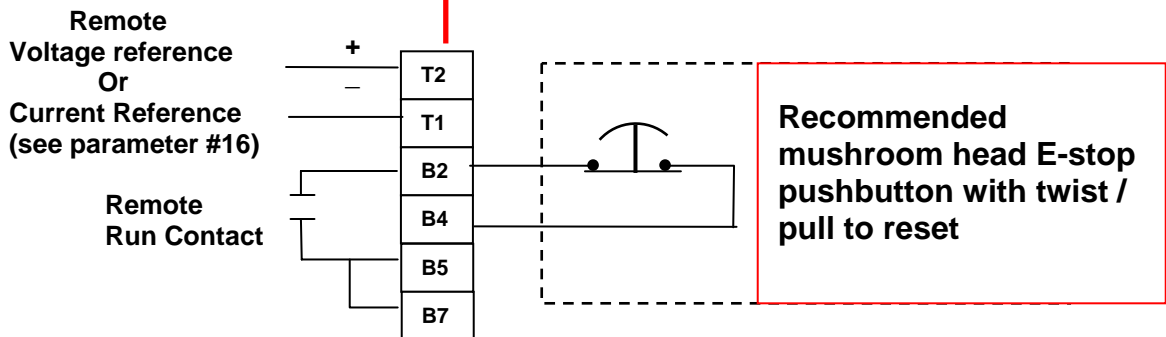
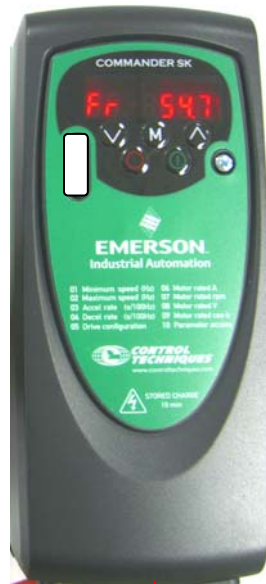
This configuration provides three modes of operation:

1. Hand – Control of the drive using the drive’s keypad or the optional remote keypad.
2. Off – Drive is disabled
3. Auto – Drive is controlled by a remote run contact and speed command

### System Safety

**As with any system design where mechanical motion is involved, personnel safety should be of paramount importance. This application note is for basic guidance in providing various drive functions and does not address these issues as it is the sole responsibility of the control panel and machine designers to meet all applicable Machine Safety requirements.**

## Commander SK with Local / Remote Control Logic Stick Required



This configuration provides two modes of operation:

1. With the run contact open, the drive is controlled by either the drive's keypad or the optional remote keypad.
2. With the run contact closed, the drive is controlled by the analog speed command.

There are many applications which require local / remote control of an ac drive. In this application, it is desirable to control the drive using the keypad controls when in local control and an analog speed reference (be it 0 to 10vdc or 4-20ma) and run contact when in the remote control mode. The two configurations above show such systems. In the first configuration, the Commander SK remote keypad and a Hand – Off – Auto switch are mounted in the front door of the drive enclosure. The second configuration is much simpler since it uses the run contact to switch to the remote mode; otherwise if it is open the drive is in local control by the drives keypad. This configuration is oriented for application where the drive is wall mounted and not in an enclosure as it is in the first configuration. The Logic Stick option is required to provide this functionality. The actual program for this application note is available on our website -- [SyPTLite Program](#) (HVAC control \_ local\_remote.dpl V1.0). It was written using the free SyPTLite PLC programming toolkit which can also be found on our website.

To obtain SyPTLite click here → [SyPTLite](#)



## **System Specifications:**

### **Local Mode**

- In local control, the drive is started and stopped using the keys on the drives faceplate. The motor speed is set using the Up (to increase) and the Down (to decrease) keys while the drive is in the run mode.
- If the drive is **not** in run, the up / down button will have no function unless the mode button is pressed, and then they are used to adjust parameters.
- If the mode button is pressed while the drive is in run, the up / down buttons are locked out to allow parameters to be adjusted without affecting the speed of the motor. This lockout time is 30 seconds which can be changed in the program to any desired time. The lockout can be reset anytime by simply pressing the up and down arrows together.

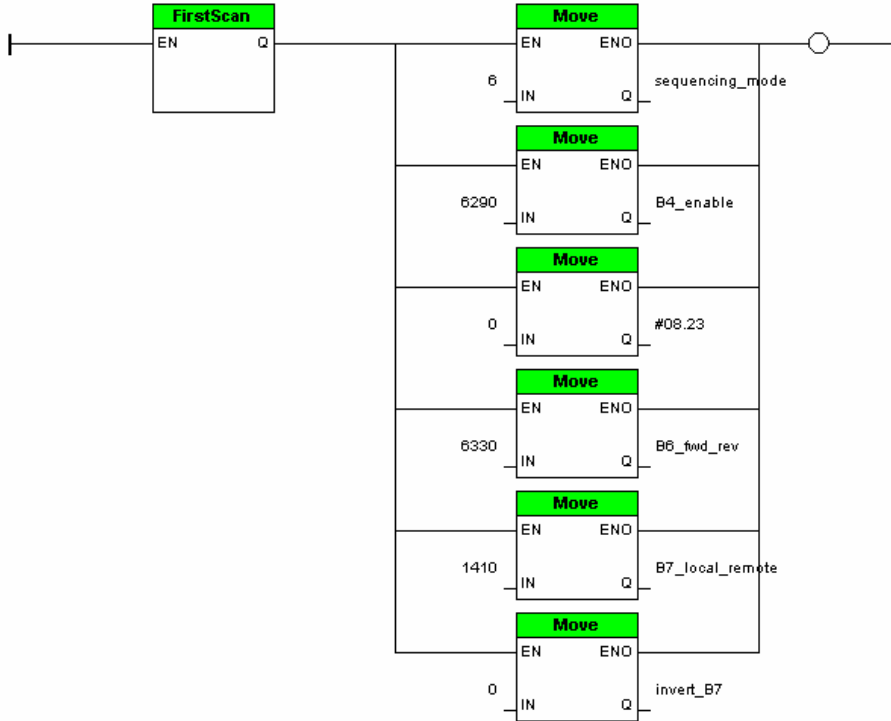
### **Remote Mode**

- In this mode, the speed is controlled by the analog reference and the remote run contact starts and stops the drive.
- If the drive is in run and the stop button is pressed on the drives faceplate, the drive will stop. To restart, the run contact must be opened and re-closed.

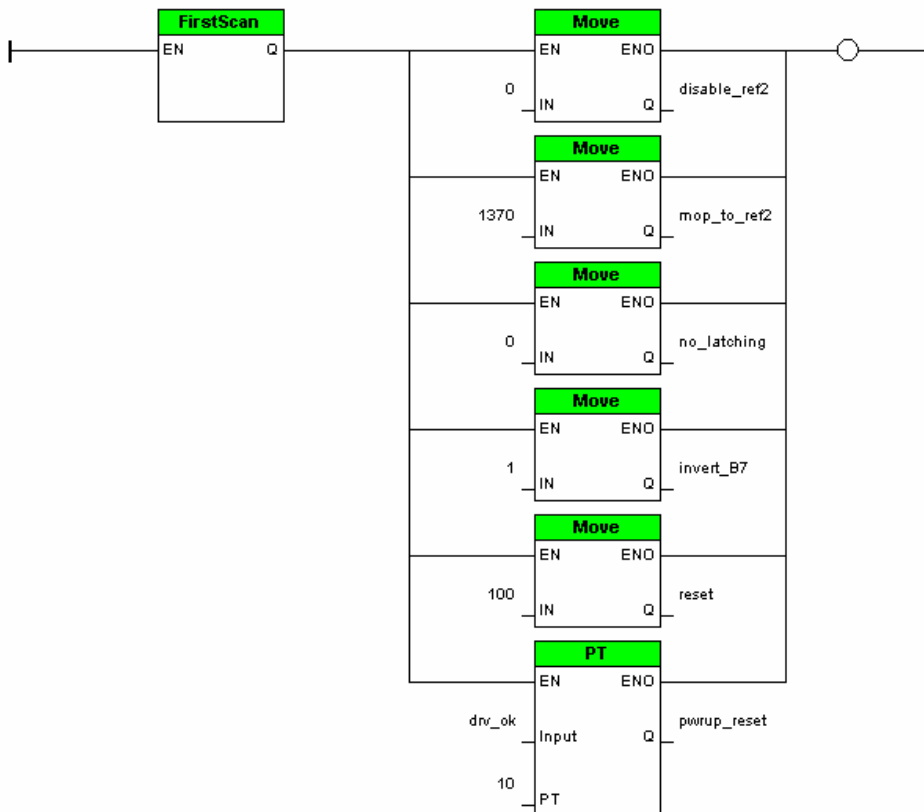
# SyPTlite Program

The SyPTlite program, in its first scan, sets some of the required I/O functions like the non-latching sequencing mode which allows user modifications.

\* This section configures the drives I/O. Sequencing mode = 6 (user) , B4 = enable, B5 = remote run and B7 = local / remote \*)

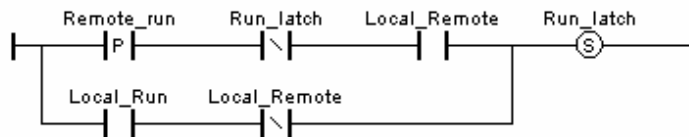


\* This section sets the output of the mop function to #1.37, logic inputs to non-latching and then a reset \*)

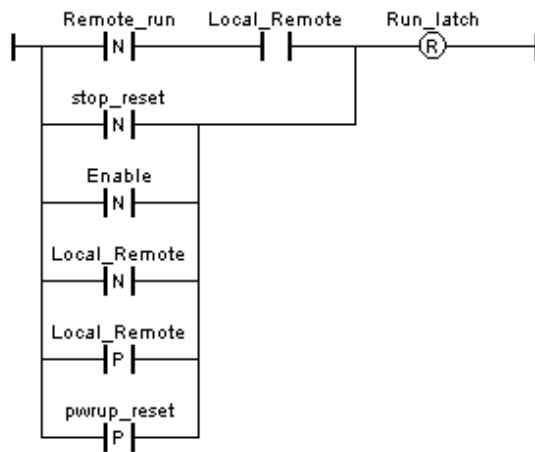


This section of the program sets up a run latch which can be set by either the keypad run button or the remote run contact. The latch can be reset by either the stop button on the drive, by opening the remote run contact, the enable or changing the state of the local/remote switch.

(\* This is the drive run command logic latch \*)



(\* This logic de-latches the run latch on a stop, disable, local / remote switch state change \*)



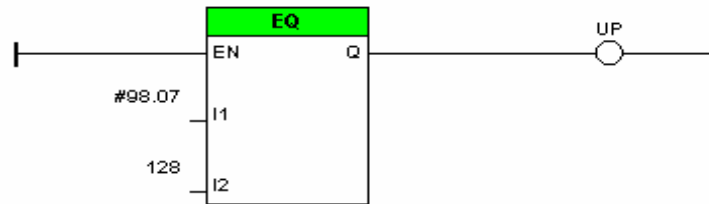
(\* Drive run command \*)



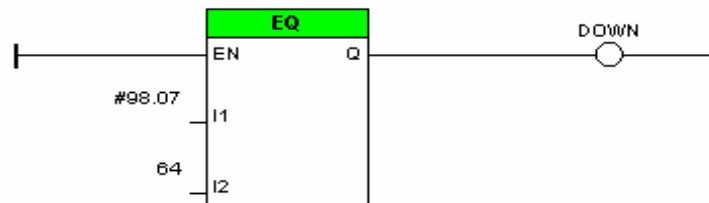
The run relay is picked up (or dropped out) by the run latch, but the enable must be closed.

This section of the program looks to see what buttons are being pressed.

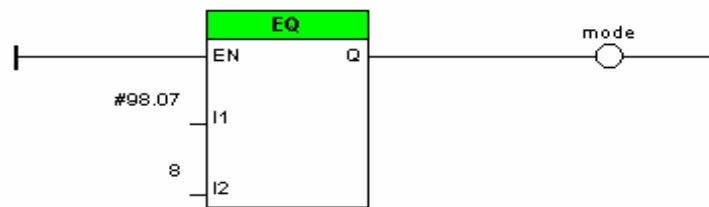
\* Up button pressed? \*)



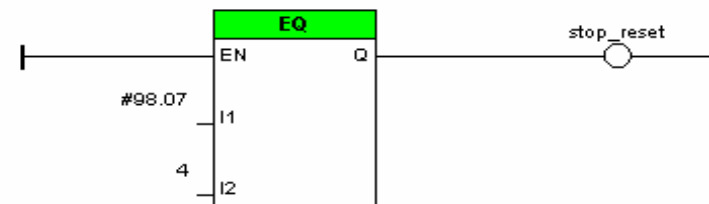
\* Down button pressed? \*)



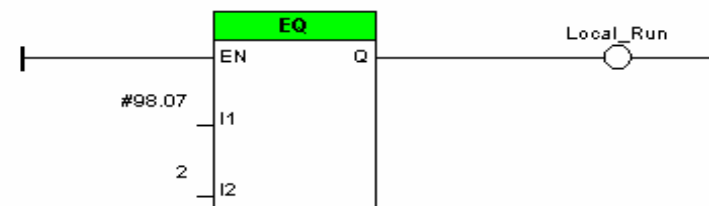
\* Mode Button Pressed? \*)



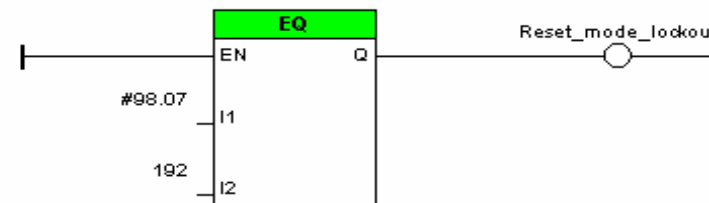
(\* Keypad Stop button pressed? \*)



(\* Keypad Run depressed? \*)



(\* Reset mode lockout by pressing the Up and Down arrows together \*)

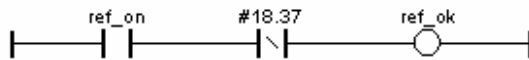


This section of the program controls the Up / Down inputs to the drives MOP function.

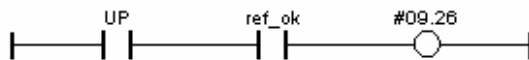
(<sup>⌘</sup> Set #18.37 if the Mode button is pressed <sup>⌘</sup>)



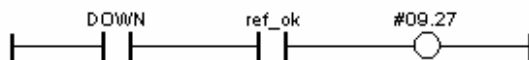
(<sup>⌘</sup> If in run and mode is pressed, disable ref\_ok <sup>⌘</sup>)



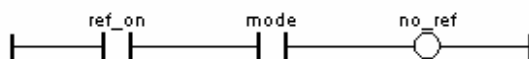
(<sup>⌘</sup> If up button is pressed and ref\_ok is enabled, allow mop up <sup>⌘</sup>)



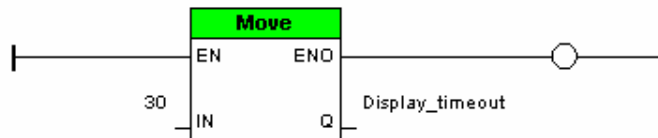
(<sup>⌘</sup> If down button is pressed and ref\_ok is enabled, allow mop down <sup>⌘</sup>)



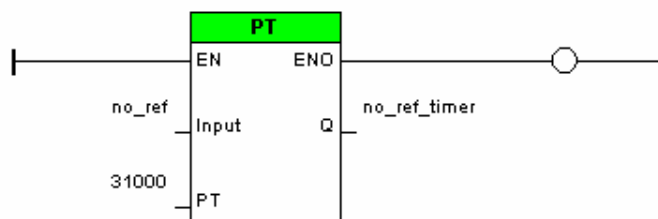
(<sup>⌘</sup> If in run and the mode button is pressed, enable mode lockout timer <sup>⌘</sup>)



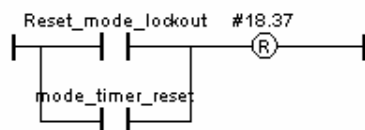
(<sup>⌘</sup> set display timer to 30sec, 1 second less than mode lockout timer <sup>⌘</sup>)



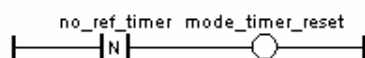
(<sup>⌘</sup> Mode lockout timer <sup>⌘</sup>)



(<sup>⌘</sup> Reset up/down lockout if stop button pushed or mode lockout timer expires <sup>⌘</sup>)



(<sup>⌘</sup> Reset mode lockout after timer expires <sup>⌘</sup>)



## Syptlite Program Aliases

mode_timer_reset	#18.40	mop_to_ref2	#09.25
reset	#10.38	no_ref	#18.34
Local_Run	#18.41	B6_fwd_rev	#08.24
no_latching	#06.40	pwrap_reset	#18.45
Reset_mode_lockout	#18.42	Remote_run	#08.03
UP	#18.31	no_ref_timer	#18.35
RUN	#06.30	B7_local_remote	#08.25
DOWN	#18.32	local_remote_sw	#01.41
run_latch	#18.43	ref_ok	#18.36
B4_enable	#08.22	disable_ref2	#07.14
mode	#18.33	invert_B7	#08.15
Run_latch	#18.44	mop_reset	#09.28

Display_timeout	#11.41
Local_Remote	#08.05
stop_reset	#18.38
sequencing_mode	#06.04
Timer_reset	#18.39
ref_on	#01.11
Enable	#06.29
drv_ok	#10.01

### Disclaimer

The examples provided here are just that, examples. They can be used for reference when creating your own application solutions. Control Techniques does not warrant these examples "as is" for actual use. The examples are intended to stimulate ideas and facilitate application solutions. One always needs to consider and test **all aspects** of a system implementation to insure integrity and **safety** of their particular intended application.

**For additional Hand-Off-Auto and Local / Remote Control schemes which do not require the use of the Optional Logic Stick. See [CTAN273](#) and [CTAN274](#), note that both of these have more limited functionality.**

### **Questions: Ask the author ??**

Steve Zaleski Email: <mailto:steve.zaleski@emersonct.com>

Tel: 1-800-367-8067