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TECHNICAL MANUAL
FOR THE ALMEGA
MICROPROCESSOR SYSTEM
"EMERGENCY SUPPLY OPERATION SUPPLEMENT"

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1) Introduction

Emergency Supply operation is required when a secondary / backup supply to the main electrical supply is required. A typical use is for fire fighting operation. The backup supply (Emergency supply) is then selected when the main supply fails. The capacity of the Emergency supply may be able to run one or more lifts at the same time, i.e. for group operation. If the capacity is for only one lift, then a group of lifts may share the supply, taking control of the supply at the appropriate time.

The Master lift will control and select each lift to run at the appropriate time (as required). The emergency supply operation in its most basic form has 2 stages, RETURN and RUN. Each lift can be programmed to return to a floor destination (they may all de different). Once they have all returned (or failed) then the RUN operation begins. Depending upon how the lift is programmed it may run all the time, or not, or be selected in order of preference (lift number). A lift will remain immobilised until it is selected, selection is dependant upon many factors, but in general if another lift fails, the control of the supply may be passed onto the next lift in order of preference. The lift may then run taking control of the supply.

The Master / Slave control (associated with group operation) works over the group serial communications, however in the event of communication failure, hard wired IO signals are required as a backup to ensure that lifts are not accidentally selected, thus overloading or fusing the emergency supply. Also Detection of Emergency / Normal supply is achieved by wiring inputs to the Almega from the emergency generator controls.

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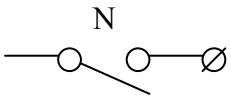
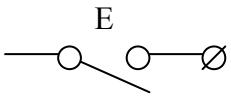
2) Emergency Supply / Normal Supply Inputs

Having both signals for Normal / Emergency Supply increases integrity of whether on Normal / Emergency Supply. If only one signal is available it is preferential to be Normal rather than Emergency supply since if the relay coil fails, it will default to Emergency Supply. Also if only one is available a changeover contact will be required to give both normal and emergency supply status. Below shows the two inputs and truth table associated with them.



Normal Supply



Emergency Supply

Truth Table

N	E	R
0	0	ESUP
0	1	ESUP
1	0	NORM
1	1	ESUP

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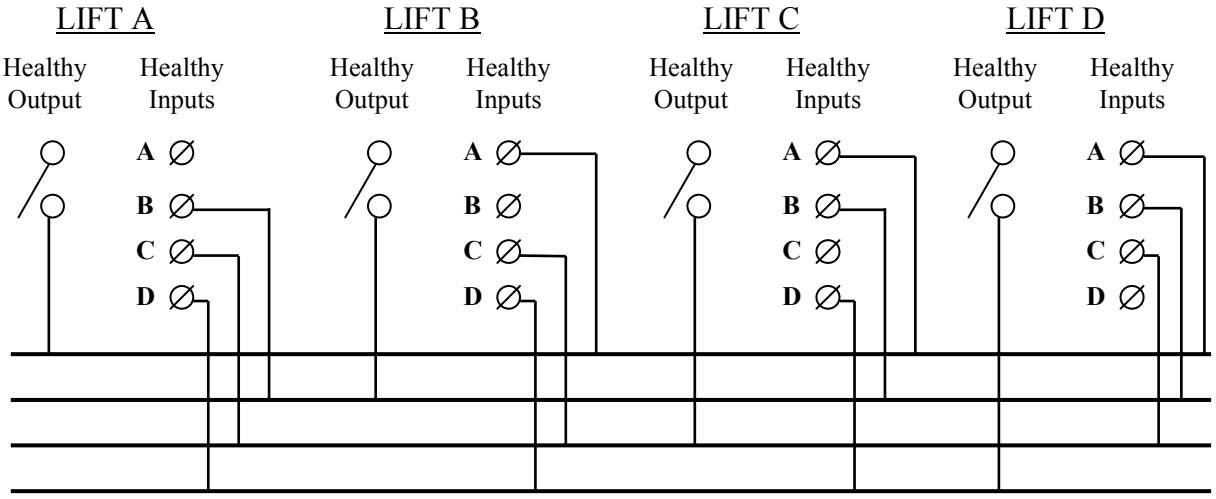
3) Lift Healthy IO (Backup IO)

Hard wired IO signals are required as a backup to ensure that lifts are not accidentally selected, thus overloading or fusing the emergency supply. Each lift has a lift healthy OUTPUT, which is fed to an input of every other lift. These INPUTS are monitored to check whether the other lifts have failed. Below is an example for a 4 car group. For example if lift D detects the failure of healthy inputs from lifts A, B and C, as well as communications failure, it may then take control of the supply and run on its own.

There are many different possible combinations relating to communications failure and healthy input checking that are tested at the design stage, but are however beyond the scope of the information required for this manual.



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4) Emergency Supply Parameters

As a general rule parameters for Emergency supply should be the same for all lifts in a group system. There will be instances where they may differ, however it is recommended to ensure that emergency supply current settings (as in the ESUP LIFT TABLE), are kept the same.

Parameters may be configured / altered using the keypad, or AlmegaWin windows application software.

	Setting	Units	Min	Max	Default
EMERGENCY SUPPLY	YES	Yes / No	-	-	NO

(A simple switch of YES / NO indicates whether or not set for Emergency Supply. In the case of a group of lifts, it is possible only one may be set to emergency supply, whilst the others remain as normal powered lifts).

RETURN FLOOR	as site	1-48	botfl	topfl	botfl

(If selected to return for the 1st phase of emergency supply, the user may select which floor to return to).

PARK OPEN	as site	Yes / No	-	-	NO

(If YES, the lift will park open after it has returned, or when immobilised).

LANCAL OPEN	as site	Yes / No	-	-	YES

(If YES, the lift will re-open its doors in response to a landing call after it has returned, or when immobilised, otherwise the call will be completely ignored).

RETURN RETRIES	2	Number	1	10	2

(When attempting to return, a number of retries are assigned so that under lift failure the lift is given enough opportunity to return before it is deemed to have failed. If it has failed, the lift can then be taken out of the return sequence and the power can be passed onto a more suitable lift. The length of time the power is held onto the lift during a return failure re-try is set by the RETURN HOLD TIME (as below)).

RETURN HOLD TIME	120	Seconds	0	180	120

(The length of time the power is held onto the lift during a RETURN failure. Note also when the lift is selected for the 1st time, and already failed, the time is reduced to 10s. This is so that any other lift(s), that may not have failed are given the opportunity to return 1st).

RUN HOLD TIME	120	Seconds	0	180	120

(The length of time the power is held onto the lift during a RUN failure, this is similar to return failure, with the exception that re-tries are infinite).

ESUP LIFT TABLE

PRIORITY	as liftnum	Number	1	8	liftnum

(Priority based upon the order in which available lifts will receive power. This is fixed as the order of the lift number i.e. Lift A = priority 1, Lift D = priority 4).

EMERGENCY SUPPLY FULL LOAD CURRENT	site	Amps	1	700	15

(This is the full load capacity of the emergency supply situated on site. It may or may not be able to run more than one lift. The setting of this parameter in association with the sum of the full load currents for each lift, will determine how many lifts may run simultaneously).

Emergency Supply Parameters Cont…

	Setting	Units	Min	Max	Default
MOTOR FULL LOAD CURRENT (MFLC)	site	Amps	1	255	10

(This is the full load current of the lift. This parameter in conjunction with the MOTOR FULL LOAD CURRENT OVERLOAD parameter, determines the total current allocated for the lift).

MOTOR FULL LOAD CURRENT OVERLOAD (MFLCO%)	site	Amps	1	255	10

(During acceleration and acceleration the lift may use more current than the full load current. In the case where a VF drive is used, this is typical, and is usually a setting within the drive. Therefore the overload parameter allows this extra current to be taken into consideration for the emergency supply. Users may also wish to add a bit more for other control equipment (i.e. door operators, brake controls etc.)).

DWELL TIME	5	Seconds	0	180	5

(This is simply the door dwell time, after the lift has returned to the return floor on emergency supply).

POWERED OPTION	RET & RUN	AS DEFINIED	-NOT POWERED -RUN ONLY -RET ONLY -RET AND RUN -ALWAYS POWERED	RET & RUN

(This is parameter determines how each lift behaves under emergency supply. Options are given from not being powered at all, to being always powered (i.e. a Fire fighting lift). The lift may also be selected to Return only and not Run, or Run only and not Return. Allowing for many conditions, should minimise any special software requirements, due to site specific conditions).

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5) Emergency Supply Self Test Operation

After the lift has returned under emergency supply operation, and is selected, but has failed, the self test operation is modified slightly to allow self tests within the RUN HOLD TIME. This is achieved by reducing the self test timer interval to half the RUN HOLD TIME. This results in the lift trying to put itself back into service whilst power is held for the lift. If it succeeds the lift is given power until the next failure (if any), otherwise it is taken away.

Cycling of power to each lift in sequence will occur when lifts fails to clear their faults within the RUN HOLD TIME.

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6) Emergency Supply Graphical Information

Both the Almega controller and the AlmegaWin windows application provide graphical information relating to the status of the lifts under emergency supply. The following are displayed on the Almega LCD, within the lift-viewer display. Similar text is also displayed on the AlmegaWin lift-viewer application.

ESUP I	=	Immobilised	on Emergency Supply
ESUP R	=	Returning	on Emergency Supply
ESUP S	=	Selected	on Emergency Supply

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7) Emergency Supply Events

The following events may be logged within the Almega controller when on Emergency supply. Each event has its own description that can be viewed within the Event History menu. A description is also given below:

ESUP RETURN COMMAND
A command given from the Master is given to attempt to return the lift, under emergency supply.

EMERGENCY SUPPLY
The lift has been switched from normal supply to emergency supply.

EMER RET SEQ COMPLETE
The Master lift controlling the emergency supply will report this event when all lifts have either returned or failed.

EMER RET SEQ TIMEOUT
The Master lift controlling the emergency supply will report this event when the return sequence has failed to complete. An overall time is given (typically 35 Minutes) to complete the return sequence (lifts either returned or failed). Under normal circumstances the return should complete within the specified time, however if it does not for any reason this event will be generated.

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8) Emergency Supply Trace Events

In addition to the Event History a Trace Event History gives more detailed information relating to the emergency supply operation, used for debug / testing purposes. Descriptions are given that can be viewed within the Event Trace Buffer menu. Below is a list of Trace Events.

ESUP_RETURN_COMMAND
ESUP_RETURN_COMPLETE
ESUP_RETURN_FAILED
ESUP_RETURN_ATTEMPT
ESUP_RUN_COMMAND
ESUP_RUN_FAILED
ESUP_RETURN_SEQ_COMPLETE
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