# FSXN1E SET FREE

## LARGE COMMERCIAL PREMISES AND OFFICES: UP TO 64 UNITS



COP 4.15

EER 4.12

SEER 7.56

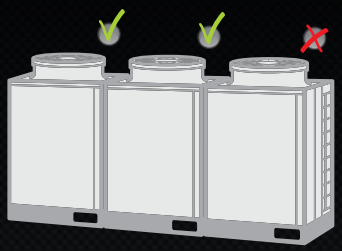
EUROVENT CERTIFIED PERFORMANCE www.eurovent-certification.com

## Function

- The only 2-pipe / 3-pipe on the market: Hitachi exclusive.
- Same units for 2-pipe and 3-pipe.
- New size 0.6 (fixed) indoor units allow the number of supported units to be above the standard. Example: 21 units on 10HP.
- Integrated window switch: it allows the subjugated-operation of the indoor unit whilst the window is open. There is no additional setting.

### CONTINUOUS OPERATION

Hitachi ensures continuous operation: in the event of failure of a compressor, the “back-up” mode maintains the operation of the remaining compressors (FSXNH/FSXN1E).



### MORE THAN 60 INTEGRATED FUNCTIONS

Hitachi includes over 60 functions in standard models. Hitachi systems can easily be adapted for all types of buildings.

For example: a Manual on/off switch can be implemented by simply connecting and setting-up the switch. The same applies to a manual Summer / Winter switch.

## Design

- All Hitachi indoor units are compatible with the full range of outdoor units.

### SYSTEM FREE INDOORS

CASSETTE

FLOOR-MOUNTED

CEILING SUSPENDED

DUCTED

WALL-MOUNTED

# FSXN1E

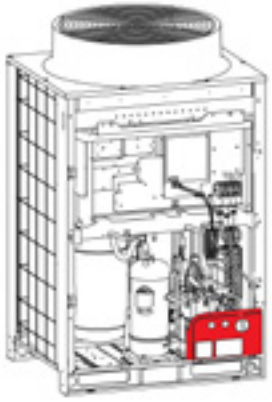
## VRF Modular 2 or 3-pipe



## Installation

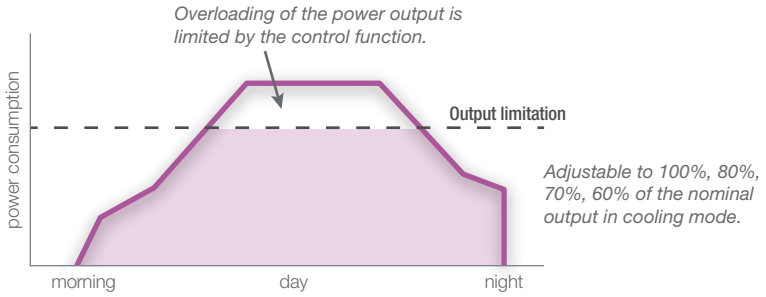
### EASY INSTALLATION

A space for the passage of piping and cables is provided.



### ENERGY SAVING

The new optional “automatic demand management” feature improves energy savings greatly by eliminating peak over-consumption. The automatic demand management system controls the current and removes any requirement for over-sized wiring. The conventional control system remains and can be accessed via the programming functions.




### EASY COMMISSIONING

- The fault codes can be viewed by users on the remote control.
- The operational parameters of the units (temperature, pressure etc.) can be accessed by installation engineers directly on the outdoor units.

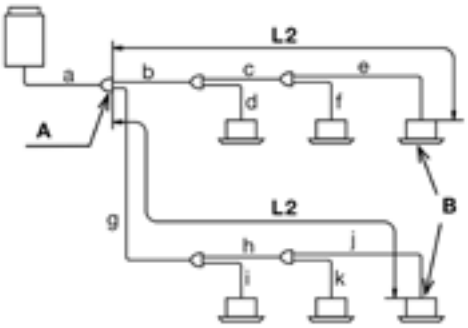
### GREATLY IMPROVED OUTPUT WHEN PARTIALLY LOADED

Example when cold:

- FSXN at 50% load EER: 4.17.
- FSXN1E at 50% load EER: 5.13.

### FLEXIBLE INSTALLATION

The “Network Architecture” has been simplified, particularly the controls that optimise the flow of fluids.
Result: the achieved IU-IU drop is 30m and 90m refrigeration lengths, from the first individual unit to the unit furthest away.




## Wide range

SET FREE FSXN1E
(pages 178 to 181)

from **8** to **54HP**

# Outdoor Units

## SET FREE FSXN1E

### 2-PIPE AND 3-PIPE SYSTEM

Set Free VRF Systems

| | | RAS 8FSXN1E | RAS 10FSXN1E | RAS 12FSXN1E | RAS 14FSXN1E | RAS 16FSXN1E | RAS 16FSXN1E-P | RAS 18FSXN1E |
|---|---|---|---|---|---|---|---|---|
| Outdoor Combination | | - | - | - | - | - | 8+10 | 8+10 |
| Power supply | | 400V / 3Ph / 50Hz | | | | | | |
| Nominal Cooling Capacity[1] | kW | 22.4 | 28.0 | 33.5 | 40.0 | 45.0 | 45.0 | 50.0 |
| Nominal Heating Capacity[2] | kW | 25.0 | 31.5 | 37.5 | 45.0 | 50.0 | 50.0 | 56.0 |
| Maximum Indoor Units[3] | | 17 | 21 | 26 | 30 | 34 | 34 | 39 |
| Minimum - Maximum connected capacity | | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% |
| Nominal Load Efficiency EER / COP[4] | | 4.12 / 4.08 | 3.78 / 4.07 | 3.16 / 3.79 | 3.30/ 3.49 | 3.24 / 3.12 | 4.10 / 4.15 | 4.04 / 4.08 |
| Energy Class (Cool/Heat) | | A / A | A / A | A / A | A / A | A / A | A / A | A / A |
| ESEER | | 7.71 | 7.45 | 7.08 | 6.17 | 6.06 | 7.56 | 7.56 |
| Noise level (sound pressure)[5] (night mode) | dB(A) | 58 (53) | 58 (53) | 60 (55) | 62 (57) | 64 (57) | 61 (56) | 61 (56) |
| Noise level (sound power)[6] | dB(A) | 78 | 78 | 80 | 82 | 84 | 81 | 81 |
| Air flow (Cooling / Heating) | $m^3/h$ | 9300 | 10200 | 10500 | 11700 | 12600 | 19500 | 19500 |
| Dimensions (H x W x D) | mm | 1720 x 950 x 765 | 1720 x 950 x 765 | 1720 x 950 x 765 | 1720 x 1210 x 765 | 1720 x 1210 x 765 | 1720 x 1920 x 765 | 1720 x 1920 x 765 |
| Weight | kg | 215 | 230 | 230 | 310 | 310 | 445 | 445 |
| Piping diameter Liquid /(Gas x 2) | Inch | 3/8 / (3/4/5/8) | 3/8 / (7/8/3/4) | 1/2 / (1 1/8/7/8) | 1/2 / (1 1/8/7/8) | 1/2 / (1 1/8/7/8) | 5/8 / (1 1/8/7/8) | 5/8 / (1 1/8/7/8) |
| | mm | 9.52 / (19.05/15.88) | 9.53 / (22.20/19.05) | 12.70 / (28.60/22.2) | 12.70 / (28.60/22.2) | 12.70 / (28.60/22.2) | 15.88 / (28.60/22.2) | 15.88 / (28.60/22.2) |
| Total Piping Length / Height Difference | m | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 |
| Max Piping Length (outdoor to indoor) | m | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| Current Quantity of Refrigerant | kg | 5.4 | 6.4 | 7.3 | 8.5 | 9.5 | 11.8 | 11.8 |
| Chargeless / Additional Refrigerant Charge | m / g/m | calculate | calculate | calculate | calculate | calculate | calculate | calculate |
| Recommended fuse size | A | 16 | 20 | 32 | 32 | 40 | 16 + 20 | 16 + 20 |
| Starting current | A | 9 | 9 | 9 | 91 | 91 | 17 | 17 |
| Running current (cooling / heating) | A | 8.7 / 9.8 | 11.4 / 12.6 | 17.1 / 15.9 | 20.1 / 20.6 | 22.9 / 26.4 | 17.4 / 19.1 | 19.6 / 21.7 |
| Working Range (cooling / heating) | °C | -5°C~43(db)°C / -20°C~15(wb)°C | | | | | | |
| Refrigerant / GWP | | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 |
| Compressor type | | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll |

| | | RAS 20FSXN1E | RAS 22FSXN1E | RAS 24FSXN1E | RAS 26FSXN1E | RAS 28FSXN1E | RAS 30FSXN1E |
|---|---|---|---|---|---|---|---|
| Outdoor Combination | | 8 + 12 | 8 + 14 | 10 + 14 | 12 + 14 | 14 + 14 | 14 + 16 |
| Power supply | | 400V / 3Ph / 50Hz | | | | | |
| Nominal Cooling Capacity[1] | kW | 56.0 | 61.5 | 69.0 | 73.0 | 80.0 | 85.0 |
| Nominal Heating Capacity[2] | kW | 63.0 | 69.0 | 77.5 | 82.5 | 90.0 | 95.0 |
| Maximum Indoor Units[3] | | 43 | 47 | 52 | 56 | 60 | 64 |
| Minimum - Maximum connected capacity | | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% |
| Nominal Load Efficiency EER / COP[4] | | 3.48 / 3.90 | 3.58 / 3.80 | 3.52 / 3.77 | 3.25 / 3.69 | 3.30 / 3.62 | 3.27 / 3.34 |
| Energy Class (Cool/Heat) | | A / A | A / A | A / A | A / A | A / A | A / A |
| ESEER | | 7.22 | 6.70 | 6.59 | 6.58 | 6.17 | 6.12 |
| Noise level (sound pressure)[5] (night mode) | dB(A) | 63 (58) | 64 (59) | 64 (59) | 65 (60) | 65 (60) | 66 (61) |
| Noise level (sound power)[6] | dB(A) | 83 | 84 | 84 | 85 | 85 | 86 |
| Air flow (Cooling / Heating) | $m^3/h$ | 19800 | 21000 | 21900 | 22200 | 23400 | 24300 |
| Dimensions (H x W x D) | mm | 1720 x 1920 x 765 | 1720 x 2180 x 765 | 1720 x 2180 x 765 | 1720 x 2180 x 765 | 1720 x 2440 x 765 | 1720 x 2440 x 765 |
| Weight | kg | 445 | 525 | 540 | 540 | 620 | 620 |
| Piping diameter Liquid /(Gas x 2) | Inch | 5/8 / (1 1/8/7/8) | 5/8 / (1 1/8/11/8) | 5/8 / (1 1/8/7/8) | 3/4 / (1 1/4/11/8) | 3/4 / (1 1/4/11/8) | 3/4 / (1 1/4/11/8) |
| | mm | 15.88 / (28.60/22.2) | 15.88 / (28.60/28.60) | 15.88 / (28.60/22.2) | 19.05 / (31.75/28.60) | 19.05 / (31.75/28.60) | 19.05 / (31.75/28.60) |
| Total Piping Length / Height Difference | m | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 |
| Max Piping Length (outdoor to indoor) | m | 165 | 165 | 165 | 165 | 165 | 165 |
| Current Quantity of Refrigerant | kg | 12.7 | 13.9 | 14.9 | 15.8 | 17.0 | 18.0 |
| Chargeless / Additional Refrigerant Charge | m / g/m | calculate | calculate | calculate | calculate | calculate | calculate |
| Recommended fuse size | A | 16 + 32 | 16 + 32 | 20 + 32 | 32 + 32 | 32 + 32 | 32 + 40 |
| Starting current | A | 17 | 103 | 103 | 103 | 115 | 115 |
| Running current (cooling / heating) | A | 25.3 / 25.5 | 27.5 / 29.1 | 31.7 / 33.1 | 36.2 / 35.9 | 39.7 / 40.6 | 42.5 / 46.2 |
| Working Range (cooling / heating) | °C | -5°C~43(db)°C / -20°C~15(wb)°C | | | | | |
| Refrigerant / GWP | | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 |
| Compressor type | | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll |

(1) Nominal Cooling: Internal temperature 27°C db (19°C wb) - Ambient 35°C
(2) Nominal Heating: Internal temperature 20°C - Ambient 7°C db (6°C wb)
(3) Maximum Indoor Units - restrictions apply see Technical Catalogue
(4) Nominal load efficiency (Cooling 35°C/27°C, Heating 7°C/20°C)
(5) Sound pressure level is measured at 1.0m from the unit front surface and 1.5m from floor level (Measured in an anechoic chamber)
(6) Sound power level is the A-weighted sound power level [dB(A)] measured at standard rated conditions for the "cooling" mode operation in accordance to EN12102.

### CH BOXES

IT IS NECESSARY TO PURCHASE CHANGEOVER BOXES FOR 3-PIPE SYSTEMS. PLEASE REFER TO PAGE 186 FOR FURTHER DETAILS AND PRICES.



*More information on controls and options on pages 257-272*

# Outdoor Units

## SET FREE FSXN1E

### 2-PIPE AND 3-PIPE SYSTEM

Set Free VRF Systems

| | | RAS 32FSXN1E | RAS 32FSXN1E-P | RAS 34FSXN1E | RAS 36FSXN1E | RAS 38FSXN1E | RAS 40FSXN1E | RAS 42FSXN1E |
|---|---|---|---|---|---|---|---|---|
| Outdoor Combination | | 16 + 16 | 10 + 12 + 12 | 10 + 12 + 12 | 12 + 12 + 12 | 12 + 12 + 14 | 12 + 12 + 16 | 12 + 14 + 16 |
| Power supply | | 400V / 3Ph / 50Hz | | | | | | |
| Nominal Cooling Capacity(1) | kW | 90.0 | 90.0 | 95.0 | 100.0 | 109.0 | 112.0 | 118.0 |
| Nominal Heating Capacity(2) | kW | 100.0 | 100.0 | 106.0 | 112.0 | 118.0 | 125.0 | 132.0 |
| Maximum Indoor Units(3) | | 64 | 64 | 64 | 64 | 64 | 64 | 64 |
| Minimum - Maximum connected capacity | | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% |
| Nominal Load Efficiency EER / COP(4) | | 3.24 / 3.12 | 3.40 / 3.95 | 3.36 / 3.88 | 3.17 / 3.81 | 3.16 / 3.78 | 3.19 / 3.49 | 3.25 / 3.47 |
| Energy Class (Cool/Heat) | | A / A | A / A | A / A | B / A | B / A | B / A | A / A |
| ESEER | | 6.06 | 7.17 | 7.11 | 7.10 | 6.59 | 6.62 | 6.38 |
| Noise level (sound pressure)(5) (night mode) | dB(A) | 66 (61) | 65 (60) | 65 (60) | 65 (60) | 66 (61) | 67 (61) | 67 (62) |
| Noise level (sound power)(6) | dB(A) | 86 | 85 | 85 | 85 | 86 | 87 | 87 |
| Air flow (Cooling / Heating) | $m^3/h$ | 25200 | 31200 | 31200 | 31500 | 32700 | 33600 | 34800 |
| Dimensions (H x W x D) | mm | 1720 x 2440 x 765 | 1720 x 2890 x 765 | 1720 x 2890 x 765 | 1720 x 2890 x 765 | 1720 x 3150 x 765 | 1720 x 3150 x 765 | 1720 x 3410 x 765 |
| Weight | kg | 620 | 690 | 690 | 690 | 770 | 770 | 850 |
| Piping diameter Liquid /(Gas x 2) | Inch | 3/4 / (1 1/4/11/8) | 3/4 / (1 1/4/11/8) | 3/4 / (1 1/4/11/8) | 3/4 / (1 1/2/11/8) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) |
| | mm | 19.05 / (31.75/28.60) | 19.05 / (31.75/28.60) | 19.05 / (31.75/28.60) | 19.05 / (38.1/28.60) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) |
| Total Piping Length / Height Difference | m | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 |
| Max Piping Length (outdoor to indoor) | m | 165 | 165 | 165 | 165 | 165 | 165 | 165 |
| Current Quantity of Refrigerant | kg | 19.0 | 21.0 | 21.0 | 21.9 | 23.1 | 24.1 | 25.3 |
| Chargeless / Additional Refrigerant Charge | m / g/m | calculate | calculate | calculate | calculate | calculate | calculate | calculate |
| Recommended fuse size | A | 40 + 40 | 20 + 32 + 32 | 20 + 32 + 32 | 32 + 32 + 32 | 32 + 32 + 32 | 32 + 32 + 40 | 32 + 32 + 40 |
| Starting current | A | 115 | 26 | 26 | 26 | 115 | 115 | 126 |
| Running current (cooling / heating) | A | 45.3 / 51.7 | 41.9 / 40.2 | 44.9 / 43.3 | 50.0 / 46.7 | 55.2 / 50.0 | 56.1 / 57.1 | 58.8 / 61.3 |
| Working Range (cooling / heating) | °C | -5°C~43(db)°C / -20°C~15(wb)°C | | | | | | |
| Refrigerant / GWP | | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 |
| Compressor type | | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll |

| | | RAS 44FSXN1E | RAS 46FSXN1E | RAS 48FSXN1E | RAS 50FSXN1E | RAS 52FSXN1E | RAS 54FSXN1E |
|---|---|---|---|---|---|---|---|
| Outdoor Combination | | 12 + 16 + 16 | 14 + 16 + 16 | 16 + 16 + 16 | 10 + 12 + 14 + 14 | 12 + 12 + 14 + 14 | 12 + 12 + 14 + 16 |
| Power supply | | 400V / 3Ph / 50Hz | | | | | |
| Nominal Cooling Capacity(1) | kW | 125.0 | 132.0 | 136.0 | 140.0 | 145.0 | 150.0 |
| Nominal Heating Capacity(2) | kW | 140.0 | 145.0 | 150.0 | 155.0 | 160.0 | 165.0 |
| Maximum Indoor Units(3) | | 64 | 64 | 64 | 64 | 64 | 64 |
| Minimum - Maximum connected capacity | | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% | 50% - 130% |
| Nominal Load Efficiency EER / COP(4) | | 3.19 / 3.23 | 3.22 / 3.26 | 3.23 / 3.12 | 3.41 / 3.81 | 3.27 / 3.78 | 3.26 / 3.61 |
| Energy Class (Cool/Heat) | | B / A | A / A | A / A | A / A | A / A | A / A |
| ESEER | | 5.97 | 6.02 | 6.04 | 6.64 | 6.62 | 6.58 |
| Noise level (sound pressure)(5) (night mode) | dB(A) | 68 (62) | 68 (63) | 69 (63) | 67 (62) | 68 (63) | 68 (63) |
| Noise level (sound power)(6) | dB(A) | 88 | 88 | 89 | 87 | 88 | 88 |
| Air flow (Cooling / Heating) | $m^3/h$ | 35700 | 36900 | 37800 | 44100 | 44400 | 45300 |
| Dimensions (H x W x D) | mm | 1720 x 3410 x 765 | 1720 x 3670 x 765 | 1720 x 3670 x 765 | 1720 x 4380 x 765 | 1720 x 4380 x 765 | 1720 x 4380 x 765 |
| Weight | kg | 850 | 930 | 930 | 1080 | 1080 | 1080 |
| Piping diameter Liquid /(Gas x 2) | Inch | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) | 3/4 / (1 1/2/11/4) |
| | mm | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) | 19.05 / (38.10/31.75) |
| Total Piping Length / Height Difference | m | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 | 1000 / 50 |
| Max Piping Length (outdoor to indoor) | m | 165 | 165 | 165 | 165 | 165 | 165 |
| Current Quantity of Refrigerant | kg | 26.5 | 27.5 | 28.5 | 30.7 | 31.6 | 32.6 |
| Chargeless / Additional Refrigerant Charge | m / g/m | calculate | calculate | calculate | calculate | calculate | calculate |
| Recommended fuse size | A | 32 + 40 + 40 | 32 + 40 + 40 | 40 + 40 + 40 | 20 + 32 + 32 + 32 | 32 + 32 + 32 + 32 | 32 + 32 + 32 + 40 |
| Starting current | A | 126 | 138 | 138 | 138 | 138 | 138 |
| Running current (cooling / heating) | A | 63.3 / 69.5 | 66.9 / 72.0 | 68.7 / 77.6 | 66.4 / 65.4 | 71.5 / 68.0 | 74.2 / 73.3 |
| Working Range (cooling / heating) | °C | -5°C~43(db)°C / -20°C~15(wb)°C | | | | | |
| Refrigerant / GWP | | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 | R410a / 1975 |
| Compressor type | | Scroll | Scroll | Scroll | Scroll | Scroll | Scroll |

(1) Nominal Cooling: Internal temperature 27°C db (19°C wb) - Ambient 35°C
(2) Nominal Heating: Internal temperature 20°C - Ambient 7°C db (6°C wb)
(3) Maximum Indoor Units - restrictions apply see Technical Catalogue
(4) Nominal load efficiency (Cooling 35°C/27°C, Heating 7°C/20°C)
(5) Sound pressure level is measured at 1.0m from the unit front surface and 1.5m from floor level (Measured in an anechoic chamber)
(6) Sound power level is the A-weighted sound power level [dB(A)] measured at standard rated conditions for the "cooling" mode operation in accordance to EN12102.

### CH BOXES

IT IS NECESSARY TO PURCHASE CHANGEOVER BOXES FOR 3-PIPE SYSTEMS. PLEASE REFER TO PAGE 186 FOR FURTHER DETAILS AND PRICES.