Environmental conditions

Operation

Parameter	Normal operation
Nominal ambient temperature	0°C-40°C See table at page 14 for different conditions
Atmospheric pressure	86-106 kPa
Relative humidity, non-condensing	0-90%
Contamination, according to IEC 60721-3-3	No electrically conductive dust allowed. Cooling air must be clean and free from corro-sive materials. Chemical gases, class 3C2. Solid particles, class 3S2.
Vibrations	According to IEC 60068-2-6, Sinusodial vibrations: ● 10<f<57 Hz, 0.075 mm ● 57<f<150 Hz, 1g
Altitude	0-1000 m, with derating 1%/100 m of rated current up to 2000 m.

Storage

Parameter	Storage condition
Temperature	-20 to +60°C
Atmospheric pressure	86-106 kPa
Relative humidity, non-condensing	0-90%

Model Number

JNFX	40	-	0006	-	20	C	E	B
Model	Mains supply voltage		Rated current (A)		Protection class	Control panel	EMC	Brake chopper
JNFX = F33 series	40 = 380~415V		3~1500A		20 = IP20	_ = Blank control panel	E = Standard EMC protection	_ = No brake chopper
	48 = 380~480V						F = Extended EMC protection	B = Brake chopper built-in
JNVX = V33 series	50 52 = 480~525V				54 = IP54	C = Standard control panel	I = IT-net	D = DC +/- terminals included
	69 = 480~690V							

Distributor

TECO

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GJ-43-01 2009-07-20

TECO

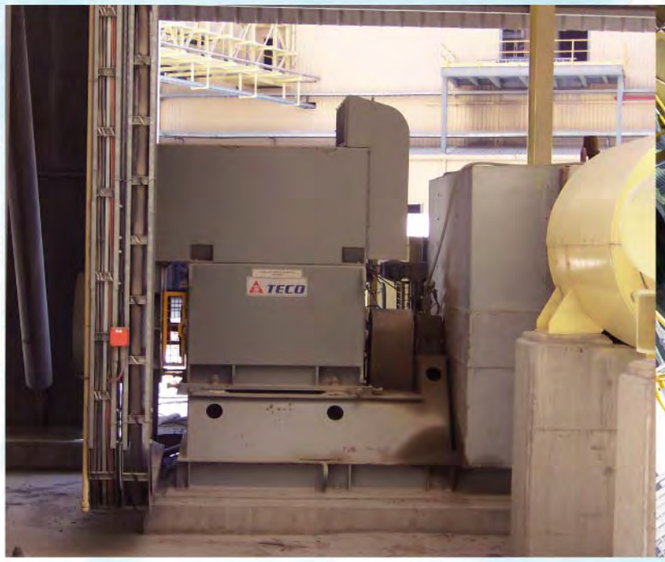
TECO INVERTER

F33 Series

Secure the flow and protect your equipment

ISO 14001 BSMI TÜV CERT ISO 9001 CE RoHS

Full control and reliable operation



TECO F33 variable speed drives offer reliable, cost-efficient and user-friendly operation of your pumps, fans, compressors and blowers. Full control of flow and pressure ensures an optimized operation, with reduced energy consumption and less downtime. The TECO F33 also protects your equipment from damage and unnecessary wear.

With all its functions included in a compact IP54 cabinet, the TECO F33 is cost-efficiently installed close to the application.
An intuitive user and process interface makes it easy to communicate critical parameters to other parts of your process. Fit-for-purpose is the key term for TECO F33.

Protective starts and stops

TECO F33 variable speed drives offer soft starts and stops that protect your equipment. Reduced start currents result in smaller fuses, cables and energy bills. Controlled stops eliminate the risk of water hammer and other costly damage. In addition, you no longer need expensive motor-controlled valves to reduce pressure spikes. The result is reduced installation, energy and maintenance costs.

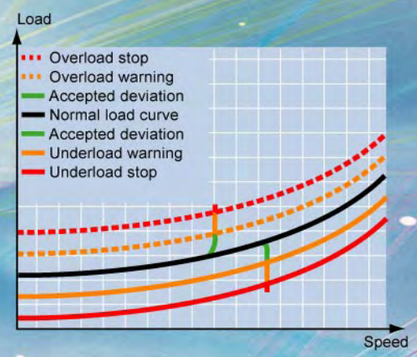
Controlled ramping for safe start-up

TECO F33 offers a unique function that protects your equipment by ensuring a controlled ramping up of the DC link voltage. This so called HCB ramping (Half Controlled Bridge) offers a safe start-up, and detects phase failure and asymmetries. As there are no built-in resistors or bulky contactors, both size and maintenance are reduced.

You can safely turn the variable speed drive on and off with an external contactor, as often as needed. In other drives this could cause breakdowns or serious damage.

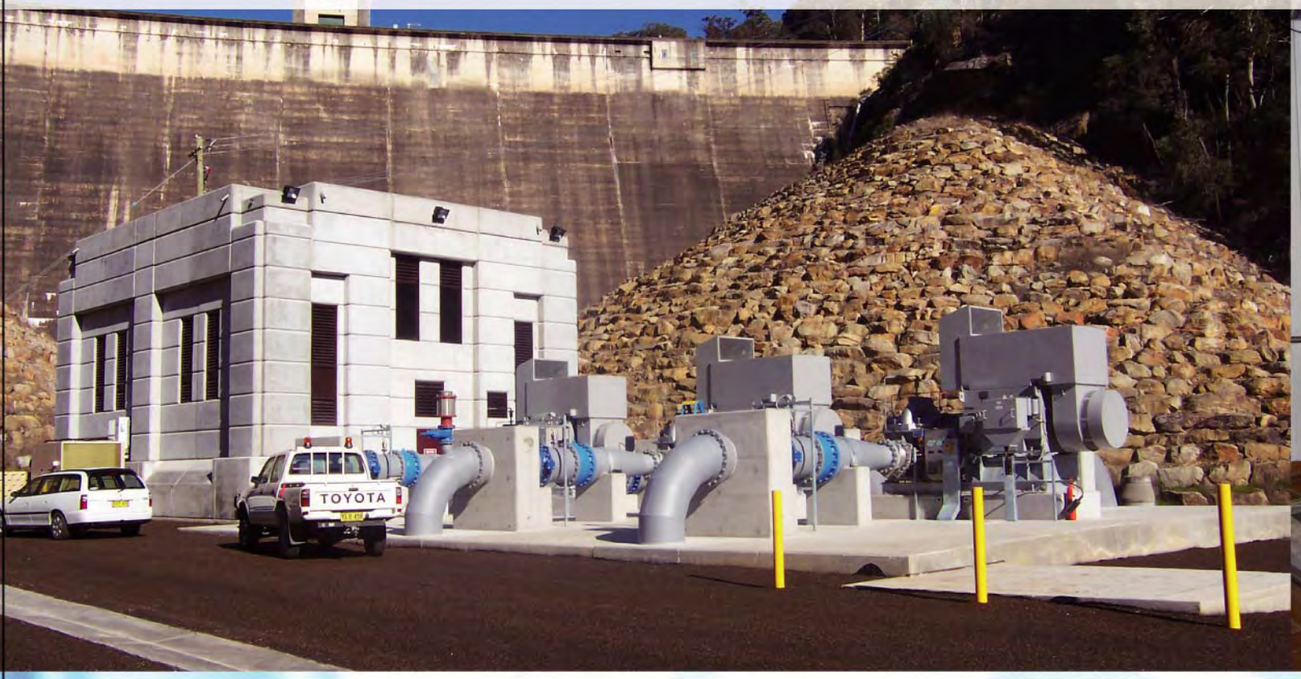
Protection against damage and downtime

A built-in shaft power monitor and a unique load curve protection function protect your process against damage and downtime. The load curve of the controlled equipment is monitored across the entire speed range. Any over- or underload situation that could cause inefficiency or damage is detected immediately. You can easily set the warning and safety stop levels that allow you to take preventive action before damage occurs. There is no need to worry about dry-running, cavitation, overheating or blocked pipes. And you will be warned if, for example, your compressor is idling, a fan belt is broken or a valve has not fully opened. TECO F33 protects the process and makes sure it works as efficiently as possible.



The unique load curve protection detects any deviation from normal load across the entire speed range, and sends a warning or stops the process before any damage is done (patent pending EP 05109356).

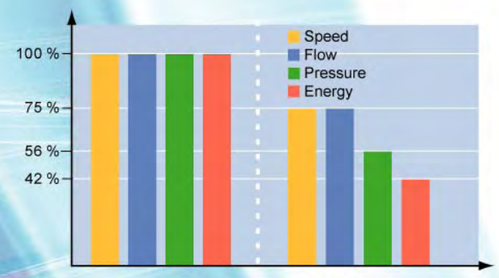
Save energy and optimize operation



Multiple control for efficiency and reliability
Using multiple pumps or compressors to keep a constant flow or pressure despite varying demands is a flexible, reliable and cost-efficient method. At all times you only use the number of pumps or compressors needed and thus the amount of energy required.

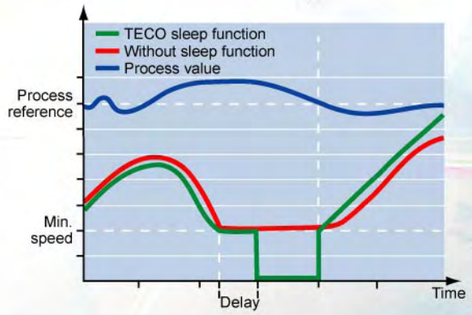
An TECO F33 controls up to seven drives without PLCs or other external equipment. When, for example, one pump reaches its limit, or when the demand decreases, the TECO F33 starts or stops more pumps. Which pumps to start or stop is decided by the variable speed drive, giving them all equal running time. Should one pump or motor break down, the system automatically switches over to the next in line, avoiding unnecessary downtime.

Save energy with variable speed control
TECO F33 is specially developed for regulating the flow and pressure of pumps, compressors, fans and blowers. Speed is continuously adapted to the level required. Controlling the equipment with motor speed means considerable energy and maintenance savings in comparison to opening and closing valves or dampers. The latter is like running a car at full throttle while controlling the speed using the brakes. Investing in a variable speed drive has in most cases a very short payback time.



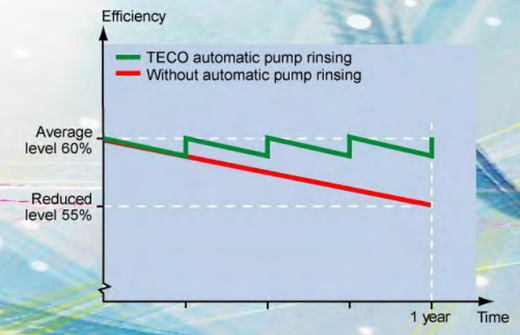
Using an TECO F33 variable speed drive to control the flow/pressure will help you to make considerable energy savings. For example, reducing the speed of a centrifugal pump or fan to 75% results in 75% of the flow and 56% of the pressure, but only 42% of the energy consumption.

Sleep function optimizes operation
A built-in sleep function optimizes the process by lowering the motor speed to zero when it does not need to be run in order to keep up the required pressure. The motor is restarted when the need occurs again. This reduces energy consumption and equipment wear.

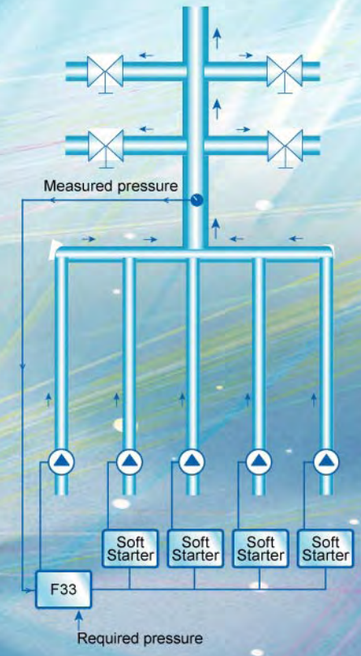


TECO F33 saves energy by pausing the motor when it does not need to be run in order to keep up the required pressure.

Automatic pump rinsing increases efficiency
TECO F33 can be set for automatic pump rinsing using a timer. When a pump is running at low speed or standing still, sludge often sticks to the impeller, reducing the pump's efficiency. With an TECO F33 variable speed drive you can set the pump to run at full speed for certain intervals or for a certain time at start-up, before returning to normal operation. This cleans the pump and pipes and increases efficiency.



TECO F33 offers automatic pump rinsing. In this example a centrifugal pump at a sewage treatment plant is set to run at full speed for certain intervals to rinse out sludge, thereby increasing efficiency.



Multiple pump or compressor control is a reliable and cost-efficient method of keeping a constant flow/pressure despite varying demands. One TECO F33 can control up to seven units in a master/slave solution, with, for example, Softstarters working as slaves.

The answer to a range of challenges

Pumps

Challenge	TECO F33 solution	Value
High start currents require larger fuses and cables. Causes stress on equipment and higher energy costs.	Speed control reduces start current. Same fuses can be used as those required for the nominal motor current.	Lower investment and energy costs. Extended equipment lifetime.
Dry-running, cavitation and overheating damage the pump and cause downtime.	Load curve protection function detects deviation. Sends warning or activates safety stop.	Preventive action before damage. Extended equipment lifetime and reduced downtime.
Sludge sticks to impeller when pump has been running at low speed or been stationary for a while. Reduces the pump's efficiency.	Automatic pump rinsing: pump can be set to run at full speed for a certain time before turning to normal speed.	Higher process efficiency and reduced maintenance costs.
Motor runs at same speed despite varying demands in pressure/ flow. Energy is lost and equipment stressed.	PID function continuously adapts speed to the level required. Sleep function can be activated when the motor does not need to be run.	Optimized energy consumption and increased efficiency. Reduced maintenance costs. Quicker set-up.
Process inefficiency due to e.g. a blocked pipe, a valve not fully opened or a worn impeller.	Load curve protection function quickly detects deviation from normal load. Warning is sent or safety stop activated.	Optimized operation. Preventive action before damage. No energy is lost and downtime is reduced.
Water hammer damages the pump when stopped. Mechanical stress on pipes, valves, gaskets and seals.	Smooth linear stops protect the equipment. Eliminates need for costly motorized valves.	Reduced maintenance costs and less downtime. Extended equipment lifetime. Lower installation costs.

Fans

Challenge	TECO F33 solution	Value
High start currents require larger fuses and cables. Causes stress on equipment and higher energy costs.	Speed control reduces start current. Same fuses can be used as those required for the nominal motor current.	Lower investment and energy costs. Extended equipment lifetime.
Draught causes turned-off fan to rotate the wrong way. Starting causes high current peaks and mechanical stress. Can result in blown fuses and breakdown.	Spin start ensures that the motor is picked up at its present speed and direction, gradually slowed to zero speed and then started in the right direction.	Reduced cycle times, extended equipment lifetime and less downtime.
Regulating pressure/flow with dampers causes high energy consumption and equipment wear.	Automatic regulation of pressure/ flow with motor speed gives a more exact control.	Optimized energy consumption and minimized impact on equipment.
Motor runs at same speed despite varying demands in pressure/ flow. Energy is lost and equipment stressed.	PID function continuously adapts speed to the level required. Sleep function can be activated when the motor does not need to be run.	Optimized energy consumption and increased efficiency. Reduced maintenance costs. Quicker set-up.
Process inefficiency due to e.g. a blocked filter, a damper not fully opened or a broken belt.	Load curve protection function quickly detects deviation from normal load. Warning is sent or safety stop activated.	Optimized operation. Preventive action before damage is done. No energy is lost and downtime is reduced.

The answer to more challenges

Compressors

Challenge	TECO F33 solution	Value
High start currents require larger fuses and cables. Causes stress on equipment and higher energy costs.	Speed control reduces start current. Same fuses can be used as those required for the nominal motor current.	Lower investment and energy costs. Extended equipment lifetime.
Compressor is damaged when cooling agent enters the compressor screw.	Overload situation is quickly detected and safety stop can be activated to avoid breakdown.	Extended equipment lifetime, reduced maintenance costs and less downtime.
Pressure is higher than needed causing leaks, stress on the equipment and excessive air use.	Load curve protection function detects deviation. Warning is sent or safety stop activated.	Preventive action before damage or breakdown. No energy is lost and downtime is reduced.
Motor runs at same speed when no air is compressed. Energy is lost and equipment stressed.	PID function continuously adapts speed to the level required. Sleep function can be activated when motor does not need to be run.	Optimized energy consumption and increased efficiency. Reduced maintenance costs. Quicker set-up.
Process inefficiency and energy wasted due to e.g. the compressor idling.	Load curve protection function quickly detects deviation from normal load. Warning is sent or safety stop activated.	Optimized operation. Preventive action before damage is done. No energy is lost and downtime is reduced.

Blowers

Challenge	TECO F33 solution	Value
High start currents require larger fuses and cables. Causes stress on equipment and higher energy costs.	Speed control reduces start current. Same fuses can be used as those required for the nominal motor current.	Lower investment and energy costs. Extended equipment lifetime.
Difficult to compensate for pressure fluctuations. Energy wasted and risk of production stop.	PID function continuously adapts pressure to the level required.	Reliable operation and no energy wasted. Always keeps the required pressure.
Motor runs at same speed despite varying demands. Energy is lost and equipment stressed.	PID function continuously adapts speed to level required. Sleep function can be activated when motor does not need to be run.	Optimized energy consumption and increased efficiency. Reduced maintenance costs. Quicker set-up.
Process inefficiency due to e.g. a broken damper, a valve not fully opened or a broken belt.	Load curve protection function quickly detects deviation from normal load. Warning is sent or safety stop activated.	Optimized operation. Preventive action before damage is done. No energy is lost and downtime is reduced.

Many other features

User-friendly and reliable operation

- Your own specific process in the units
- Virtual connection of logical functions
- User-friendly PC software
- Local or remote control
- Concise manuals help you achieve optimal use
- Easy copying of settings

Cost-efficient and flexible installation

- Compact IP54 for cost-efficient installation
- High power units are also compact
- Flexible cable connections

Options add functionality

- Combine more options
- Versatile communication options
- Efficient motor protection
- Safe stop without a contactor
- Liquid cooling saves energy and space
- Extended EMC protection
- Reduced harmonic distortions
- Standby supply

A complete series

- Rated power: 0.75-1,500 kW
- Supply voltage: 380-690 V, 3-phase
- Rated current: 2.5-1,500 A
- Protection class: IP54
- Approvals: Global standards

Simplified maintenance

- Detailed alarm codes simplify troubleshooting
- Fan control extends equipment lifetime
- Fold out for easy access

Electrical specifications related to model

Typical motor power at mains voltage 400 V

Model	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)		Heavy duty (150%, 1 min every 10 min)		Frame size
		Power @400V [kW]	Rated current [A]	Power @400V [kW]	Rated current [A]	
JNFX48-0003	3	0.75	2.5	0.55	2	B
JNFX48-0004	4.8	1.5	4	1.1	3.2	
JNFX48-0006	7.2	2.2	6	1.5	4.8	
JNFX48-0008	9	3	7.5	2.2	6	
JNFX48-0010	11.4	4	9.5	3	7.6	
JNFX48-0013	15.6	5.5	13	4	10.4	
JNFX48-0018	21.6	7.5	18	5.5	14.4	
JNFX48-0026	31	11	26	7.5	21	C
JNFX48-0031	37	15	31	11	25	
JNFX48-0037	44	18.5	37	15	29.6	
JNFX48-0046	55	22	46	18.5	37	
JNFX40-0060	73	30	61	22	49	X2
JNFX40-0073	89	37	74	30	59	
JNFX48-0090	108	45	90	37	72	E
JNFX48-0109	131	55	109	45	87	
JNFX48-0146	175	75	146	55	117	
JNFX48-0175	210	90	175	75	140	
JNFX48-0210	252	110	210	90	168	F
JNFX48-0250	300	132	250	110	200	
JNFX48-0300	360	160	300	132	240	G
JNFX48-0375	450	200	375	160	300	
JNFX48-0430	516	220	430	200	344	H
JNFX48-0500	600	250	500	220	400	
JNFX48-0600	720	315	600	250	480	I
JNFX48-0650	780	355	650	315	520	
JNFX48-0750	900	400	750	355	600	
JNFX48-0860	1032	450	860	400	688	J
JNFX48-1000	1200	500	1000	450	800	
JNFX48-1200	1440	630	1200	500	960	K
JNFX48-1500	1800	800	1500	630	1200	

* Available during limited time and as long as allowed by drive temperature.

Electrical specifications related to model

Typical motor power at mains voltage 460 V

Model	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)		Heavy duty (150%, 1 min every 10 min)		Frame size
		Power @460V [hp]	Rated current [A]	Power @460V [hp]	Rated current [A]	
JNFX48-0003	3	1	2.5	1	2	B
JNFX48-0004	4.8	2	4	1.5	3.2	
JNFX48-0006	7.2	3	6	2	4.8	
JNFX48-0008	9	3	7.5	3	6	
JNFX48-0010	11.4	5	9.5	3	7.6	
JNFX48-0013	15.6	7.5	13	5	10.4	
JNFX48-0018	21.6	10	18	7.5	14.4	
JNFX48-0026	31	15	26	10	21	C
JNFX48-0031	37	20	31	15	25	
JNFX48-0037	46	25	37	20	29.6	
JNFX48-0046	55	30	46	25	37	
JNFX50-0060	73	40	61	30	49	X2
JNFX48-0090	108	60	90	50	72	E
JNFX48-0109	131	75	109	60	87	
JNFX48-0146	175	100	146	75	117	
JNFX48-0175	210	125	175	100	140	
JNFX48-0210	252	150	210	125	168	F
JNFX48-0250	300	200	250	150	200	
JNFX48-0300	360	250	300	200	240	G
JNFX48-0375	450	300	375	250	300	
JNFX48-0430	516	350	430	250	344	H
JNFX48-0500	600	400	500	350	400	
JNFX48-0600	720	500	600	400	480	I
JNFX48-0650	780	550	650	400	520	
JNFX48-0750	900	600	750	500	600	
JNFX48-0860	1032	650	860	550	688	J
JNFX48-1000	1200	700	1000	600	800	
JNFX48-1200	1440	750	1200	700	960	K
JNFX48-1500	1800	800	1500	750	1200	

* Available during limited time and as long as allowed by drive temperature.

Typical motor power at mains voltage 525 V

Model	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)		Heavy duty (150%, 1 min every 10 min)		Frame size
		Power @525V [kw]	Rated current [A]	Power @525V [kW]	Rated current [A]	
JNFX52-0003	3	1.1	2.5	1.1	2	B
JNFX52-0004	4.8	2.2	4	1.5	3.2	
JNFX52-0006	7.2	3	6	2.2	4.8	
JNFX52-0008	9	4	7.5	3	6	
JNFX52-0010	11.4	5.5	9.5	4	7.6	
JNFX52-0013	15.6	7.5	13	5.5	10.4	
JNFX52-0018	21.6	11	18	7.5	14.4	
JNFX52-0026	31	15	26	11	21	C
JNFX52-0031	37	18.5	31	15	25	
JNFX52-0037	44	22	37	18.5	29.6	
JNFX52-0046	55	30	46	22	37	
JNFX50-0060	73	37	61	30	49	X2
JNFX69-0090	108	55	90	45	72	F69
JNFX69-0109	131	75	109	55	87	
JNFX69-0146	175	90	146	75	117	
JNFX69-0175	210	110	175	90	140	
JNFX69-0210	252	132	210	110	168	H69
JNFX69-0250	300	160	250	132	200	
JNFX69-0300	360	200	300	160	240	
JNFX69-0375	450	250	375	200	300	
JNFX69-0430	516	300	430	250	344	I69
JNFX69-0500	600	315	500	300	400	
JNFX69-0600	720	400	600	315	480	J69
JNFX69-0650	780	450	650	355	520	
JNFX69-0750	900	500	750	400	600	K69
JNFX69-0860	1032	560	860	450	688	
JNFX69-1000	1200	630	1000	500	800	

* Available during limited time and as long as allowed by drive temperature.

Electrical specifications related to model

Electrical specifications related to model

General electrical specifications

Typical motor power at mains voltage 575 V

Model	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)		Heavy duty (150%, 1 min every 10 min)		Frame size
		Power @575V [hp]	Rated current [A]	Power @575V [hp]	Rated current [A]	
JNFX69-0090	108	75	90	60	72	F69
JNFX69-0109	131	100	109	75	87	
JNFX69-0146	175	125	146	100	117	
JNFX69-0175	210	150	175	125	140	
JNFX69-0210	252	200	210	150	168	H69
JNFX69-0250	300	250	250	200	200	
JNFX69-0300	360	300	300	250	240	
JNFX69-0375	450	350	375	300	300	
JNFX69-0430	516	400	430	350	344	I69
JNFX69-0500	600	500	500	400	400	
JNFX69-0600	720	600	600	500	480	J69
JNFX69-0650	780	650	650	550	520	
JNFX69-0750	900	750	750	600	600	K69
JNFX69-0860	1032	850	860	700	688	
JNFX69-1000	1200	1000	1000	850	800	

* Available during limited time and as long as allowed by drive temperature.

Typical motor power at mains voltage 690 V

Model	Max. output current [A]*	Normal duty (120%, 1 min every 10 min)		Heavy duty (150%, 1 min every 10 min)		Frame size
		Power @690V [kw]	Rated current [A]	Power @690V [kw]	Rated current [A]	
JNFX69-0090	108	90	90	75	72	F69
JNFX69-0109	131	110	109	90	87	
JNFX69-0146	175	132	146	110	117	
JNFX69-0175	210	160	175	132	140	
JNFX69-0210	252	200	210	160	168	H69
JNFX69-0250	300	250	250	200	200	
JNFX69-0300	360	315	300	250	240	
JNFX69-0375	450	355	375	315	300	
JNFX69-0430	516	450	430	315	344	I69
JNFX69-0500	600	500	500	355	400	
JNFX69-0600	720	600	600	450	480	J69
JNFX69-0650	780	630	650	500	520	
JNFX69-0750	900	710	750	600	600	K69
JNFX69-0860	1032	800	860	650	688	
JNFX69-0900	1080	900	900	710	720	
JNFX69-1000	1200	1000	1000	800	800	

* Available during limited time and as long as allowed by drive temperature.

General electrical specifications

General

Mains voltage: JNFX40	380-415V +10%/-15%
JNFX48	380-480V +10%/-15%
JNFX50/52	460-525V +10%/-15%
JNFX69	500-690V +10%/-15%
Mains frequency:	45 to 65 Hz
Input power factor:	0.95
Output voltage:	0–Mains supply voltage:
Output frequency:	0–400 Hz
Output switching frequency:	3 kHz
Efficiency at nominal load:	97% for models 0003 to 0018 98% for models 0026 to 0046 97.5% for models 0060 to 0073 98% for models 0090 to 1500

Control signal inputs:

Analogue (differential)

Analogue Voltage/current:	0-±10 V/0-20 mA via software setting
Max. input voltage:	+30 V
Input impedance:	20 kΩ (voltage) 250 Ω (current)
Resolution:	10 bits
Hardware accuracy:	0.5% type + 1 ½ LSB fsd
Non-linearity	1½ LSB

Digital:

Input voltage:	High>7 VDC Low<4 VDC
Max. input voltage:	+30 VDC
Input impedance:	<3.3 VDC: 4.7 kΩ ≥ 3.3 VDC: 3.6 KΩ
Signal delay:	≤ 8 ms

Control signal outputs

Analogue

Output voltage/current:	0-10 V/0-20 mA via switch
Max. output voltage:	+15 V @5 mA cont.
Short-circuit current (∞):	+15 mA (voltage) +140 mA (current)
Output impedance:	10 Ω (voltage)
Resolution:	10 bit
Maximum load impedance for current	500 Ω
Hardware accuracy:	1.9% type fsd (voltage), 2.4% type fsd (current)
Offset:	3 LSB
Non-linearity:	2 LSB

Digital

Output voltage:	High>20 VDC @50 mA, >23 VDC open Low<1 VDC @50 mA
Shortcircuit current (∞):	100 mA max (together with +24 VDC)

Relays

Contacts	2 A/250 VAC or 2 A/42 VDC

References

+10VDC	+10 VDC @10 mA Shortcircuit current +30 mA max
-10VDC	-10 VDC @10 mA
+24VDC	+24 VDC Short-circuit current +100 mA max (together with Digital Outputs)

Operation at higher temperatures

Most variable speed drives are made for operation at maximum of 40°C ambient temperature. However, for most models, it is possible to use the VSD at higher temperatures with little loss in performance. The table below shows ambient temperatures as well as derating for higher temperatures.

Ambient temperature and derating 400-690V types

Model	IP20		IP54	
	Max temp.	Derating: possible	Max temp.	Derating: possible
JNFX **-0003 to JNFX **-0046	–	–	40°C	Yes, -2.5%/°C to max +10°C
JNFX **-0060 to JNFX40-0073	40°C	Yes, -2.5%/°C to max +10°C	35°C	Yes, -2.5%/°C to max +10°C
JNFX **-0090 to JNFX **-1500	–	–	40°C	-2.5%/°C to max +5°C

Example

In this example we have a motor with the following data that we want to run at the ambient temperature of 45°C:

Voltage 400 V
Current 68 A
Power 37 kW

Select variable speed drive

The ambient temperature is 5°C higher than the maximum ambient temperature. The following calculation is made to select the correct VSD model.

Derating is possible with loss in performance of 2.5%/°C.

Derating will be: 5 X 2.5% = 12.5%

Calculation for model JNFX40-0073
73 A - (12.5% X 73) = 63.875A; this is not enough.

Calculation for model JNFX48-0090
90 A - (12.5% X 90) = 78.75 A

In this example we select the JNFX48-0090.

Operation at higher switching frequency

The table below shows the switching frequency for different VSD models. With the possibility of running at higher switching frequency you can reduce the noise level from the motor.

switching frequency

Model	Standard switching frequency	Range
JNFX40-0003 to JNFX40-0013	3 kHz	1.5–6 kHz
JNFX **-0018 to JNFX **-0046	3 kHz	1.5–6 kHz
JNFX **-0060 to JNFX40-0073	3 kHz	1.5–6 kHz
JNFX **-0090 to JNFX **-1500	3 kHz	1.5–6 kHz

Dimensions and Weights

The table below gives an overview of the dimensions and weights. The models 0300 to 1500 consist of 2, 3, 4, 5 or 6 parallelled modules built into a standard cabinet.

Mechanical specifications, JNFX40, JNFX48, JNFX50, JNFX52

Models	Frame size	Dim. H x W x D [mm] IP20	Dim. H x W x D [mm] IP54	Weight IP20 [kg]	Weight IP54 [kg]
0003 to 0018	B	–	350(416) x 203 x 200	–	12.5
0026 to 0046	C	–	440(512) x 178 x 292	–	24
0060 to 0073	X2	530(590) x 220 x 270	530(590) x 220 x 270	26	26
0090 to 0109	E	–	950 x 285 x 314	–	56
0146 to 0175	E	–	950 x 285 x 314	–	60
0210 to 0250	F	–	950 x 345 x 314	–	74
0300 to 0375	G	1036 x 500 x 390	2320 x 600 x 500	140	270
0430 to 0500	H	1036 x 500 x 450	2320 x 600 x 600	170	305
0600 to 0750	I	1036 x 730 x 450	2320 x 1000 x 600	248	440
0860 to 1000	J	1036 x 1100 x 450	2320 x 1200 x 600	340	580
1200 to 1500	K	1036 x 1560 x 450	2320 x 2000 x 600	496	860

Mechanical specifications, JNFX69

Models	Frame size	Dim. H x W x D [mm] IP20	Dim. H x W x D [mm] IP54	Weight IP20 [kg]	Weight IP54 [kg]
0090 to 0175	F69	–	1090 x 345 x 314	–	77
0210 to 0375	H69	1176 x 500 x 450	2320 x 600 x 600	176	311
0430 to 0500	I69	1176 x 730 x 450	2320 x 1000 x 600	257	449
0600 to 0650	J69	1176 x 1100 x 450	2320 x 1200 x 600	352	592
0750 to 1000	K69	1176 x 1560 x 450	2320 x 2000 x 600	514	878