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Inverter Varispeed F7



Main Features of Varispeed F7 Inverter

Feature 1: Precise control, functionality and flexibility

High grade and good concentricity

Yaskawa's open loop vector control allows an excellent torque characteristic at a speed ratio of 1:100. Hence at 0.5Hz, for example, more than 200% of the rated torque is available.

Three autotuning functions

- The proven autotuning function with motor rotating (no load) during measurement.
- New method which yields similarly good result with motor at a standstill.
- Measurement of the motor resistance for simple applications.

High slip braking (HSB)

Yaskawa's intelligent function allows up to 3 times faster braking without the use of a braking transistor or resistor.

Braking transistor

This transistor is built in as standard in inverters of up to 18.5kW, and is available as an external option for higher outputs. In conjunction with an external braking resistor it achieves very powerful braking.

Improved protective functions

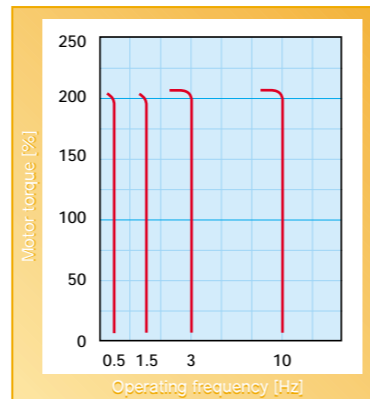
The high speed overcurrent limiting function allows virtually uninterrupted operation (no overcurrent tripping, restart after momentary power loss, motor stall prevention, attempted restart after malfunction, etc).

CASE (Custom Application Software Environment)

makes it easy to customize the Varispeed F7 to the user or application requirements if they are not covered by the extensive standard functions.

Speed search function

The Varispeed F7 determines the speed and direction of rotation of a coasting motor, then brings it to the required reference speed. This is carried out extremely smoothly in both directions.



Feature 2: Ecologically friendly

Reliable energy saving function

The energy-saving control approaches the maximum efficiency. Highly-efficient, energy-saving operations are realized for any application using either the vector control or the V/f control.

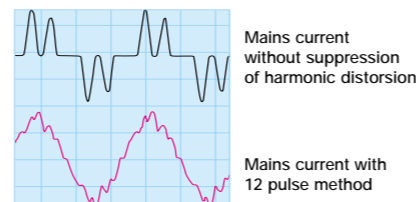
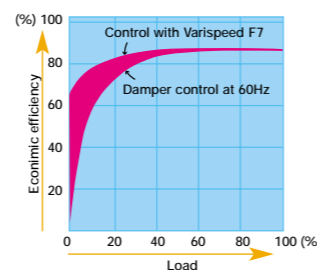
Low noise operation

With the low noise carrier PWM control for heavy duty mode as well as with the high carrier PWM control for normal duty mode a considerable quiet motor operation is achievable.

Suppression of harmonic distortion

All inverters with an output power of 22 kW and higher have a double diode supply, for 12 pulse input, which makes it possible to suppress the harmonics to about 12%. They are also equipped with a built-in DC bus reactor. For the inverters below 22 kW the DC bus reactor is available as option.

Note: 12-pulse input requires a special transformer



Feature 3: User-friendly installation and operation

Easy to operate

- The Varispeed F7 can be fully controlled using the digital operator. The operator is equipped with a parameter copy function and can even be used up to 3m away with a standard cable. The LED display can be read easily, even at a considerable distance.

- An optional LCD operator with plain text in 7 different languages and the same functions is available.

Clear hierarchy of menus for setting parameters

Easy operation for fast start up and maintenance.

Quick program

Simplifies the start-up procedure by showing the most important parameters only.

Modified Parameters

Easy troubleshooting by checking the parameters modified from the factory defaults.

Easily maintained

- The control terminal block can be disconnected from the motherboard. This enables replacement of the inverter without disconnecting the controlwiring.
- The inverter fan switches off when the motor is at a standstill. If necessary, it can be replaced without dismantling the unit.



Feature 4: Global specification

Conformity with global standards for worldwide use

Certified to UL/cUL and CE

Available worldwide

Worldwide service

Operation with commonly used mains voltages

- Series for 400V (three phase)
380 to 480V +10% -15%
- Series for 200V (three phase)
200 to 240V +10% -15%



Global fieldbus standards supported

- RS-485/422 (MEMOBUS protocol) supported as standard
- Optional cards available for Profibus-DP, INTERBUS-S, CANopen and DeviceNet (LONworks, CC Link & ControlNet)



Description of digital operator

Varispeed F7

Overview of display and keypad

Data display

Menu button

Switches menu within the hierarchy.

Local/Remote button

Changes over from control with the digital operator to control via the terminal block.

JOG button

Enables RUN with JOG speed, which has highest priority.

FWD/REV button

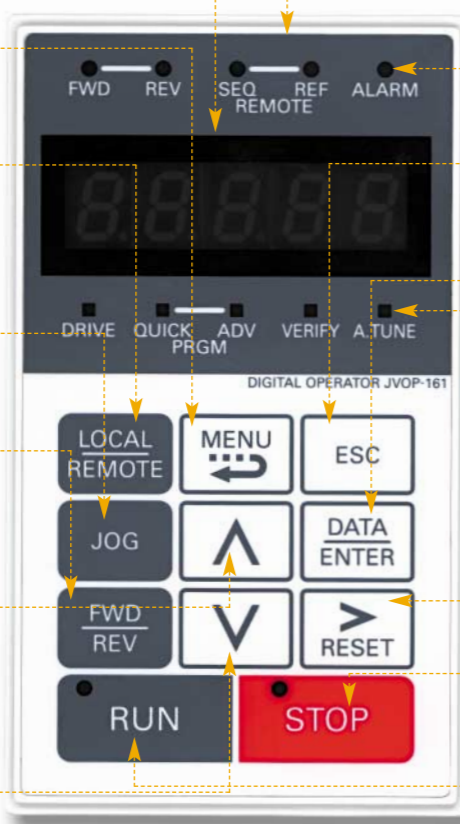
Reverses the direction of rotation of the motor.

Arrow up button

Increases the parameter number or data value.

Arrow down button

Decreases the parameter number or data value.



Digital operator

Status LEDs

One of these comes on to indicate the inverter status.

ESC button

Returns to previous menu in the hierarchy without saving.

Enter button

Saves parameter setting data. Entering a parameter number in the PRGM mode displays the associated data.

Reset button

Shifts the digit of a value that is selected to be changed resets operation when a fault has occurred (acknowledgement)

Stop button

Stops the motor.

Run button

Starts the motor. The LED in the top left corner of the button lights up on to indicate that the motor is running.

Specification/Nameplate

Inverter

CIMR - F7C40P41

Varispeed F7 series

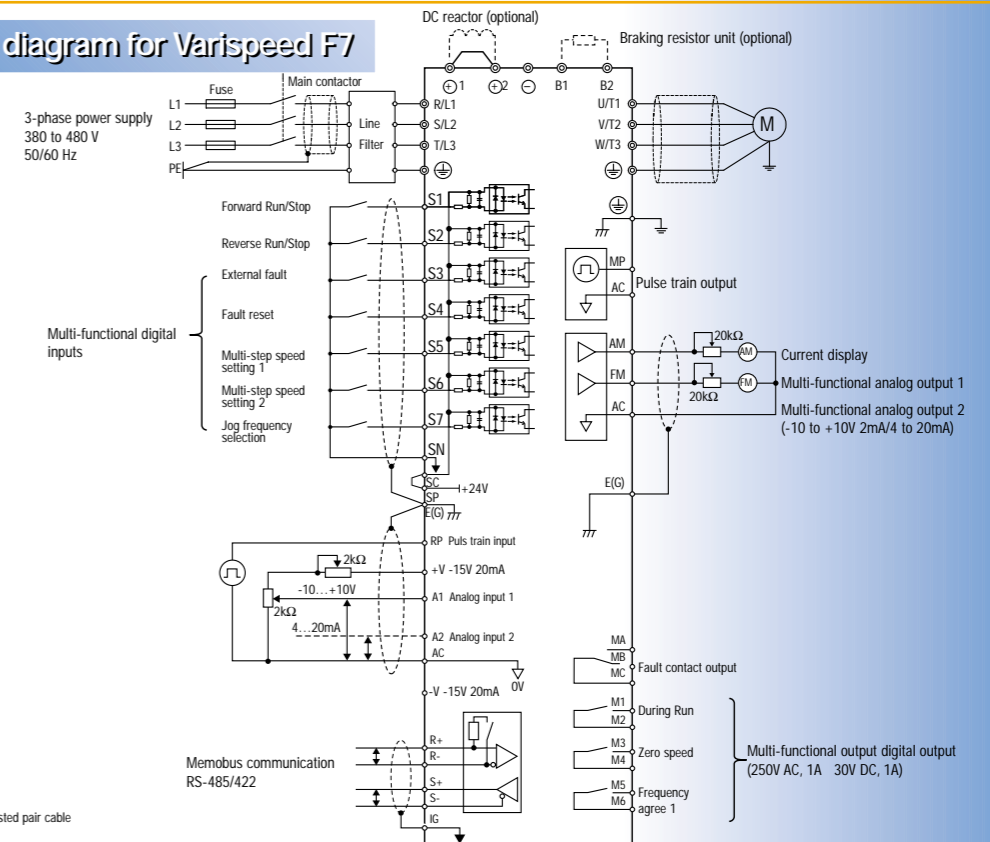
Code	Specification
A	Japanese standard
C	European standard
U	American standard

Code	Power supply
2	three phase 200V AC
4	three phase 400V AC

Code	Protection
0	IP00
1	NEMA 1/IP20

No.	Rated output of motor
0P4	0.55 kW
4P0	4.0 kW
7P5	7.5 kW
011	11 kW
045	45 kW
110	110 kW
160	160 kW
300	300 kW

Standard connection diagram for Varispeed F7



Radio interference suppression filters for conformity with the EMC Directive (CE)

The radio interference filters tested by Yaskawa are listed below. The stipulations of the Operating Manual (YEG-TOE-S616-55.1) or separate EMC documentation relating to their connection must be followed to achieve proper electromagnetic compatibility (EMC).

Inverter model	Filter model	Current (A)	Weight (kg)	Dimensions WxHxD (mm)	Fit under yes/no
CIMR-F7C20P4	FS 5972-10-07	10	1.1	141x330x46	yes
CIMR-F7C20P7					
CIMR-F7C21P5					
CIMR-F7C22P2					
CIMR-F7C22P2	FS 5972-18-07	18	1.3	141x330x46	yes
CIMR-F7C23P7	FS 5973-35-07	35	1.4	141x330x46	yes
CIMR-F7C25P5					
CIMR-F7C27P5	FS 5973-60-07	60	3	206x355x60	yes
CIMR-F7C2011	FS 5973-100-07	100	4.9	236x408x80	yes
CIMR-F7C2015					
CIMR-F7C2018					
CIMR-F7C2022					
CIMR-F7C2030	FS 5973-130-35	130	4.3	90x366x180	no
CIMR-F7C2037	FS 5973-160-40	160	6	120x451x170	no
CIMR-F7C2045	FS 5973-240-37	240	11	130x610x240	no
CIMR-F7C2055	Filters under development				no
CIMR-F7C2075					
CIMR-F7C2090					
CIMR-F7C2110					
CIMR-F7C40P4					
CIMR-F7C40P7					
CIMR-F7C41P5					
CIMR-F7C42P2					
CIMR-F7C43P7					
CIMR-F7C44P0					
CIMR-F7C45P5	FS 5972-10-07	10	1.1	141x330x46	yes
CIMR-F7C47P5	FS 5972-18-07	18	1.3	141x330x46	yes
CIMR-F7C4011	FS 5972-21-07	21	1.8	206x355x50	yes
CIMR-F7C4015	FS 5972-35-07	35	2.1	206x355x50	yes
CIMR-F7C4018	FS 5972-60-07	60	4	236x408x65	yes
CIMR-F7C4022	FS 5972-70-52	70	3.4	80x329x185	no
CIMR-F7C4030	FS 5972-100-35	100	4.5	90x326x150	no
CIMR-F7C4037					
CIMR-F7C4045	FS 5972-130-35	130	4.7	90x366x180	no
CIMR-F7C4055	FS 5972-170-40	170	6	120x451x170	no
CIMR-F7C4075	FS 5972-250-37 or FS 3359-250-28	250	11.7	130x610x240	no
CIMR-F7C4090					
CIMR-F7C4110	FS 5972-400-99 or FS 5972-410-99	400	18.5	300x610x160	no
CIMR-F7C4132					
CIMR-F7C4160	FS 5972-410-99	410	10.5	260x386x115	no
CIMR-F7C4185					
CIMR-F7C4220	FS 5972-600-99	600	11	260x386x135	no
CIMR-F7C4300	FS 5972-800-99	800	31	300x716x160	no

