

# NFO Sinus Optimal 2.2 kW

## - The optimal motor control

**NFO**  
*Sinus*

*The NFO Sinus frequency inverter is based on a patented Swedish technology that allows you to control the speed of electric motors with rated current 1.0 - 4.9 A without generating electromagnetic interference, which in turn offers a range of unique benefits. Thanks to the sine-wave output voltage, the inverter is interference-free in itself.*

### **SIMPLE**

The installation is simple and cost-effective in that the installer does not need shielded cables, EMC filters or other EMC-classified installation accessories. When undertaking renovations or energy efficiency projects, it's possible to re-use existing non-shielded cables, which makes the installation work quick and easy. There is no limit of cable length between the NFO Sinus and the motor, except for the resistance of the cable. The NFO Sinus can be installed where it's suitable depending on the application, even if the distance to the motor is several hundred meters. The unique Sinus technology provides cost-efficient and flexible solutions in all environments.

### **SILENT**

NFO Sinus is interference-free and will therefore not cause any electromagnetic interference with other technical equipment in its surroundings. The NFO Sinus meets the most stringent requirements according to the EMC

directive 2014/30/EU, without filters and without shielded cables, and can be used in all sorts of applications, from industrial to residential areas. With NFO Sinus you also avoid all annoying interference and switching noises in the motor, which results in a quieter environment.

### **SAFE**

NFO Sinus does not generate any bearing currents. The motor therefore has a longer lifespan. No earth leakage currents are generated, which means that residual current devices for both personal safety and fire prevention can be used. This provides a high level of electrical safety.

### **HIGH PRECISION**

The motor speed is very precisely controlled, with full torque right from stand-still as well as at low speed, regardless of chosen control mode: Speed, frequency or process control. Furthermore, the inverter has an energy-save function that allows you to save even more energy when running with a low load on the motor, e.g. fans, which at times run at low speed.



### **Simple installation**

- No shielded cables
- No complicated installation requirements
- No limitations of distance



### **Silent operation**

- No electromagnetic interference
- No irritating switching noise



### **Safe technology**

- No bearing currents
- No earth currents

NFO Sinus Optimal is optimized for AC motors with a rated current of 1.0 to 4.9 A (Max 5.8 A)

**NFO Sinus Optimal 2.2kW is optimized for AC induction motors with a rated current of 1.0 to 4.9 A (max 5.8 A)**

Continuous Rating (A)	1.0 - 4.9
Maximum Rating (A)	5.8
Protection Class	IP55
Measurements HxDxW (mm)	390x190x160
Weight (kg)	7.0
Part number	NFO 4A4D3490D

	<b>Voltage (V)</b>	<b>Frequency (Hz)</b>
<b>Input:</b>	3x380-480 V ±10 %	50/60 Hz ± 10 %
<b>Output:</b>	3x0 – 380-480 V	0-150 Hz
<b>Output voltage wave form:</b>	Sinus	
<b>Operating mode:</b>	4-quadrant	
<b>Configurable control signals:</b>		
2 pcs Analog input	0-10 V, 2-10 V, ±10 V, 0-20 mA, 4-20 mA, ±20 mA, Potentiometer	
2 pcs Analog output	0-10 V, 2-10 V, ±10 V, 0-20 mA, 4-20 mA, ±20 mA	
Selectable from terminal	7 fixed setpoints	

<b>Acceleration time:</b>	0.5-100 s	
<b>Retardation time:</b>	0.5-100 s	
<b>Relay outputs:</b>	Common alarm / Programmable function (Potential free contact max 1A/50 VDC) Run indication / Programmable function (Potential free contact max 1A/50 VDC)	
<b>Voltage output:</b>	24 V supply to external sensor	
<b>Control modes:</b>	Frequency control	0-150 Hz
	Speed control	0-9000 rpm
	Process control	PI controller with feedback
<b>Local mode:</b>	Forward, Reverse, Stop	
<b>Motor protection:</b>	Thermistor input	PTC or Klixon
	Power guard	Overload protection
<b>Personal safety:</b>	Safe Torque Off functionality using dual channel wiring for emergency stop switch	
<b>Communication:</b>	Modbus RTU / Modbus ASCII / NFO Classic protocol / USB / RS-485 (native) PROFIBUS / PROFINET / Modbus TCP (using Anybus CompactCom module)	
<b>Software:</b>	NFO Sinus Manager, free download from <a href="http://www.nfodrives.se">www.nfodrives.se</a>	
<b>Energysave function:</b>	Optimizing magnetizing current of motors at low load	
<b>Efficiency class CDM:</b>	IE2 according to Ecodesign Regulation 2019/1781	
<b>Environment:</b>	Ambient temp -10 - +45°C Storage temp -20 - +60°C Relative Humidity 0 - 90% non-condensing.	
<b>Earth current:</b>	< 2 mA. RCD's for both personal and fire protection can be used	
<b>EMC:</b>	According to EMC Directive 2014/30/EU Certified to be used without shielded cables and filters	
<b>Standards:</b>	EMC Emission	EN 55011:2016, EN 55011/A1:2017, EN 61000-3-3:2013, EN 61000-3-2:2019
	EMC Immunity	EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11
	LVD	EN 61800-5-1:2017, EN 61800-5-1/A1:2017
	Ecodesign	EN 61800-9-2:2017

## Option

**Brake resistors/chopper:** For dimensioning of braking resistors, see the user and installation manual

For more information: See NFO Drives Operating and installation manual