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FA-1LS/FA-3HS

1-phase/3-phase
inverter

Do not dispose of this device in the trash along with other waste!

According to the Law on Waste, electro coming from households free of charge and can give any amount to up to that end point of collection, as well as to store the occasion of the purchase of new equipment (in accordance with the principle of old-for-new, regardless of brand). Electro thrown in the trash or abandoned in nature, pose a threat to the environment and human health.



Purpose

The FA-1LS/FA-3HS inverter is an electronic frequency converter designed for stepless regulation of the rotational speed of asynchronous 1-phase (FA-1LS) and 3-phase (FA-3HS) motors.

Safety measures



It is not permitted to connect the supply voltage to the output terminals of the inverter. Failure to do so will damage the inverter and may cause a fire hazard.



Once the inverter has been energised, no installation or inspection work may be carried out on it.

Safety measures cont.



When the power supply is switched off, life-threatening voltage may still be present on the internal circuits of the inverter. To avoid electrocution, wait at least 5 minutes after the power supply has been switched off and the lights on the operator panel have gone out.



When the motor is running, it is not permitted to interrupt the connection between inverter and motor (e.g. by opening the contactor between inverter and motor).

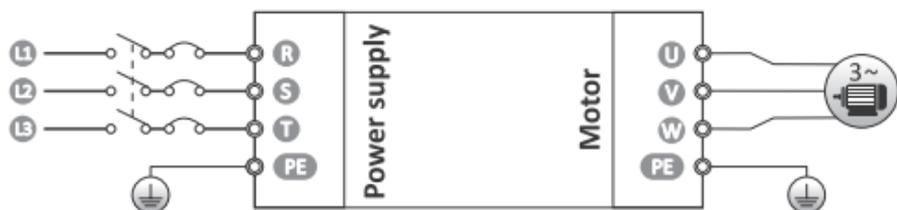


The neutral terminal of the inverter must be connected securely and effectively to the earthing of the control cabinet and the electrical installation.

Wiring diagram



1-phase FA-1LS inverter:
Connection of power supply and motor



3-phase FA-3HS inverter:
Connection of power supply and motor

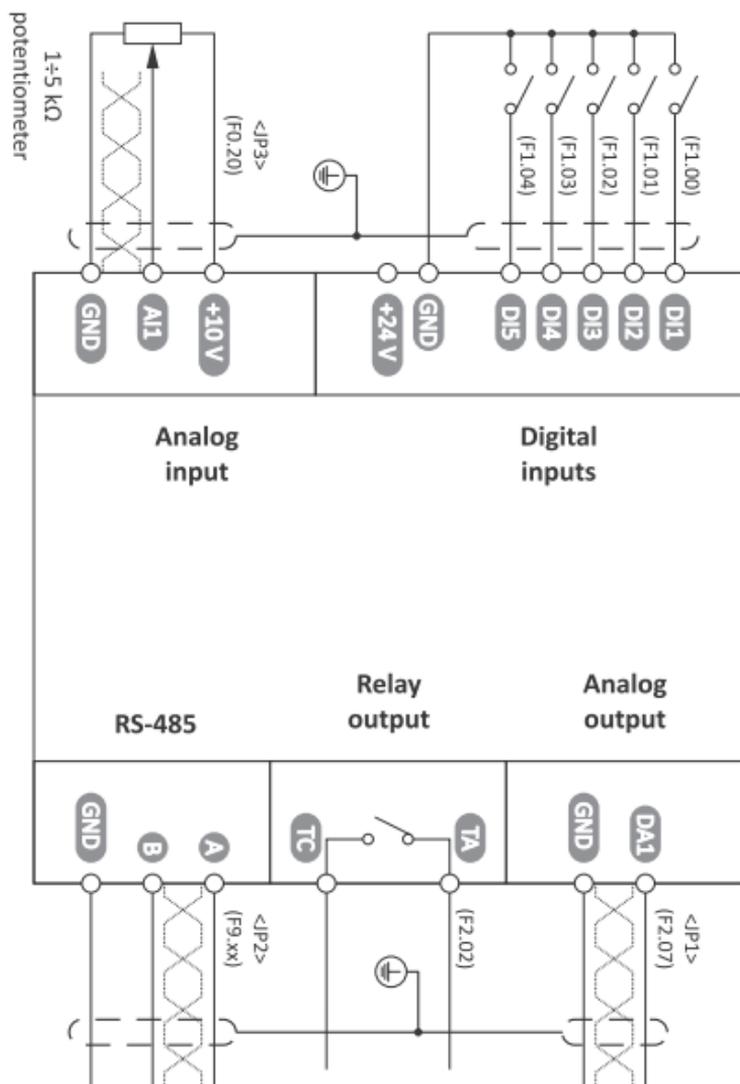
Connection of power circuits

Term.	Function	Description
R S T	Power supply inverter	 For a 1-phase inverter, the L-N power supply must be connected to the R and T terminals
+, RB	Braking resistor	Terminals for connecting an external braking resistor
U V W	Motor	Terminals designed for motor connection
 /PE	Reset	 It is necessary to ensure effective resetting of the inverter and motor

Power cables and overcurrent protection

Inverter type	Input current	Output current	Maximum motor power	Protection	Diameter of wires
	A	A	kW	A	mm ²
1LS series					
FA-1LS-004	5.4	2.5	0.4	10	1.5
FA-1LS-007	8.2	4.0	0.7	16	2.5
FA-1LS-015	14.0	7.0	1.5	25	2.5
FA-1LS-022	23.0	10.0	2.2	40	4.0
3HS series					
FA-3HS-007	4.3	2.5	0.7	10	1.5
FA-3HS-015	5.0	3.8	1.5	10	1.5
FA-3HS-022	7.1	5.1	2.2	16	2.5
FA-3HS-040	10.5	9.0	4.0	25	2.5
FA-3HS-055	14.6	13.0	5.5	32	4.0

Connection of control circuits



Connection of control circuits cont.

	Term.	Function	Description
Power supply	+10 V	Auxiliary power supply outputs +10 V	The auxiliary power supply is mainly intended to supply the potentiometers connected to the analogue inputs of the inverter.
	GND		The maximum permissible load of the +10 V power supply is 10 mA.
	+24 V	Auxiliary power supply outputs +24 V	The +24 V auxiliary power supply can be used for example, as a power source for sensors connected to the inverter. The maximum permissible load of the +24 V power supply is 50 mA.

Connection of control circuits cont.

	Term.	Function	Description
Digital inputs	D11	Multi functional digital input 1	Multifunction input terminals: – galvanically separated (optically) inputs – triggering inputs with GND level
	D12	Multi functional digital input 2	
	D13	Multi functional digital input 3	The functions performed by the inputs are defined in parameters: F1.00 – D11 input configuration F1.01 – D12 input configuration F1.02 – D13 input configuration F1.03 – D14 input configuration F1.04 – D15 input configuration
	D14	Multi functional digital input 4	
	D15	Multi functional digital input 5	
			Input logic (low or high level control) set by parameter F1.35 .

Connection of control circuits cont.

	Term.	Function	Description
Analog input	AI1	Multi functional analog input 1	The operating mode (voltage or current) is carried out using jumper J3. Position 1-2: voltage input 0÷10 V (default). Position 2-3: current input 0÷20 mA.
	TA	Relay output – NO contact	Multifunctional relay output. Output function set by parameter F2.02 .
Relay output	TC	Relay output – COM contact	Maximum contact load (both NO and NC): 5 A/250 V AC or 5 A/30 V DC.

Connection of control circuits cont.

	Term.	Function	Description
Analog output	DA1	Multi functional analog input DA1	Analogue output function set by potentiometer F2.07 . Output signal logic set by jumper J1: Position 1-2: current output 0÷20 mA. Position 2-3: voltage output 0÷10 V DC.
	485+	RS-485 A Line	RS-485 communication interface outputs supporting the Modbus RTU protocol. Communication parameters set using parameters in group F9. Jumper J1 allows the connection of an internal terminating resistor for the end of the RS-485 bus:
Communication output	485-	RS-485 B Line	Position 1-2: Resistor disconnected (default) Position 2-3: Resistor on

Control panel

Control indicators

Indicator	Description
RUN	Operation indication (motor power on)
FWD/REV	Motor spin direction indicator. In conjunction with the lit RUN indicator it indicates: FWD/REV (on) – spinning FORWARD direction FWD/REV (off) – spinning REV direction
Hz	Indicator light indicating that the display indicates the frequency value [Hz]
A	Indicator light indicating that the display indicates the current value [A]

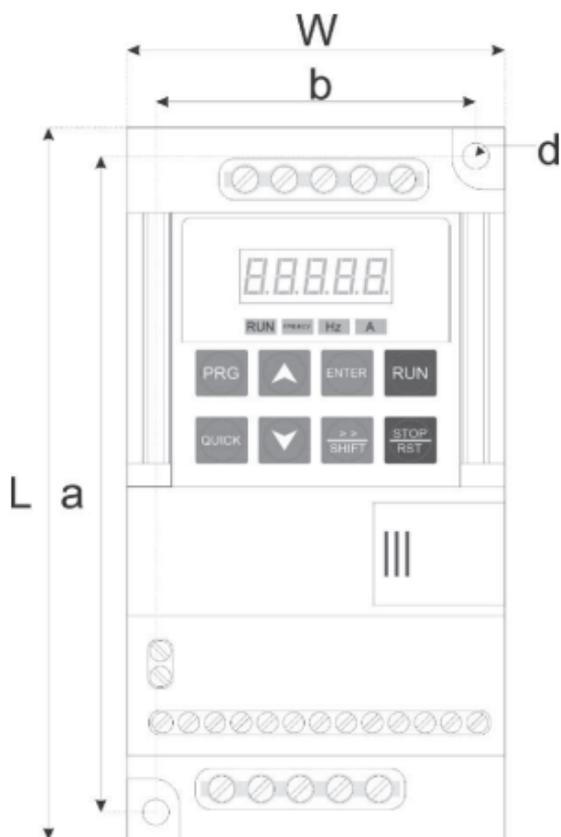
Control buttons

Button	Description
	<ul style="list-style-type: none">» In status display mode – enter the main inverter configuration menu;» In the menu display mode – entering the main menu level;» In the parameter edit mode – exit the edit mode without saving the changes made.
	<ul style="list-style-type: none">» In status display mode – toggle between displayed status values;» In the parameter edit mode – switching to edit the next digit of the parameter.
	<ul style="list-style-type: none">» In the status display mode, when the speed setting is set from the operator panel - increasing and decreasing the motor speed;» In the menu display mode – moving between successive parameters of the current parameter group;
	<ul style="list-style-type: none">» In the parameter value setting mode, the buttons allow increasing and decreasing the value of the edited parameter.

Control buttons cont.

Button	Description
	Validates the entered parameter value and exits the parameter edit mode.
	Start of the motor (if the inverter is configured for control via the operator panel).
	Stop the motor (if the inverter is configured for HMI control). Acknowledgement of an error and deletion of the error information.
	Programmable multifunction button. The current button function is set with parameter F6.21 .

Dimensions



Dimensions of the inverter
and location of the measurement holes

Inverter type	Length (L)	Width (W)	Height (H)	Length (a)	Width (b)	Diameter (d)	Weight
	mm	mm	mm	mm	mm	mm	kg
1LS series							
FA-1LS-004	138	72	124	127	61	5	1.1
FA-1LS-007	138		124	127	61		1.1
FA-1LS-015	138		124	127	61		1.1
FA-1LS-022	185		134	175	45		1.3
3HS series							
FA-3HS-007	138	72	124	127	61	5	1.1
FA-3HS-015	138		124	127	61		1.1
FA-3HS-022	138		124	127	61		1.1
FA-3HS-040	185		134	175	45		1.3
FA-3HS-055	185		134	175	45		1.3

Technical data

Downloadable from: www.fif.com.pl from the product subpage.

Warranty

The F&F products are covered by a warranty of the 24 months from the date of purchase. Effective only with proof of purchase. Contact your dealer or directly with us.

CE declaration

F&F Filipowski sp. j. declares that the device is in conformity with the essential requirements of The Low Voltage Directive (LVD) 2014/35/EU and the Electromagnetic Compatibility (EMC) Directive 2014/30/UE.

The CE Declaration of Conformity, along with the references to the standards in relation to which conformity is declared, can be found at www.fif.com.pl on the product page.