Honeywell
THE POWER OF **CONNECTED**

Inverters

YOUR SMART WAY TO ENERGY EFFICIENT HVAC CONTROL

Smart energy savings

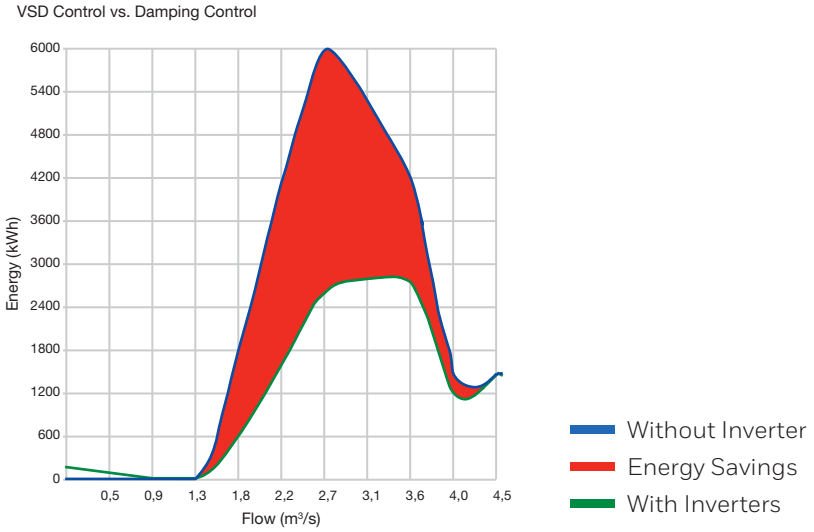
Flow-generating equipment, such as fans, pumps and compressors, are often used without speed control. Therefore motors run at full speed.

As a customer said:
“It‘s like driving a car and regulating the speed with the brakes, while the engine runs at full speed!“

Up to 70% of energy can be saved with Honeywell inverters, as Heating, Ventilation, Air Conditioning (HVAC) systems rarely require maximum flow.

Energy savings potential

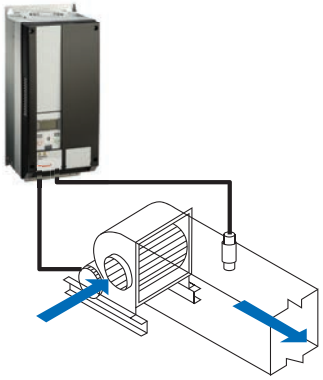
(typical ventilation application)

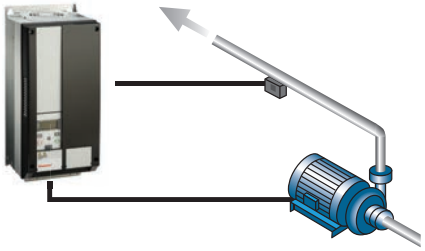


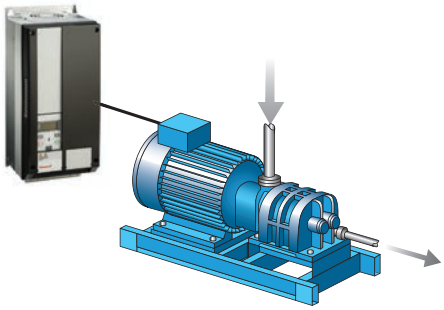
Payback on Honeywell inverter investments is usually less than two years and could be as little as three months. The payback period varies according to the cost of electricity, fan or pump size, length of running time and the achievable reduction in flow rate.

Honeywell inverters have many embedded functions such as “PID controller”, “sleep function” for fans and pumps, “ramp shapes”, a wide range of protection and safety parameters, and a wide range of communication protocols. Software, an energy saving calculator and much more are available for download at: http://hwll.co/inverter

Typical inverter applications







Fans

- Supply & extract ventilation fans
- Variable Air Volume (VAV) systems
- Cooling tower fans
- Condenser fans
- Boiler fans
- Car Park ventilation fans
- Stairway ventilation

Pumps

- Chilling
- Heating
- Booster pump
- Pressuration set
- Cold and hot water pumps
- Cooling tower pumps
- Delta P regulation on heat exchangers
- Swimming pool pumps

Compressors

- Chilling
- Clean air compressors
- Gas compressors
- Heat pumps

Benefits of Honeywell inverters

Fast installation and set-up

- 30 second Start Up Wizard for basic pump and fan applications
- Additional wizards for stand-alone applications, e.g. PID
- Quick menus
- Easy parameter copy from one unit to another
- Easy-to-use PC tools to help commissioning
- Extremely compact size and light weight – easy handling and space savings
- Convenient cabling arrangements
- IP54 available for wall mounting applications
- EMI compliant for use in residential areas without need for external filter.
- EN 61800-3 C2 compliance

Reliable and comfortable operation

- Robust design with cooling air completely separated from electrical parts
- Varnished boards helping to prevent damage from dirt and dust
- Electrolyte-free capacitors to increase the lifetime of the product
- Temperature-controlled fans and adjustable switching frequency to reduce the audible noise from the device
- Extensive software and hardware protection functions
- Software features to guarantee continuous operation, e.g. trip-free function with maintenance/safety switch operation

Smart energy savings

- Extensive standalone control capabilities: PI/PID, pump and fan cascade
- Additional PID controller for controlling other devices
- Special energy saving mode
- High class flying start
- Timed functions with the help of real-time-clock
- Specialized features for HVAC, e.g. Ramp timeoptimizer, Pump soft fill

Easy integration

- Wide selection of fieldbuses
- Ideal input and output configuration for HVAC applications
- Possibility to expand the I/O mix
- Inverter I/O can be used as remote I/O for BMS system

Note: Listed features dependent on model selection

Honeywell‘s inverter portfolio is ideally suited to cover your energy saving needs in HVAC installations.

	SmartDrive HVAC		NXL HVAC	HVAC232/402	
Voltage	208-240V 3~	380-480V 3~	380-500V 3~	208-240V 1~in/3~out	380-480V 3~
Power	0.55-55 kW	1.1-160 kW	1.1-30 kW	0.37-2.2 kW	0.37-18.5 kW
Installation	Panel mounting - IP21 Wall mounting - IP54		Panel mounting - IP21 Wall mounting - IP54	Panel mounting - IP20/21 Outdoor mounting IP66	
Keypad (HMI)	Graphical		Segments	Segments	
Fieldbus connections as standard	ModbusRTU Bacnet MS/TP Metasys N2 Modbus TCP/IP Bacnet IP		Modbus RTU	Modbus RTU	
Optional fieldbus connections	LONworks		Several: LONworks, Bacnet MS/TP, Modbus TCP/IP, Profibus, etc.	Options: Profibus DP CANopen	
EMC/RFI -level *	C2 (C1 with external filters)		IP21: C2 IP54: C1	C2	
Control modes available	Standard speed control Preset speed control Advanced PID-control Pump cascade control Fire mode Time based control (real time clock)		Standard speed control Preset speed control Standard PID-control Pump cascade control	Standard speed control Preset speed control Advanced PID-control Fire mode	

* C2 fulfills the requirements in public electrical network connection (e.g., typical building). C1 is the highest specified level of filtering and fulfills the requirements which are sometimes specified for highly sensitive areas (e.g., hospitals)

SmartDrive HVAC

The advanced HVAC drive to cover any application need.

Key Features

- 1.1 - 160 kW in 400V (3~)
- IP21 and IP54 enclosure classes
- EMC/RFI filters for installation in public electrical network (e.g. typical buildings) integrated as standard (EN61800-3 category C2)
- Compliance with THD standard EN61000-3-12
- Multilanguage text display as standard
- Allowed motor cable length: 100-200 m

Keypad

Graphical display

- 9 values shown simultaneously
- Parameter copy paste and backup function
- Local languages embedded
- Parameter elucidation can be displayed
- Up to 40 faults can be retrieved from the drive
- Special features embedded (pump cascade, soft filling, PID etc)
- Drive can be controlled from a PC

Type overview: Mains voltage 380-480 V, 50/60 Hz, 3~, enclosure class IP21/IP54, EMC level C2

Inverter type (*	Motor shaft power P (kw) 400V 40°C	Loadability		Mechanical size	Dimensions W x H x D (mm)	Weight (kg)
		Rated continuous current (A)	110% overload current (1min/10min) (A)			
HVAC400-1P1-xxA	1.1	3.4	3.7	MR4	128 x 328 x 190	6
HVAC400-1P5-xxA	1.5	4.8	5.3	MR4	128 x 328 x 190	6
HVAC400-2P2-xxA	2.2	5.6	6.2	MR4	128 x 328 x 190	6
HVAC400-3P0-xxA	3	8	8.8	MR4	128 x 328 x 190	6
HVAC400-4P0-xxA	4	9.6	10.6	MR4	128 x 328 x 190	6
HVAC400-5P5-xxA	5.5	12	13.2	MR4	128 x 328 x 190	6
HVAC400-7P5-xxA	7.5	16	17.6	MR5	144 x 419 x 214	10
HVAC400-11P-xxA	11	23	25.3	MR5	144 x 419 x 214	10
HVAC400-15P-xxA	15	31	34.1	MR5	144 x 419 x 214	10
HVAC400-18P-xxA	18.5	38	41.8	MR6	195 x 557 x 229	20
HVAC400-22P-xxA	22	46	50.6	MR6	195 x 557 x 229	20
HVAC400-30P-xxA	30	61	67.1	MR6	195 x 557 x 229	20
HVAC400-37P-xxA	37	72	79.2	MR7	237 x 660 x 259	37.5
HVAC400-45P-xxA	45	87	95.7	MR7	237 x 660 x 259	37.5
HVAC400-55P-xxA	55	105	115.5	MR7	237 x 660 x 259	37.5
HVAC400-75P-xxA	75	140	154	MR8	290 x 966 x 343	71
HVAC400-90P-xxA	90	170	187	MR8	290 x 966 x 343	71
HVAC400-110-xxA	110	205	225.5	MR8	290 x 966 x 343	71
HVAC400-132-xxA	132	261	287.1	MR9	480 x 1150 x 365	113
HVAC400-160-xxA	160	310	341	MR9	480 x 1150 x 365	113

(* IP21 and IP54 products are the same size. For defining which enclosure class is used change the xx in the end of product type 21 for IP21 units and 54 for IP54 units.
A set of items is also available with Nordic languages beginning with NO-!

Standard control I/O

Input/Output type	QTY
Analogue input	2
Digital Input	6
Analogue output	1
Relay output	2
Thermistor input (PTC)	1
Fieldbus RS485	BACnet MS/TP, Modbus RTU, Metasys N2
Fieldbus Ethernet	BACnet IP, Modbus TCP/IP

Note: Using option boards, the inverter's I/Os can be expanded and an extra fieldbus added.

MR4 MR5

MR6 MR7

MR8 MR9

NXL HVAC

The standard HVAC drive for any installation in buildings.

Key Features

- 1.1 - 30 kW in 400V (3~)
- IP21 and IP54 enclosure classes
- EMC/RFI filters for installation even in the highly sensitive areas (e.g., hospitals, airport control towers) as standard
- IP54 models EN61800-3 category C1

Type overview: Mains voltage 380-500 V, 50/60 Hz, 3~, enclosure class IP21/IP54, EMC level C2/C1

Inverter type (*	Motor shaft power P (kw) 400V 40°C	Loadability		Mechanical size	Dimensions W x H x D (mm)	Weight (kg)
		Rated continuous current (A)	110% overload current (1min/10min) (A)			
HVAC03C5	1.1	3.3	3.7	MF4	128 x 292 x 190	5
HVAC04C5	1.5	4.3	5.3	MF4	128 x 292 x 190	5
HVAC05C5	2.2	5.6	6.2	MF4	128 x 292 x 190	5
HVAC07C5	3	7.6	8.8	MF4	128 x 292 x 190	5
HVAC09C5	4	9	10.6	MF4	128 x 292 x 190	5
HVAC12C5	5.5	12	13.2	MF4	128 x 292 x 190	5
HVAC16C5	7.5	16	17.6	MF5	144 x 391 x 214	8.1
HVAC23C5	11	23	25.3	MF5	144 x 391 x 214	8.1
HVAC31C5	15	31	34.1	MF5	144 x 391 x 214	8.1
HVAC38C5	18.5	38	41.8	MF6	195 x 519 x 237	18.5
HVAC46C5	22	46	50.6	MF6	195 x 519 x 237	18.5
HVAC61C5	30	61	67.1	MF6	195 x 519 x 237	18.5

IP54 units fulfill also the requirements of category C1 (highly sensitive areas, e.g., hospitals)

Standard control I/O

Input/Output type	QTY
Analogue input	2
Digital Input	6
Analogue output	1
Relay output	2
Thermistor input (PTC)	1
Fieldbus RS485	Modbus RTU

Note: Using option boards, the inverter's I/Os can be changed and an extra fieldbus added.

MF4

MF6

MF9

HVAC232/402

The ideal basic drive solution for panel mounting.

Key Features

- 0.37 - 2.2 kW in 230V (1~in, 3~out)
- 0.55 – 18.5kWin 400V (3~)
- IP20/21 enclosure
- Comply with EN61800-3 standards category C2 without optional filter for residential areas
- Flexible architecture, tailored to customer needs
- Modbus RTU embedded

Options:

- Profibus DPV1, CANopen, EtherCAT
- Additional inputs and relays and thermistor
- PT100/1000/Ni1000 board
- Door mounting kit

COMP-LOADER
accessory is used for parameter copy and PC connection (USB)

Type overview: 1 phase input, mains voltage 208-240, 50/60Hz, 3~ Enclosure IP20 EMC level C2

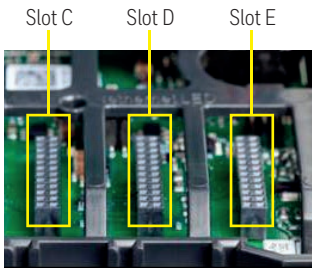
Inverter type	Motor shaft power P (kw)	Loadability		Mechanical size	Dimensions W x H x D (mm)	Weight (kg)
		Rated continuous current (A)	150% overload current (1min/10min) (A)			
HVAC232-P37-20	0.37	2.4	3.6	MI1	66 x 160 x 99	0.55
HVAC232-P55-20	0.55	2.8	4.2	MI1	66 x 160 x 99	0.55
HVAC232-P75-20	0.75	3.7	5.6	MI2	90 x 195 x 102	0.7
HVAC232-1P1-20	1.1	4.8	7.2	MI2	90 x 195 x 102	0.7
HVAC232-1P5-20	1.5	7	10.5	MI2	90 x 195 x 102	0.7
HVAC232-2P2-20	2.2	9.6	14.4	MI3	100 x 255 x 109	0.99

Type overview: 3 phases input, mains voltage 380-480, 50/60Hz, 3~ Enclosure IP20/21 EMC level C2

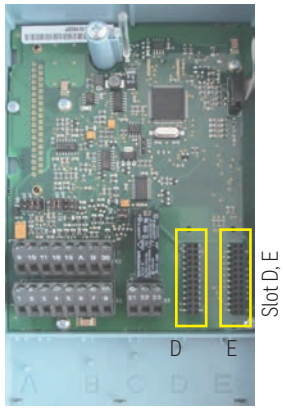
Inverter type	Motor shaft power P (kw)	Loadability		Mechanical size	Dimensions W x H x D (mm)	Weight (kg)
		Rated continuous current (A)	150% overload current (1min/10min) (A)			
HVAC402-P55-20	0.37	1.9	2.9	MI1	66 x 160 x 99	0.55
HVAC402-P75-20	0.75	2.4	3.6	MI1	66 x 160 x 99	0.55
HVAC402-1P1-20	1.1	3.3	5	MI2	90 x 195 x 102	0.7
HVAC402-1P5-20	1.5	4.3	6.5	MI2	90 x 195 x 102	0.7
HVAC402-2P2-20	2.2	5.6	8.4	MI2	90 x 195 x 102	0.7
HVAC402-3P0-20	3	7.6	11.4	MI3	100 x 255 x 109	0.99
HVAC402-4P0-20	4	9	13.5	MI3	100 x 255 x 109	
HVAC402-5P5-20	5.5	12	18	MI3	100 x 255 x 109	
HVAC402-7P5-21	7.5	16	524	MI4	165 x 370 x 165	
HVAC402-11P-21	11	23	34.5	MI4	165 x 370 x 165	
HVAC402-15P-21	15	31	46.5	MI5	165 x 414 x 202	
HVAC402-18P-21	18	38	57	MI5	165 x 414 x 202	

Drive accessories

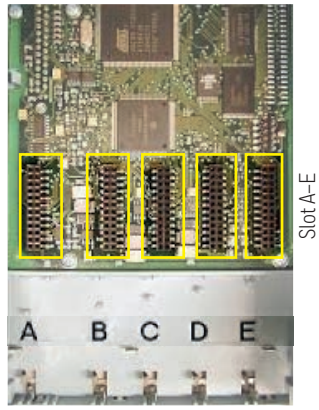
HVAC400



HVAC400



HVAC400



HVAC400

Options: 1 slot require
External cover ≤5.5 kW
ENC-Slot MI1-MI3
Internal mold >5.5 kW
ENC-Slot MI4-MI5

Communication	HVAC400	NXL	NXS	HVAC232/400	Slot	Order number
LonWorks	▲	▲	▲	–	C, D	OPTC4
Modbus/N2 (RS-485)	■	■	▲	–	C, D	NXOPTC2
Profibus DP	–	▲	▲	–	C, D	NXOPTC3
CANopen (slave)	–	▲	▲	–	C, D	NXOPTC6
DeviceNet	■	▲	▲	–	C, D	NXOPTC7
BACnet MS/TP	■	▲	▲	–	C, C	NXOPTCJ
Modbus TCP Ethernet/IP	–	–	▲	▲*	DE	OPTE9

E/A Module	HVAC400	NXL	NXS	HVACxx2	Slot	Order number
6× inputs/outputs progr.	▲	-	▲	▲*	B, C, D, E	OPTB1
2 AO & 1 AI mA	▲	▲	▲	▲*	B, C, D, E	OPTB4
3× Relays	▲	▲	▲	▲*	B, C, D, E	OPTB5
1× RO, 5× inputs 42...240 V	▲	–	▲	▲*	B, C, D, E	OPTB9
1 AI mA, 1RO, 1DO op. col.	▲	–	–	▲*	D, E	OPTBF
3× DI, 1× Relay, 1× DO	–	▲	–	–	D, E	NXLOPTAA
6× DI, 1× DO op col. 2× AI, 1× AO	–	–	■	–	A, B, C	NXOPTA1
2× Relays, 1× Thermistor	–	–	▲	–	B, C, D, E	NXOPTB2
3× Pt100	–	–	▲	–	B, C, D, E	NXOPTB8
1 Thermistor, 2× RO	■	–	–	▲*	E	OPTB2
PT1000, Ni1000, KTY84x	▲	–	–	▲*	B, C, D, E	OPTBH

■ = embedded ▲ = fit ▲* = Needs optional option Item, ENC-Slot MI1-MI3 or ENC-Slot MI4-MI5

Communication with PC	Order number
HVAC400, HVAC232/402 3 m cable	SMARTDRIVE- USBC
NXL&NXS, 2 m cable	RS232C2M
NXL&NXS, 4 m cable	RS232C-4M
Interface required for HVAC232/402 PC communication	COMP-LOADER

VFD family – Overview order number

HVAC400

1.1…160 kW IP21/54
Onboard communication:
BACnet MS/TP, BACnet IP, Modbus RTU, Modbus TCP, Metasys N2
Optional: LonWorks

Emissions:
EN61800-3 cat. C2
NO: nordic languages

Order number	kw
HVAC400-1P1-21A	1.1
HVAC400-1P1-54A	1.1
HVAC400-1P5-21A	1.5
HVAC400-1P5-54A	1.5
HVAC400-2P2-21A	2.2
HVAC400-2P2-54A	2.2
HVAC400-3P0-21A	3.0
HVAC400-3P0-54A	3.0
HVAC400-4P0-21A	4.0
HVAC400-4P0-54A	4.0
HVAC400-5P5-21A	5.5
HVAC400-5P5-54A	5.5
HVAC400-7P5-21A	7.5
HVAC400-7P5-54A	7.5
HVAC400-11P-21A	11.0
HVAC400-11P-54A	11.0
HVAC400-15P-21A	15.0
HVAC400-15P-54A	15.0
HVAC400-18P-54A	18.0
HVAC400-18P-21A	18.5
HVAC400-22P-21A	22.0
HVAC400-22P-54A	22.0
HVAC400-30P-21A	30.0
HVAC400-30P-54A	30.0
HVAC400-37P-21A	37.0
HVAC400-37P-54A	37.0
HVAC400-45P-21A	45.0
HVAC400-45P-54A	45.0
HVAC400-55P-21A	55.0
HVAC400-55P-54A	55.0
HVAC400-75P-21A	75.0
HVAC400-75P-54A	75.0
HVAC400-90P-21A	90.0
HVAC400-90P-54A	90.0
HVAC400-110-21A	110.0
HVAC400-110-54A	110.0
HVAC400-132-21A	132.0
HVAC400-132-54A	132.0
HVAC400-160-21A	160.0
HVAC400-160-54A	160.0

Display option
HVAC-DOOR-Kit

HVAC232/402

1.1…18.5 kW IP20/21
Onboard communication:
Modbus RTU
Optional: LonWorks

Emissions:
EN61800-3 cat. C2

Order number	kw
208-240V, 1 ~ Version IP20/21	
HVAC232-P37-20	0.37
HVAC232-P55-20	0.55
HVAC232-P75-20	0.75
HVAC232-1P1-20	1.1
HVAC232-1P5-20	1.5
HVAC232-2P2-20	2.2

380-480V, 3 ~ Version IP20/21	
HVAC402-P55-20	0.55
HVAC402-P75-20	0.75
HVAC402-1P1-20	1.1
HVAC402-1P5-20	1.5
HVAC402-2P2-20	2.2
HVAC402-3P0-20	3
HVAC402-4P0-20	4
HVAC402-5P5-20	5.5
HVAC402-7P5-21	7.5
HVAC402-11P-21	11
HVAC402-15P-21	15
HVAC402-18P-21	18.5

Covers for option	
HVAC400-30P-54A	30.0
HVAC400-37P-21A	37.0

Display option
HVAC-DOOR-Kit

NXL

1.1…30 kW
Onboard communication:
Modbus RTU
Optional: LonWorks, BACnet MS/TP, Modbus TCP, CANopen, Devicenet, Metasys N2
Emissions:
EN61800-3 cat. C2 IP21, EN61800-3 cat. C1 IP54

Order number	kw
HVAC03C5	1.1
HVAC04C5	1.5
HVAC05C5	2.2
HVAC07C5	3.0
HVAC09C5	4.0
HVAC12C5	5.5
HVAC16C5	7.5
HVAC23C5	11.0
HVAC31C5	15.0
HVAC38C5	18.5
HVAC46C5	22.0
HVAC61C5	30.0

Display option
DRA-02L, 2 m
DRA-04L, 4 m

NXS

1.1…400 kW
Communication with optionboard: Modbus/N2, Profibus DP, CANopen, DeviceNet, Modbus TCP, BACnet MS/TP

Emissions:
EN61800-3 cat 2 ≤ 160kW, EN61800-3 cat 3 > 160kW

Order number	kw
NXS0003V35A2H1	1.1
NXS0003V35A5H1	1.1
NXS0004V35A2H1	1.5
NXS0004V35A5H1	1.5
NXS0005V35A2H1	2.2
NXS0005V35A5H1	2.2
NXS0007V35A2H1	3.0
NXS0007V35A5H1	3.0
NXS0009V35A2H1	4.0
NXS0009V35A5H1	4.0
NXS0012V35A2H1	5.5
NXS0012V35A5H1	5.5
NXS0016V35A2H1	7.5
NXS0016V35A5H1	7.5
NXS0022V35A2H1	11.0
NXS0022V35A5H1	11.0
NXS0031V35A2H1	15.0
NXS0031V35A5H1	15.0
NXS0038V35A2H1	18.5
NXS0038V35A5H1	18.5
NXS0045V35A2H1	22.0
NXS0045V35A5H1	22.0
NXS0061V35A2H1	30.0
NXS0061V35A5H1	30.0
NXS0072V35A2H0	37.0
NXS0072V35A5H0	37.0
NXS0087V35A2H0	45.0
NXS0087V35A5H0	45.0
NXS0105V35A2H0	55.0
NXS0105V35A5H0	55.0
NXS0140V35A2H0	75.0
NXS0140V35A5H0	75.0
NXS0168V35A2H0	90.0
NXS0168V35A5H0	90.0
NXS0205V35A2H0	110.0
NXS0205V35A5H0	110.0
NXS0260V35A2H0	132.0
NXS0260V35A5H0	132.0
NXS0310V35A2H0	160.0
NXS0310V35A5H0	160.0
NXS0385V35A2L0	200.0
NXS0460V35A2L0	250.0
NXS0590V35A2L0	315.0
NXS0650V35A2L0	355.0
NXS0730V35A2L0	400.0

Display option
DRA-02B, 2 m
DRA-04B, 4 m

More than 150 million homes and 10 million buildings worldwide rely on Honeywell to control and protect their indoor environment!

We are perfectly suited to bridge the gap between the rising demand for more personal comfort, convenience and working efficiency on one hand and the growing scarcity of natural resources and rising energy costs on the other.

Our products and systems control temperature, humidity, air quality, potable water, lighting and appliances in homes and buildings.

Find out more
For more information
visit our product catalog at
http://ecc.emea.honeywell.com

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