



Designed for Fan and Pump Applications

FRENIC-Eco

Addendum

This is an update to the Instruction Manual publication number INR-S147-1225-E.
New or revised information is highlighted for easy identification.

Standard specifications

1) 208V series (1 to 125HP)

Item		Specifications																
Type (FRN□□□F1S-2U)		001	002	003	005	007	010	015	020	025	030	040	050	060	075	100	125	
Nominal applied motor for three phase input *1 [HP]		1	2	3	5	7.5	10	15	20	25	30	40	50	60	75	100	125	
Nominal applied motor for single phase input *1[HP] (a)		1/2	1	1.5	2	3	5	5	7.5	10	10	15	20	25	25	30	40	
Output ratings for three phase input	Rated capacity *2a [kVA]	1.6	2.7	3.8	6.0	9.0	11	16	21	27	31	41	51	60	76	98	123	
	Rated voltage *3 [V]	Three-phase, 200V to 240V (With AVR function)										Three-phase, 200V to 230V (With AVR function)						
	Rated current *4 [A]	4.6	7.5	10.6	16.7	25	31	47	60	75	88	114	143	169	211	273	343	
	Overload capability	120% of rated current for 1min																
	Rated frequency	50, 60Hz																
Input ratings for three phase input	Main power supply	Three-phase,200 to 240V, 50/60Hz										Three-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Auxiliary control power input	Single-phase,200 to 240V, 50/60Hz										Single-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Auxiliary fan power input *5	None										Single-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance: 2% or less *9), Frequency: +5 to -5%															
	Rated current *6 [A]	with DCR	3.1	5.8	8.7	14.5	20.6	27.5	41.3	55.1	68.8	82.6	109	134	160	199	270	333
		without DCR	5.1	9.1	12.9	21.5	30.8	40.8	59.4	76.6	94.0	110	144	179	215	—	—	—
Required power supply capacity *7 [kVA]		1.2	2.1 a)	3.2	5.3	7.5	10	15	20	25	30	40	49	58	72	98	120	
Output ratings for single phase input (a)	Rated capacity *2a [kVA]	0.8	1.6	2.3	3.3	3.9	6.1	7.5 b)	8.6	11	13 b)	16	21	27	27	34	41	
	Rated current *4 [A]	2.4	4.6	6.6	9.3	11	17	21 b)	24	31	37 b)	46.2	59.4	75	76 b)	95	114	
Input ratings for single phase input (a)	Main power supply	Single-phase,200 to 240V, 50/60Hz										Single-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Auxiliary control power input	Single-phase,200 to 240V, 50/60Hz										Single-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Auxiliary fan power input *5	None										Single-phase, 200 to 220V / 50Hz, 200 to 230V / 60Hz						
	Voltage/frequency variations		Voltage: +10 to -10%, Frequency: +5 to -5%															
	Rated current *6 [A]	with DCR	3.4	6.3	9.2	16.7	24.5	31.6	40.9	53.6	65.6	77.6	109	138	165	169	215	272
		without DCR	5.1	9.1	12.9	21.5	30.8	40.8	59.4	76.6	94.0	110	144	179	215	---	---	---
Required power supply capacity *7 [kVA]		0.8	1.4	2.0	3.5	5.1	6.6	8.6	12	14	17	23	29	35	36	45	57	
Braking	Torque *8 [%]	20										10 to 15						
	DC injection braking	Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60%																
DC reactor (DCR)		Option														Standard		
EMC Filter		Option																
KEYPAD		Multifunctional Keypad (TP-G1W)																
Applicable safety standards		UL508C, C22.2 No.14, EN50178:1997															UL508C C22.2 No.14	
Enclosure(IEC60529)		IP20 / UL open type										IP00 / UL open type						
Cooling method		Natural cooling	Fan cooling															
Mass [lbs(kg)]		7.1 (3.2)	7.3 (3.3)	7.3 (3.3)	7.5 (3.4)	13 (5.8)	13 (6.0)	15 (6.9)	21 (9.7)	21 (9.7)	25 (11.5)	51 (23)	73 (33)	75 (34)	90 (41)	90 (41)	265 (120)	

2) 460V series (1 to 75HP)

Item		Specifications															
Type	(FRN□□□F1S-4U)	001	002	003	005	007	010	015	020	025	030	040	050	060	075		
Nominal applied motor for three phase input *1 [HP]		1	2	3	5	7.5	10	15	20	25	30	40	50	60	75		
Nominal applied motor for single phase input *1[HP] (a)		1/4	1	1	2	3	3	7.5	7.5	10	10	15	20	20	30		
Output ratings for three phase input	Rated capacity *2b [kVA]	1.9	2.9	4.3	7.1	9.9	13	18	23	29	35	47	57	67	83		
	Rated voltage *3 [V]	Three-phase, 380V to 480V (With AVR function)															
	Rated current *4 [A]	2.5	3.7	5.5	9.0	12.5	16.5	23	30	37	44	59	72	85	105		
	Overload capability	120% of rated current for 1min															
	Rated frequency	50, 60Hz															
Input ratings for three phase input	Main power supply	Three-phase, 380 to 480V, 50/60Hz											Three-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz				
	Auxiliary control power input	Single-phase, 380 to 480V, 50/60Hz											Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz				
	Auxiliary fan power input *5	None													Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz		
	Voltage/frequency variations	Voltage: +10 to -15% (Voltage unbalance: 2% or less *9), Frequency: +5 to -5%															
	Rated current *6 [A]	with DCR	1.3	2.5	3.8	6.2	8.9	11.8	17.7	23.7	29.6	35.5	46.8	57.0	68.4	85.7	
		without DCR	2.5	4.8	6.9	10.8	14.5	19.1	27.7	36.0	43.6	50.9	64.0	78.5	93.7	118	
Required power supply capacity *7 [kVA]		1.1	2.0	3.1	5.0	7.1	9.5 a)	15	19	24	29	38	46	55	69		
Output ratings for single phase input (a)	Rated capacity *2b [kVA]	0.9	1.6	2.1	2.9	4.6	6.2	9.5	10	12	15	18	23	27	34		
	Rated current *4 [A]	1.2	2.1	2.7	3.7	5.8	7.9	12	13	16	19	23	30	35	43		
Input ratings for single phase input (a)	Main power supply	Single-phase, 380 to 480V, 50/60Hz											Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz				
	Auxiliary control power input	Single-phase, 380 to 480V, 50/60Hz											Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz				
	Auxiliary fan power input *5	None													Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz		
	Voltage/frequency variations	Voltage: +10 to -10%, Frequency: +5 to -5%															
	Rated current *6 [A]	with DCR	1.5	2.9	4.1	6.2	9.5	12.9	20.1	23.5	28.8	34.9	43.9	57.6	69.3	85.2	
		without DCR	2.5	4.8	6.9	10.8	14.5	19.1	27.7	36.0	43.6	50.9	64.0	78.5	93.7	115	
Required power supply capacity *7 [kVA]		0.7	1.4	1.9	2.9	4.4	6.0	9.3	11	14	17	21	27	32	40		
Braking	Torque *8 [%]	20										10 to 15					
	DC injection braking	Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60%															
DC reactor (DCR)		Option															
EMC Filter		Option															
KEYPAD		Multifunctional Keypad (TP-G1W)															
Applicable safety standards		UL508C, C22.2 No.14, EN50178:1997															
Enclosure(IEC60529)		IP20 / UL open type										IP00 / UL open type					
Cooling method		Natural cooling			Fan cooling												
Mass [lbs(kg)]		6.8 (3.1)	7.1 (3.2)	7.3 (3.3)	7.5 (3.4)	7.5 (3.4)	13 (6.0)	13 (6.0)	15 (6.9)	22 (9.9)	22 (9.9)	25 (11.5)	51 (23)	53 (24)	73 (33)		

3) 460V series (100 to 900HP)

Item			Specifications														
Type (FRN□□□F1S-4U)			100	125	150	200	250	300	350	400	450	500	600	700	800	900	
Nominal applied motor for three phase input *1 [HP]			100	125	150	200	250	300	350	400	450	500	600	700	800	900	
Nominal applied motor for single phase input *1 [HP] (a)			30	40	50	60	75	100	100	125	125	150	200	200	250	250	
Output ratings for three phase input	Rated capacity *2b [kVA]		110	133	161	191	240	286	330	380	414	517	589	669	764	828	
	Rated voltage *3 [V]		Three-phase, 380V to 480V (With AVR function)														
	Rated current *4 [A]		139	168	203	240	302	360	415	477	520	650	740	840	960	1040	
	Overload capability		120% of rated current for 1min														
	Rated frequency		50, 60Hz														
Input ratings for three phase input	Main power supply		Three-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Auxiliary control power input		Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Auxiliary fan power input *5		Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Voltage/frequency variations		Voltage: +10 to -15% (Voltage unbalance: 2% or less *9), Frequency: +5 to -5%														
	Rated current *6 [A]	with DCR	113	140	169	222	275	330	382	440	495	545	652	756	869	981	
		without DCR	—	—	—	—	—	—	—	—	—	—	—	—	—	—	
Required power supply capacity *7 [kVA]		91	112	135	177	220	263	305	351	395	435	520	603	693	782		
Output ratings for single phase input (a)	Rated capacity *2b [kVA]		40	50	60	73	78	107	129	136	160	195	228	263	309	327	
	Rated current *4 [A]		51	63	76	92	98	135	162	171	202	246	287	331	388	411	
Input ratings for single phase input (a)	Main power supply		Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Auxiliary control power input		Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Auxiliary fan power input *5		Single-phase, 380 to 440V / 50Hz, 380 to 480V / 60Hz														
	Voltage/frequency variations		Voltage: +10 to -10%, Frequency: +5 to -5%														
	Rated current *6 [A]	with DCR	102	125	151	180	231	271	311	363	392	482	560	636	714	782	
		without DCR	---	---	---	---	---	---	---	---	---	---	---	---	---	---	
Required power supply capacity *7 [kVA]		47	58	70	83	107	125	144	167	181	222	258	293	329	360		
Braking	Torque *8 [%]		10 to 15														
	DC injection Braking		Starting frequency: 0.0 to 60.0Hz, Braking time: 0.0 to 30.0s, Braking level: 0 to 60%														
DC reactor (DCR)			Standard (External)														
EMC Filter			Option														
KEYPAD			Multifunctional Keypad (TP-G1W)														
Applicable safety standards			UL508C, C22.2 No.14, EN50178:1997									UL508C, C22.2 No.14					
Enclosure(IEC60529)			IP00 / UL open type														
Cooling method			Fan cooling														
Mass [lbs(kg)]			75 (34)	93 (42)	99 (45)	139 (63)	212 (96)	212 (96)	216 (98)	357 (162)	357 (162)	529 (240)	529 (240)	783 (355)	794 (360)	794 (360)	

Notes:

*1 Standard 4-pole motor

*2a Rated capacity is calculated by assuming the output rated voltage as 208V for three-phase & single-phase input.

*2b Rated capacity is calculated by assuming the output rated voltage as 460V for three-phase & single-phase input.

*3 Output voltage cannot exceed the power supply voltage.

*4 An excessively low setting of the carrier frequency may result in the higher motor temperature or tripping of the inverter by its overcurrent limiter setting. Lower the continuous load or maximum load instead. (When setting the carrier frequency (F26) to 1kHz, reduce the load to 80% of its rating.)

*5 Use [R1,T1] terminals for driving AC cooling fans of an inverter powered by the DC link bus, such as by a high power factor PWM converter. (In ordinary operation, the terminals are not used.)

*6 Calculated under Fuji-specified conditions.

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


*8 Average braking torque (Varies with the efficiency of the motor.)

*9
$$\text{Voltage unbalance} = \frac{\text{Max. voltage [V]} - \text{Min. voltage [V]}}{\text{Three - phase average voltage [V]}} \times 67 \quad (\text{IEC61800 - 3(5.2.3)})$$

If this value is 2 to 3%, use an AC reactor (ACR).

(a) When utilized on a single phase application the drive's output voltage may be lower than the nominal rated voltage

The following functions have been added to FRENIC-Eco inverters that contain a ROM version number of 2000 or higher.

 **Note** The inverter's ROM version can be found through the keypad utilizing the "Maintenance Information" menu (menu # 5).


Additional Function Codes

Acceleration/deceleration time 2

Code	Name	Data Setting Range	Increment	Unit	Change when running	Data Copy	Default Setting
E10	Acceleration Time 2	0.00 to 3600	Variable	s	Y	Y	20.0
E11	Deceleration Time 2						

Selection between ACC/DEC time 1(F07/F08) and ACC/DEC time 2(E10/E11) requires the use of one of the drive's programmable digital input terminals [X1], [X2], [X3], [X4], [X5], [FWD], or [REV]. Set the associated digital input terminal parameter E01, E02, E03, E04, E05, E98, or E99 equal to "4 (1004): **RT1**" (a setting of 1004 assigns negative logic to the input terminal). If no **RT1** command is assigned one of the programmable digital input terminals then ACC/DEC time 1(F07/F08) takes effect by default.

Input terminal command RT1	Acceleration/deceleration time
OFF	Acceleration/deceleration time 1(F07/F08)
ON	Acceleration/deceleration time 2(E10/E11)

 **Note** When the terminal command STOP is off, the motor decelerates to a stop in accordance with the deceleration time for forced stop (H56). After the motor stops, the inverter enters the alarm state with the alarm Er6 displayed.

Rotational Direction Limitation

Code	Name	Data Setting Range	Increment	Unit	Change when running	Data Copy	Default Setting
H08	Rotational Direction Limitation	0: Disable 1: Enable (REV inhibited) 2: Enable (FWD inhibited)	-	-	N	Y	0

H08 inhibits the motor from running in an unexpected rotational direction due to miss-operation of run commands, miss-polarization of frequency commands, or other installation/wiring/user errors.