Applicable specification by each segment

The VF-S11 is provided with a wide range of useful functions for machinery and facilities in various industrial sectors and applications.

Fan & Pumps — Air-conditioning systems, various fans, blowers, pumps, plumbing/sewerage systems, clean rooms, driers

Noise filter · Replacement alarm · Life 10 years · 60C° · Capacity range · Totally enclosed · Energy savings · Deceleration · Restart · Non-stop · One-touch · PID control · Ground capacitor · Standards

Conveyance machinery — Conveyors, automatic vertical storage units, hoists, lifts, dumbwaiters

High torque · Compact · Side-by-side · Capacity range · Totally enclosed · Braking resistance · 8 inputs · 2 output functions · Step width · Free unit · Speed control · Standards

Food processing machinery — Bread, confectionery, tea, and noodle making machines, rice, wheat and powder milling machines, mixers, slivers, and fruit selection machines

High torque · Noise filter · Compact · Side-by-side · 60C° · Capacity range · Totally enclosed box type · Deceleration · Braking resistance · 8 inputs

Packaging machinery — Trimming machines, packing machines, wrapping machines, band tighteners

High torque · Noise filter · Compact · Side-by-side · Detachable · Communications · Capacity range · Totally enclosed · Deceleration · Braking resistance

Medical equipment — Stairway elevators, nursing beds, Jacuzzis, health equipment (treadmills), medical equipment (X-ray machines)

High torque · Noise filter · Compact · Side-by-side · Detachable · Braking resistance · Free unit · Ground capacitor

Commercial facility equipment — Commercial ironing boards, car washing machines, raw garbage disposal, dust collectors

High torque · Noise filter · Compact · Side-by-side · Communications · Capacity range · Braking resistance · Ground capacitor

Amusement machinery — Batting machines, pinball feeders, game machines

High torque · Noise filter · Compact · Side-by-side · 60C° · Totally enclosed · Braking resistance · Ground capacitor

Semiconductor production equipment — Semiconductor production equipment, LCD production equipment, electronic component production and assembly machinery

High torque · Noise filter · Compact · Side-by-side · Life 10 years · Capacity range · Speed control · Ground capacitor

Printing machinery — Platemakers, binding machines, printing presses

High torque · Compact · Side-by-side · Capacity range · Step width · Free unit

Woodworking machinery — Lumber machinery, woodworking machinery, plywood making machinery

High torque · Compact · Capacity range · Totally enclosed · 500 Hz · Power voltage

Agricultural machinery — Rice and wheat milling machines, fruit selection machines

High torque · Noise filter · Compact · Side-by-side · 60C° · Totally enclosed · Braking resistance · Ground capacitor

Chemical machinery — Mixers, extruding machines, centrifugal separators, painting machines, pulverizers

High torque · Compact · Capacity range · Restart · Non-stop · Pulse train

Machine tools — Lathes, drilling machines, hobbing machines, grinding machines, boring machines

High torque · Compact · Capacity range · 500 Hz

Metal processing machinery — Various rolling and shearing machinery, mechanical pressing, winding and take-up machines

High torque · Compact · Capacity range · Braking resistance

Textile machinery — Weaving machines, knitting machines, dyeing/finishing machines, sewing machine

Compact · Detachable · Communications · 500 Hz

Panel manufacturer — Control panels, special control panels

Compact · Side-by-side · 60C° · Detachable · Capacity range · Ground capacitor

General — General related items, common items, other

History · Log details · 28 monitors · Storage

Explanation of symbols

:Described pages 1 and 2. :Described page 4. :Functions enabled on all models

High torque	High torque (1 Hz - 200% or more)	Capacity range	Wide capacity range up to 15 kW.	8 inputs	8 logic inputs	Standards	Compatible with main standards (CE, UL, CSA)
Noise filter	Built-in noise filter	Totally enclosed	Totally enclosed box type (IP54, IP55 compatible)	2 output functions	2 output terminal functions are assigned.	Sink/source	Sink/source logic switching
Compact	Small-sized, compact	Energy savings	Dynamic energy saving function	Step width	Variable step width setting	History	History function
Side-by-side	Side-by-side installation	Deceleration	Dynamic deceleration time reduction	Free unit	Free unit multiplication factor, bias setting	Log details	Detailed information of past tripping
Replacement alarm	Expected replacement period alarm for spare parts	Restart	Instantaneous power interruption restart (frequency scan system)	500 Hz	Max. frequency 500 Hz	28 monitors	28 monitor functions (power, watt-hour power)
Life 10 years	Main circuit capacitor designed to have a life of 10 years	Non-stop	Instantaneous power interruption non-stop control function	Pulse train	Pulse train output	Storage	Storage of user parameter settings
60°C	Possible installed in an ambient temperature 60°C	One-touch	One-touch fan replacement	Speed control	Speed control accuracy		
Detachable	Detachable terminal block	PID control	PID control with wait time	Power voltage	Wide power supply voltage range (240 V, 500 V)		
Communications	Built-in communications options	Braking resistance	Built-in braking resistor drive circuit	Ground capacitor	Ground capacitor disconnection switch		

Dynamic Automatic Energy Savings

Energy savings Dynamic automatic energy savings: A new function exclusively for fans and pumps in addition to the conventional energy savings mode. With this function, you can expect considerable energy savings.

Deceleration Dynamic deceleration time reduction control: Conventional deceleration time reduction control has been further modified. With this function, you can expect a certain amount of reduction in deceleration time even without the aid of a braking resistor.

28 monitors Energy saving effect monitor: Besides monitoring of input/output power (momentary values), the effect of energy savings can be easily checked as the input/output watt-hour power (electric energy) can be monitored.

Instantaneous power interruption restart function: The inverter can be restarted smoothly without any shock as it employs a frequency scan system.

Restart Instantaneous power interruption restart function: The inverter can be restarted smoothly without any shock as it employs a frequency scan system.

Non-stop Instantaneous power interruption non-stop control: This function uses the regenerative energy from the motor to continue inverter operation when a power interruption occurs during operation. In the same way, regenerative energy can be used to decelerate the motor to a stop without the inverter running free and then stopping.

PID control PID control: Conventional PID control functions have been enhanced for even easier use. New functions are a wait time for applying a time period in which PID control is disabled at startup and a function for resetting integrated amounts.

Full Lineup of Monitor and Display Functions

28 monitors Extensive monitor menus: 28 monitor values including load current and torque current can be viewed in real time.

Log details Monitor at trip: 28 momentary monitor values for when a trip occurs can be viewed. Ten monitor values are stored in memory for the last four inverter operations, which is effective in pin-pointing the cause of a trip.

Storage Storage of user parameter settings: All parameter settings made by the user can be stored in memory. Stored parameters can be immediately called even they have been changed.

History History function: This function is for displaying the latest five changes made to parameter settings. This is displayed in the top menu (AUH), which is handy when parameters are frequently changed or repeatedly adjusted.

Free unit Free unit display: Bias can also be set in addition to the multiplication factor in the free unit display. This display shows speed of rotation, line speed and other units in addition to frequency.

Step width Variable step width setting: The change increment of the frequency when an arrow key on the panel is pressed can be set as desired. For example, this is convenient when you want to change the frequency in 10 Hz increments each time that a key is pressed.

Various Input Terminals

8 inputs 8 contact input terminals: Analog input terminals can be selected as contact inputs. This means that up to eight contact inputs can be set to support more complex settings.

8 inputs 76 menus: A variety of operation specifications are supported as functions selected from 66 menus can be individually assigned to contact input terminals.

8 inputs Use of external power supply possible: A PLC terminal is provided for input of an external +24 V power supply. This is convenient when the inverter is connected to a programmable controller. A +24 V power supply is also integrated into the inverter which can also be used for contact input.

Safe Maintenance

One-touch One-touch fan replacement: The cooling fan, one of the service parts, can be easily removed for replacement. The fan, of course, is designed to last a long time as it has a temperature-based ON/OFF control function.

Ground capacitor Ground capacitor disconnection switch: Even when current leakage is a problem, it is possible to reduce current leakage easily with a ground condenser cutoff switch. (Only on single-phase 240 V models and 3-phase 500 V models)

Various Output Terminals

2 output functions 3 contact output terminals: Various outputs are provided on three terminals, relay contact (1c) output, relay contact (1a) output, and open collector output.

Pulse train Pulse train output: Open collector output is insulated from other circuits so that it can also be used as pulse train output.

2 output functions 58 menus: Functions selected from 58 menus can be individually assigned to contact output terminals. Moreover, two menus can be simultaneously assigned to a single terminal. A hold function for holding the state of an input once it turns ON is also provided. This enables inverter compatibility with various operation specifications.

2 output functions Analog output terminal: Any of 0 to 10 V, 0 to 1 mA and 4 to 20 mA can be selected. Also, data can be selected from 20 menus.

Extensive Communication Functions

Detachable Built-in communications option board: The detachable terminal block board can be detached and swapped with various internal option boards. Communications option boards including RS-485, DeviceNET and LonWorks are available.

Communications Communications protocol: TOSHIBA inverter protocol and Modbus-RTU protocol are supported. The inverter can also be connected directly by communications to touch panels made by Digital Electronics Corporation.

Communications Block communications: Block read/write functions have been added on as communications methods to simplify high-speed transmission of instructions and monitoring. Inverter-to-inverter communications is also supported, which enables master/slave control on just inverters without the aid of a host controller.

Compatibility with World's Main Standards

Standards Compatibility with main standards: All models are compatible with the World's Main Standards (EC Directive (CE marking), UL, and CSA. Some of C-tick complied models are also available.

Sink/source Sink/source logic switching: Sink or source (i.e. positive - negative) on input terminals can be easily switched by the bit switch on the circuit board.

Noise filter Built-in noise filter: A noise filter is built into all models.

Model	Built-in Filter	European EMC Directive
Single-phase models, 500 V models	High-attenuation EMI filter	Compatible on standard products
3-phase 240 V models	Standard filter	Optionally* compatible

*1. A noise reduction filter (EU-compatible) compatible with the EMC Directive is available. See page 20.

Other Features

Power voltage Wide power supply voltage range: 200 to 240 V range on 200 V class models, and 380 to 500 V range on 400 V class models are supported.

Speed control Speed control accuracy: Speed control accuracy is improved by high startup torque and current vector calculation control, a TOSHIBA proprietary control system.

500 Hz Output frequency: The VF-S11 can be used in a wide range of applications as its maximum output frequency is 500 Hz.

Braking resistance Built-in braking resistor drive circuit: A drive circuit for an external braking resistor is integrated into all models to enable large regenerative energy loads to be stopped in a short time.