



# Standard Model Specifications

## Three phase 400V class series

Items		Specifications											
Type		FRN □□□□E2S-4GA, FRN □□□□E2S-4GB					FRN □□□□E2S-4A, FRN □□□□E2S-4E, FRN □□□□E2S-4K, FRN □□□□E2S-4U						
		0002	0004	0006	0007	0012	0022	0029	0037	0044	0059	0072	
Nominal applied motor <sup>1</sup> [kW]	ND	0.75	1.5	2.2	3.0	5.5	11	15	18.5	22	30	37	
	HD	0.75	1.1	2.2	3.0	5.5	7.5	11	15	18.5	22	30	
	HND	0.75	1.1	2.2	3.0 <sup>10</sup>	5.5 <sup>10</sup>	7.5	11	15	18.5	22	30	
	HHD	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22	
Output ratings	Rated capacity [kVA] <sup>2</sup>	ND	1.6	3.1	4.2	5.3	9.1	16	22	28	34	45	55
		HD	1.4	2.6	3.8	4.8	8.5	13	18	24	29	34	46
		HND	1.4	2.6	3.8	4.8 <sup>10</sup>	8.5 <sup>10</sup>	13	18	24	29	34	46
		HHD	1.1	1.9	3.2	4.2	6.9	9.9	14	18	23	30	34
	Rated voltage [V] <sup>3</sup>	Three-phase 380 to 480V (With AVR)											
		Rated current [A] <sup>4</sup>	ND	2.1	4.1	5.5	6.9	12	21.5	28.5	37.0	44.0	59.0
	HD		1.8	3.4	5.0	6.3	11.1	17.5	23.0	31.0	38.0	45.0	60.0
	HND		1.8	3.4	5.0	6.3 <sup>10</sup>	11.1 <sup>10</sup>	17.5	23.0	31.0	38.0	45.0	60.0
	HHD		1.5	2.5	4.2	5.5	9.0	13.0	18.0	24.0	30.0	39.0	45.0
	Overload capability	ND, HND	120% of nominal current for 1min										
		HD	150% of nominal current for 1min										
		HHD	150% of nominal current for 1min or 200% of nominal current for 0.5s										
Input ratings	Main power supply	Three-phase 380 to 480V (With AVR)											
	Voltage/frequency variations	Voltage: +10 to -15% (Voltage unbalance:2% or less <sup>8</sup> , Frequency: +5 to -5%)											
	Rated current without DCR <sup>5</sup> [A]	ND	2.7	4.8	7.3	11.3	16.8	33.0	43.8	52.3	60.6	77.9	94.3
		HD	2.7	3.9	7.3	11.3	16.8	23.2	33.0	43.8	52.3	60.6	77.9
		HND	2.7	3.9	7.3	11.3 <sup>10</sup>	16.8 <sup>10</sup>	23.2	33.0	43.8	52.3	60.6	77.9
		HHD	1.7	3.1	5.9	8.2	13.0	17.3	23.2	33.0	43.8	52.3	60.6
	Rated current with DCR <sup>5</sup> [A]	ND	1.5	2.9	4.2	5.8	10.1	21.1	28.8	35.5	42.2	57.0	68.5
		HD	1.5	2.1	4.2	5.8	10.1	14.4	21.1	28.8	35.5	42.2	57.0
		HND	1.5	2.1	4.2	5.8 <sup>10</sup>	10.1 <sup>10</sup>	14.4	21.1	28.8	35.5	42.2	57.0
		HHD	0.85	1.6	3.0	4.4	7.3	10.6	14.4	21.1	28.8	35.5	42.2
	Required power supply capacity <sup>6</sup> [kVA]	ND	1.1	2.1	3.0	4.1	7.0	15	20	25	29	39	47
		HD	1.1	1.5	3.0	4.1	7.0	10	15	20	25	29	39
HND		1.1	1.5	3.0	4.1 <sup>10</sup>	7.0 <sup>10</sup>	10	15	20	25	29	39	
HHD		0.6	1.2	2.1	3.1	5.1	7.3	10	15	20	25	29	
Braking	Braking torque <sup>7</sup> [%]	ND	53%	50%	48%	29%	27%	12%					
		HD	53%	68%	48%	29%	27%	15%					
		HND	53%	68%	48%	29% <sup>10</sup>	27% <sup>10</sup>	15%					
		HHD	100%		70%	40%		20%					
	DC braking	Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60% (ND spec.), 0 to 80% (HD/HND spec.), 0 to 100% (HHD spec.) of nominal current											
	Braking chopper	Built-in											
Minimum connectable resistance[ohm]	200		160		130	80	60	40	34.4	16			
Braking resistor	Option												
DC reactor (DCR)	ND	Option											
	HND, HD	Option											
	HHD	Option											
Enclosure (IEC60529)	IP20, UL open type												
Cooling method	Natural cooling					Fan cooling							
Mass [kg]	1.2	1.5	1.5	1.6	1.9	5.0	5.0	8.0	9.0	9.5	10		

<sup>1</sup> Fuji 4-pole standard motor. At the selection of the inverter rating, consider not only the rating capacity(kW) is enough but also inverter output current is larger than selected the motor's nominal current.  
<sup>2</sup> Rated capacity is calculated by assuming the output rated voltage as 440 V.  
<sup>3</sup> The output voltage cannot exceed the power supply voltage.  
<sup>4</sup> When the carrier frequency (F26) is set to below value or higher, the inverter is sure to be necessary to derate their nominal current.  
HHD spec.--type 0002 to 0012 : 8kHz, type 0022 to 0168 : 10kHz, type 0203 to 0590 : 6kHz  
HND spec.--type 0002 to 0012 : 8kHz, type 0022 to 0059 : 10kHz, type 0072 to 0168 : 6kHz, type 0203 to 0590 : 4kHz  
HD,ND spec.--All type : 4kHz  
The rated output current at HD/ND spec. is decreased 2% for every 1 °C (1.8 °F) when ambient temperature is +40 °C (+104 °F) or more.  
<sup>5</sup> The value is calculated assuming that the inverter is connected with a power supply with the capacity of 500 kVA (or 10 times the inverter capacity if the inverter capacity exceeds 50 kVA) and %X is 5%. Be sure to use the DCR when applicable motor capacity is 75kW or above.  
<sup>6</sup> Obtained when a DC reactor (DCR) is used.  
<sup>7</sup> Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)  
<sup>8</sup> Voltage unbalance (%) = (Max. voltage (V) - Min. voltage (V))/Three -phase average voltage (V) × 67 (IEC 61800 - 3) If this value is 2 to 3%, use an optional AC reactor (ACR).  
<sup>10</sup> HND spec. of the type 0007 and 0012: allowable ambient temperature 40 °C (+104 °F) or less.  
The rated output current at HND spec. is decreased 1% for every 1 °C (1.8 °F) when ambient temperature is +40 °C (+104 °F) or more.

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Common Specifications  
Basic Wiring Diagram  
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Options

## Standard Model Specifications

### Three phase 400V class series

Items		Specifications											
Type		FRN□□□□E2S-4A, FRN□□□□E2S-4E, FRN□□□□E2S-4K, FRN□□□□E2S-4U											
		0085	0105	0139	0168	0203	0240	0290	0361	0415	0520	0590	
Nominal applied motor <sup>*1</sup> [kW]	ND	45	55	75	90	110	132	160	200	220	280	315	
	HD	37	45	55	75	90	110	132	160	200	220	250	
	HND	37	45	55	75	90	110	132	160	200	220	280	
	HHD	30	37	45	55	75	90	110	132	160	200	220	
Output ratings	Rated capacity [kVA] <sup>*2</sup>	ND	65	80	106	128	155	183	221	275	316	396	450
		HD	57	69	85	114	134	160	193	232	287	316	364
		HND	57	69	85	114	134	160	193	232	287	316	396
		HHD	46	57	69	85	114	134	160	193	232	287	316
	Rated voltage [V] <sup>*3</sup>		Three-phase 380 to 480V (With AVR)										
	Rated current [A] <sup>*4</sup>	ND	85.0	105	139	168	203	240	290	361	415	520	590
		HD	75.0	91.0	112	150	176	210	253	304	377	415	477
		HND	75.0	91.0	112	150	176	210	253	304	377	415	520
		HHD	60.0	75.0	91.0	112	150	176	210	253	304	377	415
	Overload capability	ND, HND	120% of nominal current for 1min										
		HD	150% of nominal current for 1min										
		HHD	150% of nominal current for 1min or 200% of nominal current for 0.5s										
Input ratings	Main power supply		Three-phase 380 to 480V, 50/60Hz					Three-phase 380 to 440V, 50Hz <sup>*9</sup> Three-phase 380 to 480V, 60Hz					
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance:2% or less <sup>*8</sup> , Frequency: +5 to -5%) <sup>*8</sup>										
	Rated current without DCR <sup>*5</sup> [A]	ND	114	140	-	-	-	-	-	-	-	-	-
		HD	94.3	114	140	-	-	-	-	-	-	-	-
		HND	94.3	114	140	-	-	-	-	-	-	-	-
		HHD	77.9	94.3	114	140	-	-	-	-	-	-	-
	Rated current with DCR <sup>*5</sup> [A]	ND	83.2	102	138	164	201	238	286	357	390	500	559
		HD	68.5	83.2	102	138	164	201	238	286	357	390	443
		HND	68.5	83.2	102	138	164	201	238	286	357	390	500
		HHD	57.0	68.5	83.2	102	138	164	201	238	286	357	390
	Required power supply capacity <sup>*6</sup> [kVA]	ND	58	71	96	114	139	165	199	248	271	347	388
		HD	47	58	71	96	114	140	165	199	248	271	307
HND		47	58	71	96	114	140	165	199	248	271	347	
HHD		39	47	58	71	96	114	140	165	199	248	271	
Braking	Braking torque <sup>*7</sup> [%]	ND	5 to 9%										
		HD	7 to 12%										
		HND	7 to 12%										
		HHD	10 to 15%										
	DC braking		Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60% (ND spec.), 0 to 80% (HD/HND spec.), 0 to 100% (HHD spec.) of nominal current										
	Braking chopper		Option										
	Minimum connection resistance[ohm]		-	-	-	-	-	-	-	-	-	-	-
Braking resistor		Option											
DC reactor (DCR)	ND	Option											
	HND, HD	Option											
	HHD	Option											
Enclosure (IEC60529)		IP00, UL open type											
Cooling method		Fan cooling											
Mass [kg]		25	26	30	33	40	62	63	95	96	130	140	

<sup>\*1</sup> Fuji 4-pole standard motor. At the selection of the inverter rating, consider not only the rating capacity(kW) is enough but also inverter output current is larger than selected the motor's nominal current.

<sup>\*2</sup> Rated capacity is calculated by assuming the output rated voltage as 440 V.

<sup>\*3</sup> Output voltage cannot exceed the power supply voltage.

<sup>\*4</sup> When the carrier frequency (F26) is set to below value or higher, the inverter is sure to be necessary to derate their nominal current.

HND spec.--type 0002 to 0012 : 8kHz, type 0022 to 0168 : 10kHz, type 0203 to 0590 : 6kHz

HND spec.--type 0002 to 0012 : 8kHz, type 0022 to 0059 : 10kHz, type 0072 to 0168 : 6kHz, type 0203 to 0590 : 4kHz

HD,ND spec.--All type : 4kHz

The rated output current at HD/ND spec. is decreased 2% for every 1 °C (1.8 °F) when ambient temperature is +40 °C (+104 °F) or more.

<sup>\*5</sup> The value is calculated assuming that the inverter is connected with a power supply with the capacity of 500 kVA (or 10 times the inverter capacity if the inverter capacity exceeds 50 kVA) and %X is 5%. Be sure to use the DCR when applicable motor capacity is 75kW or above.

<sup>\*6</sup> Obtained when a DC reactor (DCR) is used.

<sup>\*7</sup> Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)

<sup>\*8</sup> Voltage unbalance (%) =(Max. voltage (V) - Min. voltage (V))/Three -phase average voltage (V) × 67 (IEC 61800 - 3) If this value is 2 to 3%, use an optional AC reactor (ACR).

<sup>\*9</sup> The 400 V class series with type 0203 or above is equipped with a set of switching connectors (male) which should be configured according to the power source voltage and frequency.



# Standard Model Specifications

## Three phase 200V class series

Items		Specifications														
Type		FRN □□□□E2S-2GA, FRN □□□□E2S-2GB							FRN □□□□E2S-2A, FRN □□□□E2S-2E, FRN □□□□E2S-2K, FRN □□□□E2S-2U							
		0001	0002	0004	0006	0010	0012	0020	0030	0040	0056	0069	0088	0115		
Nominal applied motor <sup>*1</sup> [kW]	HND	0.2	0.4	0.75	1.1	2.2	3.0 <sup>*10</sup>	5.5 <sup>*10</sup>	7.5	11	15	18.5	22	30		
	HHD	0.1	0.2	0.4	0.75	1.5	2.2	3.7	5.5	7.5	11	15	18.5	22		
Output ratings	Rated capacity [kVA] <sup>*2</sup>	HND	0.5	0.8	1.3	2.3	3.7	4.6 <sup>*10</sup>	7.5 <sup>*10</sup>	11	15	21	26	34	44	
		HHD	0.3	0.6	1.1	1.9	3.0	4.2	6.7	9.5	13	18	23	29	34	
	Rated voltage [V] <sup>*3</sup>		Three-phase 200 to 240V (With AVR)													
	Rated current [A] <sup>*4</sup>	HND	1.3	2.0	3.5	6.0	9.6	12 <sup>*10</sup>	19.6 <sup>*10</sup>	30	40	56	69	88	115	
		HHD	0.8	1.6	3.0	5.0	8.0	11	17.5	25	33	47	60	76	90	
	Overload capability	HND	120% of nominal current for 1min													
HHD		150% of nominal current for 1min or 200% of nominal current for 0.5s														
Input ratings	Main power supply		Three-phase 200 to 240V, 50/60Hz													
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance:2% or less <sup>*8</sup> , Frequency: +5 to -5%)													
	Rated current without DCR <sup>*5</sup> [A]	HND	1.8	2.6	4.9	6.7	12.8	17.9 <sup>*10</sup>	31.9 <sup>*10</sup>	42.7	60.7	80.0	97.0	112	151	
		HHD	1.1	1.8	3.1	5.3	9.5	13.2	22.2	31.5	42.7	60.7	80.0	97.0	112	
	Rated current with DCR <sup>*5</sup> [A]	HND	0.93	1.6	3.0	4.3	8.3	11.7 <sup>*10</sup>	19.9 <sup>*10</sup>	28.8	42.2	57.6	71.0	84.4	114	
		HHD	0.57	0.93	1.6	3.0	5.7	8.3	14.0	21.1	28.8	42.2	57.6	71.0	84.4	
Required power supply capacity <sup>*6</sup> [kVA]	HND	0.4	0.6	1.1	1.5	2.9	4.1 <sup>*10</sup>	6.9 <sup>*10</sup>	10	15	20	25	30	40		
	HHD	0.2	0.4	0.6	1.1	2.0	2.9	4.9	7.3	10	15	20	25	30		
Braking	Braking torque <sup>*7</sup> [%]	HND	75%		53%	68%	48%	29% <sup>*10</sup>	27% <sup>*10</sup>	15%						
		HHD	150%		100%	70%	40%	20%								
	DC braking		Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60% (ND spec.), 0 to 80% (HD/HND spec.), 0 to 100% (HHD spec.) of nominal current													
	Braking chopper		Built-in													
	Minimum connection resistance[ohm]		100				40		33	20	15	10	8.6	4		
DC reactor (DCR)	HND	Option														
	HHD	Option														
Enclosure (IEC60529)		IP20, UL open type														
Cooling method		Natural cooling						Fan cooling								
Mass [kg]		0.5	0.5	0.6	0.8	1.5	1.5	1.8	5.0	5.0	8.0	9.0	9.5	10		

\*1 Fuji 4-pole standard motor. At the selection of the inverter rating, consider not only the rating capacity(kW) is enough but also inverter output current is larger than selected the motor's nominal current.  
 \*2 Rated capacity is calculated by assuming the output rated voltage as 220 V.  
 \*3 Output voltage cannot exceed the power supply voltage.  
 \*4 When the carrier frequency (F26) is set to below value or higher, the inverter is sure to be necessary to derate their nominal current.  
 HND spec.---type 0001 to 0020 : 8kHz, type 0030 to 0115 : 10kHz,  
 HND spec.---type 0001 to 0020 : 4kHz, type 0030 to 0069 : 10kHz, type 0088,0115 : 4kHz  
 \*5 The value is calculated assuming that the inverter is connected with a power supply with the capacity of 500 kVA (or 10 times the inverter capacity if the inverter capacity exceeds 50 kVA) and %X is 5%.  
 \*6 Obtained when a DC reactor (DCR) is used.  
 \*7 Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)  
 \*8 Voltage unbalance (%)=(Max. voltage (V) - Min. voltage (V))/Three -phase average voltage (V) × 67 (IEC 61800 - 3)  
 If this value is 2 to 3%, use an optional AC reactor (ACR).  
 \*10 HND spec. of the type 0012 and 0020: allowable ambient temperature 40 °C (+104 °F) or less.  
 The rated output current at HND spec. is decreased 1% for every 1 °C (1.8 °F) when ambient temperature is +40 °C (+104 °F) or more.

Major Functions

Standard Model Specifications

Common Specifications

Basic Wiring Diagram

Terminal Functions

External Dimensions

Options

## Standard Model Specifications

### Single phase 200V class series

Items			Specifications						
Type			FRN□□□□E2S-7GA, FRN□□□□E2S-7GB						
			0001	0002	0003	0005	0008	0011	
Nominal applied motor <sup>*1</sup> [kW]		HHD	0.1	0.2	0.4	0.75	1.5	2.2	
Output ratings	Rated capacity [kVA] <sup>*2</sup>	HHD	0.3	0.6	1.1	1.9	3.0	4.2	
	Rated voltage [V] <sup>*3</sup>		Three-phase 200 to 240V (With AVR)						
	Rated current [A] <sup>*4</sup>	HHD	0.8	1.6	3.0	5.0	8.0	11	
	Overload capability		150% of nominal current for 1min or 200% of nominal current for 0.5s						
Input ratings	Main power supply		Three-phase 200 to 240V, 50/60Hz						
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance:2% or less <sup>*8</sup> , Frequency: +5 to -5%)						
	Rated current without DCR <sup>*5</sup> [A]	HHD	1.8	3.3	5.4	9.7	16.4	24.8	
	Rated current with DCR <sup>*5</sup> [A]	HHD	1.1	2.0	3.5	6.4	11.6	17.5	
	Required power supply capacity <sup>*6</sup> [kVA]	HHD	0.3	0.4	0.7	1.3	2.4	3.5	
Braking	Braking torque <sup>*7</sup> [%]	HHD	150%		100%		70%	40%	
	DC braking		Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 100% (HHD spec.) of nominal current						
	Braking chopper		Built-in						
	Minimum connection resistance [ohm]		100				40		
	Braking resistor		Option						
DC reactor (DCR)		HHD	Option						
Enclosure (IEC60529)			IP20, UL open type						
Cooling method			Natural cooling				Fan cooling		
Mass [kg]			0.5	0.5	0.6	0.9	1.6	1.8	

\*1 Fuji 4-pole standard motor. At the selection of the inverter rating, consider not only the rating capacity(kW) is enough but also inverter output current is larger than selected the motor's nominal current.

\*2 Rated capacity is calculated by assuming the output rated voltage as 220 V.

\*3 Output voltage cannot exceed the power supply voltage.

\*4 When the carrier frequency (F26) is set to below value or higher, the inverter is sure to be necessary to derate their nominal current.  
HHD spec.--type 0001 to 0011 : 8kHz

\*5 The value is calculated assuming that the inverter is connected with a power supply with the capacity of 500 kVA (or 10 times the inverter capacity if the inverter capacity exceeds 50 kVA) and %X is 5%.

\*6 Obtained when a DC reactor (DCR) is used.

\*7 Average braking torque for the motor running alone. (It varies with the efficiency of the motor.)