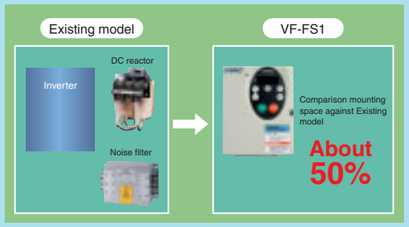
## POINT 1 Half installation space and less wiring

### Half installation space

Reactor-less harmonic suppress technologies and built-in filter reduce 50% of installation space, save time and cost of wiring.
And side-by-side installation realizes effective utilization of space in control panels.

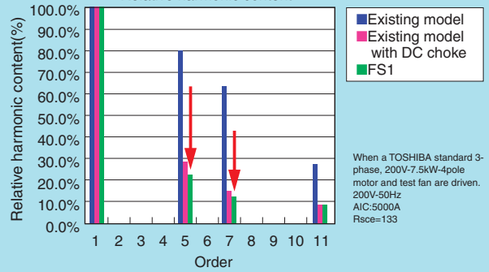



## POINT 2 Reactor-less harmonics reduction and high-frequency noise reduction

### Harmonics reduction, Power factor improvement

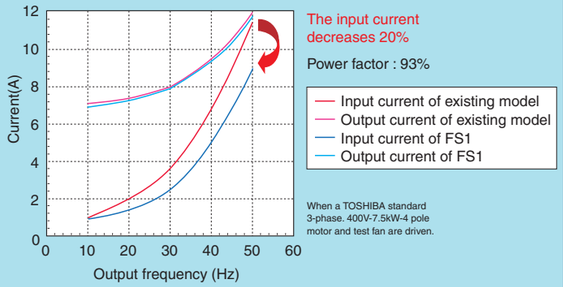
Toshiba unique technologies suppress harmonics, particularly 5th and 7th harmonic current that affect power sources. And the power factor in all models has been improved. Harmonics are controlled to within the Total Harmonic Distortion (THD) of international standard IEC61000-3-12 without any external reactor. ( Rsce ≧120 )

Relative harmonic content




When a TOSHIBA standard 3-phase, 200V-7.5kW-4pole motor and test fan are driven.
200V-50Hz
AIC:5000A
Rsce=133

Input/output current comparison




The input current decreases 20%

Power factor : 93%

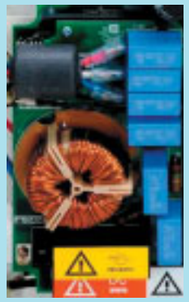
When a TOSHIBA standard 3-phase, 400V-7.5kW-4 pole motor and test fan are driven.

### High-frequency noise reduction

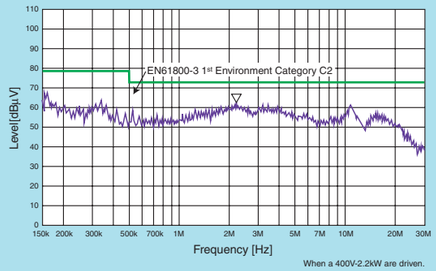
High-frequency noise is drastically reduced on models with built-in noise filters.
Built-in noise filters are ideal for office, commercial facilities, and factories where special attention for peripheral devices are needed.
Compared with existing model, less space and wiring are realized by incorporating filter in the panel.
In addition, models with built-in EMC noise filter comply with the European EMC Directive as individual inverter units.

400V class models : EMI noise filter
(complies with the European EMC Directive) built-in standard
200V class models : Basic noise filter
(not complies with the European EMC Directive) built-in standard

Built-in EMC filter



Effect of built-in filter




When a 400V-2.2kW are driven.

European EMC Directive:IEC/EN61800-3,1st Environment,C2
or
IEC/EN61800-3,2nd Environment,C3



## POINT 3 Long life and easy maintenance

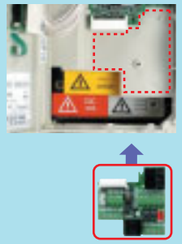
### Long life and easy maintenance

- 15 years life designed main capacitors
- An alarm warns when the main circuit capacitors, circuit boards capacitors, or cooling fan needs to be replaced.
- Cooling fan's On/Off control extend its life
- Easy replacement of cooling fan by one touch
- The inverter unit can be replaced by removable terminal block without disconnecting cables.

Long life main film capacitors

Cooling fan

Removable control terminal board

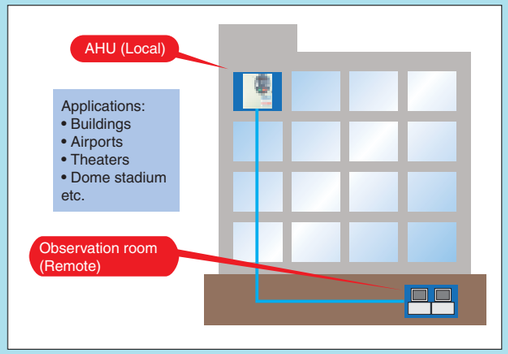


## POINT 4 Special softwares for fan and pump application are built-in

### Ideal functions are built-in for fan and pump application.

- The local or remote operation can be selected by one touch.
- Bumpless function realize seamless operation between local and remote.

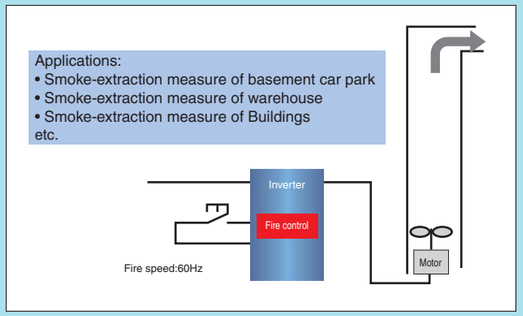
Local/Remote key


- Fire control enables forced operation in emergency. In case of emergency, forced control will run by specified frequency. The forced operation signal will be saved when the signal turns ON. Motor does not stop in the event of the occurrence of a soft fault.

- Speed reference can manage on/off operation. (sleep function)
- Low current detection can notice a broken belt or low load for pump application
- PTC thermistor input
- Built-in RS485 (TOSHIBA/Modbus protocol) communication as standard. Optional fieldbuses for LonWorks®, BACnet®, Metasys®N2 and APOGEE® FLN as built in option.

For exemplum :Fire control enables forced operation




LonWorks® is a registered trademark of Echelon Corporation.
BACnet® is a registered trademark of American Society of Heating, Refrigerating and Air-Conditioning Engineers, Incorporated.
Metasys®N2 is a registered trademark of Johnson Controls, Incorporated.
APOGEE® FLN is a registered trademark of Siemens Building Technologies, Incorporated.

# POINT 5 More energy saving and easier operation

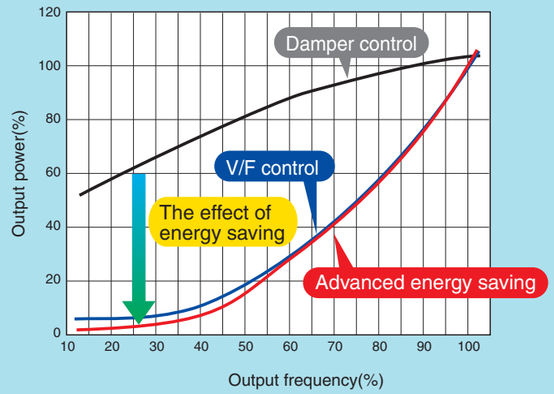
## More energy saving

The advanced energy-saving mode optimizes fan and pump efficiency even at normally inefficient in low speeds.

The effect can be monitored by operation panel or through serial communication data.

Monitor


Effect of advanced energy-saving mode




| | | | | |
|---|---|---|---|---|
| Output power | ∧ | H 75 | FE30 | The inverter output power (kW) is displayed. |
| Integral output power | ∧ | H 75 | FE77 | The integrated amount of power (kWh) supplied from the inverter is displayed. |

## Easy operation

A wizard function enable set the 10 most often used parameter quickly.
It can be sequentially, such as installing the PC software.

Macro function for basic parameters by one setting is available as shown below.
- The coast stop
- The 3-wire operation
- External input UP/DOWN setting
- 4 to 20mA current input operation

The startup or adjustments are supported by the history function that displays the latest 5 changed parameters.

Quick setting wizard

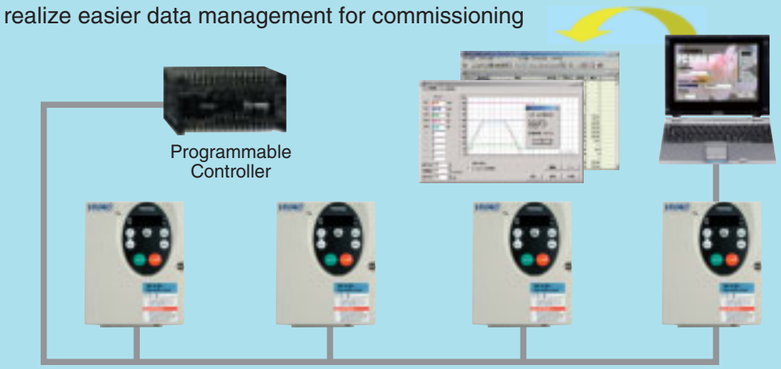
| Title | Function |
|---|---|
| AUI | Automatic acceleration/deceleration |
| ACC | Acceleration time 1 |
| dEC | Deceleration time 1 |
| LL | Lower limit frequency |
| UL | Upper limit frequency |
| tHr | Motor electronic-thermal protection level 1 |
| FM | Meter adjustment |
| Pt | V/F control mode selection |
| uL | Base frequency 1 |
| uLu | Base frequency voltage 1 |



# POINT 6 Communications software and options

## Communications software

The PCM001Z communications software allows you to edit, monitor, and trace parameter data on a PC. It realize easier data management for commissioning and maintenance.




## Options

### USB communications conversion unit

This is a unit which converts USB port signal to VF inverter serial port for data communication.
Optional cables to USB and inverter unit are required.
By using serial data communication, all parameters and monitoring data can be accessed for commissioning and maintenance.

USB communications conversion unit


### Network

Built-in HVAC fieldbuses option are available to communicate with a host controller for centralized control.
- LonWorks®
- BACnet®
- Metasys® N2
- APOGEE® FLN

LonWorks® board

### LED extension panel

The panel with 20 mm height LEDs displays frequency and parameters very clearly at sight.
In addition, it can save and download up to three sets of individual parameters as a parameter writer.

LED extension panel


### External EMC directive compliant noise reduction filter

It can be complied to the following directives by installing this filter
- 400V class:IEC/EN61800-3,1st Environment,C1
  or IEC/EN61800-3, 1st Environment,C2
- 200V class:IEC/EN61800-3,1st Environment,C2
  or IEC/EN61800-3,2nd Environment,C3

External EMC directive compliant noise reduction filter