# Lester Control Systems Ltd

BRAKE CONTROLLER:
QUICK SETUP GUIDE for use with ALMEGA II
ISSUE: 1 Date: 01/03/2019

1. Pre-Check Information:
   a. Check Materials (e.g. for a typical 8 floor job Simplex)
      i. 1- Brake Controller
      ii. 1 - Brake Controller Supply (240V, 110V etc.)
      iii. 1- Brake Controller Backup Supply (for Hand-winding)
      iv. 1- Brake Control Switching Circuit.
   b. Check Parameters.
      i. Parameters are factory set, however a double check to make sure all are set correctly configured / enabled could save time. See Section "**Brake Controller Parameters**".

2. Brake Controller Overview:
   a. The brake controller provides the facility for lift Brake control
      i. Brake Lift and Hold Voltage
      ii. Brake Lift to Hold Timer
      iii. Secondary Supply (hand winding operation)
         1. As above plus Brake Pulse operation (i.e. the brake is only energised for a set time period (adjustable)) to stop lift roll away.

Key:
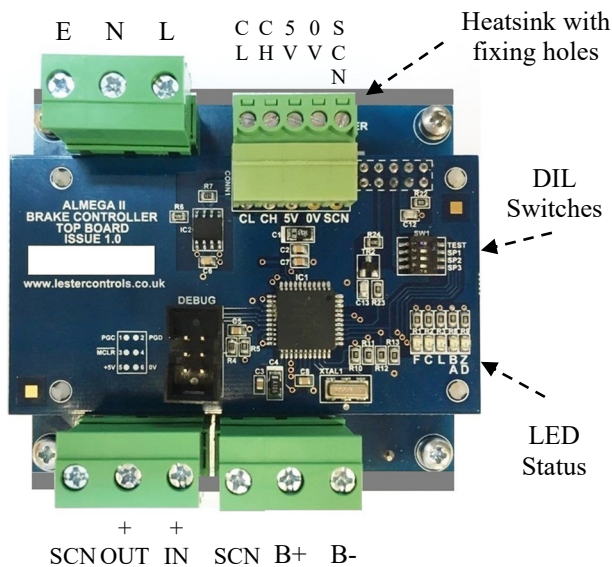
AC High Volatge Input Power
E   = Earth / Screen
N   = Neutral
L   = Live

Low Voltage Input Power & Communications
CL   = CAN LOW Communications
CH   = CAN HIGH Communications
5V   = 5V Supply
0V   = 0V Supply
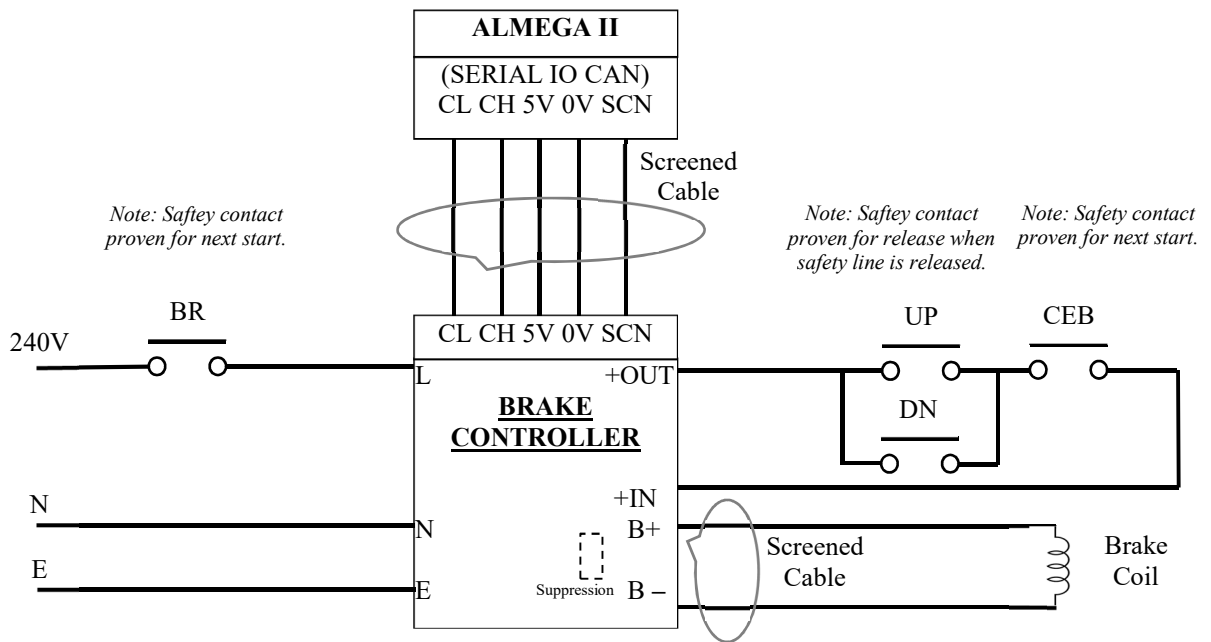SCN   = Screen Cable Screen Connection

Output Switching
+OUT   = DC Voltage Out
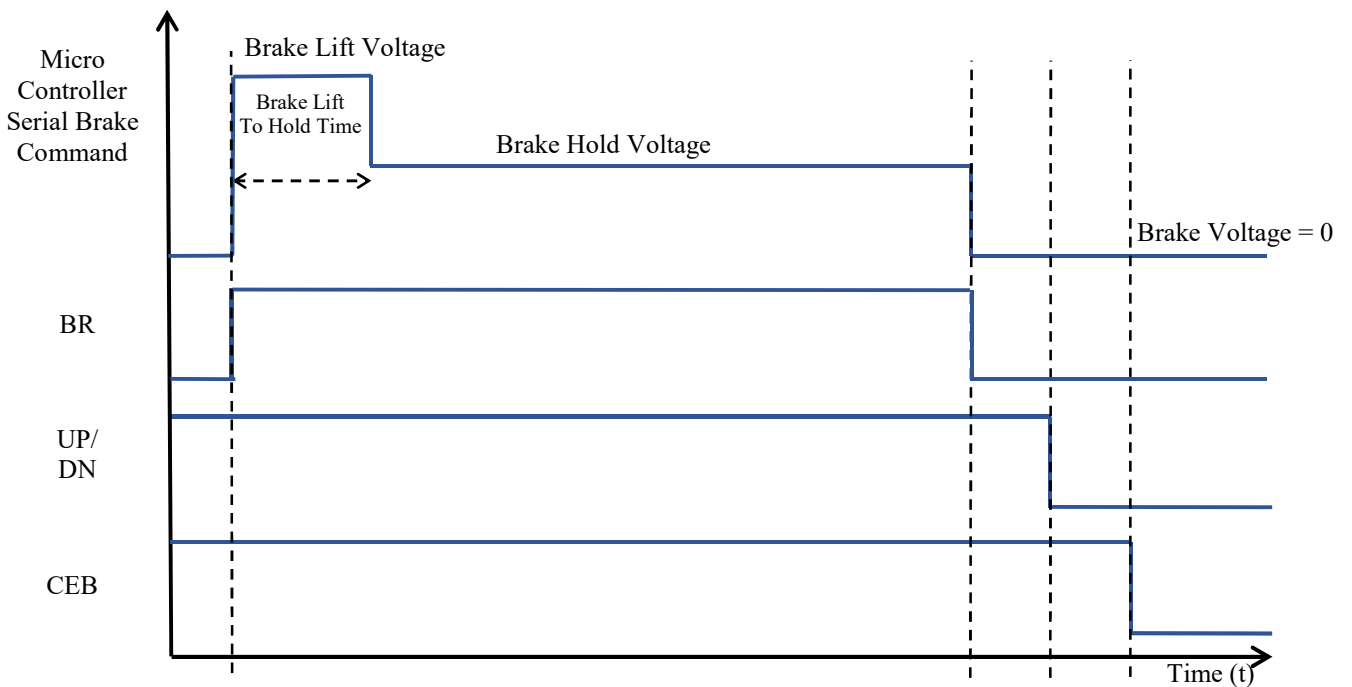+IN   = DC Voltage In / return

Output to Lift Brake
B+   = Brake Coil +
B –   = Brake Coil –
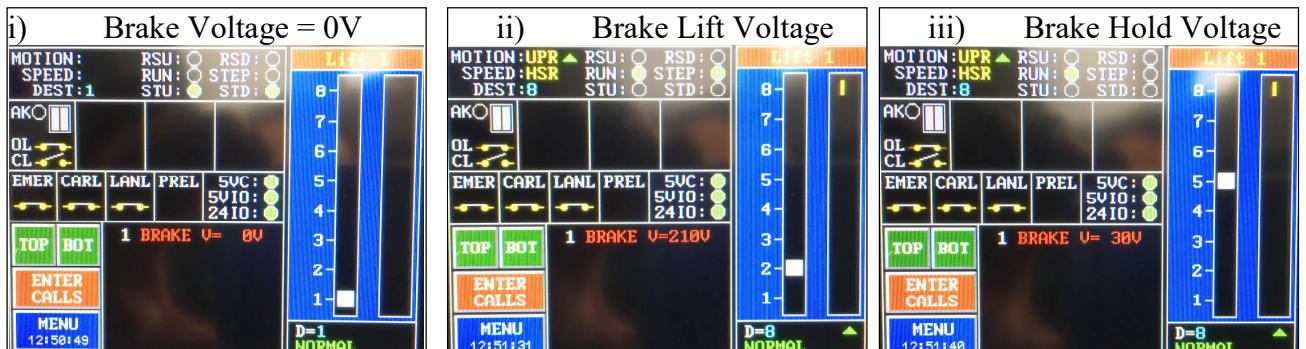SCN   = Screen Cable Screen Connection
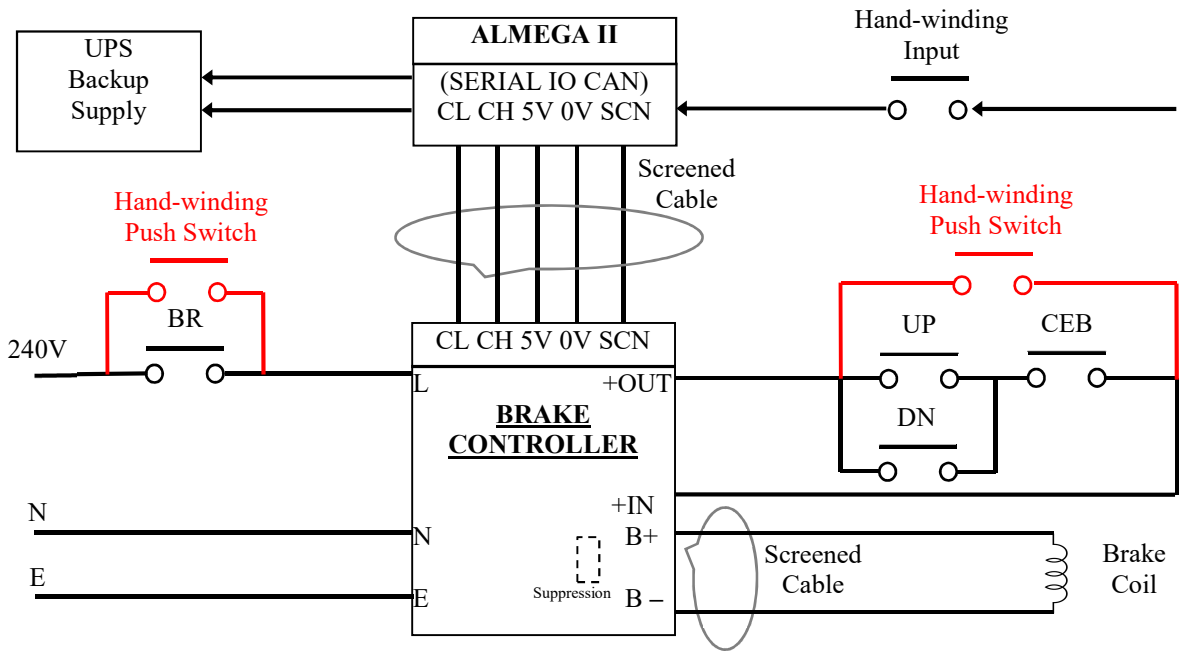
3. Normal Supply Operation (e.g. 240V AC Input):

ALMEGA II

(SERIAL IO CAN)
CL CH 5V 0V SCN

Screened Cable

Note: Saftey contact proven for next start.

Note: Saftey contact proven for release when safety line is released.

Note: Safety contact proven for next start.

CL CH 5V 0V SCN

BR

240V

L   +OUT

BRAKE CONTROLLER

UP   CEB

DN

+IN

N

N

B+

Screened Cable

Brake Coil

E

E

Suppression   B –

a. Normal Supply Timing Chart

Micro Controller Serial Brake Command

Brake Lift Voltage

Brake Lift To Hold Time

Brake Hold Voltage

Brake Voltage = 0

BR

UP/ DN

CEB

Time (t)

b. The Lift Menu "Lift Viewer" will show the brake voltage (as below)

i) Brake Voltage = 0V

ii) Brake Lift Voltage

iii) Brake Hold Voltage

1 BRAKE V= 0V

1 BRAKE V=210V

1 BRAKE V= 30V

4. Backup Supply Operation (e.g. UPS 240V AC Input):

a. Backup Supply Timing Chart
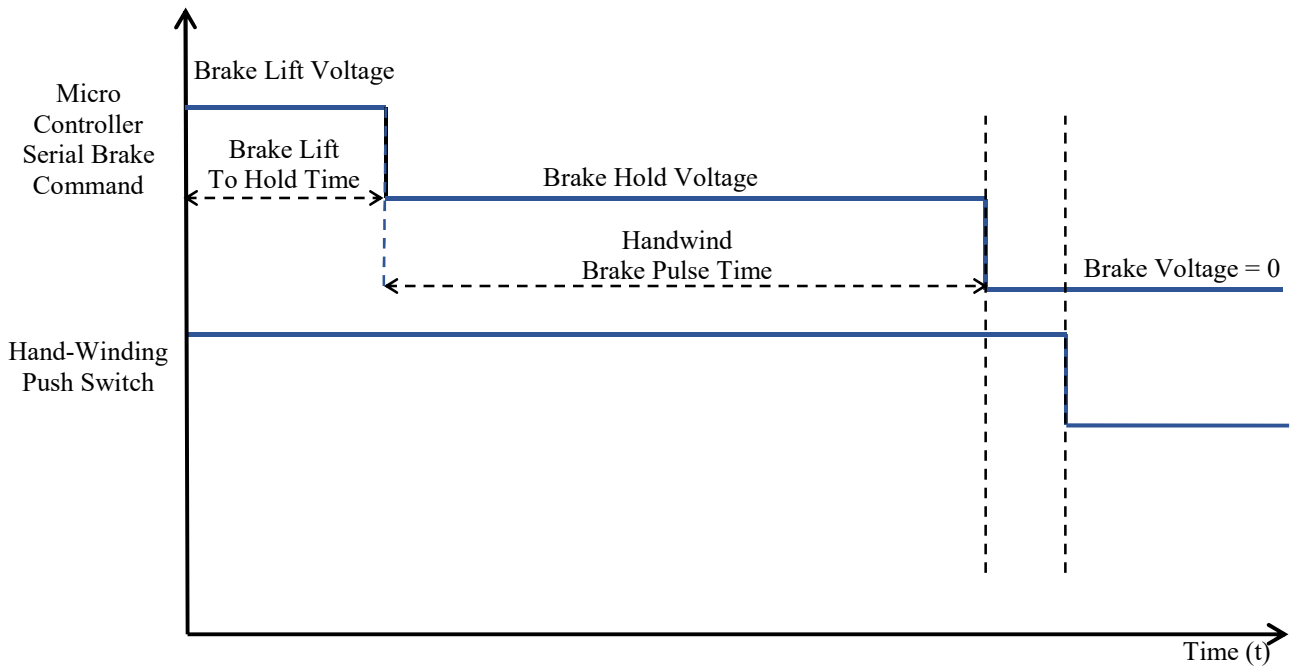
b. The Lift Menu "Lift Viewer" will show Hand-winding operation (as below)

Notes:
1. Hand-wind Operation is invoked by the Hand-wind Operation Input to the Almega II processor.
2. The Brake Module however controls the brake independently of the Almega II processor.
3. The Brake module can also detect hand-wind mode itself if the Almega II processor should fail (i.e. serial communications is lost).

5. Parameter Adjustments:

    Parameters are stored in the Brake Module, but adjusted from the Almega II micro controller menu.

    a. **Travel Control Parameters**
        Several Brake Control parameters can be found in Travel Controls (as below):

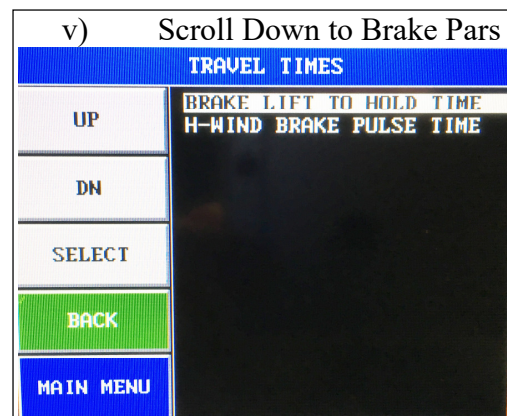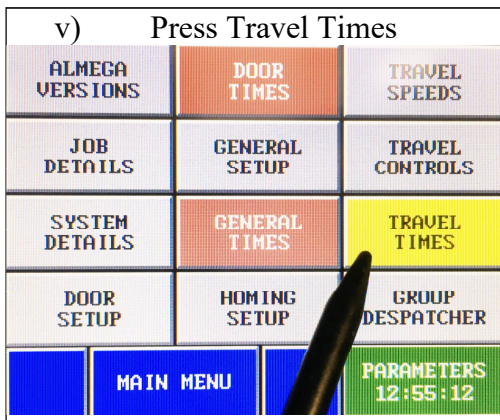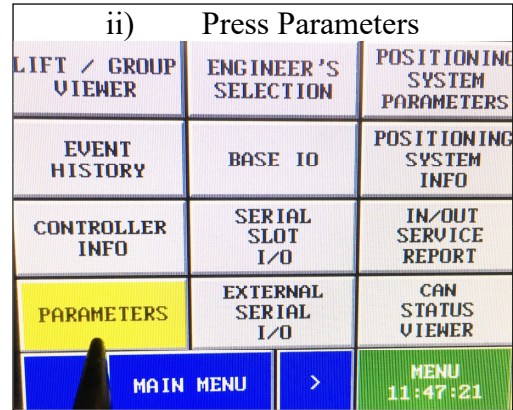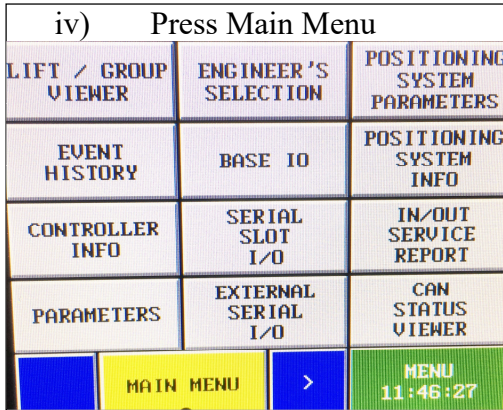| Parameter	Minimum	Maximum	Default
i. Brake Controller Fitted	NO	YES	NO
ii. Brake Controller Initialised	0	255	255 (Note 1)
iii. Brake Supply Voltage	70VAC	240VAC	240VAC
iv. Brake Lift Voltage	1VDC	210VDC	110VDC
v. Brake Hold Voltage	1VDC	210VDC	110VDC

Note 1: Brake Controller initialised is a read only parameter. The initialised value is 90 when the mirco controller has programmed the brake controller with parameter values. 255 means un-initialised / un-programmed.

i) Press Main Menu	ii) Press Parameters

iii) Press Travel Controls	ii) Scroll Down to Brake Pars
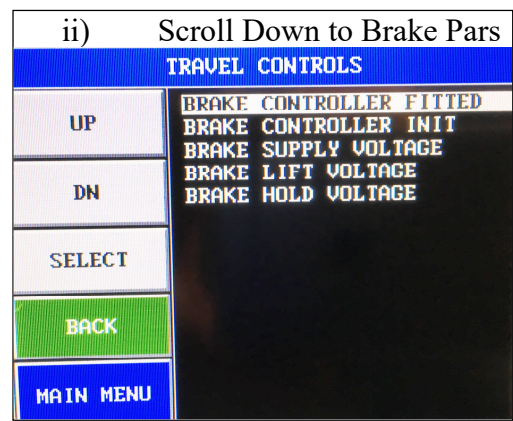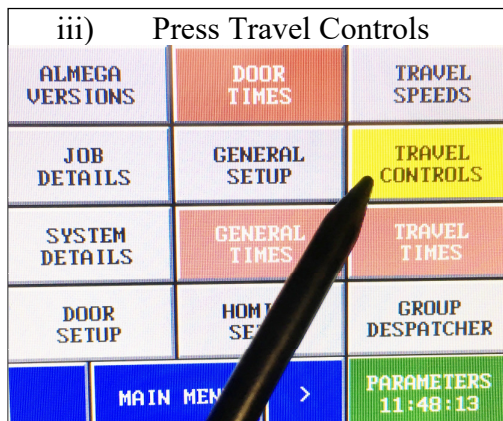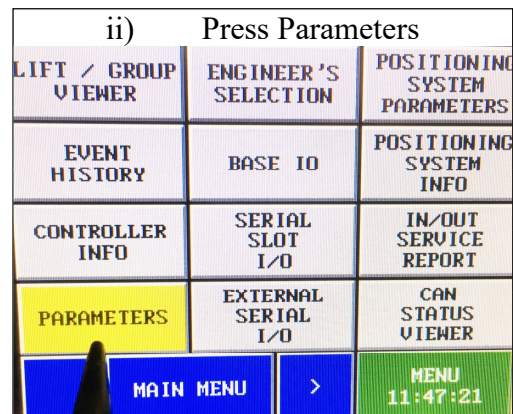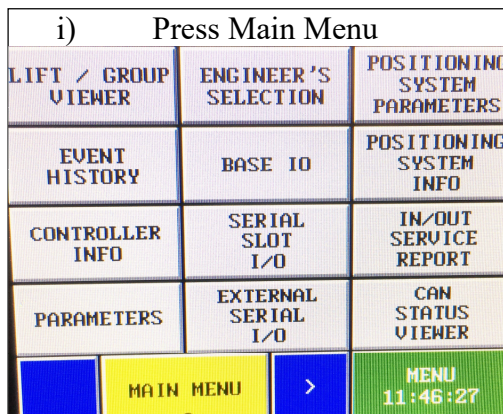
b. Travel Time Parameters

Several Brake Time parameters can be found in Travel Times (as below):

Parameter	Minimum	Maximum	Default
i. Brake Lift to Hold Time	0	3000ms	1000ms
ii. Handwind Brake Pulse Time	0	20s	8s

iv)   Press Main Menu

LIFT / GROUP VIEWER	ENGINEER'S SELECTION	POSITIONING SYSTEM PARAMETERS
EVENT HISTORY	BASE IO	POSITIONING SYSTEM INFO
CONTROLLER INFO	SERIAL SLOT I/O	IN/OUT SERVICE REPORT
PARAMETERS	EXTERNAL SERIAL I/O	CAN STATUS VIEWER
MAIN MENU	>	MENU 11:46:27

ii)   Press Parameters

LIFT / GROUP VIEWER	ENGINEER'S SELECTION	POSITIONING SYSTEM PARAMETERS
EVENT HISTORY	BASE IO	POSITIONING SYSTEM INFO
CONTROLLER INFO	SERIAL SLOT I/O	IN/OUT SERVICE REPORT
PARAMETERS	EXTERNAL SERIAL I/O	CAN STATUS VIEWER
MAIN MENU	>	MENU 11:47:21

v)   Press Travel Times

ALMEGA VERSIONS	DOOR TIMES	TRAVEL SPEEDS
JOB DETAILS	GENERAL SETUP	TRAVEL CONTROLS
SYSTEM DETAILS	GENERAL TIMES	TRAVEL TIMES
DOOR SETUP	HOMING SETUP	GROUP DESPATCHER
MAIN MENU		PARAMETERS 12:55:12

v)   Scroll Down to Brake Pars

TRAVEL TIMES	
UP	BRAKE LIFT TO HOLD TIME
DN	H-WIND BRAKE PULSE TIME
SELECT	
BACK	
MAIN MENU	

6. Trouble Shooting:
When the brake Controller is installed there are several conditions which will cause the lift to go out of service as below.

i) Communications Lost	ii) Initialise Error	iii) Parameter Error	iv) Start Failure (VCFirm)
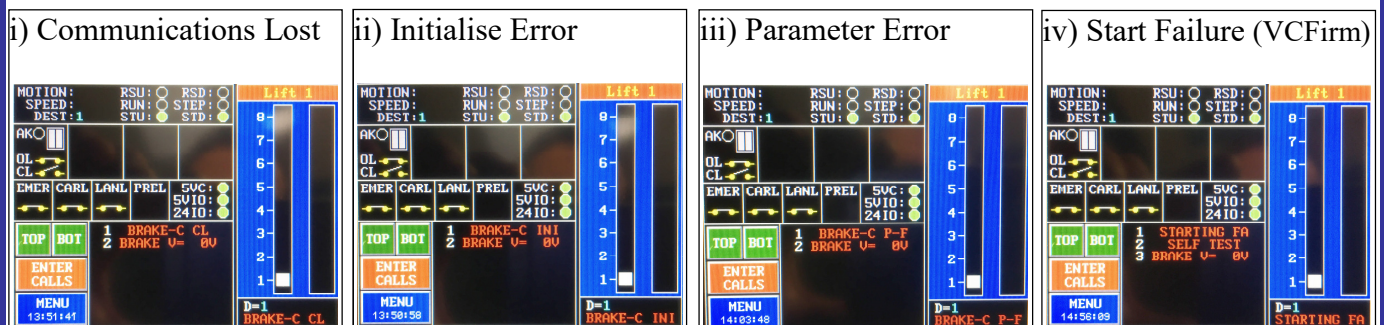
- **i)** **Communications Lost:**
  - a. Check CAN communications connections CH and CL.
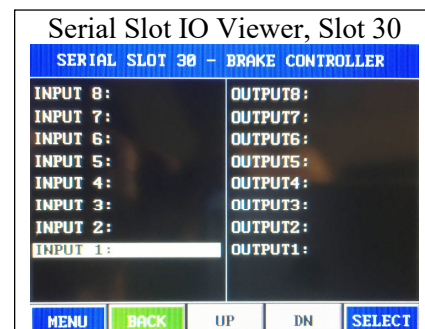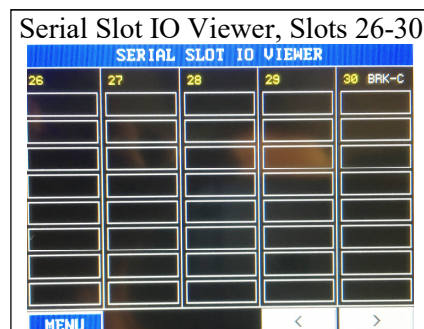 - b. Event Reporting:
    The events will be recorded in the fault logger as below:
    BRAKE CTRLR COMS LOST (Brake Controller Communications Lost)
    BRAKE CTRLR COMS REST (Brake Controller Communications Restored)
  - c. Checking the Brake Controller Communications:
    The Brake Controller Communications can be checked from the Serial Slot IO Viewer as below, the Node ID is always at number 30. If communicating, the display will show the Brake Controller text, otherwise it will be blank.

Serial Slot IO Viewer, Slots 26-30	Serial Slot IO Viewer, Slot 30

- **ii)** **Initialise Error:**
  - a. This can be reported upon power initialise if the CAN communications connections CH and CL are not connected properly, hence the Brake Controller cannot be initialised.
  - b. The Brake controller may be faulty and thus failed to initialise.
- **iii)** **Parameter Error:**
  - a. One or more parameters are out of range.
    (e.g. the Brake Lift Voltage is >210V)
  - b. Event Reporting:
    The event will be recorded in the fault logger as below:
    BRAKE CTRLR PARAM-ERR (Brake Controller Parameter Error)
- **iv)** **Start Failure (Brake Controller Voltage Confirm Error):**
  - a. The Brake Lift Voltage has to be confirmed when the lift starts its' journey. The Micro Processor checks the voltage with the Brake Controller. If it is not confirmed the lift does a failure to start (i.e. identical to start failures). This is repeated 4 times until start failure is invoked. After that a self-test (or call car) will attempt to put the lift back in service.
  - b. Event Reporting:
    The event will be recorded in the fault logger as below:
    BRAKE CTRLR VOLT-C-ER (Brake Controller Voltage Confirm Error)
    Note, the event will also be reported for Brake Hold, however has no effect on the lift operation.

v)   Trace Events:
a. The parameter "Brake Controller Info" can be set to YES in the Trace Setup Menu to invoke the recording of trace events as below.
b. Trace Events
BRAKE CTRL PAR READ   = Read Brake Controller Parameter   *(Note 1)*
BRAKE CTRL PAR WRITE   = Write Brake Controller parameter   *(Note 1)*
BRAKE CTRL PAR RST RQ   = Parameter Reset Request (due to param error, *Note 1*)
SET BRAKE CTRL VOLTAG   = Set the Brake Controller Voltage   *(Note 2)*
BRAKE CTRL INIT TMOUT   = Initialise timeout

Note 1: Sub Event Code = parameter reference
Note 2: Sub Event Code = Voltage

vi)   LED Status:
a. F = Fault (RED)
    i.   Flashes once every second for a parameter fault or initialise fault.
    ii. Flashes once every 250 milliseconds for a CAN communications warning fault.
    iii. Remains Solid RED for a CAN communications "Bus Off" fault.
b. C = Communications (RED)
    i.   Flickers RED when a CAN communications message is received.
c. L = Loop (BLUE)
    i.   Flashes 20 times per second (approx.) when idle, and slows down when the brake is active.
d. BA = Brake Active (GREEN)
    i.   Remains Solid GREEN when the brake is active, and is OFF otherwise.
e. ZD = ZERO DETECT (RED)
    i.   Flashes once every 20 milliseconds when the mains input voltage is detected.

vii) Brake Fault Output:
The Brake Fault output can be configured as an output (Almega II micro-processor) for the faults: communications fault, initialise fault, and parameter range fault as below.
   BRAKE_CONTROLLER_FAULT   198

viii) TEST DIL switch:
The TEST DIL switch is used for factory testing. When set the brake controller will flash the LEDS in pre-determined sequence and will also provide a "Ramp Up / Ramp Down" voltage output to the Brake Output.

7. Fixing Dimensions:

   The brake controller has been designed for the heatsink to be fixed to a metal surface for thermal heat dissipation. The dimensions for the fixing holes and size are as below:

Dimenions in (mm)
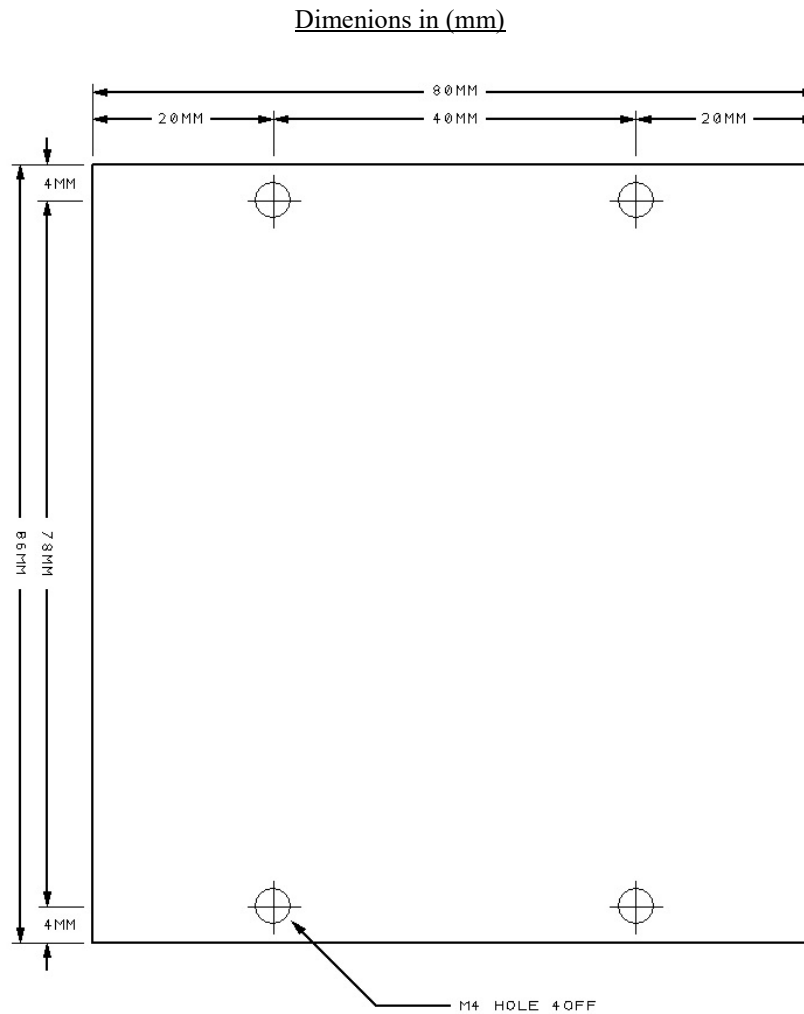
8. Specifications:

Parameter	Minimum	Maximum
a. Input Mains Voltage	70VAC	240VAC
b. Output Voltage	1VDC	210VDC
c. Output Current	0	10ADC
d. 5V Supply	1.8VDC	5.5VDC
e. 5V Supply current usage	0	25mA