

A800 Plus

for CRANES



FR-A800 Plus series

1st!

Release of the new crane-dedicated inverter, FR-A800-CRN

with various functions ideal for a crane application such as reduction in tact time, load slippage prevention, etc.

Dedicated functions for crane applications + A800 Plus for CRANES

A800 Plus

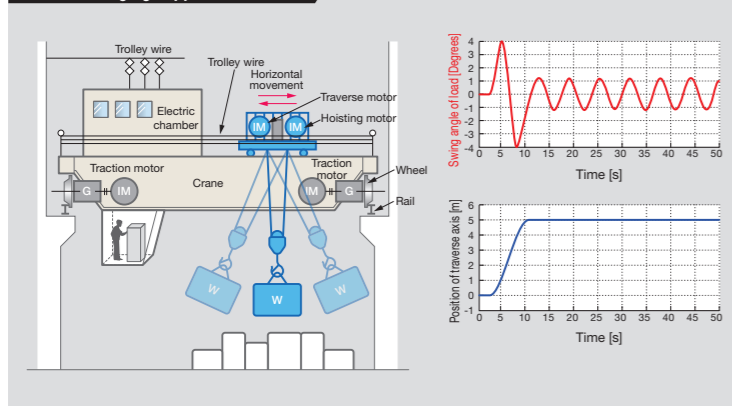
A new lineup of dedicated inverters for specialized fields are born! Plus! The optimum functions for each dedicated field are added to the already high performance and high functionality FR-A800 series inverter.

Reduction in tact time

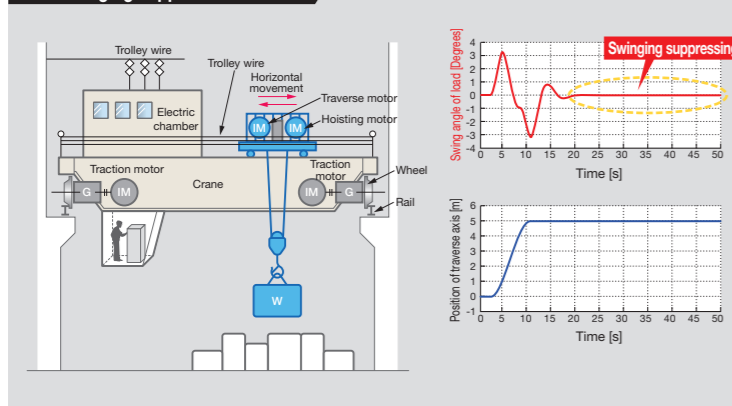
Swinging suppression control

By using the Mitsubishi's original swinging suppression control technology, the swinging of an object moved by a crane is suppressed at the time of stopping, even without the operator's input. This control cuts down the tact time and facilitates efficient operation.

Without swinging suppression control



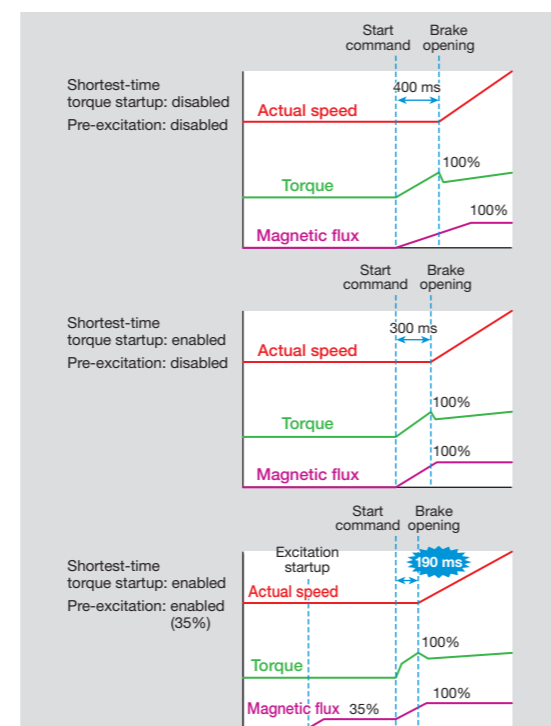
With swinging suppression control



Shortest-time torque startup function

The time from the start command to when the brake opens is shortened. This will contribute to a reduction in tact time.

- Shortest-time torque startup function: The optimum distribution of the excitation current and torque current enables rapid startup of the torque.
- Magnetic flux command during pre-excitation: Decreasing the pre-excitation current during a motor stop reduces power consumption during standby, and enables rapid startup of the torque.

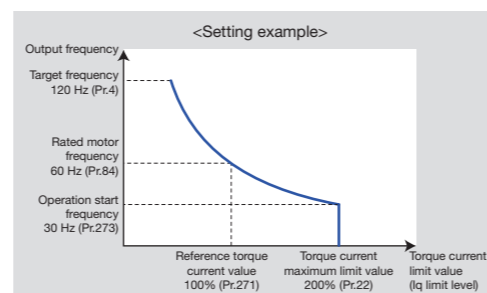


Example for the FR-A820-90K-1-60CRN with the SF-THY (90 kW)

Load torque high-speed frequency control (mode 2)

When there is a light-load (when light loads are moved up or down by a crane), the speed will automatically be increased. This reduces the tact time and facilitates efficient operation.

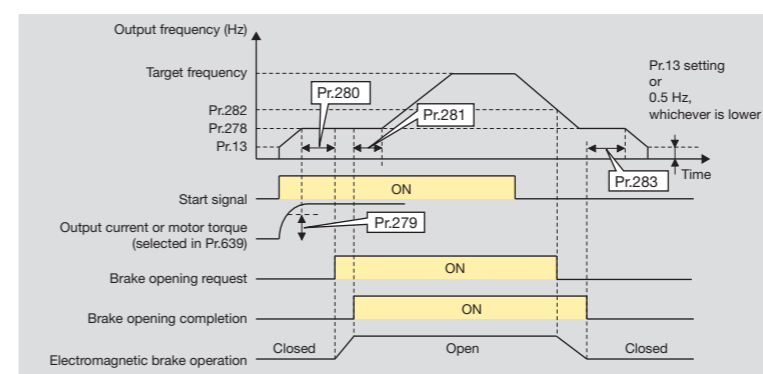
The possible operation frequency is set automatically according to the load. After starting the inverter, since the output frequency is suppressed depending on the current value, the inverter will run at a high frequency during a light load, or at a low frequency during a heavy load.



Load slippage prevention

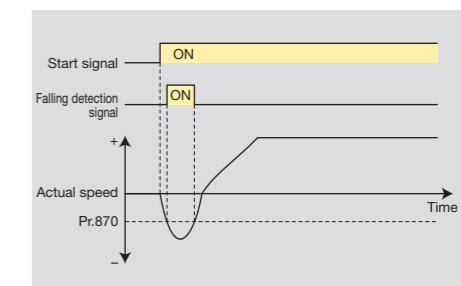
Brake sequence function

The highly scalable brake sequence function enables the output of a brake opening signal for the optimum brake operation calculated from the load torque or the actual speed.



Falling detection

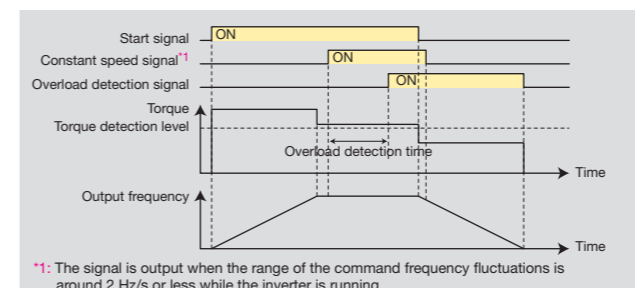
Slippage during the start of a lift can be checked. When the commanded direction differs from the actual motor rotation direction, the falling detection signal is output.



A variety of dedicated monitoring functions

Overload detection function

By outputting an overload detection signal when too much load (overload) is applied to a crane, this information can be transmitted to the superordinate controller. During constant speed operation, when the motor torque is equal to or higher than the torque setting for the time setting or longer, the overload detection signal is turned ON.



Start count monitor

The inverter starting times can be counted. Confirming the starting times can be used to determine the timing of the maintenance, or can be used as a reference for system inspection or parts replacement.

Available in a wide range of industries

Using the recommended EMC filter in combination with the inverter supports compliance with various countries ship classifications, such as NK, LR, DNV, ABS, and BV. The FR-A800-CRN can be used for electric deck cranes on ship.

Longer service life Long life components

- The service life of the cooling fans is now 10 years^{*2}. The service life can be further extended by ON/OFF control of the cooling fan.
- Capacitors with a design life of 10 years^{*2,3} are adapted.
- Life indication of life components

| Components | Estimated lifespan of the FR-A800 [®] | Guideline of JEMA ^{®4} |
|-----------------------------------|--|---------------------------------|
| Cooling fan | 10 years | 2 to 3 years |
| Main circuit smoothing capacitor | 10 years ³ | 5 years |
| Printed board smoothing capacitor | 10 years ³ | 5 years |

^{*2} Surrounding air temperature: Annual average 40°C (free from corrosive gas, flammable gas, oil mist, dust and dirt). The design life is a calculated value from the ND rating (normal duty) and is not a guaranteed product life.

^{*3} Output current: 80% of the inverter ND rating (normal duty)

^{*4} Excerpts from "Periodic check of the transistorized inverter" of JEMA (Japan Electrical Manufacturer's Association).

Enhanced vibration resistance Protection against vibration

A strong vibration may occur in some operating conditions, for example, during the crane traveling. Inverters with the components fixed on the circuit board with an adhesive, or the cables tied (fixed) together, are available for enhanced vibration resistance. (to be released soon)

Improved environmental resistance Measures against dust, dirt, and corrosion

Using the inverter in the dusty environment may cause fault such as a short circuit. The inverter with circuit board coating (conforming to IEC60721-3-3 3C2/3S2) ensures reliability even in poor environments. Furthermore, the inverter with plated conductor is also available.

Lineup

•Standard model

FR - A 8 2 0 - 0.4K - 1 - 60 CRN

| Symbol | Voltage class | Symbol | Structure, functionality | Capacity ^{*1} | Description | Symbol | Type ^{*2} | Symbol | Circuit board coating (IEC60721-3-3 3C2/3S2 compatible) | Plated conductor | Symbol | Dedicated functions |
|--------|---------------|--------|--------------------------|------------------------|---------------------------------|--------|--------------------|------------------|--|------------------|--------|---------------------|
| 2 | 200 V class | 0 | Standard model | 0.4K to 280K | Inverter ND rated capacity (kW) | -1 | FM | 60 | With | Without | CRN | Dedicated to crane |
| 4 | 400 V class | | | 00023 to 06830 | Inverter SLD rated current (A) | -2 | CA | 06 ^{*3} | With | With | | |

| Three-phase 200V class FR-A820-□ ^{*1} | 0.4K | 0.75K | 1.5K | 2.2K | 3.7K | 5.5K | 7.5K | 11K | 15K | 18.5K | 22K | 30K | 37K | 45K | 55K | 75K | 90K |
|--|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| | 00046 | 00077 | 00105 | 00167 | 00250 | 00340 | 00490 | 00630 | 00770 | 00930 | 01250 | 01540 | 01870 | 02330 | 03160 | 03800 | 04750 |
| Three-phase 400V class FR-A840-□ ^{*1} | 0.4K | 0.75K | 1.5K | 2.2K | 3.7K | 5.5K | 7.5K | 11K | 15K | 18.5K | 22K | 30K | 37K | 45K | 55K | 75K | 90K |
| | 00023 | 00038 | 00052 | 00083 | 00126 | 00170 | 00250 | 00310 | 00380 | 00470 | 00620 | 00770 | 00930 | 01160 | 01800 | 02160 | 02600 |
| | 110K | 132K | 160K | 185K | 220K | 250K | 280K | | | | | | | | | | |
| | 03250 | 03610 | 04320 | 04810 | 05470 | 06100 | 06830 | | | | | | | | | | |

•Separated converter type

FR - A 8 4 2 - 315K - 1 - 60 CRN

| Symbol | Voltage class | Symbol | Structure, functionality | Capacity ^{*1} | Description | Symbol | Type ^{*2} | Symbol | Circuit board coating (IEC60721-3-3 3C2/3S2 compatible) | Plated conductor | Symbol | Dedicated functions |
|--------|---------------|--------|--------------------------|------------------------|---------------------------------|--------|--------------------|--------|--|------------------|--------|---------------------|
| 4 | 400 V class | 2 | Separated converter type | 315K to 500K | Inverter ND rated capacity (kW) | -1 | FM | 60 | With | Without | CRN | Dedicated to crane |
| | | | | 07700 to 12120 | Inverter SLD rated current (A) | -2 | CA | 06 | With | With | | |

| Three-phase 400V class FR-A842-□ ^{*1} | 315K | 355K | 400K | 450K | 500K |
|--|-------|-------|-------|-------|-------|
| | 07700 | 08660 | 09620 | 10940 | 12120 |

*1: Models can be alternatively indicated with the inverter rated current (SLD rating).

*2: Specification differs by the type as follows.

| Symbol | Type | Motor output | Built-in EMC filter | Initial setting | | |
|--------|------|---|---------------------|-----------------|-----------------|------------------------------------|
| | | | | Control logic | Rated frequency | Base frequency voltage (Pr.19) |
| -1 | FM | Terminal FM (pulse train output) | OFF | Sink logic | 60 Hz | 9999 |
| | | Terminal AM (analog voltage output (0 to 10 VDC)) | | | | (same as the power supply voltage) |
| -2 | CA | Terminal CA (analog current output (0 to 20 mA)) | ON | Source logic | 50 Hz | 8888 |
| | | Terminal AM (analog voltage output (0 to 10 VDC)) | | | | (95% of the power supply voltage) |

*3: Available for the 5.5K or higher.

*4: For the 75K or higher inverter, or whenever a 75 kW or higher motor is used, always connect a DC reactor (FR-HEL), which is available as an option.

[Related Factory Automation Products]

Three-Phase Motor | High Performance Energy-Saving Motor | Super Line Premium Series SF-PR



Premium Efficiency & Compatible. New Launch of Super Line Premium Series SF-PR Model

- Compared to general efficiency motor SF-JR model, generated loss is reduced by 37% on average, and it is compatible with highly efficient premium IE3.
- Easy replacement is achieved as mounting dimension (frame number) is compatible with general efficiency motor SF-JR model.
- One motor can accommodate different power sources of Japan and the U.S. Three ratings in Japan meet the Top Runner standards, while it corresponds to EISA in the U.S.
- Can be driven by inverters as standard. Advanced magnetic-flux vector control by our FR-A800 achieves steady torque drive up to 0.5Hz.

Product Specifications

| | |
|---------------------------|--|
| Number of poles | 2-poles, 4-poles, 6-poles |
| Voltage-Frequency | 200/200/220/230V 50/60/60/60Hz EISA 230V 60Hz or 400/400/440/460V 50/60/60/60Hz EISA 460V 60Hz |
| Exterior | Totally enclosed fan cooled type (inside, outside installation) |
| Protection system | IP44 |
| Power transmission system | Motor with 2-poles over 11kW is dedicated for a direct connection. Motors with 4-poles and 6-poles are for both direct and crossed belt connections. |
| Rotation direction | Counter-clock-wise (CCW) direction viewed from the edge of axis. |
| Compatible standard | JEC-2137-2000 (Efficiency is compatible with IEC 60034-30.) |

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