

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 disturb 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.



### Simple installation

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



### Silent operation

- No electromagnetic interference
- No irritating switching noise



### Safe technology

- No bearing currents
- No earth currents

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

Power rating (kW)	7.5	11.0	15.0
Continuous Rating (A)	14.8	21.5	28.5
Maximum Rating (A)	17.7	25.8	32.0
Protection Class	IP20/IP54	IP20	IP20
Measurements HxDxW (mm)	413x280x150	413x280x150	413x265x203
Weight (kg)	14.0	14.0	14.0
Part number	NFO 2C1/3A3151D	NFO 2C1A3221D	NFO 2C1A3281D

	Voltage (V)	Frequency (Hz)
<b>Input:</b>	3x380-440V ±10%	50/60 Hz ± 10 %
<b>Output:</b>	0-440V + 10 %	0-150Hz
<b>Output voltage wave form:</b>	Sinus	
<b>Operating mode:</b>	4-kvadrant	
<b>Control inputs configurable:</b>	<b>Setpoint</b>	<b>Actual value</b>
2 pcs of voltage(V)	0-10V, 2-10V, ± 10V	0-10V, 2-10V, ± 10V
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	

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

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

For more information: See NFO Drives Operating and installation manual