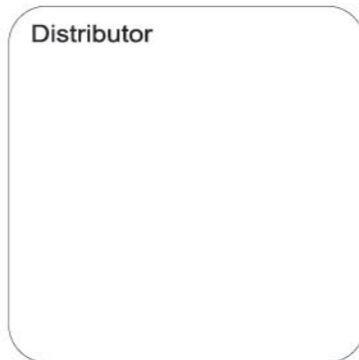




Ideal For Fan & Pump

Distributor



**TECO ELECTRIC & MACHINERY CO., LTD.**

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Specifications covered in this brochure may be subject to change without notice.

GJ-67-00 2013-03-11

# F510

Fan & Pump Drive

IP 20 / NEMA 1  
IP 55 / NEMA 12





# F510

## Mechanical Features

F510 realizes modular design, not only for applications of high protection level, but also for maintaining equipment inclusive of Hot plug display, communication card, removable fan, and etc...

## IP55

### Water and Dust Protection Design

Teco launches the all new drives for fan and pump control which meet protection level-IP55 to provide various options for harsh environment.

## Enclosure



IP20



IP55 / NEMA12



LED / LCD Keypad

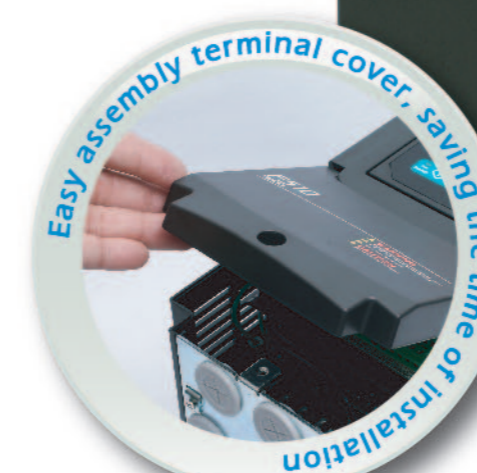
HAND / AUTO / OFF

## Hand/Auto/Off

Hand/Auto selection is a very convenient function when system failure, test and inspection. F510 provides friendly user interface of Hand/Auto selection. To get this function by using optional HOA digital operator.



Easy assembly and hot plug digital keypad



Easy assembly terminal cover, saving the time of installation



Quick install fan for maintaining



F510  
TECO

**WARNING**  
Risk of electrical shock. Shut off main power and wait for 5 minutes before servicing.  
**CAUTION**  
Hot surface. Risk of burn.  
See manual before operation.





## Excellent Pump Control

Built-in multi-pump control mode. According to the load of water supply system, use intelligent control to coordinate pumps. It distributes running hours evenly across master and slave pumps to increase system efficiency and extend the life of drive.

## Pump Cascade Control

1 to 8 pump card is available for a larger water supply and constant pressure applications. It is sophisticated in water supply industry by built-in PID controller and simple PLC of the advantages of drive. F510 series provides variable frequency power to realize the continuously variable speed of pump, and keep the pressure stable by built-in PID controller. 1 to 8 pump option card can control with up to 8 pumps.

- Possess constant pressure control technology.
- Provide quick parameter setting, favorable for most of water supply applications.
- Pump Cascade Control via optional pump card.

**F510**  
Energy Efficient Pump Control



### Blockage Inspection

F510 can detect clog of pump and give alarm to prevent overload pressure to damage pipes.

### Sleep Mode

Sleep mode saves energy by detecting when flow is low or zero. It can stop system to extend the life of drive.

### Dry Pump Protection

F510 can evaluate the system pressure and detect pump running dry. It will shut off pump immediately to protect it from heat and friction damage.



# F510

High Efficient  
Fan Control

With hardware safe torque off function and fire override mode for emergency.



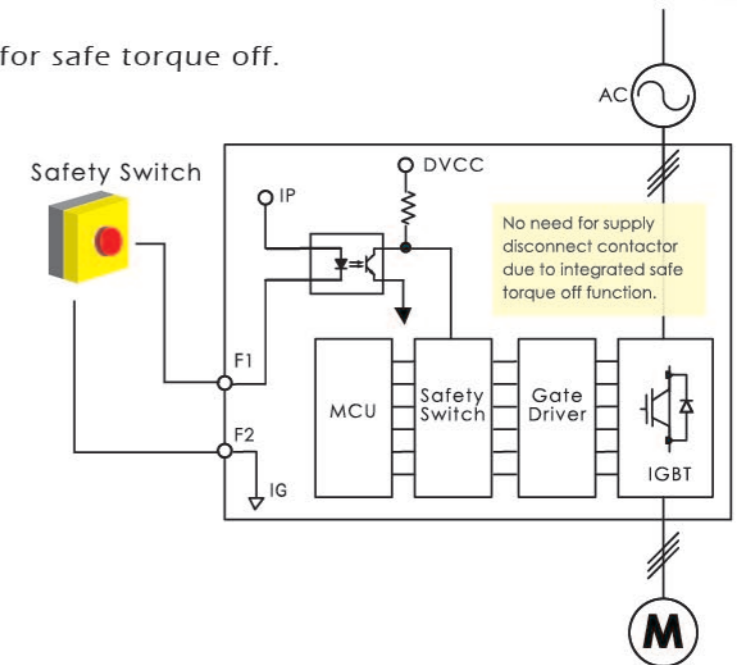
## Fire Override Mode

This feature is crucial for ensuring smoke extraction from building by air conditioner or fume extractor. In Fire mode, the drive will be used in full load operation as either forward or reverse direction and ignore all software protection until trigger hardware protection or drive damaged, to achieve the requirements of smoke extraction and reduce smoke damage to human as possible.

## Hardware Safe Torque Off Function

Built-in high reliable hardware circuit for safe torque off.

The operator can use the safety switch to protect staff or system in emergency timely.



## Skip Frequency

F510 can avoid resonance by quick parameter setting. Preventing mechanical damage to system and fans.



# F510

## Communication Network Protocol

Advanced network functions for building automation inclusive of BACnet, Metasys N2 and Modbus. F510 can reduce the cost of installing automatic central air conditioning system.

**METASYS** is a communication protocol developed by Johnson Controls Inc. It is according to the actual needs of user and manager in building. Metasys N2 is easy to install, use, and adjust. System maintenance becomes very convenient. Metasys N2 may also collect, record, preserve and manage important message and data of the system, to achieve the best automatic management and energy saving effect.

**Modbus** has become a de facto standard communication protocol, and it is now amongst the most commonly available means of connecting industrial electronic devices.

**BACnet** is a communications protocol for building automation and control networks. It is an ASHRAE, ANSI, and ISO standard protocol. BACnet was designed to allow communication of building automation and control systems for applications such as heating, ventilating, and air-conditioning control, lighting control, access control, and fire detection systems and their associated equipment. The BACnet protocol provides mechanisms for computerized building automation devices to exchange information, regardless of the particular building service they perform.





# F510

Saving Energy

The issue of saving energy and emission reduction become popular in recent years. The importance of relative technologies grows as time. F510 provides various technologies of saving energy.

## Permanent-Magnet Motor Control Technology

Permanent-magnet motor control technology avoids energy wasting. PM motor with high efficiency rises importance for present trend of energy saving and emission reduction.

## Conformity To Global Standards

Conformity to ROHS directive and international recognized certification.

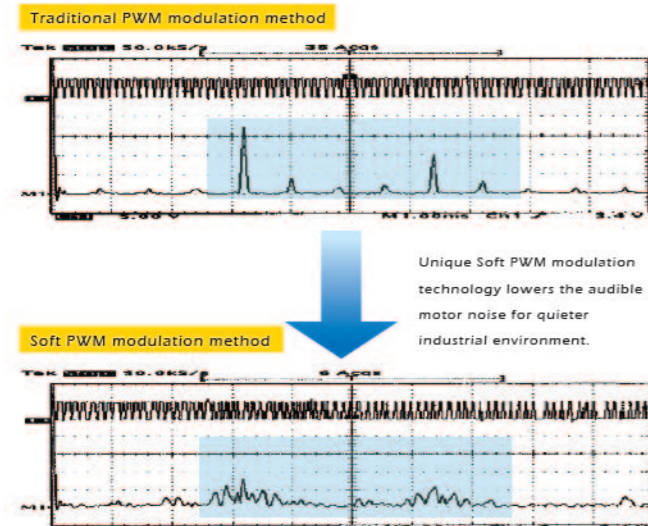
## RoHS

UL/cUL approval and CE certification.



## Ultra Low Motor Noise

Soft PWM technology reduces common-mode voltage to restrain EMI and make motor noise down significantly.



## RTC Function / Simple PLC

Automatic control has been mainstream. It is not only saving human resource cost, but also handling system load more efficiently. To adjust load to avoid unnecessary expense by built-in simple PLC with Real Time Clock Function. It can modulate load easily to achieve the purpose of daylight saving.

※ The RTC function only for LCD keypad.

## Automatic Energy Saving Function

F510 can adjust the optimum output voltage, and lower the output current of the drive according to the load automatically. The output power changes by the load proportion. In light duty, the AES has highest efficiency.





## BASIC SPECIFICATIONS

### 220V Class

Inverter Capacity (HP)		5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	
Output Rated	Rated Output Capacity (KVA)	5.5	8	11.4	15.2	21.3	26.2	30	41.9	52.5	64.3	76.2	95.2	119	152	171	
	Rated Output Current (A)	14.5	21	30	40	56	69	79	110	138	169	200	250	312	400	450	
	Maximum Applicable Motor	(HP)	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175
		(KW)	3.7	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	130
	Maximum Output Voltage (V)	Three Phase, 200V~240V															
Maximum Output Frequency (Hz)	Based on parameter setting 0.1~400.0 Hz <sup>-3</sup>																
Input Power	Rated Voltage, Frequency	Three Phase, 380V ~ 480V, 50/60Hz															
	Allowable Voltage Fluctuation	-15% ~ +10%															
	Allowable Frequency Fluctuation	±5%															

### 440V Class

Inverter Capacity (HP)		5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	215	250	300	375	425	535 <sup>2</sup>	670 <sup>2</sup>	800 <sup>2</sup>	
Output Rated	Rated Output Capacity (KVA)	7	8.4	13	18	24	28.9	34	41	55	67	78	110	125	158	190	225	250	331	392	445	525	640	731	
	Rated Output Current (A)	9.2	11	18	23	31	38	44	54	72	88	103	145	165	208	250	296	328	435	515	585	690	840	960	
	Maximum Applicable Motor	(HP)	5	7.5	10	15	20	25	30	40	50	60	75	100	125	150	175	215	250	300	375	425	535	670	800
		(KW)	4	5.5	7.5	11	15	18.5	22	30	37	45	55	75	90	110	132	160	185	220	280	315	400	500	600
	Maximum Output Voltage (V)	Three Phase, 380V~480V																							
Maximum Output Frequency (Hz)	Based on parameter setting 0.1~400.0Hz <sup>-3</sup>																								
Input Power	Rated Voltage, Frequency	Three Phase, 380V ~ 480V, 50/60Hz																							
	Allowable Voltage Fluctuation	-15% ~ +10%																							
	Allowable Frequency Fluctuation	±5%																							

#### Remarks :

1. Based on the standard 4-pole induction motor. Selecting inverter must have a higher output current rating than motor.
2. 440V 535HP models or above are under development.
3. The maximum output frequency of each control mode is different, please refer to user manual for more details.

## GENERAL SPECIFICATIONS

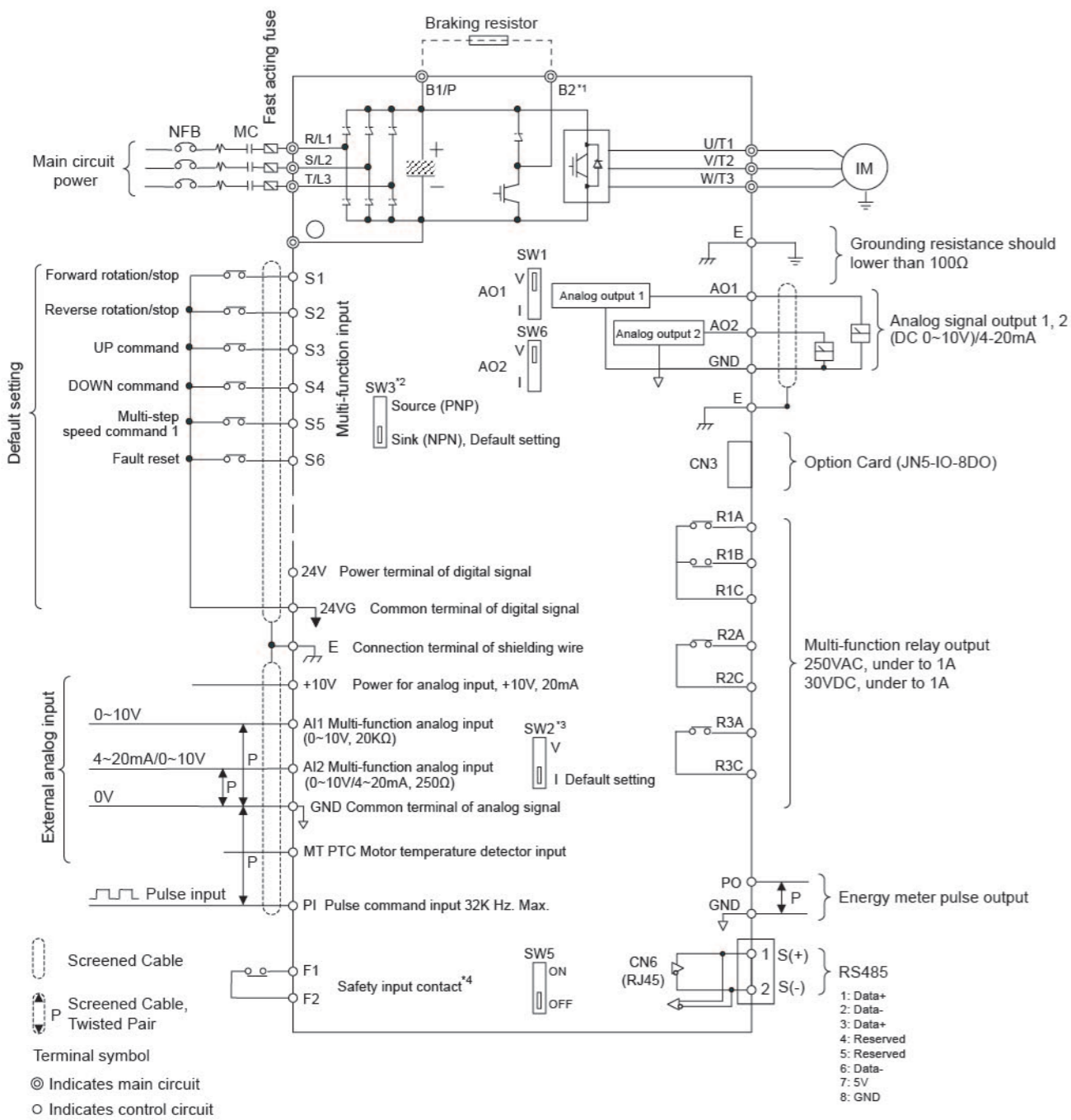
Control Characteristics	Display	LED keypad with 5-digits seven-segment display or LCD keypad (HOA LCD keypad option)all LCD keypad with parameter copy function	
	Control Modes	V/F, SLV, PMSLV with Space Vector PWM Mode	
	Output Frequency	0.1Hz ~ 400.0Hz	
	Frequency Accuracy	Digital references : ±0.01%(-10 ~ +40°C), Analog references : ±0.1% (25°C ±10°C)	
	Speed Control Accuracy	±0.5% (Sensorless Vector Control Mode) <sup>1</sup>	
	Frequency Setting Resolution	Digital references : 0.01Hz, Analog references : 0.06Hz/60Hz	
	Output Frequency Resolution	0.01Hz	
	Overload Tolerance	120% /1 min	
	Frequency Setting Signal	DC 0 ~ +10V / -10V~+10V or 4 ~ 20mA	
	Acceleration / Deceleration Time	0.0 ~ 6000.0 second (separately set acceleration and deceleration time )	
	Voltage / Frequency Characteristics	Can arbitrarily set V / F curve based on parameters	
	Braking Torque	About 20%	
	Main Control Functions	Auto Tuning, Soft-PWM, Over-Voltage Protection, Dynamic Braking, Speed Search, Momentary Power Loss Restart, 2 Sets of PID Control, Slide Difference Compensation, RS-485 Communication Standard, Simple PLC Function, 2 Sets of Analog Output, Safety Switch	
Records of Power On and Operation Time, 4 Fault History Records and Latest Fault Record State, Energy-Saving Function, Phase Loss protection, Smart Braking, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, Modbus, BACnet MS/TP, and Metasys N2 Communication Protocol, Display of Multi- Engineering Unit, Local / Remote Switch, SINK / SOURCE Input Selection, User Parameter Settings			
Other Functions	Records of Power On and Operation Time, 4 Fault History Records and Latest Fault Record State, Energy-Saving Function, Phase Loss protection, Smart Braking, DC Braking, Dwell, S Curve Acceleration and Deceleration, Up / Down Operation, Modbus, BACnet MS/TP, and Metasys N2 Communication Protocol, Display of Multi- Engineering Unit, Local / Remote Switch, SINK / SOURCE Input Selection, User Parameter Settings		
Protection Functions	Stall Protection	Current level can be set (in acceleration or constant speed, it can be set separately. In deceleration, it can be set with or without protection)	
	Over Current (OC) and Output Short-circuit (SC) Protection	It stops when the current exceeds 160% of the inverter rated current	
	Inverter Overload Protection (OL2)	Inverter will be stopped when the output higher than 120% rated current for 1 min, Carrier frequency is 2~4KHZ <sup>2</sup>	
	Motor Overload Protection (OL1)	Electrical overload protection curve	
	Over Voltage Protection (OV)	If the main circuit DC voltage is over 410V (220V class) / 820V (440V class), the motor stops running	
	Under Voltage Protection (UV)	If the main circuit DC voltage is under 190V (220V class) / 380V (440V class), the motor stops running	
	Momentary Power Loss Restart	Power loss exceeds 15ms. You can set the function of momentary power loss restart up to 2sec	
	Overheat Protection(OH)	Thermistor sensor on heatsink	
	Ground Fault Protection(GF)	Protection by current detection circuit	
	Charge Indicator	When main circuit DC voltage ≥50V, the CHARGE LED is on	
Environment Specification	Output Phase Loss Protection (OPL)	If the OPL function acts, the motor stops rotation automatically	
	Location	Indoor (protected from corrosive gases and dust)	
	Ambient Temperature	-10 ~ +40°C (IP20/NEMA1 and IP55/NEMA12), -10 ~ +50°C (IP00), with de-rating, its maximum operation temperature is 60°C	
	Storage Temperature	-20 ~ +70°C	
	Humidity	95%RH or less ( no condensation )	
Communication Function	Altitude and Vibration	Altitude of 1000 meters or lower, below5.9m/s <sup>2</sup> (0.6G)	
	Communication Function	Built-in RS-485 as standard (Modbus protocol with RJ45 / BACnet / Metasys N2)	
	PLC Function	Built-in	
	Electromagnetic Interference (EMI)	Meet EN61800-3 Standard, IP20 400V 75HP or below and IP55 400V 60HP can be built in	
	Electromagnetic Susceptibility (EMS)	Meet EN61800-3 Standard	
	Certification	CE	Meet EN61800-3(CE & RE) and EN61800-5-1(LVD)
		UL	UL508C
	Option Card	1 to 8 Pump card, HOA LCD keypad, Profibus card	

#### Remarks :

- 1.Speed control accuracy will be influenced when the motor and installation condition are different.
- 2.The default setting of carrier frequency is different from models.



## WIRING DIAGRAM



### Remark:

- \*1: Only the main circuit of IP20 220V 5~30HP, 440V 5~40HP (included) and IP55 440V 5~25HP with built-in braking transistor provide terminal B2. The braking transistor can be connected directly between B1 and B2.
- \*2: The multi-function digital input terminals S1~S6 can be set to source (PNP) or sink (NPN) mode by SW3.
- \*3: The multi-function analog input 2 (AI2) can be set to the voltage command input (0~10V) or the current command input (4~20mA) through the SW2.
- \*4: When integrated safety function is NOT used, connect a link across terminals F1 & F2 for the inverter output to function. External safety circuits can be interfaced with inverter using terminals F1 and F2.

## DIMENSIONS

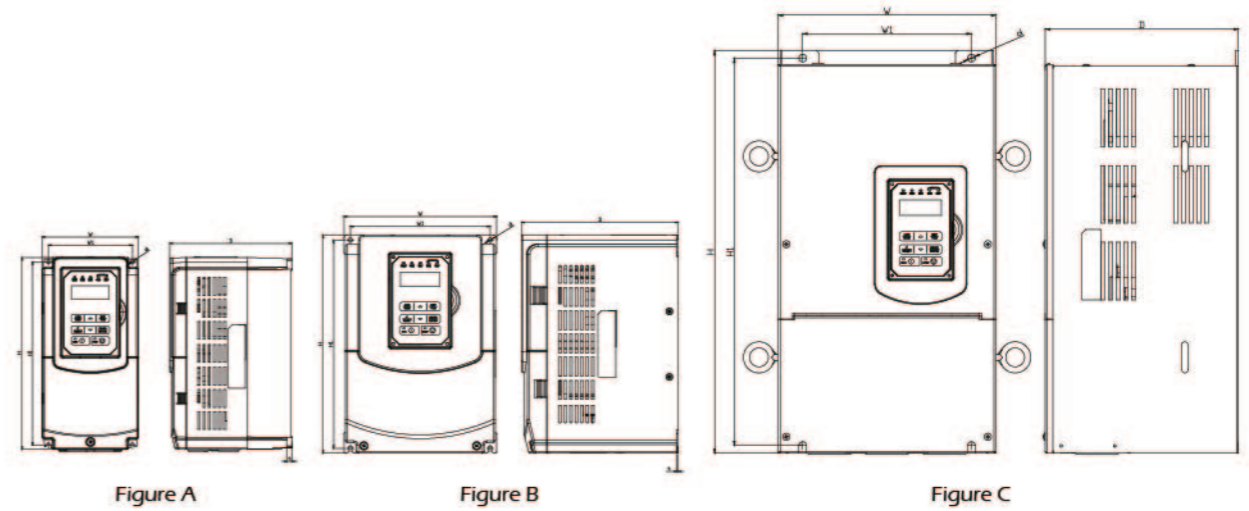
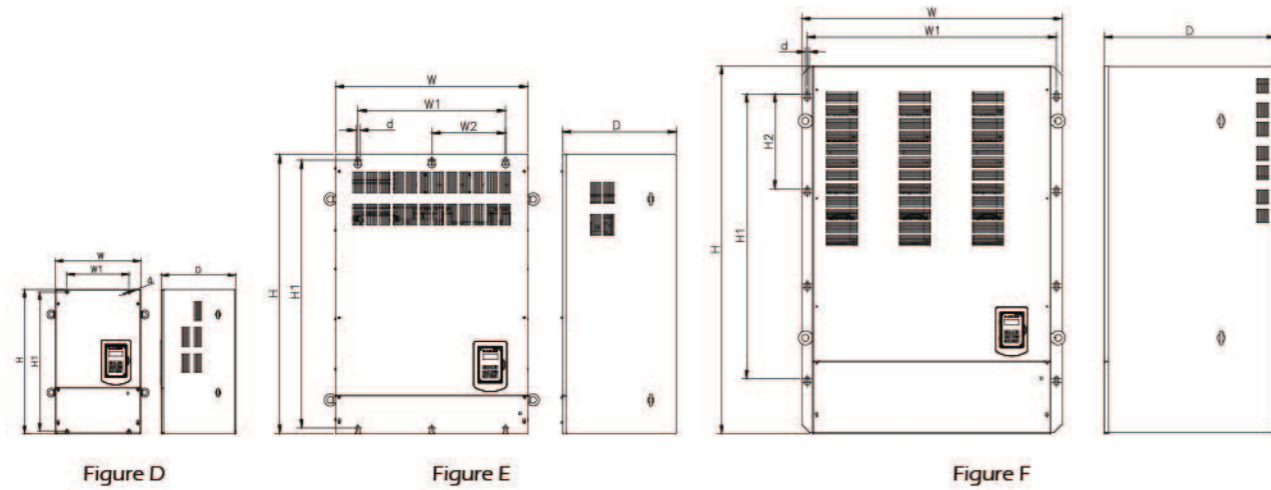


Figure	Enclosure	Frame	Models	Dimensions(mm)							Weight (kg)
				W	H	D	W1	H1	t	d	
A	IP00/ IP20(NEMA1)	Frame2	F510-2005-H3	140	279	177	122	267	7	M6	3.8
			F510-2008-H3	140	279	177	122	267	7	M6	3.8
			F510-4005-H3	140	279	177	122	267	7	M6	3.8
			F510-4008-H3	140	279	177	122	267	7	M6	3.8
			F510-4010-H3	140	279	177	122	267	7	M6	3.8
B	IP00/ IP20(NEMA1)	Frame 3	F510-2010-H3	210	300	215	192	286	1.6	M6	6.2
			F510-2015-H3	210	300	215	192	286	1.6	M6	6.2
		Frame 4	F510-2020-H3	265	360	225	245	340	1.6	M8	10
			F510-2030-H3	265	360	225	245	340	1.6	M8	10
			F510-4015-H3	210	300	215	192	286	1.6	M6	6.2
		Frame 4	F510-4020-H3	210	300	215	192	286	1.6	M6	6.2
			F510-4025-H3	265	360	225	245	340	1.6	M8	10
			F510-4030-H3	265	360	225	245	340	1.6	M8	10
			F510-4040-H3	265	360	225	245	340	1.6	M8	10
			F510-2040-H3	284	525	252	220	505	1.6	M8	30
C	IP00/ IP20(NEMA1)	Frame 5	F510-2050-H3	284	525	252	220	505	1.6	M8	30
			F510-4050-H3	284	525	252	220	505	1.6	M8	30
			F510-4060-H3	284	525	252	220	505	1.6	M8	30
			F510-4075-H3	284	525	252	220	505	1.6	M8	30
			F510-4075-H3	284	525	252	220	505	1.6	M8	30



## DIMENSIONS



## DIMENSIONS

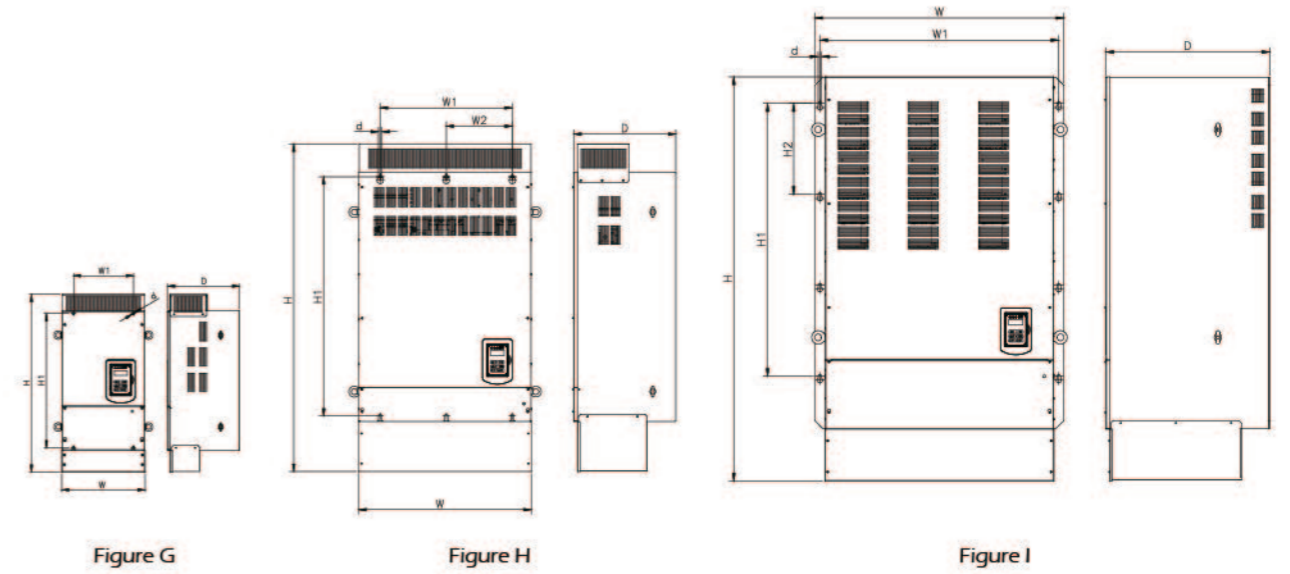


Figure	Enclosure	Frame	Models	Dimensions(mm)										Weight (kg)
				W	H	D	W1	W2	H1	H2	t	d		
D	IP00	Frame 6	F510-2060-H3	344	580	300	250	N/A	560	N/A	1.6	M10	40.5	
			F510-2075-H3	344	580	300	250	N/A	560	N/A	1.6	M10	40.5	
		Frame 7	F510-2100-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
			F510-2125-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
		Frame 6	F510-4100-H3	344	580	300	250	N/A	560	N/A	1.6	M10	40.5	
			F510-4125-H3	344	580	300	250	N/A	560	N/A	1.6	M10	40.5	
		Frame 7	F510-4150-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
			F510-4175-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
			F510-4215-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
			F510-4250-H3	459	790	325	320	N/A	760	N/A	1.6	M10	74	
E	IP00	Frame 8	F510-2150-H3	690	1000	410	530	265	960	N/A	1.6	M12	184	
			F510-2175-H3	690	1000	410	530	265	960	N/A	1.6	M12	184	
			F510-4300-H3	690	1000	410	530	265	960	N/A	1.6	M12	184	
			F510-4375-H3	690	1000	410	530	265	960	N/A	1.6	M12	184	
			F510-4425-H3	690	1000	410	530	265	960	N/A	1.6	M12	184	
F	IP00	Frame 9	F510-4535-H3	960	1356	632	920	N/A	1050	350	3	M12	290	
			F510-4670-H3	960	1356	632	920	N/A	1050	350	3	M12	290	
			F510-4800-H3	960	1356	632	920	N/A	1050	350	3	M12	290	

Figure	Enclosure	Frame	Models	Dimensions(mm)										Weight (kg)
				W	H	D	W1	W2	H1	H2	t	d		
G	IP20(NEMA1)	Frame 6	F510-2060-H3	348.5	740	300	250	N/A	560	N/A	1.6	M10	44	
			F510-2075-H3	348.5	740	300	250	N/A	560	N/A	1.6	M10	44	
		Frame 7	F510-2100-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
			F510-2125-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
		Frame 6	F510-4100-H3	348.5	740	300	250	N/A	560	N/A	1.6	M10	44	
			F510-4125-H3	348.5	740	300	250	N/A	560	N/A	1.6	M10	44	
		Frame 7	F510-4150-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
			F510-4175-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
			F510-4215-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
			F510-4250-H3	463.5	1105	324.5	320	N/A	760	N/A	1.6	M10	81	
H	IP20(NEMA1)	Frame 8	F510-2150-H3	690	1313	410	530	265	960	N/A	1.6	M12	194	
			F510-2175-H3	690	1313	410	530	265	960	N/A	1.6	M12	194	
			F510-4300-H3	690	1313	410	530	265	960	N/A	1.6	M12	194	
			F510-4375-H3	690	1313	410	530	265	960	N/A	1.6	M12	194	
			F510-4425-H3	690	1313	410	530	265	960	N/A	1.6	M12	194	
I	IP20(NEMA1)	Frame 9	F510-4535-H3	960	1556	632	920	N/A	1050	350	3	M12	300	
			F510-4670-H3	960	1556	632	920	N/A	1050	350	3	M12	300	
			F510-4800-H3	960	1556	632	920	N/A	1050	350	3	M12	300	



## DIMENSIONS

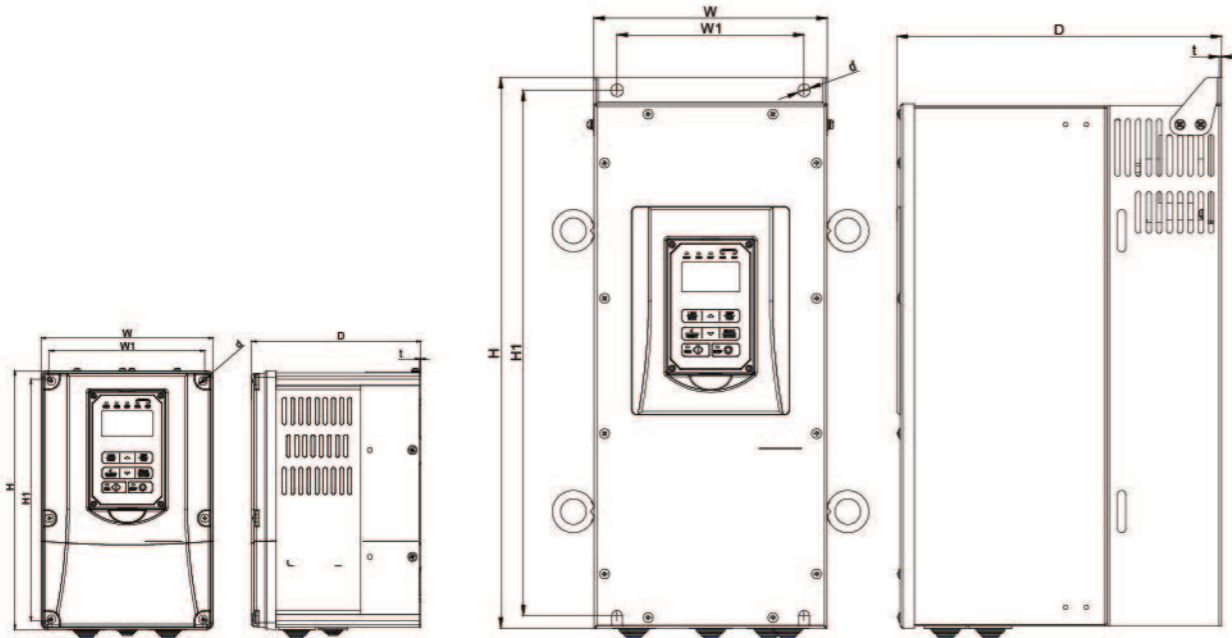
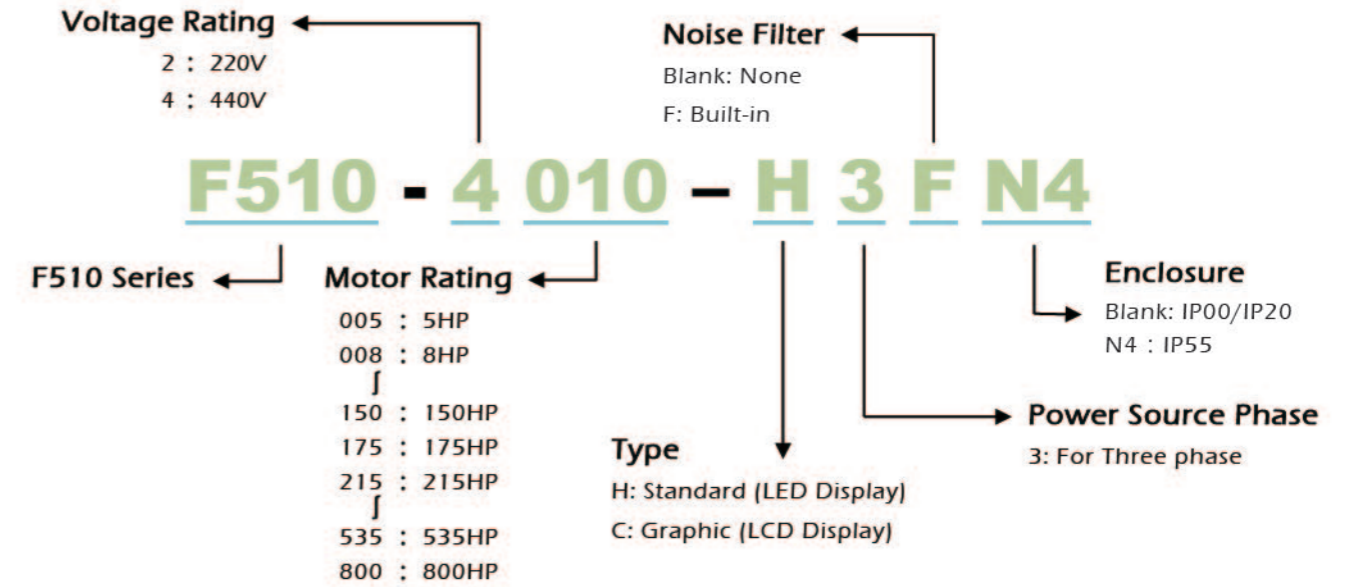


Figure J

Figure K

Figure	Enclosure	Frame	Models	Dimensions(mm)							Weight (kg)	
				W	H	D	W1	H1	t	d		
J	IP55(NEMA12)	Frame 1	F510-4005-C3FN4	189	284	186	171	266	1.2	M5	7	
			F510-4008-C3FN4	189	284	186	171	266	1.2	M5	7	
		Frame 2	F510-4010-C3FN4	230	320	210	210	305	2	M5	10.5	
			F510-4015-C3FN4	230	320	210	210	305	2	M5	10.5	
		Frame 3	F510-4020-C3FN4	265	396	227	249	380	2	M5	17	
			F510-4025-C3FN4	265	396	227	249	380	2	M5	17	
K		IP55(NEMA12)	Frame 4	F510-4030-C3FN4	224	527	311	180	505	2	M10	32.5
				F510-4040-C3FN4	224	527	311	180	505	2	M10	32.5
			Frame 5	F510-4050-C3FN4	224	527	311	180	505	2	M10	32.5
				F510-4060-C3FN4	326	695	343	276	671	2.3	M10	55
			Frame 5	F510-4075-C3N4	326	695	343	276	671	2.3	M10	55
				F510-4100-C3N4	326	695	343	276	671	2.3	M10	55

## MODEL DESIGNATION



## NOISE FILTER

Series	Capacity(HP)	Noise Filter		
		Models	Rated Current(A)	Notes
IP00 / IP20 3 $\phi$ 220V	5 / 7.5	FS32124-23-99	23	External
	10 / 15	FS32123-42-99	42	External
	20	FS32125-61-99	61	External
	25 / 30	FS32125-86-99	86	External
	40 / 50	FS32125-150-99	150	External
	60 / 75	FS32125-232-99	232	External
	100 / 125	FS32125-343-99	343	External
IP00 / IP20 3 $\phi$ 440V	150 / 175	FN3270H-600-99	600	Under development
	5 / 7.5 / 10	JN5-FLT-19A	19	
	15 / 20	JN5-FLT-33A	33	
	25 / 30 / 40	JN5-FLT-63A	63	
	50 / 60 / 75	JN5-FLT-112A	112	
	100 / 125	FS32126-181-99	181	External
	150 / 175 / 215 / 250	FS32126-361-99	361	External
	300 / 375 / 425	FN3270H-800-99	800	Under development
	535 / 670 / 800			Under development
IP55 3 $\phi$ 440V	10 / 15	FS29040-30-99*1	30	External

### Remarks :

1. The external noise filter for F510 IP55 4010/4015 models (FS29040-30-99) do not have IP55 enclosure .
2. F510 IP55 4010/4015 models meet EN61800-3 requirements for category c2 with external filter and category c3 without additional external mitigation.



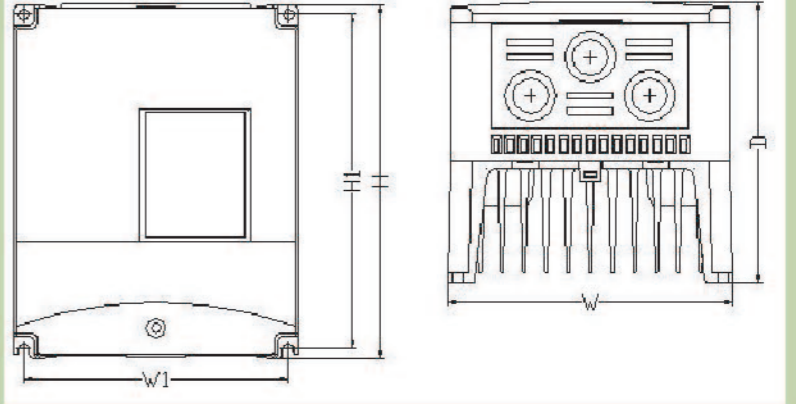
## EXTERNAL BRAKING RESISTOR AND DETECTION MODULE

Drive		Braking Detection Module*1		Braking Resistor				Braking Torque
Series	Capacity (HP)	Models	Parallel Number	Models	Specification*2	Used Model Number	Dimensions(mm) (Total Number)*3	
IP00 / IP20 3φ 220V	5	-	-	JNBR-390W40	390W/40Ω	1	395×34×78	126%,10%ED
	7.5	-	-	JNBR-520W30	520W/30Ω	1	400×40×100	114%,10%ED
	10	-	-	JNBR-780W20	780W/20Ω	1	400×40×100	126%,10%ED
	15	-	-	JNBR-2R4KW13R6	2400W/13.6Ω	1	535×50×110 (2 pcs)	124%, 10%ED
	20	-	-	JNBR-3KW10	3000W/10Ω	1	615×50×110 (2 pcs)	126%, 10%ED
	25	-	-	JNBR-4R8KW8	4800W/8Ω	1	535×50×110 (4 pcs)	126%, 10%ED
	30	-	-	JNBR-4R8KW6R8	4800W/6.8Ω	1	535×50×110 (4 pcs)	124%, 10%ED
	40	JNTBU-230	2	JNBR-3KW10	3000W/10Ω	2	615×50×110 (4 pcs)	126%, 10%ED
	50	JNTBU-230	2	JNBR-3KW10	3000W/10Ω	2	615×50×110 (4 pcs)	105%, 10%ED
	60	JNTBU-230	2	JNBR-4R8KW6R8	4800W/6.8Ω	2	535×50×110 (8 pcs)	124%, 10%ED
	75	JNTBU-230	3	JNBR-4R8KW8	4800W/8Ω	3	535×50×110 (12 pcs)	124%, 10%ED
	100	JNTBU-230	3	JNBR-4R8KW6R8	4800W/6.8Ω	3	535×50×110 (12 pcs)	116%, 10%ED
	125	JNTBU-230	4	JNBR-4R8KW6R8	4800W/6.8Ω	4	535×50×110 (16 pcs)	119%,10%ED
	150	JNTBU-230	5	JNBR-4R8KW8	4800W/8Ω	5	535×50×110 (20 pcs)	108%, 10%ED
	175	JNTBU-230	6	JNBR-4R8KW8	4800W/8Ω	6	535×50×110 (24 pcs)	113%, 10%ED
IP00 / IP20 3φ 440V	5	-	-	JNBR-400W150	400W/150Ω	1	395×34×78	133%, 10%ED
	7.5	-	-	JNBR-600W130	600W/130Ω	1	400×40×100	107%,10%ED
	10	-	-	JNBR-800W100	800W/100Ω	1	535×50×110	105%,10%ED
	15	-	-	JNBR-1R6KW50	1600W/50Ω	1	615×50×110	133%, 10%ED
	20	-	-	JNBR-1R5KW40	1500W/40Ω	1	615×50×110	126%, 10%ED
	25	-	-	JNBR-4R8KW32	4800W/32Ω	1	535×50×110 (4 pcs)	126%, 10%ED
	30	-	-	JNBR-4R8KW27R2	4800W/27.2Ω	1	535×50×110 (4 pcs)	124%, 10%ED
	40	-	-	JNBR-6KW20	6000W/20Ω	1	615×50×110 (4 pcs)	124%, 10%ED
	50	JNTBU-430	2	JNBR-4R8KW32	4800W/32Ω	2	535×50×110 (8 pcs)	126%, 10%ED
	60	JNTBU-430	2	JNBR-4R8KW27R2	4800W/27.2Ω	2	535×50×110 (8 pcs)	124%, 10%ED
	75	JNTBU-430	2	JNBR-6KW20	6000W/20Ω	2	615×50×110 (8 pcs)	133%, 10%ED
	100	JNTBU-430	3	JNBR-4R8KW27R2	4800W/27.2Ω	3	535×50×110 (12 pcs)	113%, 10%ED
	125	JNTBU-430	3	JNBR-6KW20	6000W/20Ω	3	615×50×110 (12 pcs)	121%, 10%ED
	150	JNTBU-430	3	JNBR-6KW20	6000W/20Ω	3	615×50×110 (12 pcs)	104%, 10%ED
	175	JNTBU-430	5	JNBR-4R8KW27R2	4800W/27.2Ω	5	535×50×110 (20 pcs)	109%, 10%ED
	215	JNTBU-430	6	JNBR-4R8KW27R2	4800W/27.2Ω	6	535×50×110 (24 pcs)	107%, 10%ED
	250	JNTBU-430	5	JNBR-6KW20	6000W/20Ω	5	615×50×110 (20 pcs)	105%,10%ED
	300	JNTBU-430	6	JNBR-6KW20	6000W/20Ω	6	615×50×110 (24 pcs)	105%,10%ED
	375	JNTBU-430	7	JNBR-6KW20	6000W/20Ω	7	615×50×110 (28 pcs)	100%,10%ED
	425	JNTBU-430	8	JNBR-6KW20	6000W/20Ω	8	615×50×110 (32 pcs)	100%,10%ED
	535	JNTBU-430	10	JNBR-6KW20	6000W/20Ω	10	615×50×110 (40 pcs)	99%,10%ED
	670	JNTBU-430	11	JNBR-6KW20	6000W/20Ω	11	615×50×110 (44 pcs)	90%,10%ED
	800	JNTBU-430	13	JNBR-6KW20	6000W/20Ω	13	615×50×110 (52 pcs)	90%,10%ED

## EXTERNAL BRAKING RESISTOR AND DETECTION MODULE

Drive		Braking Detection Module*1		Braking Resistor				Braking Torque
Series	Capacity (HP)	Models	Parallel Number	Models	Specification*2	Used Model Number	Dimensions(mm) (Total Number)*3	
IP55 3φ 440V	5	-	-	JNBR-400W150	400W/150Ω	1	395×34×78	133%, 10%ED
	7.5	-	-	JNBR-600W130	600W/130Ω	1	400×40×100	107%,10%ED
	10	-	-	JNBR-800W100	800W/100Ω	1	535×50×110	105%,10%ED
	15	-	-	JNBR-1R6KW50	1600W/50Ω	1	615×50×110	133%, 10%ED
	20	-	-	JNBR-1R5KW40	1500W/40Ω	1	615×50×110	126%, 10%ED
	25	-	-	JNBR-4R8KW32	4800W/32Ω	1	535×50×110 (4 pcs)	126%, 10%ED
	30	JNTBU-430	1	JNBR-4R8KW27R2	4800W/27.2Ω	1	535×50×110 (4 pcs)	124%, 10%ED
	40	JNTBU-430	1	JNBR-6KW20	6000W/20Ω	1	615×50×110 (4 pcs)	126%, 10%ED
	50	JNTBU-430	2	JNBR-4R8KW32	4800W/32Ω	2	535×50×110 (8 pcs)	126%, 10%ED
	60	JNTBU-430	2	JNBR-4R8KW27R2	4800W/27.2Ω	2	535×50×110 (8 pcs)	124%, 10%ED
	75	JNTBU-430	2	JNBR-6KW20	6000W/20Ω	2	615×50×110 (8 pcs)	133%, 10%ED
	100	JNTBU-430	3	JNBR-4R8KW27R2	4800W/27.2Ω	3	535×50×110 (12 pcs)	113%, 10%ED

## BRAKING DETECTION MODULE (TBU-230/430)

MODEL	Dimensions(mm)					Diagram
	W	H	D	W1	H1	
TBU-230	149	184	146	138	174	
TBU-430						

### Remarks :

- If you have any requirements of braking module, please contact your local TECO Sales Representative for additional details.
- For the minimum suggestion value of braking resistor, please refer to the F510 manual and the attached user manual of braking module.
- It shows the total numbers of resistors. The IP00/20 2075 model is suggested to use 3pcs JNBR-4R8KW8, each JNBR-4R8KW8 includes 4pcs of resistors. Thus, it needs 12pcs of resistors. (each resistor size: 535×50×110 mm)
- Other option braking module for IP55 4050 model : JUVPHV-0060+JNBR-9R6KW16.  
Other option braking module for IP55 4060 model : JUVPHV-0060+JNBR-9R6KW13R6.
- The external braking resistors and detection modules do not have IP55 enclosure.



