





S100

LV Drive Line-up

1] LV Drive Line-up 2] Target application

- 3] Fame design
- 4] General spec.
- 5] Features
- 6] Option
- 7] Comparison
- 8] Launching schedule



Capacity(kW)

Capacity(kW)

S100

Target Application

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Frame design

Standard IP20

- 1] LV Drive Line-up
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Optional IP66/NEMA4X



S100	General specifications
1] LV Drive Line-up	 Drive capacity 200V, Single-phase, 0.4~2.2kW(2.5~11A, HD) 200V, Three-phase, 0.4~15kW(2~55.9A, HD) 400V, Three-phase, 0.4~75kW(1.8~152A, HD) 0~400Hz (Sensorless: 0~120Hz)
2] Target application	Overload capacity (Dual rating) Carrier frequency Leonar Duty 1 Televis
3] Fame design	- 120% for 60sec. (Normal Duty) - Teavy Duty. 1~15kH2 / Normal Duty. 1~5kH2
4] General spec.	 Input voltage range 200~240V Single/Three-phase (-15%/+10%) Standard: IP20, Optional: NEMA1/NEMA4X(IP66) Global Certificated
5] Features	- 380~480V Three-phase (-15%/+10%) - CE, UL, cUL, RoHS
6] Option	Inbuilt EMC Filter, DC Reactor, LCD Keypad
7] Comparison	IP20 400V/3Φ
8] Launching schedule	<u>Inbuilt EMC Filter, LED keypad</u> IP20 400V/3Φ (C3)
	IP20 200V/1Φ (C2)
	IP20 400V/3Φ
	IP20 200V/3Φ
	IP20 200V/1Φ
	<u>Inbuilt EMC Filter, LED keypad, Discharge switch(IP66, NEMA4X)</u> IP66 400V/3Ф IP66 200V/3Ф
4/32	kW 0.4 0.75 1.5 2.2 3.7 4.0 5.5 7.5 11 15 18.5 22 30 37 55 75

S100

General specifications

Different specifications according to standard S100's capacity

	Drive capacity(kW)	0.4~4kW	5.5~22KW	30~75kW		
1] LV Drive Line-up						
2] Target application						
3] Fame design	Desim					
4] General spec.	Design					
5] Features		•	100	1E 1E 1E		
6] Option		5 N 5 N 5	<u> </u>			
7] Comparison	Control terminal I/O	Standard I/O: 23p 2 nd I/O: 27pins(3	ins(5mm pitch, three-stage) 3.5mm pitch, three-stage)	34pins(5mm pitch, two-stage)		
8] Launching schedule	Keypad	Inbuilt 7 segm (Graphic LCD ke	ent keypad as standard eypad as external option)	Inbuilt Graphic LCD keypad as standard		
	Inbuilt comm.	Inbuilt in	RS485(Modbus RTU / LS Bus)) as standard (Max. speed 115kbps)		
	Optional Comm.	CA	ANopen, Profibus DP, Ethernet	(Modbus TCP / Ethernet I/P)		
	EMC Filter	Inbuilt EMC filter as option: 200V/1Φ(C2) 400V/3Φ(C3)	Inbuilt EMC filter as standard: 400V/3Φ(C3)	Inbuilt EMC filter as option: 400V/3Φ(C3)		
	DC Reactor		N/A	Inbuilt DC reactor as standard		
	Dynamic Braking Transistor	Inbuilt Dynamic br	aking transistor as standard	N/A		
	Side by Side (Zero stack)	Side	by Side (3mm)	N/A (50mm)		
	Communication option installation	External op	tion installation type	Internal option installation type		
5/32	Top ventilation cover	Open		Close		

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General specifications User friendly Keypad

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Key



- Stop / Reset - Enter (SET)

- **ESC**^{*}

Graphic LCD (30~75kW)



Display	• Graphic LCD (128x64 Pixels)
LED	• 3
Кеу	 11 key 4 directions Mode Stop / Reset FWD / REV ESC / MULTI* PROG ENT

*'ESC' & 'MULTI' key: This key is used for Multi-Functions and one touch allows to access to the principal parameters such as Return to initial parameter position, Local/Remote and Keypad Jog etc.

S100

General specifications Control terminal I/O

Standard I/O (0.4~22kW)

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S+	S-	SG	VR	V1	СМ	12	AO
P4	P5	CM	SA	SB	SC		
01	EG	24	P1	P2	P3		

Mul	ti I	/0 (0.4~	22k	W)

	S+	S-	SG	VR	V1	CM	12	AO	
	P5	P6	P7	CM	SA	SB	SC	T0	
A1 B1 C1	Q1	EG	24	P1	P2	P3	P4		

	Standard I/O (0.4~22kW)	Multi I/O (0.4~22kW)	Standard I/O (30~75kW)
No. of Pins	23 pins	27 pins	34 pins
Relay output	A1,B1,C1	A1,B1,C1	A1,B1,C1 A2, C2
24V output	24	24	24
Analog input voltage (+12V)	VR	VR	VR
Analog voltage input	V1	V1	V1
Analog voltage/Current input	I2	I2	I2
Analog voltage/Current output	AO	AO	AO1
Analog voltage output	-	-	AO2
RS485 signal / Ground	S+,S- / SG	S+,S- / SG	S+,S- / SG
Safety input	SA,SB,SC	SA,SB,SC	SA,SB,SC
I/O Ground(Except for comm.)	СМ	CM	СМ
Multifunctional TR output	Q1, EG	Q1,EG	Q1,EG
Multifunctional digital input (PNP/NPN)	P1~ P5	P1~ P7	P1~ P7
Pulse train input(0~32kHz)	P5(Common)	TI	TI
Pulse train output(0~32kHz)	Q1(Common)	TO	ТО
Terminal pitch	5mm	3.5mm	5mm

Standard I/O (30~75kW)

S+ S SG A2 C1 NC NC P5 P6 P7 CM VR V1 12 A01 TO CM A1 B1 C1 Q1 EG SA SB SC 24 P1 P2 P3 P4 CM A02 TI CM

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General specifications Keypad & Switches

- 1] LV Drive Line-up
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FWD	Turn on in FWD operation, Flash in Acc./Dec.	
REV	Turn on in REV operation, Flash in Acc./Dec.	Flash in
 RUN	Turn on in operation	trip modo
SET	Turn on when user setting, Flash when ESC is used as Multi-function Key	mode
7-Segment	Status & Parameter Information	

	RUN		Run command
-	STOP/R	ESET	STOP : Stop command, RESET : Reset command
		Up	Moving code / Increase parameter value
	▼	Down	Moving code / Decrease parameter value
	◀	Left	Moving group / Moving cursor to left
	•	Right	Moving group / Moving cursor to right
	ENT	Enter	Changing parameter / Saving parameter
	ESC	Multi-key	JOG / Remote-Local / Cancel

		Switch Position	LEFT	RIGHT	UP	DOWN
	SW1	NPN / PNP	PNP	NPN		
	SW2	Analog Input Select			Voltage	Current
	SW3	Analog Output Select	Current	Voltage		
	SW4	Terminal Resistor	ON	OFF		
¥	CN2	Graphic LCD Port	Port for con	necting iS7	7 Keypad	
	CN4	Field bus Port	CANopen, E	thernet. Pr	ofibus-DP	

S100

General specifications

RJ45 Port for Keypad & DriveView7

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General specifications

EMC Filter

1] LV Drive Line-up

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5] Features

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EMC Filter which is compatible with EMC Directive (EN6180-3 2nd Environment Category C3) is available in S100 0.4~75kW three-phase 400V class. Category C2 is available also in S100 0.4~2.2kW single-phase 200V class.



DC Reactor

DC Reactor is inbuilt in S100 30~75kW as standard in order to improve Power Factor and reduce THD(Total Harmonic Distortion).

S100

Features (Performances) Dual CPU Topology

1] LV Drive Line-up

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4] General spec.

5] Features

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Thanks to Dual CPU Topology, Scan cycle time for a motor control is faster than the previous generation. Also CAN communication used between Control and I/O block helps electromagnetic noise to reduce.



• DSP: Digital Signal Processor

• MIPS: million Instructions Per Second

•MCU: Micro Controller Unit

S100

Features (Performances)

Enhanced torque control

- 1] LV Drive Line-up
- 2] Target application
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S100 has impressive torque characteristics with current vector control which provides a powerful starting torque of 200% at 0.5Hz and precise torque limit operations. Both of standing and rotating Auto-tuning function save start-up time and assure high performance operation at the maximum efficiency.



Torque characteristics

- Test drive: S100 7.5kW 400V class , heavy duty, at rotating Auto-tuning
- Test motor: Heigen induction motor 7.5kW, 3-phase, 4 poles,

S100

Features (Performances)

Enhanced RS485 communication

Inbuilt RS485 communication (Modbus RTU & LS Bus) is faster than the previous models (Max. speed 115kbps) and its reliability has be improved.



Stable communication signal levels

- through improvement in the terminal resistor circuit even if several stations are communicated
- Independent power source for RS485 communication
 - Not affected by electromagnetic noises from the drive or its surrounding environment
- 3 High communication speed
 - Approximately 6 times faster than previous model (IG5A: 19kbps \rightarrow S100: 115kbps)



- 1] LV Drive Line-up
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1] LV Drive Line-up

2] Target application

3] Fame design

Features (Performances)

Enhanced functions in case of power failure

Through improved algorithms such as Flying Start(Speed Search) and KEB(Power-Loss-Ride-Through), there might be no more trouble from power failure.



S100

Features (Space-saving Design)

1] LV Drive Line-up

- 2] Target application
- 3] Fame design
- 4] General spec.
- 5] Features
- 6] Option
- 7] Comparison
- 8] Launching schedule

World best compact size *S100* iG5A S 100 68.00 290mm 163mm LS 180mm * Size comparison between S100 and previous model based on 11kW 400V class Approximately 60% Smaller

Thanks to a state-of-the-art thermal simulation technology, LSIS creates the world smallest compact drive.



S100 allows OEMs or panel makers to save a installation space in their panels.

15/32

S100

1] LV Drive Line-up

- 2] Target application
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5] Features

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Features (Reliability)

Enhanced cooling design

Suction structure for internal cooling system enhances their protection and improves the life of S100 in dusty working environment. This cooling structure prevents air from flowing externally to the internal PCBs.



Input Air flow



Air flow

S100

Features (Reliability) Life-time Diagnosis

- 1] LV Drive Line-up
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Code	Display	Range	Unit	Default
PRT-86	Fan Time Perc	(Read Only)	%	0
PRT-87	Fan Exchange	0.0 ~ 100.0	%	90.0
PRT-88	Fan Time Rst	0 : No 1 : Yes	-	0 (No)
OUT-74	Relay 2	38 : Fan Exchange	-	14 : Run
CNF-74	Fan Time	(Read Only)	-	-

1) PRT-86 : Actual counted value of use (50000hrs = 100%)

2) PRT-87 : Value to exchange the fan (Fan Diagnosis not activated when it is set to 0)

3) PRT-88 : Initializing running time of the fan

S100

Features (Reliability) *Life-time Diagnosis*

- 1] LV Drive Line-up
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[Description of the related parameters]

- PRT-82 : Percentage of test current (100% = Rated current of INV CT)
 PRT-83~85 are displayed when PRT-82 is not set to 0
 PRT-83 a) CAP Diag 1 : Measuring initial value of Capacitance
 - b) CAP Diag 2 : Measuring current Capacitance based on the operation
- c) CAP Init : Initializing the measured capacitance
- 4) PRT-84 : Initial capacitance
 - It is the Reference value for exchange
- 5) PRT-85 : Current Capacitance

Code	Display	Range	Unit	Default
PRT-82	CAP Diag Perc	0 / 10 ~100	%	0
PRT-83	CAP Diag	0 : None 1 : CAP Diag 1 2 : CAP Diag 2 3 : CAP Init	-	0 : None
PRT-84	CAP Level 1	0.0 / 50.0 ~ 95.0	%	-
PRT-85	CAP Level 2	-	%	-
OUT-32	Relay 2	37 : Cap Warning		

S100

Features (Reliability)

IP66(NEMA4X)

IP66 and NEMA4X models are available up to S100 22kW which provides waterproof and dust-proof protection and separated installation in a harsh environment, specially Food & Beverage.

Power disconnecting switch



Internal cooling Fan for PCBs and Capacitor



External Cooling Fan for Heat sink

1] LV Drive Line-up

- 2] Target application
- 3] Fame design
- 4] General spec.

5] Features

- 6] Option
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S100

Features (User convenience)

Multi-Keypad

A optional LCD keypad^{*} of Master drive enables to access every drive (Slave) connected via inbuilt RS485 communication so that the users adjust and monitor parameters easily.



*LCD keypad of S100 is the same as IS7's one. It is a external option for S100 0.4~22kW, but is inbuilt for 30~75kW.

3] Fame design4] General spec.

1] LV Drive Line-up

2] Target application

5] Features

- 6] Option
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S100

Features (User convenience)

P2P communication

Peer to peer communication among the drives allows to share any I/O via inbuilt RS485 communication. It might be useful in case of limited number of I/O points for a certain system.



- 1] LV Drive Line-up
- 2] Target application
- 3] Fame design
- 4] General spec.

S100

Features (User convenience)

Safety Disable function (Safety Stop)

S100 is compliant to the EU Machinery Directive without the additional of previously required external devices. Through this compliance, S100 reduces the number of peripheral devices needed to satisfy safety regulation. It results in cost, space, and maintenance reduction.



This Safe Disable function can be utilized to perform a safe stop according to the EN60204-1, **stop category 0** (Uncontrolled stop by power removal). It is designed to meet the requirements of the EN954-1, Safety Category 3 and EN61508, SIL2 and EN ISO 13849-1 PL d. Removing the voltage from the Terminals SA, SB activates the disables the drive output, i.e. the power supply to the motor is cut by stopping the switching of the output transistors and "SFT" is shown in the display.

* Note : Output is cut in less than 1ms (SA is activated) or 20ms (SB is activated), but general response time is 1ms (SA and SB are activated coincidently.

- 1] LV Drive Line-up
- 2] Target application
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5] Features

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S100

Features (User convenience)

Inbuilt User Sequence (Simple PLC function)

1. Simple sequence can be made with combination of function blocks such as PID, arithmetic operation, bitwise operation, etc.

2. Consists of max. 18 steps with 29 function block, 30 void parameters

Loop Time : Can choose between 10msec ~ 1sec

Parameter Group

US Group : User Sequence setting

UF Group : Function Block function and input/output definition



1] LV Drive Line-up

- 2] Target application
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5] Features

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Features (User convenience)

Smart Copier

- 1] LV Drive Line-up
- 2] Target application
- 3] Fame design
- 4] General spec.

5] Features

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[Features]

- Save 1 firmware to download
- Save 4 parameter groups
- Built in Battery (80 times of firmware download) (1000 times of parameter download)

S100

- 1] LV Drive Line-up
- 2] Target application
- 3] Fame design
- 4] General spec.

5] Features

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Features (User convenience)

Easy cooling fan replacement

Cooling fan is provided on top of all drives (except for below 1.5kW) and it can be easily replaced without disconnecting main circuit wires.



Easy wiring

Since a cable guide can be fitted after wiring, wiring work is easily done.



Keep track of part wear of Main Capcitor and Fan

S100 monitors both main capacitor's lifecycle and Fan. When the life span of Fan is near, S100 outputs via Relay or Digital output as a alarm sign.

S100

Options

LSLV

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Communication option (CANopen)

- 1] LV Drive Line-up
- 2] Target application
- 3] Fame design
- 4] General spec.
- 5] Features

6] Option

- 7] Comparison
- 8] Launching schedule Technical Data



Connector	PIII	Signai	Description
	1	GND	CAN Ground
	2	CANLI	CAN_L Bus Line (Dominant
		CAN_L	Low)
1 5	3	SLD	CAN Shield
1	4	CANL II	CAN_H Bus Line (Dominant
		CAN_H	High)
	5	_	Reserved

Device Type CANopen Network Bus Topology Topology 20kbps, 50kbps, 125kbps, 250kbps, 500kbps, Comm. Baud Rate 800kbps, 1Mkbps LED Color Max. no. of Node 64 (Including Master) Process Data Object (PDO), CPU Green Power status Service Data Object (SDO), supporting comm. Synchronization (Sync), rameter setting error, mm. Error Network Management (NMT) MT status Terminal resistor 120 ohm 1/4W (내장) PDO1 (CiA 402 Drive and Motion Co fferent speed and profile) Available PDO ofile from Master PDO3 (LS Profile) 0x7D (LSIS) Vender Name

• LED



Description

	ERROR	Red	Pa co
	MODE	Green	NN
ontrol device	BUS	Red	Dif pro

S100

Options

Communication option (Profibus DP)

			Connector	Pin	Signal		J	Description	n
1] LV Drive Line-up	D.T. G			1	None		None		
2] Target application				2	M24		24V out	tput GND	
31 Fame design				3	RxD/TxD	-P	Transm	itter-receiv	er
sj rame design	Prefibus-07 S 100						data Plu	1S	
4] General spec.	akie O O			4	CTRL-P		Control signal for Repeater Signal GND 5V for terminal resistor		epeater
5] Features	Hard of barry or licetic Struck, many structure later of the struck structure later of the struck struck struck structu			5	DGND				
61 Option	Build purchase to have			6	VP				stor
oloption				7	P24		24V out	put Plus	
7] Comparison	 Technical Data 			8	RxD/TxD	-N	Transm	itter-receiv	er
8] Launching schedule							data Negative		
	Device Type	PROFIBUS-DP Slave		9	CTRL-N		Control	signal for R	epeater
	Auto Baud Rate Detect	ct Support Support			● LED		Profibus-DP S 100		
	Sync Mode							CPU O	
	Freeze ModeSupportMax Input Length8 words						ERROR Q	LSLV	
						ONLINE Q			
	Max Output Length	8 words						0	
	Baud Pata Support	9.6K, 19.2K, 93.75K, 18	9.6K, 19.2K, 93.75K, 187.5K, 500K, 1.5M, 3M, 6M, 12M		LED	Colo	r	Descript	ion
		3M, 6M, 12M			CPU	Greei	n Por	wer status	
	Modular Station	Support			EDDOD	Ded	C_	Emer	
	Max Module	2			ERROR	кеа		mm. Error	
		Max 32 nodes without repeater (Including		uding	ONLIN F	Greei	een Comm. Online status		status
	Max. no. of Nodes	Master)			Ľ				
	LED	CPU, ERR, ONLINE							
27/32	Comm. connector	9Pin D-sub							

S100

Options

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Communication option (Modbus TCP / Ethernet I/P)

- 1] LV Drive Line-up
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	Connector	Pin	Signal	Description
		1	TX+	Transmitter data Plus
		2	TX-	Transmitter data Minus
	Z/SV	3	RX+	Receiver data Plus
all and the second seco		4	NONE	Not used
Lak O		5	NONE	Not used
		6	RX-	Receiver Minus
	8	7	NONE	Not used
	Connector to	8	NONE	Not used
Protocol selector (No. 1 switch)	Ethernet option			

• Technical Data

Device Type	ETHERNET-IP		
Speed	10Mbps, 100Mbps		
Comm. Method	Base band		
Max. distance betwee	n 100m (Nada Humh)		
nodes	100m (Node-Hurb)		
Max. no. of Nodes	Connected to Hurb		
Auto Negotiation	Support		
Max. frame size	1500 bites		
Comm. Area access method	CSMA/CD		
Frame error checkin	g CDC20		
method	CRC32		
Recommended connecto	or D Sector		
TCP Socket	2 Socket		

● LED	Ethemet	S100
	NS/CPU O	
	MS/ERF O	LSLV
	SPEED Q	
	LINK O	

LED	Color	Description				
ODDDD	Green -	ON	Speed 100Mbps			
SPEED		OFF	Speed10Mbps			
		ON	Comm. ready OK			
LINK	JK Green	OFF	Comm. ready FAIL			



Options

How to mount option cards





① Take off **Bottom Cover**

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- ② Take off I/O Cover

③ Take off KPD Cover

④ Mount a module

(5) Reassemble -Mount KPD cover, I/O cover, Bottom cover

S100

Options

Other options

Conduit option: S100 meets NEMA 1 with this option.

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Flange option: S100 allows its heatsink to be installed outside of panel for better cooling system with this option.







Wall

Back side of panel

S100

Comparison

	Competitor (Series)	Yaskawa (V1000)	Mitsubishi (E700)	ABB (ACS355)	Danfoss (FC51)	LSIS (S100)	
1] LV Drive Line-up	Appearance					90 100	
2] Target application		TRACT	10 m		22	14 m	
21 F I .	1Φ 200V class	0.1~3.7KW	0.1~2.2KW	0.37~2.2KW	0.18~2.2KW	0.4~2.2KW	
3] Fame design	3Φ 200V class	0.1~15KW	0.1~15KW	0.37~11KW	0.18~3.7KW	0.4~15KW	
Al General spec	3Φ 400V class	0.2~15KW	0.4~15KW	0.37~22KW	0.18~22KW	0.4~75KW	
4] General spec.	Dual rating	Semi	No	No	No	Semi	
5] Features	EMC filter	Category 3 (External Option)	Category 3 (External Option)	Category 3 (Built-in)	Category 1/2 (Built-in)	Category 2/3 (Built-in or External)	
6] Option		· · · · ·		, , ,	(2 and m)	(
7] Comparison	Machinery Directive(Safety)	STO, SIL2	Х	STO, SIL3	Х	STO, SIL2	
8] Launching schedule	Enclosure	IP20 NEMA1 IP66/NEMA4X	IP20/IP40	IP20/UL Open NEMA1/ IP66/67/NEMA4X (~7.5kW)	IP20 IP21/NEMA 1	IP20/UL Open NEMA1/ IP66/NEMA4X (~22kW)	
	Temperature	-10~50°C (Open Chasis) 40°C:10% Derating (NEMA1)	-10~50°C	-10~40°C 50°C:10% Derating	50°C (40°C:24hr.)	-10~50°C (Heavy Duty) -10~40°C (Normal Duty)	
	User sequence (Simple PLC)	Yes	Х	Yes	Smart Logic	Yes	
	Braking chopper	Built-in as standard	Built-in 0.4~15KW	Built-in as standard	Built-in 1.5~22KW	Built-in as standard up to 22kW	
	Control Mode	v/f, SLV(IM) / SLV(PM)	V/f, SLV 1,2	V/f, SLV, SV	V/f, SLV	V/f, SLV(IM) / SLV(PM)	
31/32	Fieldbus	Modbus RTU, Mechatrolink-II, CC- Link, DeviceNet, Profibus DP, CANopen, LonWorks	Modbus RTU, CC-Link, DeviceNet, Profibus DP, LonWorks	Profibus DP, DeviceNet, CANopen, Modbus, Ethernet	Modbus RTU	Modbus RTU, Profibus-DP, CANopen, Ethernet	

