

The Fuji Cabinet Solution

FRENIC Inverter Cabinets created in Europe



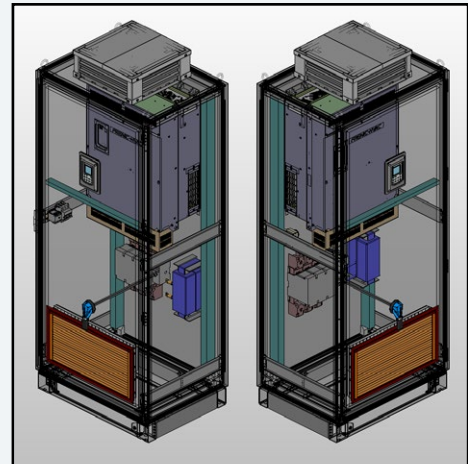
- FRENIC-HVAC
- FRENIC-AQUA
- FRENIC-Ace
- FRENIC-MEGA



**The Cabinet Solution
for a variety of inverters**



Simple but smart design



Our cabinets are designed based on the customer's needs. The customer chooses size, inverter type and options, depending on their application and space. We arrange all the rest.

The Fuji Cabinet Solution

Available for our series:

- FRENIC-HVAC
- FRENIC-AQUA
- FRENIC-Ace
- FRENIC-MEGA



- ✓ Compact IP54 for cost-efficient installation (IP44 optional on request)
- ✓ 110 to 710 kW as a standard solution. Other sizes and capacities upon request.
- ✓ EMC filter built-in
- ✓ DC Reactor always included
- ✓ 4 different cabinet topologies:
 - ① inverter alone
 - ② inverter + fuses
 - ③ inverter + main switch
 - ④ inverter + fuses + main switch
- ✓ Height selectable for some power sizes
- ✓ Keypad on door optional
- ✓ Option cards available (several fieldbuses, real time clock backup battery, D I/O, A I/O, Pt 100/1000 options)
- ✓ STO (SIL2 or SIL3 depending on the inverter type)

Availability according to the related inverter series.

Type Code Diagram



Inverter Selection							Electrical Features			Mechanical Features				<div style="display: flex; justify-content: space-around; align-items: center;"> FRENIC-MEGA FRENIC-Ace FRENIC-Ace FRENIC-Ace </div>				
FRN	90	C	G1E	-4	E	OPT-	A	1	1	R	1	D	54	K	18	-HD	-CLI	-XXX
FRENIC Series	Power					Separator	Output	Configuration Input AC	Configuration Input DC	Door	Baseheight	Keypad	IP	Closing Way	Duty			
	90 110 132 160 200 240 220 280 315 361 415 355 520 400 590 500 630 710																	
	Cabinet																	
	Inverter																	
	Voltage																	
	Software Version																	
							A	1	1	R	0	D	54	K				
							B	2		L	1	I	44	L				
							C	3			2	H						
							D	4										
							E	5										
							F	6										
							G	7										
								8										

Mechanical Features

Height
 10 = 1000 mm
 14 = 1400 mm
 18 = 1800 mm
 20 = 2000 mm
 22 = 2200 mm

Closing Way
K=KEY **L=LOCK**

Base height
 0 = Without base
 1 = 100 mm
 2 = 200 mm

Keypad TP-A1-E2C
 D = Keypad TP-A1-E2C* placed on the door
 I = Keypad placed on the inverter
 H = HMI placed on door

Door
 R = Right opening
 L = Left opening

IP Degree
 IP 54 Filter
 IP 44 Filter

*not for FRENIC-MEGA. Please consult your Fuji Electric sales representative regarding the related keypad option.

Type Code Explanation



Electrical Features

FRN 590 C E2E -4 E OPT- **A** 4 1 R 1 D 54 K 20 -ND -CLI

Output

Code	-	A	B	C	D	E	F	G
Ferrites	None	●		●		●		●
du/dt			●	●				
Sinus					●	●	●	●

FRN 590 C E2E -4 E OPT- A **4 1** R 1 D 54 K 20 -ND -CLI

Configuration Input

1 st digit	Configuration L1, L2, L3 Main Parts*	1	2	3	4	5	6	7	8
	General Fuse L1, L2, L3		●		●		●		●
	Main Switch L1, L2, L3			●	●			●	●
	External Input EMC Filter L1, L2, L3					●	●	●	●

* The kind of material used will depend on the kind of input (i.e. AC fuses in case of AC supply, DC fuses in case of DC supply...)

2 nd digit	Configuration DC Bus Main Parts**	1
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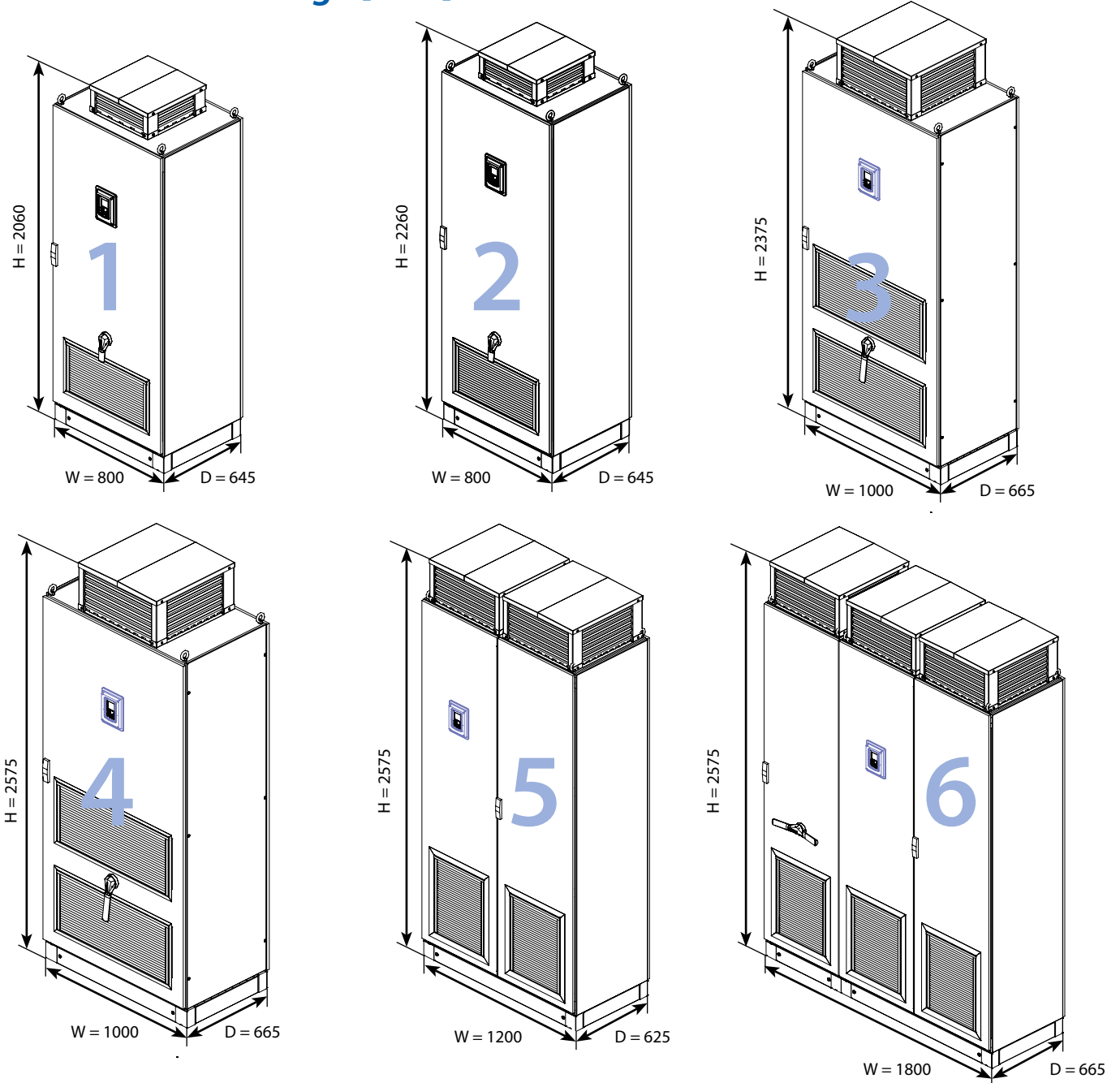
**For standard AC cabinets, the DC electrical inputs are fixed to 1.

Dimensions



The topology of the cabinets depends on the inverter type used inside. In order to define the exact dimensions of your cabinet, please refer to the specification tables on pages 6 and 7. In case of doubts, please contact your Fuji Electric sales representative.

External Drawings [mm]



Notes:

- All drawings (except for n° 5) show the dimensions for cabinets with mains switch included. For cabinets without mains switch: D = 625 mm.
- N° 5 is without mains switch and fuses. N° 6 is with mains switch and fuses.

Specifications



Item		Cabinet Specifications												
Model	FRN□CG1E-4E OPT-●-○	90	110	132	160	200	220	280	315	355	400	500	630	
Nominal applied motor [kW] ¹	HD	90	110	132	160	200	220	280	315	355	400	500	630	
	MD	110	132	160	200	220	280	315	355	400	450	-	-	
	LD	110	132	160	200	220	280	355	400	450	500	630	710	
Output ratings	Rated capacity [kVA] ²	HD	134	160	192	231	287	316	396	445	495	563	731	891
		MD	160	192	231	287	316	356	445	495	563	640	-	-
		LD	160	192	231	287	316	396	495	563	640	731	891	1044
	Rated current [A]	HD	176	210	253	304	377	415	520	585	650	740	960	1170
		MD	210	253	304	377	415	468	585	650	740	840	-	-
		LD	210	253	304	377	415	520	650	740	840	960	1170	1370
Overload capability	HD	150% - 1 min, 200% - 3.0 s												
	MD	150% - 1 min												
	LD	120% - 1 min												
Input ratings	Voltage, frequency	3phase 400 VAC +10% -15%, 50 Hz +/-5%												
	Required capacity with DCR [A] ⁵	HD	114	140	165	199	248	271	347	388	436	489	611	773
		MD	140	165	199	248	271	308	388	436	489	547	-	-
		LD	140	165	199	248	271	347	436	489	547	611	773	871
Drawing number (see page 5)		1-2		2		3		4		5-6				

□ = power (90 to 630 kW)
 ● = electrical and mechanical features, according to type code diagram on page 3
 ○ = duty (ND, HD, MD, LD)



Item		Cabinet Specifications						
Model	FRN□CE2E-4E OPT-●-○-CLI-XXX	0240	0290	0361	0415	0520	0590	
Nominal applied motor [kW] ¹	ND	132	160	200	220	280	315	
	HD	110	132	160	200	220	250	
	HND	110	132	160	200	220	280	
	HHD	90	110	132	160	200	220	
Output ratings	Rated capacity [kVA] ²	ND	183	221	275	316	396	450
		HD	160	193	232	287	316	364
		HND	160	193	232	287	316	396
		HHD	134	160	193	232	287	316
	Rated current [A] ⁴	ND	240	290	361	415	520	590
		HD	210	253	304	377	415	477
		HND	210	253	304	377	415	520
		HHD	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	3ph 400V +10% -15%, 50 Hz +/- 5%						
	Rated current with DCR [A] ⁵	ND	238	286	357	390	500	559
		HD	201	238	286	357	390	443
		HND	201	238	286	357	390	500
		HHD	164	201	238	286	357	390
	Required power supply capacity [kVA] ⁶	ND	165	199	248	271	347	388
		HD	140	165	199	248	271	307
HND		140	165	199	248	271	347	
Drawing number (see page 5)		1-2		2		3		

□ = current (240 to 590 A)
 ● = electrical and mechanical features, according to type code diagram on page 3
 ○ = duty (ND, HD, HND, HHD)

*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 440V.
 *3 Duty in case of FRENIC-Ace: When the carrier frequency (F20) 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:0002 to 0012 : 8kHz, HND spec: ---type:0002 to 0012 : 8kHz, type:0002 to 0059 : 10kHz, type:0072 to 0108 : 6kHz, type:0203 to 0590 : 4kHz, HD, ND spec: ---All types: 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.
 *4 Obtained when a DC reactor (DCR) is used.
 *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 %±5%. Be sure to use the DCR when applicable motor capacity is 75kW or above.

Specifications

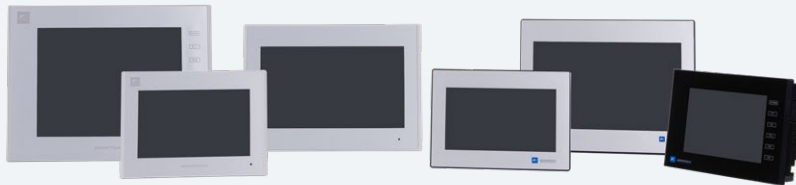


Item		Cabinet Specifications											
Model	FRN□□■-4E OPT-●	110	132	160	200	220	280	315	355	400	500	630	710
Nominal applied motor [kW] ¹		110	132	160	200	220	280	315	355	400	500	630	710
Output ratings	Rated capacity [kVA] ²	160	192	231	287	316	396	445	495	563	731	891	1044
	Rated current [A]	210	253	304	377	415	520	585	650	740	960	1170	1370
	Overload capability	110% -1 min (Overload tolerated interval: compliant with IEC 61800-2)											
Input power supply	Main power supply	3-phase, 380 to 440 V, 50 Hz											
	Voltage, frequency variations	Voltage: +10 to -15% (Unbalance rate between phases is within 2%) Frequency: +5 to -5%											
	Rated input current [A]	201	238	286	357	390	500	559	628	705	881	1115	1256
	Required power supply capacity [kVA]	140	165	199	248	271	347	388	436	489	611	773	871
Drawing number (see page 5)		1 - 2		2		3		4		5 - 6			

□ = power (110 to 710 kW)
 ■ = inverter (AR1S, AQ1S)
 ● = electrical and mechanical features, according to type code diagram on page 3

Optional: Fuji Electric MONITOUCH HMI Series

MONITOUCH



Optional for your cabinet: HMI MONITOUCH

- Access to various drives data, even via internet with V9 and X1 Series
- Connections, calculations and monitoring
- Graphical display of site/machine
- Easy access by daily devices
- Possibility to get a customized screen program for every application

Add a MONITOUCH to your cabinet solution and benefit from many advantages. Thanks to the flexible accessibility to data and information, users are able to monitor the operational status of machines or equipment **easily at any time, anywhere.**

It enables users to catch the sign of abnormalities or possible failures on their machines and plan counter-measures before it breaks down. This allows an easier maintenance and gives good service and reliability to the customer.

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