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Servicio de Att. al Cliente

Electric Drives
and Controls

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Service

Rexroth
Bosch Group

Frequency converters

Frequency Converter Fv



2 **Bosch Rexroth AG** | Electric Drives and Controls

Frequency converters

Frequency Converter Fv

Documentation



- Brake chopper with up to 30 kW continuous braking power
- Easy to operate and service (detachable fan, LCD operating panel with copy function)
- Advanced functions and high performance
- Reliable quality
- CE marking and UL certification
- Worldwide availability and service

Rexroth Frequency Converter Fv is the new optimized drive solution for the automation of diverse applications in the power range up to 90kW. The distinct operating modes voltage/frequency (V/f), sensorless vector control (SVC) or sensor vector control (FOC) allow a wide range of applications.

Technical data

| | | FVCA01.1-0K40 | FVCA01.1-0K75 | FVCA01.1-1K50 | FVCA01.1-2K20 | FVCA01.1-4K00 | FVCA01.1-5K50 | FVCA01.1-7K50 |
|---|-------|--|---------------|---------------|---------------|---------------|---------------|---------------|
| Performance data | | | | | | | | |
| Nominal power | [kW] | 0.4 | 0.75 | 1.5 | 2.2 | 4 | 5.5 | 7.5 |
| Rated continuous current | [A] | 1.3 | 2.5 | 4 | 5.5 | 10 | 13 | 17 |
| Motor nominal voltage | | Three phase, 0 V ... mains voltage | | | | | | |
| Output voltage | | 0 V ... mains voltage | | | | | | |
| Output frequency | | 0...400 Hz | | | | | | |
| Overload capacity | | 200% In for 1 s or 150% In for 60 s | | | | | | |
| Mains voltage | 3 AC | 3 AC 380 ... 480 V (-15%/+10%) | | | | | | |
| Frequency | | 50 ... 60 Hz (±5%) | | | | | | |
| Brake chopper / resistor | | | | | | | | |
| Brake resistor | | External | | | | | | |
| Brake chopper | | Internal | | | | | | |
| Ambient conditions | | | | | | | | |
| Permissible temperature (operation) | | -10 ... +40 °C | | | | | | |
| Permissible relative humidity (operation) | | < 90% | | | | | | |
| Max. installation height | | Derating from 1000 m (1% of the power output per 100m) | | | | | | |
| Category Total | | IP20 | | | | | | |
| Functions | | | | | | | | |
| Control technology | | U/f, SVC, FOC | | | | | | |
| Pulse width modulation (PWM), continuously adjustable | [kHz] | 1 ... 15 | | | | | | |

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| | | | | | | | | |
|------------------------------------|-----------------------|--|-----|-----|-----|-----|-----|-----|
| Modulation type | | Magnetic flux PWM-modulation: SVPWM | | | | | | |
| Speed control range | Without pulse encoder | Vector control 1:100 | | | | | | |
| | With pulse encoder | Vector control 1:1000 | | | | | | |
| Start-up torque | U/f | Max. start-up torque 150% at 5 Hz | | | | | | |
| | SVC | Max. start-up torque 150% at 0.5 Hz | | | | | | |
| | FOC | Max. start-up torque 200% at 0 Hz | | | | | | |
| Frequency resolution | Digital | 0,01 Hz | | | | | | |
| | Analog | Max. frequency x 0.05% | | | | | | |
| V/F curve | | Freely definable | | | | | | |
| Ramps | | Linear, S-curve | | | | | | |
| DC brake | Start frequency | 0 ... 10 Hz | | | | | | |
| | Braking time | 0 ... 20 s | | | | | | |
| Automatic energy saving function | | Load-dependent adaptation of V/f curve | | | | | | |
| Automatic PWM frequency adaptation | | Load-dependent adaptation of PWM frequency | | | | | | |
| Integrated controller | | Integrated step switching mechanism | | | | | | |
| Frequency setting accuracy | Analog | 0,05 % | | | | | | |
| | Digital | 0,01 % | | | | | | |
| Frequency control accuracy | SVC | 0.5% x maximum frequency | | | | | | |
| | FOC | 0.05% x maximum frequency | | | | | | |
| Regulators | | PID, Schrittschaltwerk | | | | | | |
| Bus systems | | Modbus | | | | | | |
| | | PROFIBUS (optional) | | | | | | |
| Status signal over digital output | | Frequency | | | | | | |
| Display | | LCD: Frequency, output voltage, output current, etc. | | | | | | |
| Status LED | | Rotation direction and operating status | | | | | | |
| Weight | | | | | | | | |
| Mass | [kg] | 2.7 | 2.7 | 2.7 | 2.8 | 4.8 | 4.9 | 4.9 |

| | | FVCA01.1-11K0 | FVCA01.1-15K0 | FVCA01.1-18K5 | FVCA01.1-22K0 | FVCA01.1-30K0 | FVCA01.1-37K0 | |
|--------------------------|------|-------------------------------------|---------------|---------------|---------------|---------------|---------------|--|
| Performance data | | | | | | | | |
| Nominal power | [kW] | 11 | 15 | 18.5 | 22 | 30 | 37 | |
| Rated continuous current | [A] | 24 | 33 | 39 | 44 | 60 | 75 | |
| Motor nominal voltage | | Three phase, 0 V ... mains voltage | | | | | | |
| Output voltage | | 0 V ... mains voltage | | | | | | |
| Output frequency | | 0...400 Hz | | | | | | |
| Overload capacity | | 200% In for 1 s or 150% In for 60 s | | | | | | |
| Mains voltage | 3 AC | 3 AC 380 ... 480 V (-15%/+10%) | | | | | | |
| Frequency | | 50 ... 60 Hz (±5%) | | | | | | |

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Frequency converters

Frequency Converter Fv

| | | |
|---|-----------------------|--|
| Brake chopper / resistor | | |
| Brake resistor | | External |
| Brake chopper | | Internal External |
| Ambient conditions | | |
| Permissible temperature (operation) | | -10 ... +40 °C |
| Permissible relative humidity (operation) | | < 90% |
| Max. installation height | | Derating from 1000 m (1% of the power output per 100m) |
| Category Total | | IP20 |
| Functions | | |
| Control technology | | U/f, SVC, FOC |
| Pulse width modulation (PWM), continuously adjustable | [kHz] | 1 ... 12 1 ... 8 |
| Modulation type | | Magnetic flux PWM-modulation: SVPWM |
| Speed control range | Without pulse encoder | Vector control 1:100 |
| | With pulse encoder | Vector control 1:1000 |
| Start-up torque | U/f | Max. start-up torque 150% at 5 Hz |
| | SVC | Max. start-up torque 150% at 0.5 Hz |
| | FOC | Max. start-up torque 200% at 0 Hz |
| Frequency resolution | Digital | 0,01 Hz |
| | Analog | Max. frequency x 0.05% |
| V/F curve | | Freely definable |
| Ramps | | Linear, S-curve |
| DC brake | Start frequency | 0 ... 10 Hz |
| | Braking time | 0 ... 20 s |
| Automatic energy saving function | | Load-dependent adaptation of V/f curve |
| Automatic PWM frequency adaptation | | Load-dependent adaptation of PWM frequency |
| Integrated controller | | Integrated step switching mechanism |
| Frequency setting accuracy | Analog | 0,05 % |
| | Digital | 0,01 % |
| Frequency control accuracy | SVC | 0.5% x maximum frequency |
| | FOC | 0.05% x maximum frequency |
| Regulators | | PID, Schrittschaltwerk |
| Bus systems | | Modbus |
| | | PROFIBUS (optional) |
| Status signal over digital output | | Frequency |
| Display | | LCD: Frequency, output voltage, output current, etc. |
| Status LED | | Rotation direction and operating status |
| Weight | | |

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Frequency converters

Frequency Converter Fv

| Mass | [kg] | 8.8 | 9 | 16.5 | 16.5 | 22 | 22 | | |
|---|-----------------------|--|---|---------------|------|---------------|----|---------------|--|
| | | FVCA01.1-45K0 | | FVCA01.1-55K0 | | FVCA01.1-75K0 | | FVCA01.1-90K0 | |
| Performance data | | | | | | | | | |
| Nominal power | [kW] | 45 | | 55 | | 75 | | 90 | |
| Rated continuous current | [A] | 95 | | 110 | | 152 | | 183 | |
| Motor nominal voltage | | Three phase, 0 V ... mains voltage | | | | | | | |
| Output voltage | | 0 V ... mains voltage | | | | | | | |
| Output frequency | | 0...400 Hz | | | | | | | |
| Overload capacity | | 200% In for 1 s or 150% In for 60 s | | | | | | | |
| Mains voltage | 3 AC | 3 AC 380 ... 480 V (-15%/+10%) | | | | | | | |
| Frequency | | 50 ... 60 Hz (±5%) | | | | | | | |
| DC bus | | | | | | | | | |
| DC bus voltage | [V] DC | Mains voltage x 1.41 | | | | | | | |
| Brake chopper / resistor | | | | | | | | | |
| Brake resistor | | External | | | | | | | |
| Brake chopper | | External | | | | | | | |
| Ambient conditions | | | | | | | | | |
| Permissible temperature (operation) | | -10 ... +40 °C | | | | | | | |
| Permissible relative humidity (operation) | | < 90% | | | | | | | |
| Max. installation height | | Derating from 1000 m (1% of the power output per 100m) | | | | | | | |
| Category Total | | IP20 | | | | | | | |
| Functions | | | | | | | | | |
| Control technology | | U/f, SVC, FOC | | | | | | | |
| Pulse width modulation (PWM), continuously adjustable | [kHz] | 1 ... 4 | | | | | | | |
| Modulation type | | Magnetic flux PWM-modulation: SVPWM | | | | | | | |
| Speed control range | Without pulse encoder | Vector control 1:100 | | | | | | | |
| | With pulse encoder | Vector control 1:1000 | | | | | | | |
| Start-up torque | U/f | Max. start-up torque 150% at 5 Hz | | | | | | | |
| | SVC | Max. start-up torque 150% at 0.5 Hz | | | | | | | |
| | FOC | Max. start-up torque 200% at 0 Hz | | | | | | | |
| Frequency resolution | Digital | 0,01 Hz | | | | | | | |
| | Analog | Max. frequency x 0.05% | | | | | | | |
| V/F curve | | Freely definable | | | | | | | |
| Ramps | | Linear, S-curve | | | | | | | |
| DC brake | Start frequency | 0 ... 10 Hz | | | | | | | |
| | Braking time | 0 ... 20 s | | | | | | | |

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Frequency converters

Frequency Converter Fv

| | | | | | |
|------------------------------------|---------|--|----|------|----|
| Automatic energy saving function | | Load-dependent adaptation of V/f curve | | | |
| Automatic PWM frequency adaptation | | Load-dependent adaptation of PWM frequency | | | |
| Integrated controller | | Integrated step switching mechanism | | | |
| Frequency setting accuracy | Analog | 0,05 % | | | |
| | Digital | 0,01 % | | | |
| Frequency control accuracy | SVC | 0.5% x maximum frequency | | | |
| | FOC | 0.05% x maximum frequency | | | |
| Regulators | | PID, Schrittschaltwerk | | | |
| Bus systems | | Modbus | | | |
| | | PROFIBUS (optional) | | | |
| Status signal over digital output | | Frequency | | | |
| Display | | LCD: Frequency, output voltage, output current, etc. | | | |
| Status LED | | Rotation direction and operating status | | | |
| Weight | | | | | |
| Mass | [kg] | 37 | 39 | 56.7 | 58 |

Dimensions

Dimensions

| Type | A [mm] | E [mm] | F [mm] |
|---------------|-----------|-----------|-----------|
| FVCA01.1-0K40 | 125 | 315 | 127 |
| FVCA01.1-0K75 | | | |
| FVCA01.1-1K50 | | | |
| FVCA01.1-2K20 | | | |
| FVCA01.1-4K00 | 150 | 380 | 162 |
| FVCA01.1-5K50 | | | |
| FVCA01.1-7K50 | | | |
| FVCA01.1-11K0 | 175 | 448 | 204 |
| FVCA01.1-15K0 | | | |
| FVCA01.1-18K5 | 225 | 500 | 232 |
| FVCA01.1-22K0 | | | |
| FVCA01.1-30K0 | 250 | 585 | 256.5 |
| FVCA01.1-37K0 | | | |
| FVCA01.1-45K0 | 325 | 712.5 | 270 |
| FVCA01.1-55K0 | | | |
| FVCA01.1-75K0 | | | |
| FVCA01.1-90K0 | 450 | 779 | 307 |

Accessories

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| Type code | Description | Part No.: |
|---------------------------|---|------------|
| FVAM01.1-A-Mounting Plate | Mounting plates to install the Fv operating panel in the control cabinet section | R912002621 |
| FVAA01.1-M-NNNN-01V01 | Communication adapter to connect a Rexroth Fv frequency converter to a Modbus master | R912002622 |
| FVAA01.1-P-NNNN-01V01 | Communication adapter to connect a Rexroth Fv frequency converter to a PRO-FIBUS master | R912002623 |

Order information

| Type code | Description | Part No.: |
|-------------------------------------|--|------------|
| FVCA01.1-0K40-3P4-MDA-LP-NNNN-01V01 | 0,4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 1,3 A | R912002607 |
| FVCA01.1-0K75-3P4-MDA-LP-NNNN-01V01 | 0,75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 2,5 A | R912002608 |
| FVCA01.1-1K50-3P4-MDA-LP-NNNN-01V01 | 1,5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 4 A | R912002609 |
| FVCA01.1-2K20-3P4-MDA-LP-NNNN-01V01 | 2,2 kW, 3 AC 380 ... 480 V, 50/60 Hz, 5,5 A | R912002610 |
| FVCA01.1-4K00-3P4-MDA-LP-NNNN-01V01 | 4 kW, 3 AC 380 ... 480 V, 50/60 Hz, 10 A | R912002611 |
| FVCA01.1-5K50-3P4-MDA-LP-NNNN-01V01 | 5,5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 13 A | R912002612 |
| FVCA01.1-7K50-3P4-MDA-LP-NNNN-01V01 | 7,5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 17 A | R912002613 |
| FVCA01.1-11K0-3P4-MDA-LP-NNNN-01V01 | 11 kW, 3 AC 380 ... 480 V, 50/60 Hz, 24 A | R912002614 |
| FVCA01.1-15K0-3P4-MDA-LP-NNNN-01V01 | 15 kW, 3 AC 380 ... 480 V, 50/60 Hz, 33 A | R912002615 |
| FVCA01.1-18K5-3P4-MDA-LP-NNNN-01V01 | 18,5 kW, 3 AC 380 ... 480 V, 50/60 Hz, 39 A | R912002616 |
| FVCA01.1-22K0-3P4-MDA-LP-NNNN-01V01 | 22 kW, 3 AC 380 ... 480 V, 50/60 Hz, 44 A | R912002617 |
| FVCA01.1-30K0-3P4-MDA-LP-NNNN-01V01 | 30 kW, 3 AC 380 ... 480 V, 50/60 Hz, 60 A | R912002618 |
| FVCA01.1-37K0-3P4-MDA-LP-NNNN-01V01 | 37 kW, 3 AC 380 ... 480 V, 50/60 Hz, 75 A | R912002619 |
| FVCA01.1-45K0-3P4-MDA-LP-NNNN-01V01 | 45 kW, 3 AC 380 ... 480 V, 50/60 Hz, 95 A | R912002669 |
| FVCA01.1-55K0-3P4-MDA-LP-NNNN-01V01 | 55 kW, 3 AC 380 ... 480 V, 50/60 Hz, 110 A | R912002670 |
| FVCA01.1-75K0-3P4-MDA-LP-NNNN-01V01 | 75 kW, 3 AC 380 ... 480 V, 50/60 Hz, 152 A | R912002671 |
| FVCA01.1-90K0-3P4-MDA-LP-NNNN-01V01 | 90 kW, 3 AC 380 ... 480 V, 50/60 Hz, 183 A | R912002672 |



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It must be remembered that our products are subject to a natural process of wear and aging.

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