



3 PIPE FLOW LOGIC 410 RANGE

Three pipe VRF air conditioning solutions

Airwell

FLOW LOGIC RANGE

FLOW LOGIC 3i-410 is a range of variable refrigerant flow solutions for 3 way heating and air-conditioning using the high performance R410A fluid. This range is unmatched by anything on the market and **can independently operate up to 40 interior units in cooling and heating mode**. The DC Inverter technology means that these systems achieve a **COP of 4** whilst offering ultra silent operation, and a compact footprint.

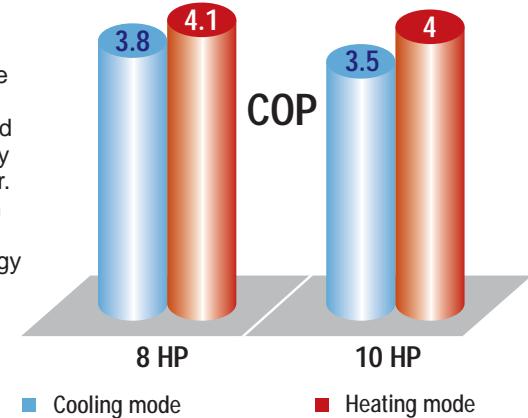


Guarantees

These reliable and high performance ranges, containing proven components, are equipped with the latest generation DC Inverter technology. We are so confident of the performance of our products that we guarantee all the compressors in the FLOW LOGIC range for 5 years, and parts and service for 3 years, providing the equipment was installed by an approved Airwell Installer.

Energy savings

The energy efficiency of the **FLOW LOGIC 3i-410** is exceptional thanks to the use of DC Inverter compressors and the use of variable speed fan motors which significantly improve the distribution of air. The use of a new generation of heat exchanger and a ventilation grill with low energy loss also contribute to the improvement of the energy efficiency of the system.

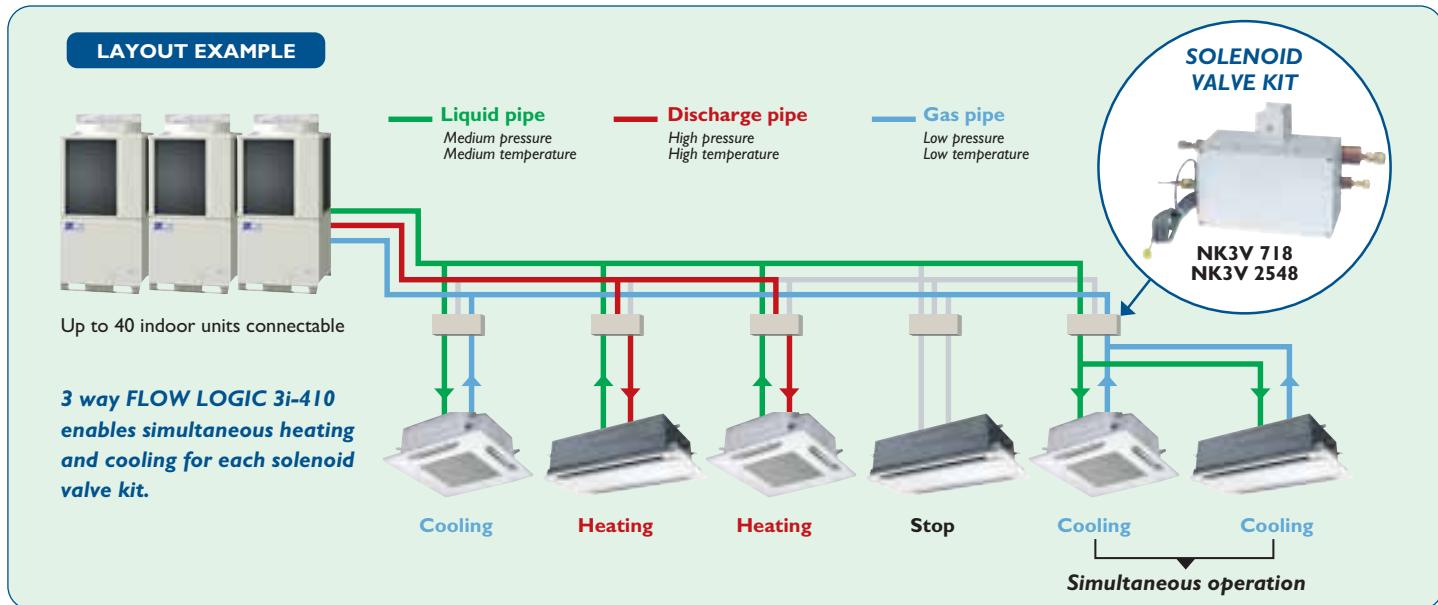


A range which meets all requirements

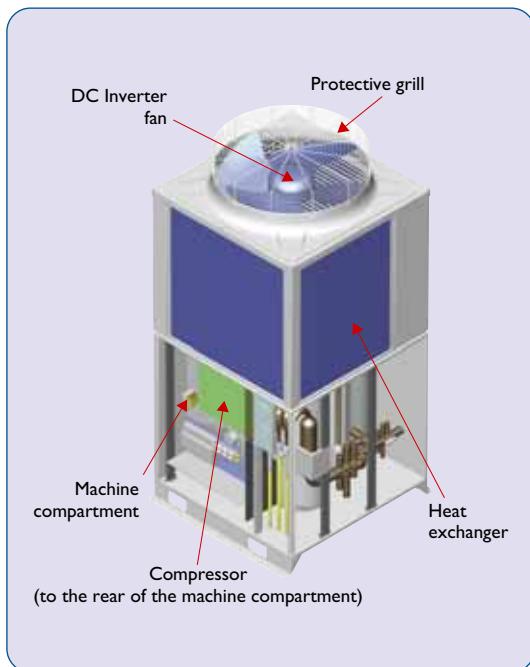
The **FLOW LOGIC 3i-410** range consists of 5 DC inverter outdoor units whose capacity varies from 8 HP to 16 HP. By combining up to three of these groups, it is possible to offer 21 configurations with a power of between 8 HP and 48 HP.

Group	8	10	12	14	16	18 (8+10)	20 (10+10)	22 (10+12)	24 (10+14)	26 (10+16)	28 (12+16)	30 (14+16)	32 (16+16)	34 (10+10+14)	36 (10+10+16)	38 (10+12+16)	40 (10+14+16)	42 (10+16+16)	44 (12+16+16)	46 (14+16+16)	48 (16+16+16)		
HP	EFL 80-3R410	EFL 100-3R410	EFL 120-3R410	EFL 140-3R410	EFL 160-3R410	EFL 80-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 120-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 160-3R410	EFL 100-3R410 EFL 140-3R410	EFL 100-3R410 EFL 160-3R410				
Ref.	7SP141018	7SP141019	7SP141020	7SP141021	7SP141022	7SP141018 7SP141019	7SP141019 7SP141019	7SP141019 7SP141020	7SP141019 7SP141021	7SP141019 7SP141022	7SP141019 7SP141022	7SP141021 7SP141022	7SP141021 7SP141022	7SP141021 7SP141022	7SP141019 7SP141021	7SP141019 7SP141021	7SP141019 7SP141022	7SP141019 7SP141022	7SP141019 7SP141022	7SP141019 7SP141022	7SP141019 7SP141022	7SP141019 7SP141022	
Oracle code																							

A range which allows simultaneous heating and cooling and heat recovery



THE TECHNOLOGICAL INNOVATIONS OF THE 3I-410 RANGE



❖ IDENTICALLY SIZED OUTDOOR UNITS

The 5 outdoor units which make up the **3i-410** range are of identical size, enabling the footprint to be rationalized.

❖ EFFICIENT PERFORMANCE

In addition to the inclusion of a DC Inverter fan which improves energy efficiency, a new generation of protective grills have also reduced power losses. These elements contribute to a significant improvement in the COP.

❖ HIGH PERFORMANCE (HIGH PRESSURE) COMPRESSOR SCROLL FOR THE CONSTANT SPEED COMPRESSOR

In comparison with traditional compressors, oil is stable, COP is improved and reliability reinforced.

❖ NEW GENERATION EXCHANGER

The increase in the exchange surface, the use of 7mm coiled diameter tubes and the drawing of air in 4 directions has enabled a significant improvement of the COP.

❖ OPTIMAL ORGANISATION OF COMPONENT LOCATION

Sound levels have been greatly reduced by locating the compressor in a specific box towards the bottom of the unit.

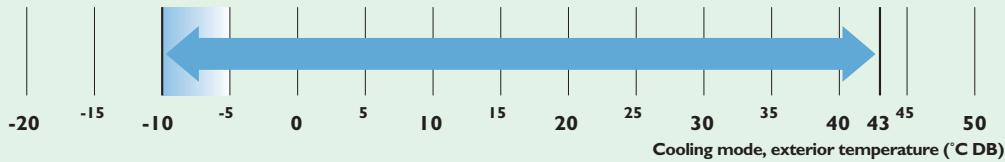
❖ POSSIBILITY OF SIDE-BY-SIDE INSTALLATION

The location of the fixing systems means that it is possible for outdoor units to be assembled side by side, 100mm apart for a significant reduction in footprint.

Extended Operating Range

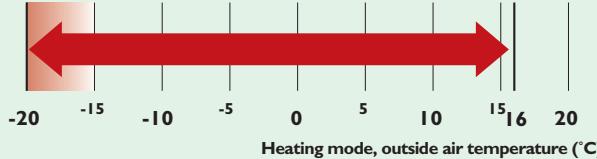
Cooling mode

The DC Inverter fan means operation extends to an outdoor temperature of -10°C.



Heating mode

Stable heating operation even with an outside air temperature of -20°C.



Operating range,
indoor temperature:
16 - 30 °C

Minimal footprint

The 5 outdoor units of the **3i-410** range have the same outer dimensions thanks to the use of a casing with two compartments: the lower compartment is for the compressor and the components, the upper compartment for the exchanger. This means that the footprint is reduced and noise levels are low.

The advantages of the range

❖ BACK UP FUNCTION

System continues to operate even if one of the compressors fails.

❖ IMPORTANT TUBING LENGTHS

Length per circuit ≥ 150 m
Total length ≥ 300 m

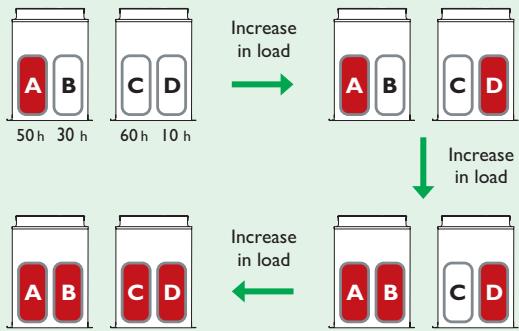
❖ MAXIMUM NUMBER OF CONNECTABLE INDOOR UNITS

System (HP)	8	10	12	14	16	18	20	22	24-48
Connectable indoor units	13	16	19	23	26	29	33	36	40

Improvement in life span

The total operation time of the processors is monitored by a microcomputer, which makes it possible to standardise this time for each compressor in the system

EXAMPLE A, C : DC Inverter compressor
B, D : Constant speed compressor



Outdoor unit range

Group						
HP		8	10	12	14	16
Reference		EFL 80-3R410	EFL 100-3R410	EFL 120-3R410	EFL 140-3R410	EFL 160-3R410
Oracle code		7SP141018	7SP141019	7SP141020	7SP141021	7SP141022
Cooling capacity	kW	22.4	28	33.5	40	45
	BTU/h	76400	95500	114300	136500	153600
EER		3.8	3.5	3.4	3.5	3.4
Heating capacity	kW	25	31.5	37.5	45	50
	BTU/h	85300	107500	128000	153600	170600
COP		4.1	4	3.8	3.9	3.8
Dimensions (H/W/D)	mm	1887x890x890				
Weight	kg	290	290	290	350	350
Electrical rating	Cooling Power input	A	10/9.5/9.2	13.7/13/12.6	16.6/15.7/15.2	20/19/18.3
	Heating Power input	kW	5.93	8.12	9.82	11.6
Air circulation	Running amperes	A	10.3/9.8/9.4	13.5/12.8/12.3	16.6/15.8/15.2	19.9/18.9/18.2
	Power input	kW	6.11	7.97	9.84	11.5
Piping connection	m³/min	150	160	180	200	220
Operating range	Refrigerant amount at shipment	kg	12	12	12	15
	Gas pipe	mm	19.05	22.22	25.4	25.4
	Discharge pipe	mm	15.88	19.05	19.05	22.22
	Liquid pipe	mm	9.52	9.52	12.7	12.7
	Balance pipe	mm	9.52	9.52	9.52	9.52
Acoustic pressure	Normal mode	dB(A)	54.5	55	56	60
	Silent mode	dB(A)	51.5	52	53	57

Range of indoor units

Size	7	9	12	16	18	25
Power (cooling/heating in kW)	2.2/2.5	2.8/3.2	3.6/4.2	4.5/5	5.6/6.3	7.3/8
Wall mounted		ST-NWFL 7	ST-NWFL 9	ST-NWFL 12	ST-NWFL 16	ST-NWFL 18
Oracle code		7SP022296	7SP022293	7SP022294	7SP022368	7SP022295
Ducted low static		ST-NDLP 7	ST-NDLP 9	ST-NDLP 12	ST-NDLP 16	ST-NDLP 18
Oracle code		7SP032068	7SP032069	7SP032070	7SP032085	7SP032071
Ducted high static						ST-NDHP 24
Oracle code						7SP051124
Accessory : RAP Valve kit NRAP-FL						7ACFH0418
4 way cassette		ST-NKFL 7	ST-NKFL 9	ST-NKFL 12	ST-NKFL 16	ST-NKFL 18
Oracle code		7SP042137	7SP042138	7SP042139	7SP042169	7SP042140
Required option : GR ST NK7 60 facia		7ACVF0292	7ACVF0292	7ACVF0292	7ACVF0292	7ACVF0292
Option : Air intake plenum FAIP-NKFL 7-60		7ACVF0293	7ACVF0293	7ACVF0293	7ACVF0293	7ACVF0293
Option : Fresh air intake connector FAIB-NKFL 7-60		7ACVF0294	7ACVF0294	7ACVF0294	7ACVF0294	7ACVF0294
2 way cassette		ST-NK2FL 7	ST-NK2FL 9	ST-NK2FL 12	ST-NK2FL 16	ST-NK2FL 18
Oracle code		7SP042149	7SP042150	7SP042151	7SP042170	7SP042152
Required option : GR ST-K2(7-18) facia		7ACVF0169	7ACVF0169	7ACVF0169	7ACVF0169	7ACVF0170
Required option : GR ST-K2(24) facia						
1 way cassette			ST-NKSFL 9	ST-NKSFL 12		ST-NKSFL 18
Oracle code			7SP042145	7SP042146		7SP042147
Required option : GR ST-KSFL9-18 facia			7ACVF0167	7ACVF0167		7ACVF0167
Required option : GR ST-KSFL 24 facia						7ACVF0168
Ceiling units				ST-NPFL 12	ST-NPFL 16	ST-NPFL 18
Oracle code				7SP022298	7SP022369	7SP022299
Floor consoles		ST-NFFL 7	ST-NFFL 9	ST-NFFL 12	ST-NFFL 16	ST-NFFL 18
Oracle code		7SP012123	7SP012124	7SP012125	7SP012128	7SP012126

Control devices

Standard control device		NRGC-FL	Oracle code : 7ACEL1307
Infra red control device for all units		RCIRC-FL	Oracle code : 7ACEL1310
Infrared control device for NKFL		RCIRK-FL	Oracle code : 7ACEL1308
Infrared control device for NKSFL, NK2FL		RCIRKS-FL	Oracle code : 7ACEL1309
Infrared control device for NPFL		RCIRP-FL	Oracle code : 7ACEL1311
Infrared control device for NWFL		RCIRW	Oracle code : 7ACEL1312
Simple control device		NRCB-FL	Oracle code : 7ACEL1315

Variable Refrigerant Flow (VRF)

FLOW LOGIC

3 PIPE R410a

Product Overview															
Product Type		Dimensions (mm)		Performance Metrics		Material Properties		Electrical & Control		Accessories		Packaging & Shipping		Logistics & Support	
Model	Series	Width	Height	Depth	Power Consumption	Efficiency Rating	Temperature Range	Humidity Range	IP Rating	Mounting Options	Warranty	Weight	Volume	Delivery Time	Customer Support
EFL 80-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 120-3R410	EFL 100-3R410 EFL 120-3R410	EFL 100-3R410 EFL 130-3R410	EFL 120-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 100-3R410 EFL 100-3R410	EFL 120-3R410 EFL 160-3R410	EFL 140-3R410 EFL 160-3R410	EFL 160-3R410 EFL 160-3R410	
7SP141018 7SP141019	7SP141019 7SP141019	7SP141019 7SP141020	7SP141019 7SP141021	7SP141019 7SP141022	7SP141020 7SP141022	7SP141021 7SP141022	7SP141022 7SP141022	7SP141019 7SP141019	7SP141019 7SP141020	7SP141019 7SP141021	7SP141019 7SP141022	7SP141020 7SP141022	7SP141020 7SP141022	7SP141021 7SP141022	7SP141022 7SP141022
50.4 172000	56 191100	61.5 219900	68 232000	73 249100	78.5 267900	85 290100	90 307100	96 327600	101 344700	107 363400	113 385600	118 402700	124 421400	130 443600	135 460700
3.6 56.5	3.5 63	3.4 69	3.5 76.5	3.4 81.5	3.4 87.5	3.4 95	3.4 100	3.5 108	3.4 113	3.4 119	3.4 127	3.4 132	3.4 138	3.4 145	3.4 150
192800	215000	235500	261100	278100	300300	324200	343000	368500	385600	407800	431700	450400	470900	494800	511900
4	4	3.9	3.9	3.8	3.8	3.9	3.8	3.9	3.9	3.8	3.9	3.8	3.8	3.8	3.8
1887x1880x890															
580 23.8/22.6/21.8	580 27.3/26/25	580 30.2/28.7/27.7	640 33.6/31.9/30.8	640 36.5/34.7/33.5	700 39.4/37.5/36.1	700 43/40.8/39.4	700 45.9/43.6/42.1	700 47.5/45.7/43.5	700 50.9/48/46.3	700 53/57/49	700 57/54/52	700 60/57/55	700 63/60/58	700 66/63/60	700 69/65/63
14.1 23.8/22.6/21.8	16.2 26.8/25.5/24.6	17.9 30/28.5/27.5	19.7 33.3/31.6/60.5	21.4 36.2/34.4/33.1	23.1 39.3/37.3/36	24.9 42.6/40.5/39	26.6 45.6/43.3/41.7	27.8 46.9/44.6/43	29.6 47.9/47.2/45.5	31.3 53/50/48	33 56/54/52	33.7 59/56/54	36.4 63/59/57	38.2 65/62/60	39.9 68/65/63
14.1 15.9	15.9 17.8	17.8 19.5	19.5 21.2	21.2 23	24.7 24.7	26.4 26.4	27.5 29.1	29.1 31	32.7 34.4	33 36.2	34.4 37.9	36.2 39.6	37.9 41.1	39.6 43.8	
150+160 24	160+160 24	160+180 24	160+200 27	160+220 27	180+220 30	200+220 30	220+220 39	160+160+200 39							
28.58 22.22	28.58 22.22	28.58 25.4	31.75 25.4	31.75 25.4	31.75 28.58	31.75 28.58	31.75 28.58	31.75 31.75							
15.88 9.52	15.88 9.52	15.88 9.52	19.05 9.52												
Cooling : -10°C/+43°C Heating : -20°C/+15°C, Simultaneous operation : -10°C/+43°C															
58 55	58 55	58.5 55.5	61.5 58.5	62 59	62.5 59.5	63.5 60.5	64 61	62.5 59.5	63 60	63 60	64.5 61.5	64.5 61.5	65 62	65.5 62.5	66 63

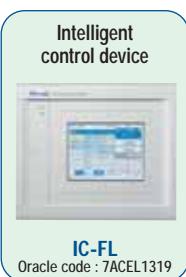
Wireless remote controller		Long life filter	High lift pump	Motorised louver	Automatic air sweep
Integrated receiver	Separate receiver				
✓	✓	✓			✓
	✓		✓		
	✓				
✓	✓	✓	✓	✓	✓
✓	✓	✓	✓	✓	✓
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	✓	✓			



NWTM-FL
Oracle code : 7ACEL1314



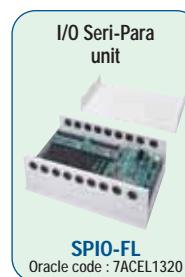
NRSC-FL
Oracle code : 7ACEL1313



IC-FL
oracle code : 7ACEL1319



CM-FL
Oracle code : 7ACEL1317



SPI0-FL
Oracle code : 7ACEL1320



LON-FL
Oracle code : 7ACEL1321



NSD
Oracle code : 7ACEL1316

Range of accessories

DISTRIBUTION JOINT KITS

Indoor units

NRF-DL 22

Oracle code : 7ACFH0434

Cooling capacity after connection less than **22.4 kW**

NRF-D 2268

Oracle code : 7ACFH0435

Cooling capacity after connection between **22.4 and 68 kW**

NRF-D 68135

Oracle code : 7ACFH0436

Cooling capacity after connection between **68 and 135 kW**

Outdoor units

NRFO-3DL68

Oracle code : 7ACFH0437

Cooling capacity after connection less than **68 kW**

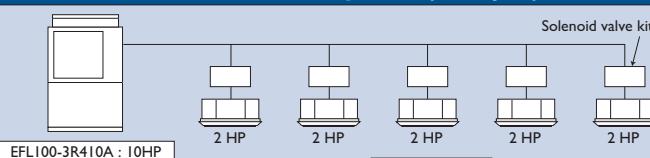
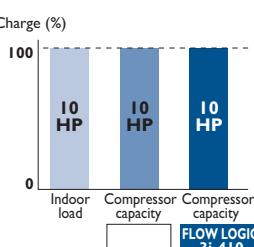
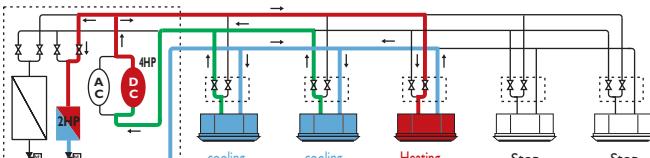
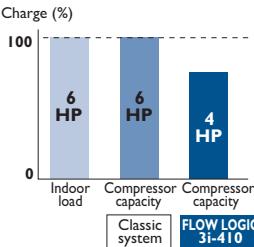
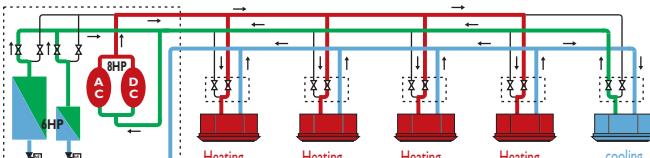
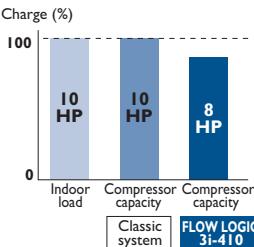
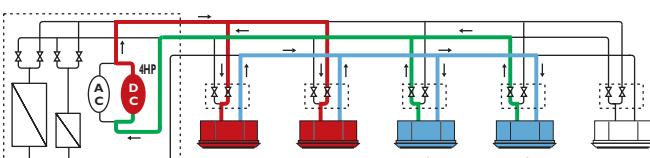
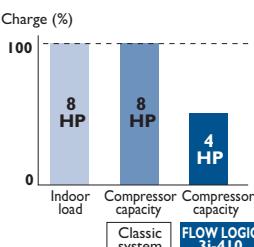
NRFO-3D68135

Oracle code : 7ACFH0438

Cooling capacity after connection between **68 and 135 kW**

Comparative

- ❖ **FLOW LOGIC 3i-410** : outdoor unit of 10HP, 5 indoor units of 2HP
- ❖ **CLASSIC SYSTEM** : 5 outdoor units of 2HP, 5 indoor units of 2HP

CONFIGURATION	FLOW LOGIC 3i-410 systems (examples)	Comparison of FLOW LOGIC "i-410 and Classic System"	Outdoor unit (load : HP)			
			System	Compressor capacity	Reclaimed capacity	Capacity required for equivalent performance
Cold only Cold load 10 HP Total load of indoor units 10 HP	 EFL100-3R410A : 10HP Oracle code : 7SP0141019		FLOW Logic 3i-410	10	10	100%
Cold > Hot Cold load 4 HP > Hot load 2 HP Total load of indoor units 6 HP			FLOW Logic 3i-410	4	2	67%
Cold < Hot Cold load 2 HP < Hot load 8 HP Total load of indoor units 10 HP			FLOW Logic 3i-410	8	6	80%
Cold = Hot Cold load 4 HP = Hot load 4 HP Total load of indoor units 8 HP			Classic system	8	8	50%

** AC compressor: fixed speed compressor, DC : DC Inverter compressor

Range of accessories (cont)

❖ SOLENOID VALVE KIT

NK3V 718
Oracle code : 7ACFH0439

For type
7 to 18
indoor units

NK3V 2548
Oracle code : 7ACFH0441

For type
25 to 48
indoor units



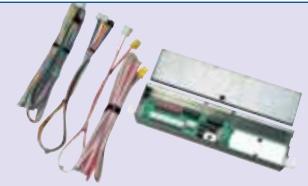
A valve must be installed for each independent indoor unit.
for each valve kit.

Note : if a type 76 or 96 ducted high pressure unit is used, two **NK3V 2548** solenoid valves must be installed in series.

❖ SOLENOID VALVE CONTROL KIT

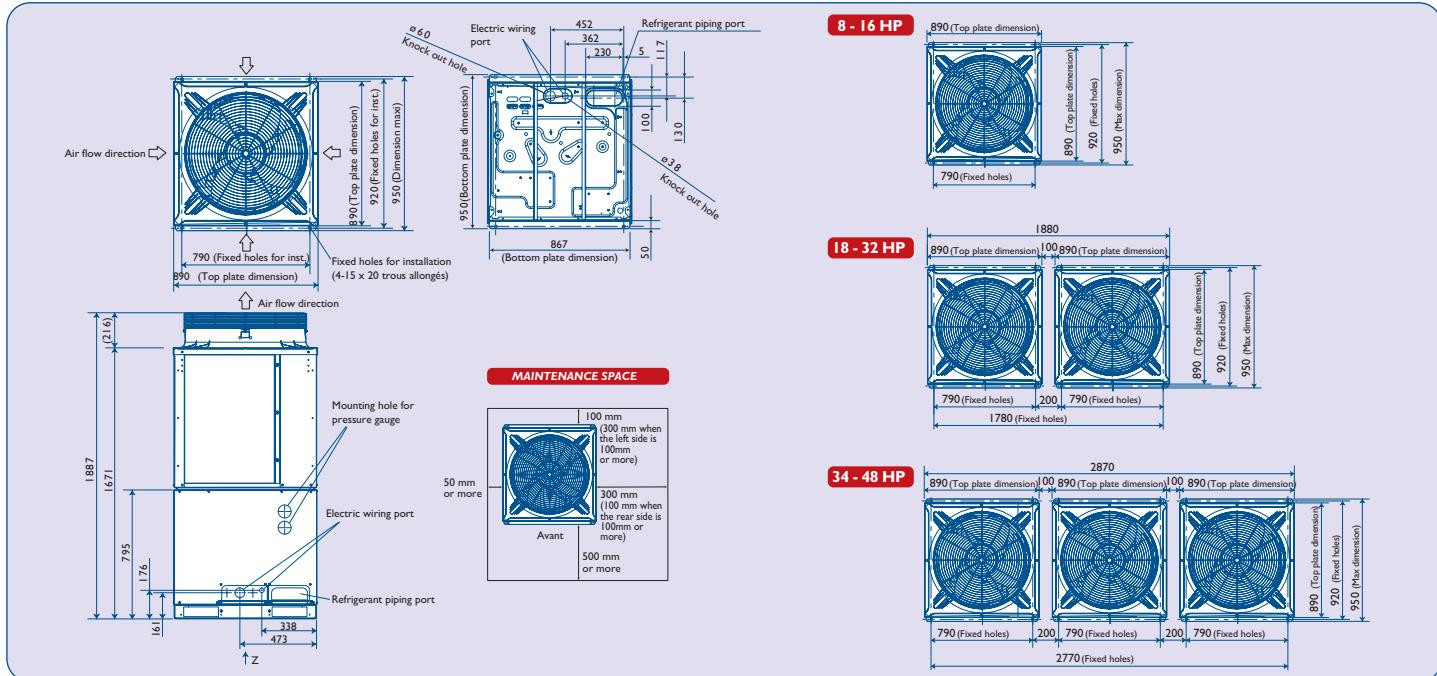
NK3V-FL
Oracle code : 7ACFH0417

This controls the RAP valve kit
or the solenoid valve kit.

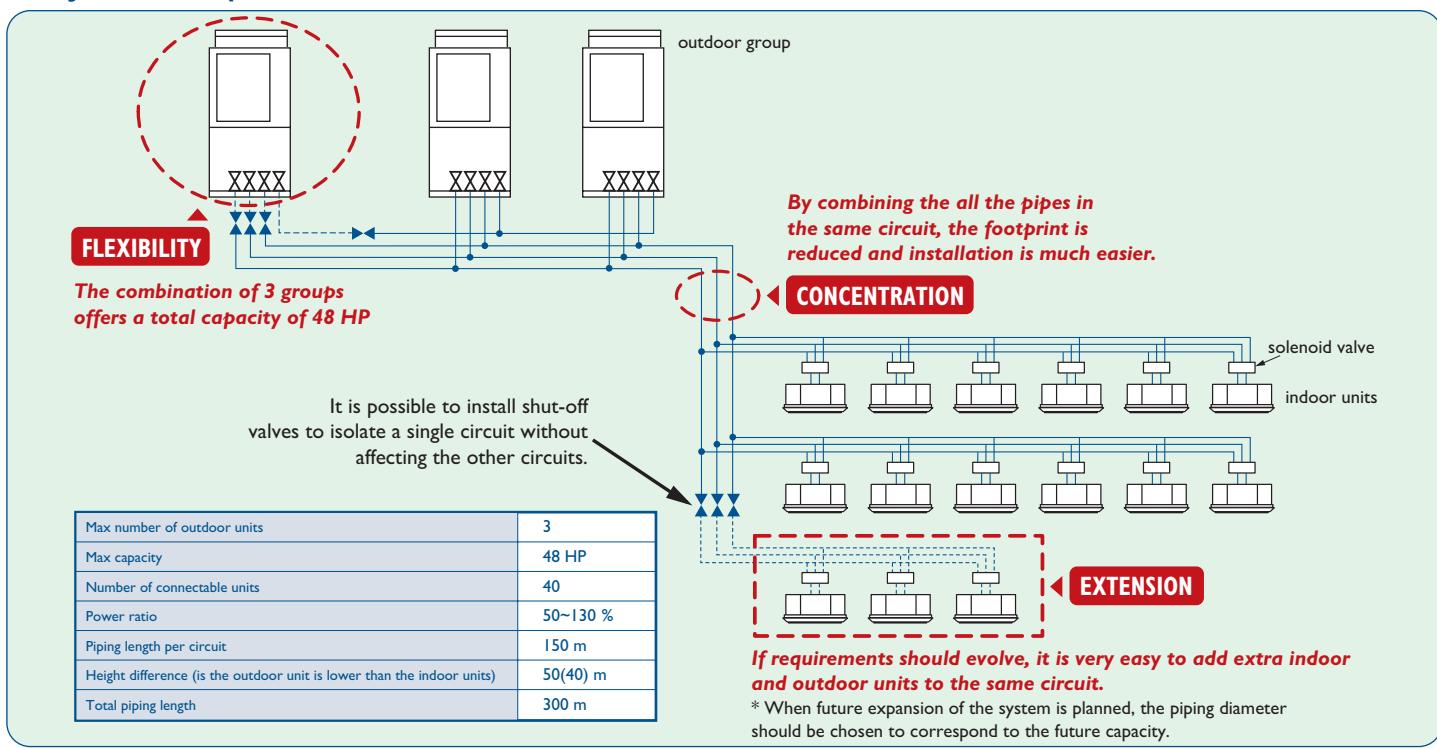


Attention : a control kit must be installed
for each valve kit

Dimensions

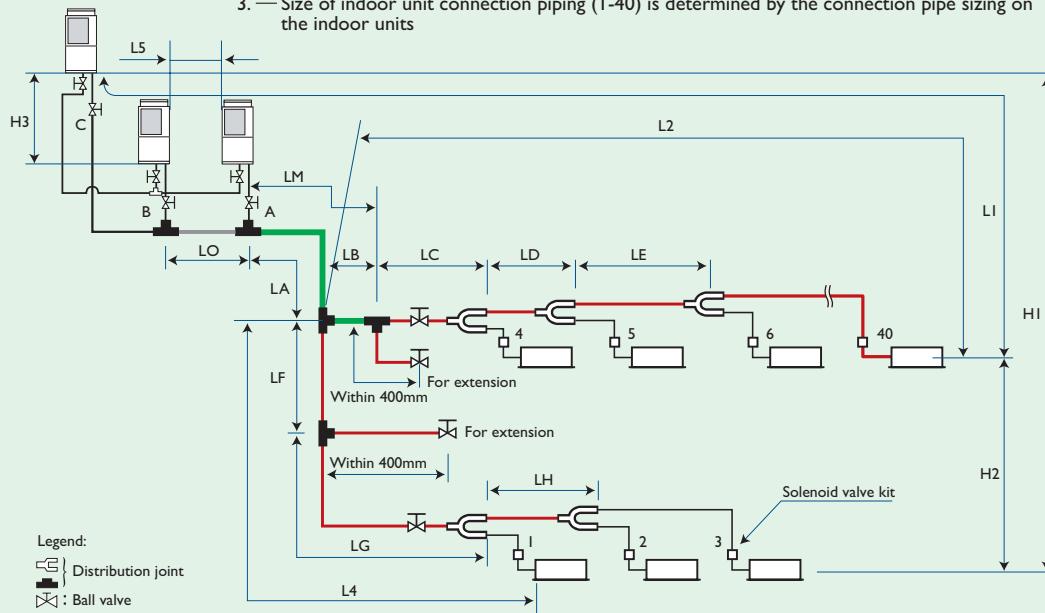


System example



Refrigerant piping

1. Main piping length $LM = LA + LB \dots \leq 80 \text{ m}$
2. Main distribution pipes LC-LH are selected according to the capacity after the distribution joint.
3. Size of indoor unit connection piping (I-40) is determined by the connection pipe sizing on the indoor units



Tubing lengths and authorised height differences

Lengths	Marks	Contents	Lengths (m)
Allowable piping length	L1	Max piping length	Per circuit ≤ 150 Equivalent ≤ 175
	$\Delta L(L2-L4)$	Difference between the max. length and the min. length from the N°1 distribution joint	≤ 40
	LM	Max. Length of main piping	≤ 80
	1,2-40	Max length of each distribution	≤ 30
	$L1+1+2+\dots+40+A+B+LF+LG+LH$	Total max piping length	≤ 300
	L5	Max length between two outdoor units	≤ 10
Allowable height difference	H1	Outdoor unit installed higher than indoor unit	≤ 50
		Outdoor unit installed lower than indoor unit	≤ 40
	H2	Maximum difference between the indoor units	≤ 15
	H3	Maximum difference between the outdoor units	≤ 4

The size of the outdoor connection main piping (LO part) depends on the total capacity of the system

When the main piping length (L1) equivalent length exceeds 90m in equivalent length, increase the size of the gas and liquid main piping (LM)

System limitations

Max. number of combined outdoor units	3
Max HP of combined outdoor units	135 kW (48 CV)
Max. number of connectable indoor units	40
Indoor/Outdoor unit capacity ratio	50-130 %

Additional refrigerant charge

Liquid piping size	Refrigerant charge (g/m)
≥ 6.35	26
≥ 9.52	56
≥ 12.7	128
≥ 15.88	185
≥ 19.05	259
≥ 22.22	366

Conversion table

mm	Inches
6.35	1/4
9.52	3/8
12.70	1/2
15.88	5/8
19.05	3/4
22.22	7/8
25.40	1
28.58	1"1/8
31.75	1"1/4
38.10	1"1/2

Main pipe sizes (LA)

HP	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48
Combination	8	10	12	14	16	10 8	10	12 10	14 10	16 10	16 12	16 14	16 16	14 10	16 10	16 12	16 14	16 10	16 12	16 14	16 16
Gas pipe (≥ mm)	19.05	22.22	25.40			28.58					31.75					38.10					
Discharge pipe (≥ mm)	15.88	19.05		22.22			25.40				28.58					31.75					
Liquid pipe (≥ mm)	9.52		12.70			15.88									19.05						

NOTE 1 : When future expansion is planned, select a diameter which taken into account the total HP after expansion.

NOTE 2 : The balance piping diameter is 9.52mm.

NOTE 3 : Max length for the main pipe (LM) : when the length exceeds 50m the size of the gas pipe and HP gas pipe [suction pipe and discharge pipe] should be increased by one size.

Main piping size between outdoor units (LO)

Select the piping size between outdoor units according to the main pipe size (LA) of the above table.

Main piping size after distribution (LB, LC, ...)

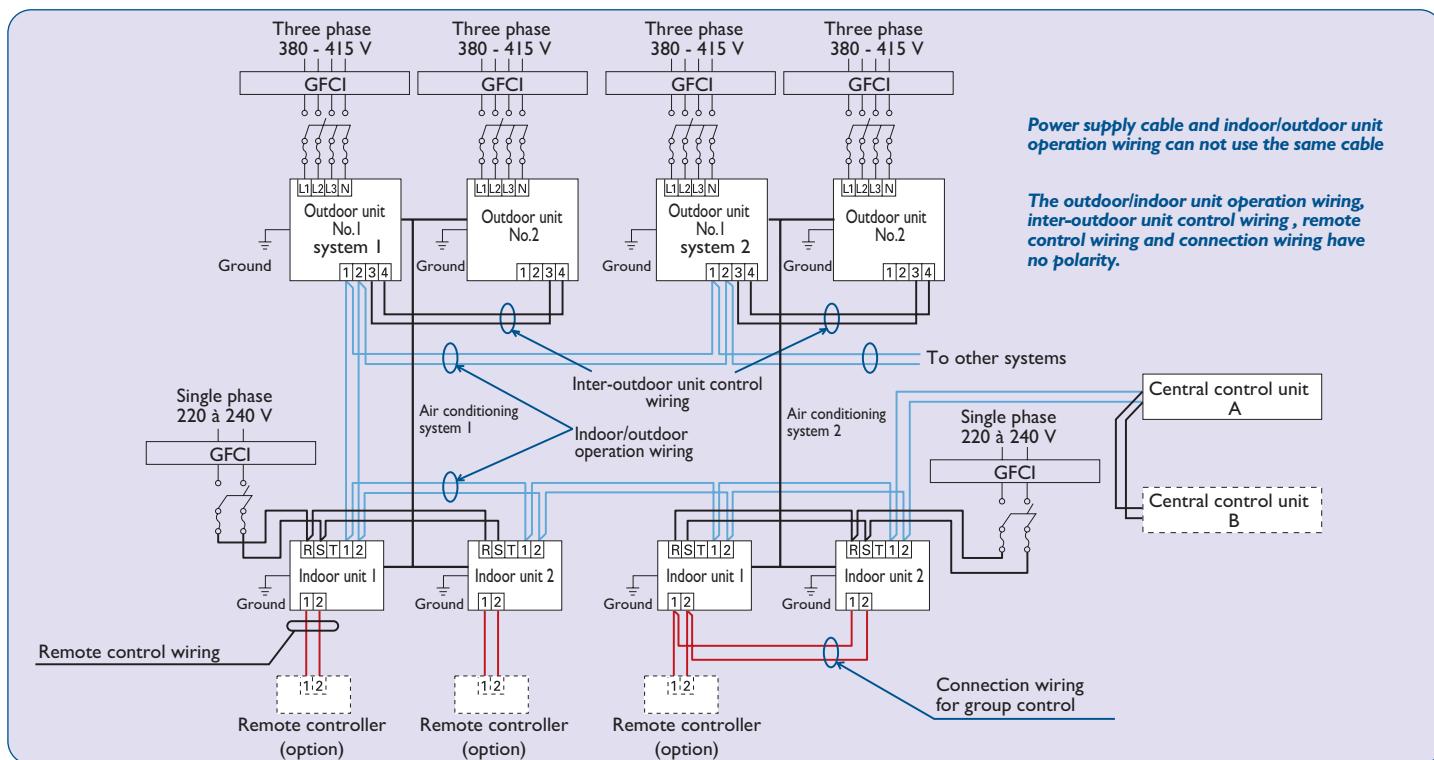
Total capacity after connection	Before (kW)	7.1	16.0	26.2	30.0	36.4	42.0	47.6	58.8	70.0	75.6	98.0	103.6	-
	After (kW)	-	7.1	16.0	26.2	30.0	36.4	42.0	47.6	58.8	70.0	75.6	98.0	103.6
Piping size	Gas pipe (≥ mm)	15.88	19.05	19.05	22.22	25.40	25.40	28.58	28.58	28.58	31.75	31.75	38.10	38.10
	Discharge pipe (≥ mm)	12.70	15.88	15.88	19.05	19.05	22.22	22.22	22.22	25.40	25.40	28.58	28.58	31.75
	Liquid pipe (≥ mm)	9.52	9.52	9.52	12.70	12.70	12.70	15.88	15.88	19.05	19.05	19.05	19.05	19.05

NOTE 1 : The outdoor unit connection main pipe (LO part) depends on the total capacity of the system.

NOTE 2 : If the total capacity of the indoor units differs from the total capacity of the outdoor units, select the main pipe size according to the total capacity of the outdoor units.

Indoor unit connection piping (1 – 40)

Indoor unit type	7	9	12	16	18	25	36	48	60	76	96
Equivalent HP	0.8	1	1.3	1.6	2	2.5	4	5	6	8	10
Piping between distribution and solenoid valve kit	Gas pipe (≥ mm)					15.88				19.05	22.22
	Discharge pipe (≥ mm)					12.70				15.88	19.05
	Liquid pipe (≥ mm)					9.52					
Piping between solenoid valve kit and indoor unit	Gas pipe (≥ mm)			12.70				15.88		19.05	22.22
	Liquid pipe (≥ mm)			6.35				9.52			

Wiring

Notes

Notes

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