



Please read this document carefully before using this product. The guarantee will be invalidated if the device is damaged by not following instructions detailed in the manual. The company shall not be responsible for any damage or losses however caused, which may be experienced as a result of the installation or use of this product.

ENDA ERFA1 SERIES FAN SPEED CONTROLLER

Thank you for choosing ENDA ERFA1 Series fan speed controller devices.

- ▶ 40A AC Load current
- ▶ 280V AC Load voltage
- ▶ 0/4-20mA, 0/1-5V DC, 0/2-10V DC or 1k Ω ~ 10k Ω Potentiometer input
- ▶ 24V DC Sensor supply
- ▶ 4 Digits LED display
- ▶ Phase angel or zero-cross controlled
- ▶ Soft Start or Kick Start feature
- ▶ Varistor protection for peak voltages
- ▶ CE Marked according to European Norms

ORDER CODE :		ERF A 1-2 40 - F	
Product Base Code		Fan	
Fan Speed Control ERF		Fan F	
Load Voltage		Load Current	
AC A		40A AC 40	
Number of Pole		Load Voltage	
Single Pole 1		180-280V AC 2	



ENVIRONMENTAL CONDITIONS	
Ambient/storage temperature	-25... +60 °C / -30... +100 °C (Shouldn't be icing and condensation in ambient.)
Relative humidity	50% Relative humidity for +40°C temperature increases up to 90% at +20°C. (Shouldn't be condensation)
Pollution degree	2
Overvoltage category	II
Altitude	Max. 1000m
Protection	IP20 According to EN60529

⚠ Do not use the device in locations subject to corrosive and flammable gases.

OUTPUT	
Order code	ERFA1-240
Load Current, AC51/25°C (Arms)	40
Load voltage (Vrms)	180 - 280
Overload current t=1s/25°C (Arms)	150
Non rep.surge current/25°C (Arms)	400
On-state voltage drop (Vrms)	1,6
Leakage current (mArms)	5
I ² t for fusing t=10ms (A ² s)	880
Frequency (Hz)	50 - 60
Power factor (Cos Φ)	>0,75
Minimum operating current (mArms)	160

INPUT	
Input signal	0/4-20mA, 0/1-5V DC, 0/2-10V DC or 1k Ω ~ 10k Ω potentiometer. (Device may be damaged at \pm 12V DC and above voltages)
Transmission signal	\geq 0,2mA (for mA input), \geq 0,08V (for V input)
Drop-out signal	\leq 0,18mA (for mA input), \leq 0,075V (for V input)
Turn-on time	15ms
Dynamic input impedance	\leq 100 Ω (for mA input), \geq 10k Ω (for V input)
Protection	Protection feature for reverse connection is available.

GENERAL	
Order code	ERFA1-240
Power supply	90-250V AC, 50/60Hz. 7VA Max.
Sensor supply	24V DC, 30mA
Dimensions	W46 x H110 x D117mm
Weight	Approx. 450g (boxed)
Isolation Voltage	2500 Vrms between I/O terminals for 1 min.
Connection	For power line 16mm ² cable (with 25mm ² cable terminal) cable, for signal line can be connected 4mm ² cable.
Terminal screw torque	Max. 1,2Nm
Product standard	EN 60947-4-3
Mounting	Rail mount (EN60715, TH35)
Enclosure material	Self extinguishing plastics (According to EN 60695-11-10 V-O)
Fan (Optional)	Fan is controlled with thermostat and works at temperatures over 50°C.

⚠ While cleaning the device, solvents (thinner, gasoline, acid etc.) or corrosive materials must not be used.

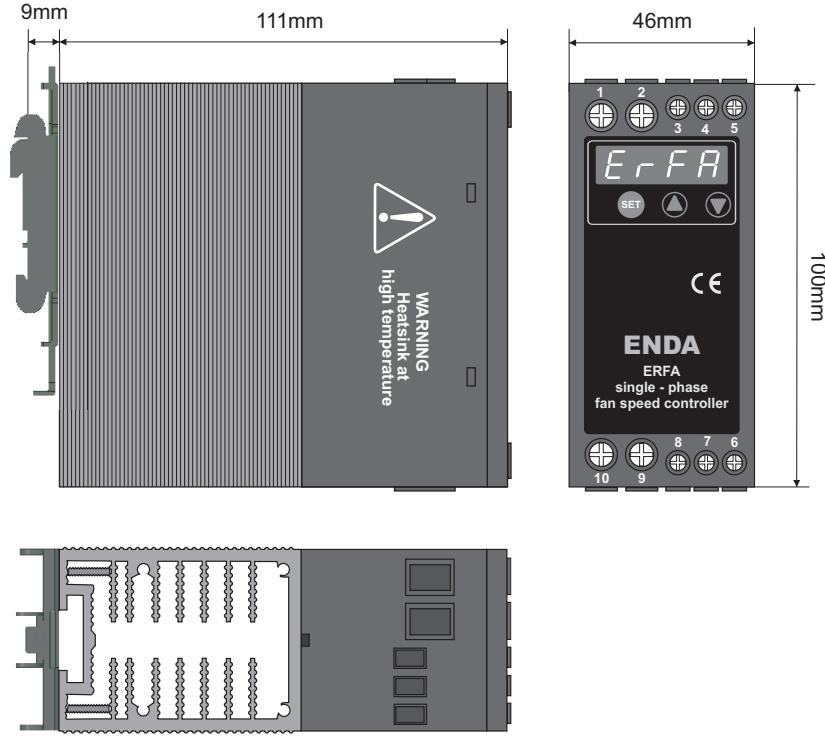


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ERFA1-240-EN-01-170420

DIMENSIONS

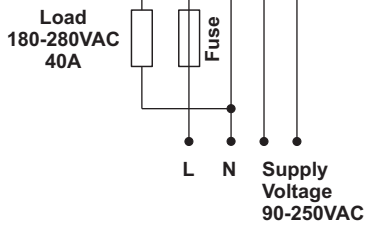
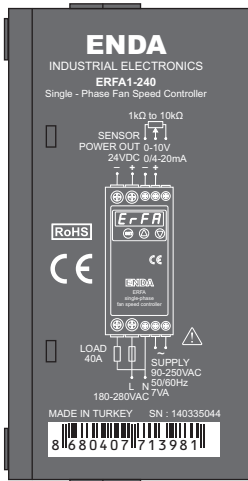


APPLICATIONS

Input Signal



Sensor Supply 24V DC
0/4-20mA or 0-10V



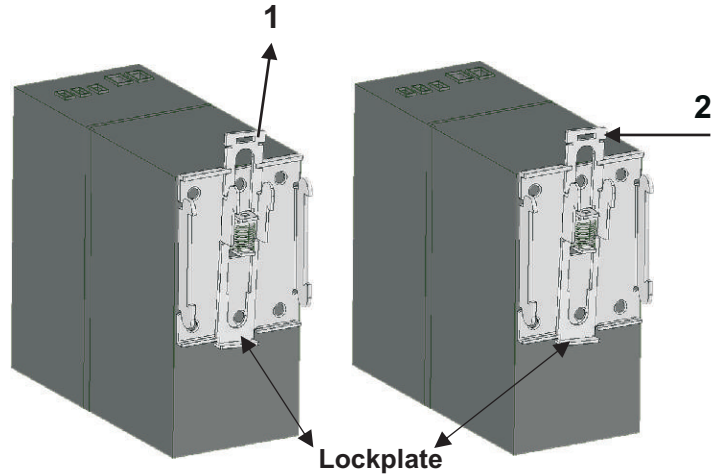
INSTALLATION

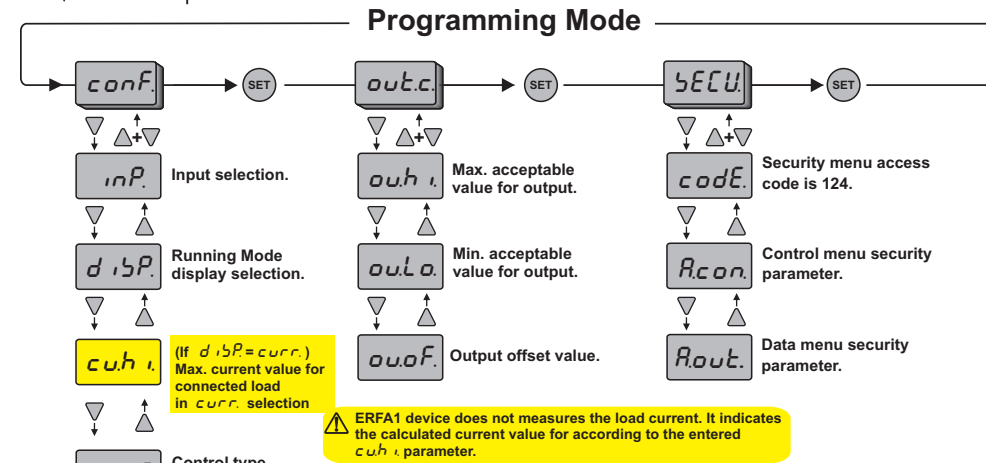
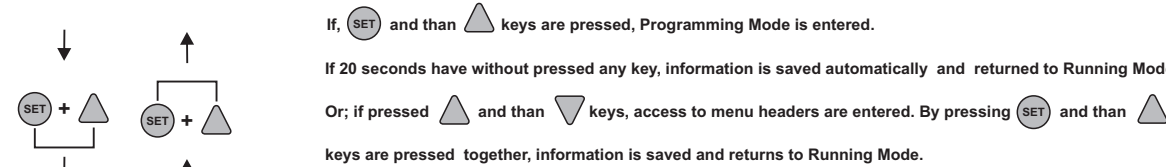
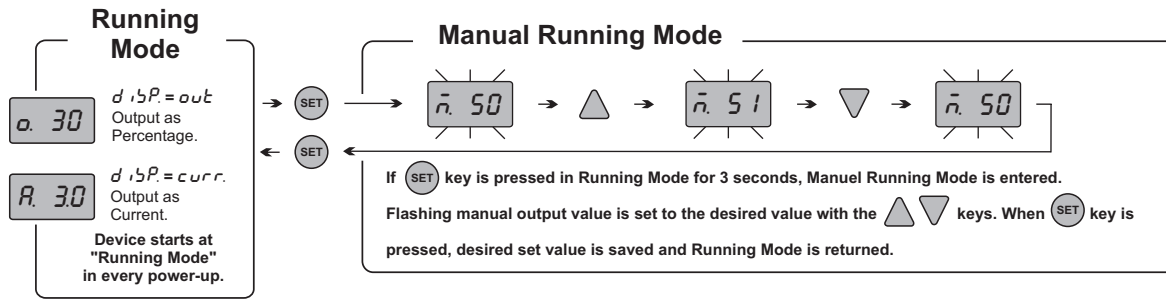
To mount the device on rail :

By using a screwdriver, pull the lockplate in direction 1 to lock it. Assemble the device on the rail and push it in the direction 2 (sideways).

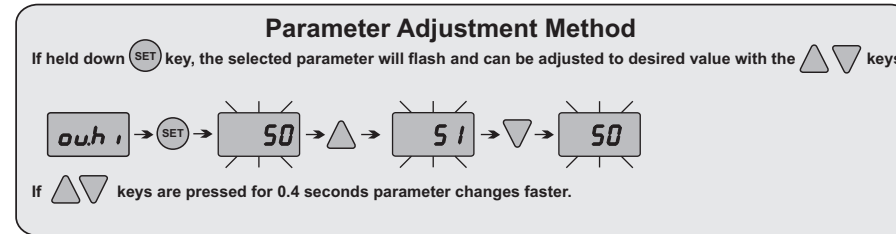
To remove the device from the rail :

By using a screwdriver, pull the lockplate in direction 1 to lock it. Remove device from rail.





ERFA1 device does not measure the load current. It indicates the calculated current value for according to the entered $cu.h.i.$ parameter.



Factory Settings

If ∇ key is held down while the device is powered up, **d.P.R.** message will appear and factory settings will be restored.

PARAMETERS TABLE			
Parameter	Options / [units]	Description	Default values
conf. Configuration menu			
inp.	4-20	4-20mA	0-10
	0-20	0-20mA	
	0-10	0-10V	
	1-5	1-5V	
	2-10	2-10V	
	0-5	0-5V	
	Pot.	Potentiometer input.	
n.Rnu.		Manual Running Mode.	
d.isP.	out	Output as Percentage in Running Mode.	out
	curr.	Output as Current in Running Mode.	
cu.h.i.	[Ampere]	Takes a value between 0 and load current.	(**)
ct.yP.	PhR5	Control with phase angle.	PhR5
	cross	Control with Zero-cross.	
st.t.y.	soft	Output is energized with soft start.	soft
	icst	Output is energized with kick start.	
	n.st	Output is energized with soft start according to manual output value.	
	n.icst	Output is energized with kick start according to manual output value.	
st.t.i.	[Second]	Start duration (0 - 200).	4
Err.c.	Auto	Returns to Running Mode when error disappears.	Auto
	stop	Remains in Error Mode when error disappears.	
out.c. Output Control Menu			
ou.h.i.	[%]	Takes a value between ou.l.o. and 100.	100
ou.l.o.	[%]	Takes a value between 0 and ou.h.i.	0
ou.o.f.	[%]	Takes a value between -50 and 50.	0
secu. Security Menu			
R.con.	nonE	Configuration menu invisible.	PYE5
	PYE5	Configuration menu can be changed.	
	P.no	Only configuration menu visible.	
R.out.	nonE	Output control menu invisible.	PYE5
	PYE5	Output control menu can be changed.	
	P.no	Only Output control menu visible.	

Error Messages

Err.1 When the device overheats, **Err.1** appears on display and enters to error mode.

Err.2 If input values are selected as 4-20 or 0-20 and if above current flows, **Err.2** appears on display and enters to error mode.

If **Err.c.** parameter is set as **stop**, only when (SET) key is pressed, if **Err.c.** parameter is set as **Auto**, when (SET) key is pressed or when the error disappeared, it returns to Running Mode. When return to the operating mode. If overheating continues device passes to the Error Mode.

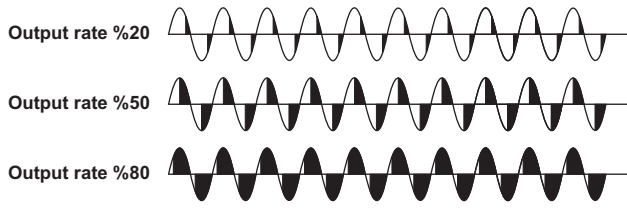


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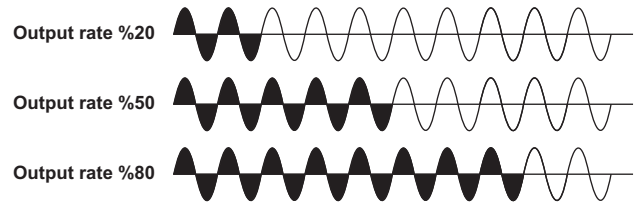
Control Method

With Phase Angle Control



It is a proportional control method used in inductive and variable resistive loads ($\cos\phi < 1$). The disadvantage of this method is that it causes high electrical noise.

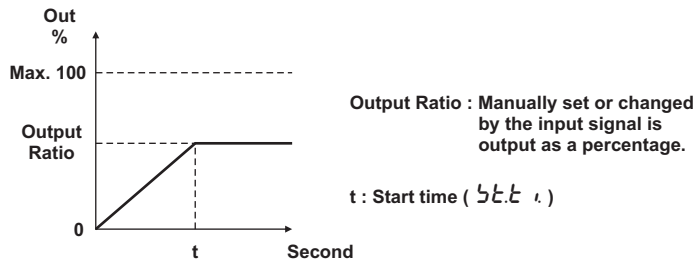
With Zero-Crossing Control



It is a control method used in capacitive and variable resistive loads ($\cos\phi = 1$). The advantage of this method is that it does not cause high electrical noise.

Start Method

Soft Start



Kick Start

