The NFO Sinus® frequency inverter is based on a patented Swedish technology that allows you to control the speed of electric motors without generating electromagnetic interference, which in turn offers a range of unique benefits. Thanks to the sine-wave voltage, the inverter is intrinsic EMC, i.e., it is interference-free in itself.

NFO® Sinus

SIMPLE
Installation is easy and cost-efficient due to there is no need of shielded cables, EMC filters or other EMC-classed installation accessories. When undertaking energy efficiency projects, it's also possible to use the existing none shielded cables, this makes the installation work quick, easy and cost-efficient. There is no cable length limitation between the motor and the NFO Sinus 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 thanks to the Sinus technique which gives cost-efficient flexible solutions in all environments.

SILENT
NFO Sinus® is interference free and therefore does not create any electromagnetic interference which can disturbed surrounding equipment. The NFO Sinus satisfies the most stringent demands set out in the EMC directive 2014/30/EU without filters and without shielded cables and can be used in every kind of environment from industrial, medical to residential. With NFO Sinus® you also avoid all the disturbing switching noise 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 and with full torque right from stand-still as well as at a low speed regardless of chosen control mode Speed, frequency, torque or process-control . The inverter furthermore has an energy-save function that allows you to conserve even more energy when running with a low load on the motor, e.g., fans, which at times run at a low speed.

NFO Sinus® is available in size 0,37 kW up to 22 kW

Simple installation
- No shielded cables
- No complicated installation requirement
- No limitations of distance

Silent operation
- No electomagnetic interference
- No irritating switching noise

Safe technology
- No bearing currents
- No earth currents

TECHNICAL DATA — NFO SINUS 18.5-22.0 kW

Power rating (kW)	**18.5**	**22.0**
Continius Rating (A)	35	41.0
Maximum Rating (A)	42	49.2
Protection Class	IP54	IP54
Measurements HxDxW (mm)	900x280x300	900x280x300
Weight (kg)	45	45
Part number	NFO 2D3D3351D	NFO 2D3D3411D

	Voltage (V)	**Frequency (Hz)**
Input:	3x380-460 V ±10%	50/60 Hz ± 10 %
Output:	0-460 V + 10 %	0-150Hz
Output voltage wave form:	Sinus	
Operating mode:	4-kvadrant	
Control inputs configurable:	**Setpoint**	**Actual value**
2 pcs of voltage(V)	0-10 V, 2-10 V,± 10 V	0-10 V, 2-10 V,± 10 V
1 pc of current (mA)	0-20 mA, 4-20 mA ± 20 mA	0-20 mA, 4-20 mA ± 20 mA
1 pc of potentiometer input	Potentiometer 10 kΩ	
Selectable from terminal + or- logic	7 fixed setpoints	

Acceleration time:	0,2-500 s	
Retardation time:	0,2-500 s	
Relay outputs:	Common alarm (Potential free contact max 1A 50VDC)	
	Run signal (Potential free contact max 1A 50VDC)	
Voltage output:	24 V supply to external sensor	
Control modes:	Frequency control	0-150 Hz
	Speed control	0-9000 rpm
	Torque control	1-400% of nominal motor tourqe, depending on inverter capacity
	Process control	PI- controller with feedback
Local mode keyboard:	Forward, Reverse, Stop	
Motor protection:	Thermistor input	PTC or Klixon
	Power guard	Overload protection
Communication:	Modbus RTU/ASCII	
Software:	Sinus Manager free download from www.nfodrives.se	
Energysave function:	Optmized motors magnetizing current at low load.	
Environment:	Ambient temp -10-> +40,°C	
	Storage temp -20->+60°C RH 0->90% non-condensing.	
Earth current:	< 2 mA. RCD's for both person-och fireprotection can be used.	
EMC:	Certifierad to be used without Screen Cables and filters	
	EMC Directive 2014/30/EU	
	Standards:	
	EMC Emission	EN 61000-6-3:2007/A1:2011
	EMC Immunity	EN 61000-6-2:2005, EN 61000-4-2, -3, -4, -5, -6, -11
	LVD	EN 61800-5-1

Option

Expansion card I/O:	Input PT1000 Output 0-10 V, Frequenzy 0-32 kHz open collector
	Function relay Potential free contact max 2A 50VDC 50 W, 24 V to external sensor
Brake resistors/chopper:	Dimensioning of braking resistors; see the user and installation manual Chap. 6
Communication card:	Can-open, Profi-Bus DP

For more information: See NFO Drives Operating and installation manual

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NFO® DRIVES