APPLICATION NOTE	AN-Lift-0012v103EN

Lift Speed displayed and movement direction shown during Rescue

Inverter type	FRENIC Lift
Software version	From 1300,1301
Required options	Not required
Related documentation	FRENIC Lift Reference Manual (INR-SI47-1068a-E)
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Use	Public, Web
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Version	1.0.3
Languages	English

Introduction.

Some times when a rescue process is performed it is needed to show the lift or motor speed to the operator who is doing the rescue. Although the inverter is not used for controlling the motor, if the control board of the FRENIC-Lift is supplied, the motor encoder can be used in order to measure and show the motor speed on the keypad of the inverter, and therefore the lift speed can be displayed. Normally the direction of the movement must be also indicated.

The aim of this document is to explain how to configure and operate the inverter in case of manual rescue (this means that the inverter is not used to control the motor, only for displaying speed and direction), in order to be able to read the lift speed on the keypad LED display and the direction of the lift movement by means of a digital output. For this purpose, the control board of the inverter must be supplied (R0-T0 from 220Vac to 400Vac) during rescue operation.

Application implementation.

Indication of LIFT Direction

To see the direction of the detected speed, it is proposed to use a digital output programmed with the function "116: Detected Speed Direction (DSD)". This signal is ON when the motor (speed given by the encoder) is rotating in counter-clockwise and it is OFF when the motor is moving in clockwise (keep in mind that it is possible to invert the function by means of using function 1116 instead of 116).

Once the motor stops, after rotating in any of the two directions, this signal continues in the same state as when the motor was moving.
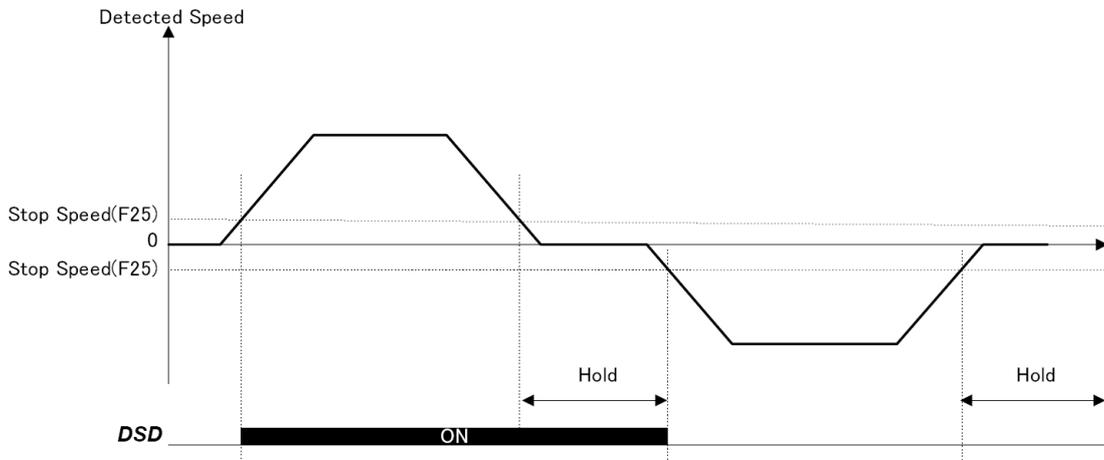
Figure 1 depicts the behaviour of DSD signal.

Figure 1: Detected Speed Direction signal

Displaying the lift speed

On the other hand, to see the motor rotation speed (or lift speed) on the Keypad LED display during normal operation, it is necessary to set E43 to 0 (LED monitor depending on E48) and E48 to 3 or 5 (LED monitor showing motor speed or lift speed respectively).

In addition, we will have to set an input (in this example, X4) as "63: Enable battery operation (BATRY)", as depicted in figure 2. When using the solution proposed in this document, it is mandatory to set one input to BATRY function, and to activate it during the rescue operation, in order to avoid trips if the inverter DC link does not have the rated voltage level (for example rescue is done with batteries or only the inverter control board is supplied by means of the R0, T0 terminals, etc,..).

Once the inverter is programmed like explained above, it is ready to indicate the motor or lift speed by means of the keypad during rescue operation. Execute the following steps in order to see properly the speed data by means of the keypad:

- Remove the ENABLE signal or ensure that the lift controller has removed it.
- Activate the input set to BATRY function.
- Activate the input set as FWD or REV, just in order to give the RUN command to the inverter.

Once this sequence has been activated, it is possible to see the motor or lift speed by means of the LED display in the keypad, and therefore the manual rescue operation can begin.
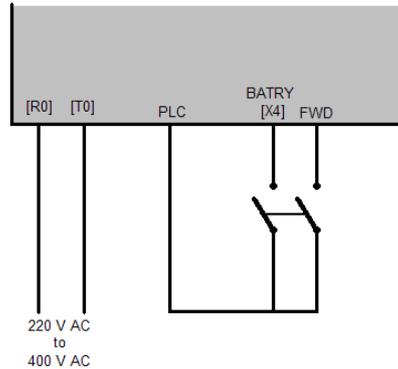
Figure 2 shows the connection setup.

Figure 2: Connection Setup Diagram

Inverter setup

The following table describes the function settings that differ from factory defaults.

Function	Value	Description
E04	63	Enable battery operation (BATRY)
E21	116 (or 1116)	Detected Speed Direction (DSD)
E48	3 or 5	3: Motor Speed or 5: Elevator Speed

Conclusions

FRENIC-Lift can be used in a lift rescue process although the inverter is not used for driving the motor. If the inverter is supplied by means of R0-T0 terminals not only the control board of the inverter is alive but it also the encoder, therefore it can be used to measure the speed of the motor and to show it on the display. Some other functions are also available such as Detected Speed Direction, etc.

Document history.

Version	Changes applied	Date	Written	Checked	Approved
1.0.0	First version	02/03/2009	JM Ibáñez	J. Català	
1.0.1	Second version	02/03/2009	J. Català		
1.0.2	Third version. Schematic and conclusions added.	02/03/2009	JM Ibáñez	J. Català	
1.0.3	Text corrections	03/03/2009	JM Ibáñez	J. Català	D.Bedford