ERP 2015

Heating unit

Nevada JET

STAVOKLIMA

www.stavoklima.eu

Basic description

Exceptional power and excellent heat comfort!

Should you need heat comfort in spacious and in particular high spaces, the Nevada JET unit is the right choice for you as highly efficient source of heating.

The unit complies with all user demands for optimal hot air distribution, minimum heat loss, and fully automated control. The units features are best applicable in shops, industrial or warehouse spaces, which standard products are unable to manage.

The Nevada JET unit is provided with a powerful EC fan and directionally adjustable nozzles that successively redistribute hot air from ceiling to the floor level.

Hot air flows from the nozzles with high speed, which causes movement of surrounding air. Heated air is thereby distributed in an optimal way across the space. Owing to large-scale heat coverage by the Nevada JET unit, lower number of appliances in said space is required with respect to common heating units. At the same time, the adjustable nozzles operate as a destratifier.

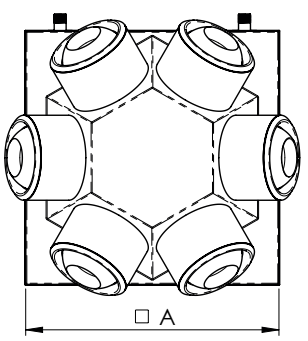
Basic distribution

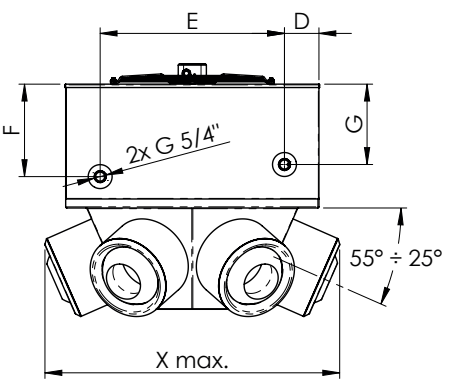
- Self-supporting light-weight structure made of zinc-coated metal sheet in RAL 9010 colour
- Highly powerful diffusers that distribute air flow in six directions in an effective way
- Highly powerful and smooth EC fans, balanced both statically as well as dynamically with built-in thermocontact to prevent overheating
- Powerful 3- and 4-line Cu/Al heat exchangers for max 90°/1,6 MPa.
- Two options for fully automatic control
- Suspension under ceiling

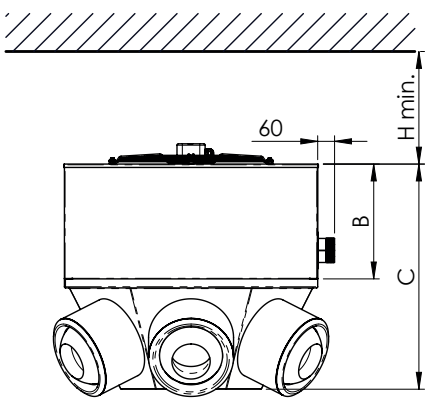
Model		**Nevada N3 JET 4RR**				**Nevada N4 JET 4RR**			
Air volume	[m³/h]	1300	2250	3000	3550	2950	4600	6200	8050
EC control	[V]	4	6	8	10	4	6	8	10
Heating capacity (50/30°C; Ti=15°C)									
heating capacity	[kW]	10,8	16,1	19,7	22	21,7	29,5	35,8	42,1
pressure loss	[kPa]	0,9	1,8	2,6	3,2	0,9	1,6	2,2	3
water flow	[l/h]	432	684	828	939	900	1260	1512	1800
outlet temperature	[°C]	39,5	36,2	34,3	33,3	36,7	33,9	32	30,4
Connection	[DN]	20				20			
EC fan fan voltage	[V]	230	230	230	230	400	400	400	400
power consumption	[W]	46	122	266	420	138	349,2	716,4	1100
current	[A]	0,3	0,8	1,7	2,6	0,22	0,54	1,09	1,7
Installation height	[m]	3,8 ÷ 9 m				5 ÷ 13 m			
IP rating		IP 54				IP 54			
Acoustic pressure*	[dB(A)]	47	50	56	59	49	57	62	66
Weight	[kg]	115				172			

Model		**Nevada N3 JET 3RR**				**Nevada N4 JET 3RR**			
Air volume	[m³/h]	1350	2350	3125	3700	3050	4750	6400	8300
EC control	[V]	4	6	8	10	4	6	8	10
Heating capacity (50/30°C; Ti=15°C)									
heating capacity	[kW]	12,4	18,2	21,9	24,3	24,4	32,5	39,1	45,6
pressure loss	[kPa]	0,9	1,7	2,3	2,8	0,9	1,5	2,1	2,7
water flow	[l/h]	504	756	936	1044	1044	1368	1656	1944
outlet temperature	[°C]	45,1	40,8	38,6	37,4	41,6	38,2	36	34,2
Connection	[DN]	20				20			
EC fan fan voltage	[V]	230	230	230	230	400	400	400	400
power consumption	[W]	46	122	266	420	138	349,2	716,4	1100
current	[A]	0,3	0,8	1,7	2,6	0,22	0,54	1,09	1,7
Installation height	[m]	3,8 ÷ 9 m				5 ÷ 13 m			
IP rating		IP 54				IP 54			
Acoustic pressure*	[dB(A)]	47	50	56	59	50	58	63	67
Weight	[kg]	111				168			

* Acoustic data in the distance 5m from the unit







	A	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**X**
Nevada N3 JET	900	408	800	123	655	330	287	400	990
Nevada N4 JET	1120	456	914	75	970	377	334	630	1190

Heat exchanger calculation data – Nevada N3 JET

		Nevada N3 JET 4RR											
Air volume	[m³/h]	1300	2250	3000	3550	1300	2250	3000	3550	1300	2250	3000	3550
EC control	[V]	4	6	8	10	4	6	8	10	4	6	8	10
Temperature drop		60/40°C				50/30°C				40/30°C			
heating capacity	[kW]	21,6	33,2	40,9	46,1	17,3	26,3	32,4	36,4	14,8	22,9	28,4	32,1
indoor tempertaure	[Ti °C]	0	0	0	0	0	0	0	0	0	0	0	0
outlet temperature	[Ta °C]	49	43,4	40,2	38,3	39,3	34,5	31,9	30,3	33,7	30	27,9	26,7
pressure lost	[kPa]	2,9	6,4	9,3	11,5	2,1	4,4	6,3	7,8	5,5	12,1	17,8	22,1
water flow	[l/hod]	900	1404	1728	1980	720	1116	1368	1548	1260	1944	2412	2736
heating capacity	[kW]	17,4	26,5	32,6	36,7	13,1	19,6	24	26,9	10,7	16,4	20,2	22,8
indoor tempertaure	[Ti °C]	10	10	10	10	10	10	10	10	10	10	10	10
outlet temperature	[Ta °C]	49,5	44,8	42,1	40,5	39,6	35,7	33,6	32,3	34,3	31,5	29,9	29
pressure lost	[kPa]	2	4,3	6,2	7,7	1,2	2,6	3,7	4,5	3,1	6,6	9,7	12
water flow	[l/hod]	720	1116	1368	1548	540	828	1008	1152	900	1404	1728	1944
heating capacity	[kW]	15,3	23,2	28,5	31,9	10,8	16,1	19,7	22	8,6	13,1	16,1	18,1
indoor tempertaure	[Ti °C]	15	15	15	15	15	15	15	15	15	15	15	15
outlet temperature	[Ta °C]	49,7	45,4	43	41,6	39,6	36,2	34,3	33,3	34,6	32,2	30,9	30
pressure lost	[kPa]	1,6	3,3	4,8	6	0,9	1,8	3,6	3,2	2,1	4,4	6,4	7,9
water flow	[l/hod]	648	972	1188	1368	432	684	828	936	720	1116	1368	1548
heating capacity	[kW]	13,2	19,8	24,2	27,2	8,5	12,5	15,1	16,9	6,5	9,8	11,9	13,4
indoor tempertaure	[Ti °C]	20	20	20	20	20	20	20	20	20	20	20	20
outlet temperature	[Ta °C]	49,8	46	43,8	42,6	39,3	36,4	34,9	34	34,7	32,8	31,7	31,1
pressure lost	[kPa]	1,2	2,5	3,6	4,5	0,6	1,1	1,6	2	1,2	2,6	3,7	4,6
water flow	[l/hod]	540	828	1008	1152	360	504	648	720	540	828	1008	1116

		Nevada N3 JET 3RR											
Air volume	[m³/h]	1350	2350	3125	3700	1350	2350	3125	3700	1350	2350	3125	3700
EC control	[V]	4	6	8	10	4	6	8	10	4	6	8	10
Temperature drop		70/50°C				60/40°C				50/30°C			
heating capacity	[kW]	23,6	35,3	42,8	47,9	19,6	29,1	35,2	39,3	15,5	22,9	27,6	30,7
indoor tempertaure	[Ti °C]	0	0	0	0	0	0	0	0	0	0	0	0
outlet temperature	[Ta °C]	51,6	44,3	40,4	38,2	42,8	36,5	33,3	31,4	33,9	28,7	26	24,5
pressure lost	[kPa]	2,6	5,4	7,6	9,3	1,9	3,9	5,5	6,7	1,3	2,6	3,7	4,5
water flow	[l/hod]	1008	1512	40,4	38,2	828	1224	1512	1656	648	972	1152	1296
heating capacity	[kW]	19,7	29,3	35,5	39,6	15,6	23,1	27,9	31,1	11,5	16,7	20,1	22,3
indoor tempertaure	[Ti °C]	10	10	10	10	10	10	10	10	10	10	10	10
outlet temperature	[Ta °C]	53	46,8	43,5	41,6	44,2	38,9	36,3	34,7	35,1	31	28,9	27,8
pressure lost	[kPa]	1,9	3,8	5,4	6,6	1,3	2,6	3,6	4,4	0,76	1,5	2,1	2,5
water flow	[l/hod]	828	1224	1512	1692	648	972	1188	1332	468	684	828	936
heating capacity	[kW]	17,7	26,3	31,8	35,5	13,6	20	24,1	26,9	9,4	13,6	16,3	18
indoor tempertaure	[Ti °C]	15	15	15	15	15	15	15	15	15	15	15	15
outlet temperature	[Ta °C]	53,7	47,9	45	43,3	44,8	40,1	37,8	36,4	35,5	32,1	30,3	29,3
pressure lost	[kPa]	1,54	3,2	4,4	5,4	1	2	2,8	3,4	0,5	1	1,4	1,7
water flow	[l/hod]	756	1116	1332	1512	576	828	1008	1152	396	576	684	756
heating capacity	[kW]	15,7	23,3	28,1	31,3	11,6	16,9	20,4	22,6	7,2	10,3	12,3	13,6
indoor tempertaure	[Ti °C]	20	20	20	20	20	20	20	20	20	20	20	20
outlet temperature	[Ta °C]	54,4	49,2	46,5	44,9	45,4	41,2	39,2	38,1	35,8	32,9	31,6	30,8
pressure lost	[kPa]	1,3	2,5	3,6	4,3	0,8	1,5	2,1	2,5	0,4	0,6	0,9	1
water flow	[l/hod]	648	972	1188	1332	468	720	864	972	288	432	504	576

* the indicated heating outputs are maximum (regardless of suspension height)

Heat exchanger calculation data – Nevada N4 JET

		Nevada N4 JET 4RR											
Air volume	[m³/h]	2950	4600	6200	8050	2950	4600	6200	8050	2950	4600	6200	8050
EC control	[V]	4	6	8	10	4	6	8	10	4	6	8	10
Temperature drop		60/40°C				50/30°C				40/30°C			
heating capacity	[kW]	44,3	61,4	75,5	89,9	35,3	48,6	59,6	70,7	30,7	42,7	52,7	62,9
indoor tempertaure	[Ti °C]	0	0	0	0	0	0	0	0	0	0	0	0
outlet temperature	[Ta °C]	44,2	39,4	35,9	32,9	35,3	31,2	28,3	25,9	30,6	27,4	25,1	23,1
pressure lost	[kPa]	3,1	5,6	8,2	11,2	2,2	3,8	5,6	7,6	6	10,8	15,8	21,7
water flow	[l/hod]	1872	2628	3240	3852	1512	2088	2556	3024	2628	3636	4500	5400
heating capacity	[kW]	35,6	49	60	71,3	26,3	36	43,8	51,8	22	30,4	37,4	44,5
indoor tempertaure	[Ti °C]	10	10	10	10	10	10	10	10	10	10	10	10
outlet temperature	[Ta °C]	45,5	41,4	38,6	36,1	36,3	33	30,9	29	32	29,5	27,8	26,3
pressure lost	[kPa]	2,2	3,8	5,4	7,4	1,3	2,2	3,2	4,3	3,3	5,9	8,5	11,6
water flow	[l/hod]	1512	2088	2556	3060	1116	1512	1872	2196	1872	2592	3204	3816
heating capacity	[kW]	31,3	42,7	52,2	61,9	21,7	29,5	35,8	42,1	17,6	24,2	29,7	35,2
indoor tempertaure	[Ti °C]	15	15	15	15	15	15	15	15	15	15	15	15
outlet temperature	[Ta °C]	46,2	42,4	39,8	37,7	36,7	33,9	32	30,4	32,6	30,5	29,1	27,9
pressure lost	[kPa]	1,7	2,9	4,2	5,7	0,9	1,6	2,2	3	2,2	3,9	5,6	7,6
water flow	[l/hod]	1332	1800	223	2628	900	1260	1512	1800	1512	2052	2520	2988
heating capacity	[kW]	26,6	36,3	44,3	52,4	16,9	22,7	27,4	32,1	13,1	17,9	21,8	25,8
indoor tempertaure	[Ti °C]	20	20	20	20	20	20	20	20	0	20	20	20
outlet temperature	[Ta °C]	46,4	43,2	41,1	39,2	36,9	34,5	33	31,8	33,1	31,5	30,4	29,4
pressure lost	[kPa]	1,3	2,2	3,1	4,2	0,6	1	1,4	1,8	1,3	2,3	3,2	4,4
water flow	[l/hod]	1116	1548	1872	2232	720	972	1152	1368	1116	1512	1872	2196

		Nevada N4 JET 3RR											
Air volume	[m³/h]	3050	4750	6400	8300	3050	4750	6400	8300	3050	4750	6400	8300
EC control	[V]	4	6	8	10	4	6	8	10	4	6	8	10
Temperature drop		70/50°C				60/40°C				50/30°C			
heating capacity	[kW]	47	63,6	71,2	90,7	38,9	52,4	63,4	74,3	30,6	41	49,4	57,8
indoor tempertaure	[Ti °C]	0	0	0	0	0	0	0	0	0	0	0	0
outlet temperature	[Ta °C]	45,5	39,5	35,6	32,2	37,6	32,5	29,2	26,4	29,6	25,5	22,8	20,5
pressure lost	[kPa]	2,7	4,7	6,7	8,9	2	3,4	4,8	6,4	1,4	2,3	3,2	4,3
water flow	[l/hod]	2016	2736	3312	3888	1656	2232	2700	3168	1296	1728	2088	2484
heating capacity	[kW]	39,1	52,7	63,9	74,9	30,9	41,4	49,9	58,5	22,5	29,8	35,8	41,8
indoor tempertaure	[Ti °C]	10	10	10	10	10	10	10	10	10	10	10	10
outlet temperature	[Ta °C]	47,8	42,7	39,4	36,6	39,8	35,7	33	30,8	31,7	28,5	26,5	24,8
pressure lost	[kPa]	2	3,4	4,7	6,3	1,3	2,2	3,1	4,2	0,8	1,3	1,8	2,4
water flow	[l/hod]	1656	2232	2736	3204	1296	1764	2124	2484	936	1260	1512	1764
heating capacity	[kW]	35,1	47,2	57,1	67	26,8	35,8	43,2	50,5	18,3	24,1	28,9	33,6
indoor tempertaure	[Ti °C]	15	15	15	15	15	15	15	15	15	15	15	15
outlet temperature	[Ta °C]	49	44,3	41,3	38,8	40,9	37,3	34,9	32,9	32,7	30	28,3	26,9
pressure lost	[kPa]	1,6	2,7	3,9	5,2	1	1,7	2,4	3,2	0,6	0,88	1,2	1,6
water flow	[l/hod]	1476	2016	2448	2844	1152	1512	1836	2160	756	1008	1224	1440
heating capacity	[kW]	31,1	41,7	50,4	59	22,7	30,2	36,3	42,4	13,9	18,2	21,6	25,1
indoor tempertaure	[Ti °C]	20	20	20	20	20	20	20	20	20	20	20	20
outlet temperature	[Ta °C]	50	45,9	43,2	41	41,9	38,8	36,7	35,1	33,5	31,3	30	28,9
pressure lost	[kPa]	1,3	2,2	3,1	4,1	0,8	1,3	1,8	2,4	0,3	0,5	0,8	1
water flow	[l/hod]	1332	1764	2160	2520	972	1296	1548	1800	576	756	900	1080

* the indicated heating outputs are maximum (regardless of suspension height)

Air distribution

Individual nozzles may be adjusted to optimize exhausted air distribution. An ideal air direction depends on the area of use and mounting height of the appliance. These aspects substantially influence the selection of correct Nevada JET type.

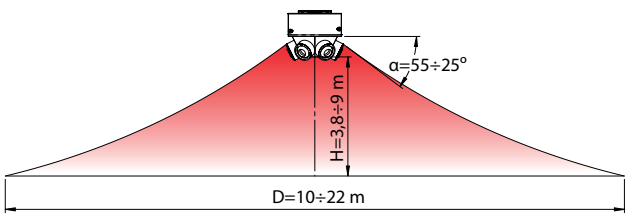
Graphical illustration of suspension height (H) and surface of heated floor area (D)

Nevada N3 JET

Input parameters:

- Ti = 15°C
- Ta = 20°C
- Q = 3.550 m^3/h

Field of action: 80-380m^2

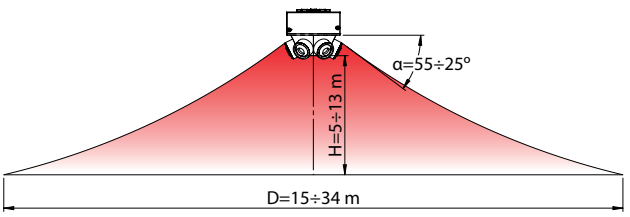


Nevada N4 JET

Input parameters:

- Ti = 15°C
- Ta = 20°C
- Q = 8.050 m^3/h

Field of action: 190-900 m^2



The following steps will guide you to choosing the right heating unit and configuration of optimum nozzle angle:

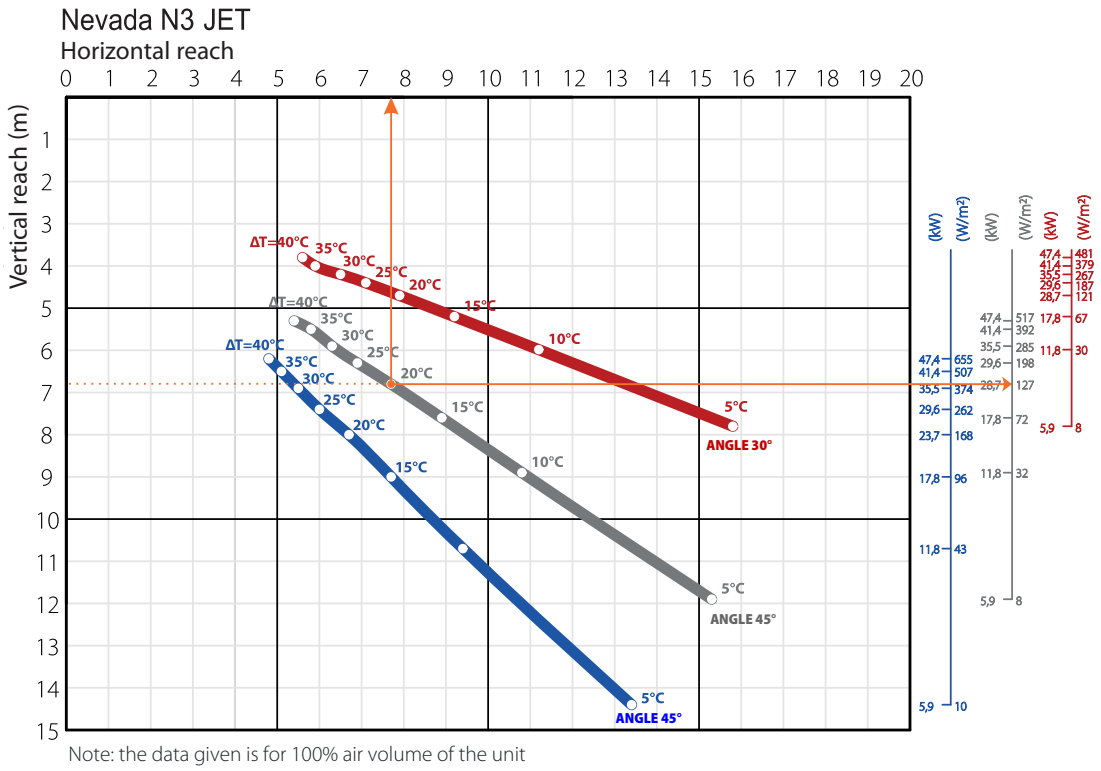
- Use room dimensions and specify average (D) floor area of heated space Consider mounting height the mounting height (H) is the distance between the floor and lower portion of the unit.
- Use table below and select the correct angle of exhaust nozzle (α), adequate model of the heating unit, and number.
- Selection of the unit depends on the used source of heat, required spatial temperature, and power input (kW). Use technical parameters of the heating unit for final selection.

Configuration of optimal nozzle angle (°) based on the mounting height (H) and diameter of heated floor area (D):

D (m)	10	12,5	15	17,5	20	22,5	25	27,5	30	32,5
H (m)										
3	36	30	26	25	22	20	-	-	-	-
4	43	36	33	32	29	28	27	25	23	22
5	-	44	39	36	34	31	30	28	26	24
6	-	-	44	39	36	34	32	30	28	26
7	-	-	-	44	39	37	34	32	31	31
8	-	-	-	-	45	42	41	38	35	33
9	-	-	-	-	46	45	42	40	38	36
10	-	-	-	-	-	46	45	43	40	38
11	-	-	-	-	-	-	47	45	43	42
12	-	-	-	-	-	-	-	47	46	44
13	-	-	-	-	-	-	-	-	48	46
14	-	-	-	-	-	-	-	-	-	48

Nevada N3 JET Nevada N4 JET

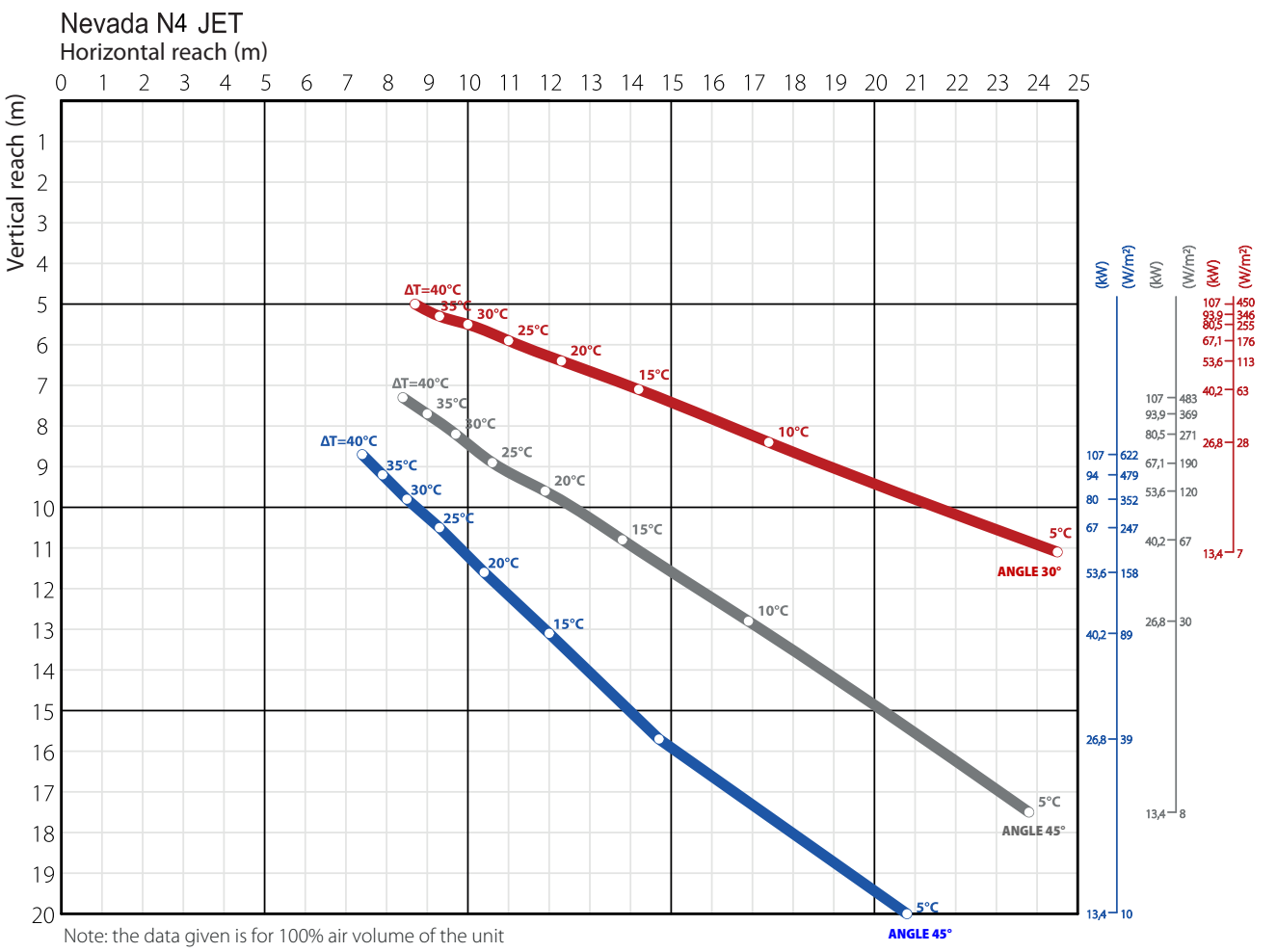
Air flow reach graph



Note: the data given is for 100% air volume of the unit

Exemplary graph reading:

1) Mounting height H of the Nevada JET unit is 6,8 m.
2) Using the values in table on page 6, an optimum angle was selected, which is 45° in this exemplary case (grey curve).
3) Determination of the difference between suction (Ti) and exhaust (Ta) temperature. In the model case: 43,6-20 = 23,6°C ΔT≒20°C).
4) Horizontal reach is 7,7m (this is R radius). Average of floor area D = 2x R. In this exemplary case it is 15,4 m.
5) Heating output for said input values is 23,7 kW (surface area output 127 W/m²).



Note: the data given is for 100% air volume of the unit

Control

Three types of control are used for controlling of the Nevada JET heating units:

- OE 230 / OE 400 controller
- Unireg distribution board with integrated control board + Ditronic Touch EC touch controller
- Unireg distribution board with integrated BMS input EC control board

OE 230 / OE 400 controller

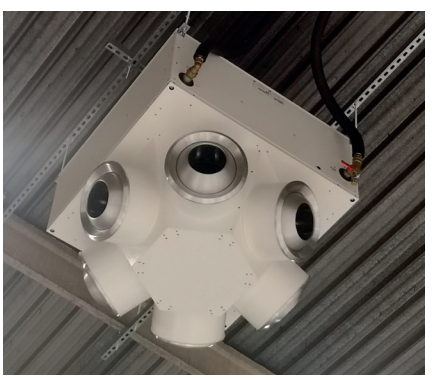
Revolutions controller for controlling of EC fans revolutions in the range of 0-10V. Up to three Nevada JET units may be connected to one OE controller.

Type of control	OE	OET
Unit design	230 V	400 V
For maximum unit(s) current	10 A	10 A
IP rating	IP 40	
Dimensions (length x height x width)	230 x 180 x 90 mm	

UNIREG

Unireg is the distribution board suitable for control of heating units with hot water heater and EC motors for 230V (Nevada N3 JET) and 400V (Nevada N4 JET) where integration of the controller into the unit is not possible. The system permits the use of all functions offered by Ditronic Touch controllers, or BMS input EC switch. The selection of an appropriate Unireg type must consider the power input of the unit (output power limitation in "A").

Type of control	Unireg DIT EC	Unireg DIT EC	Unireg BMS EC	Unireg BMS EC
Unit design	230 V	400 V	230 V	400 V
For maximum unit(s) current	14 A	9 A	14 A	9 A
IP rating	IP 20	IP 20	IP 20	IP 20
Dimensions (length x height x width)	300x400x170 mm		300x400x170 mm	

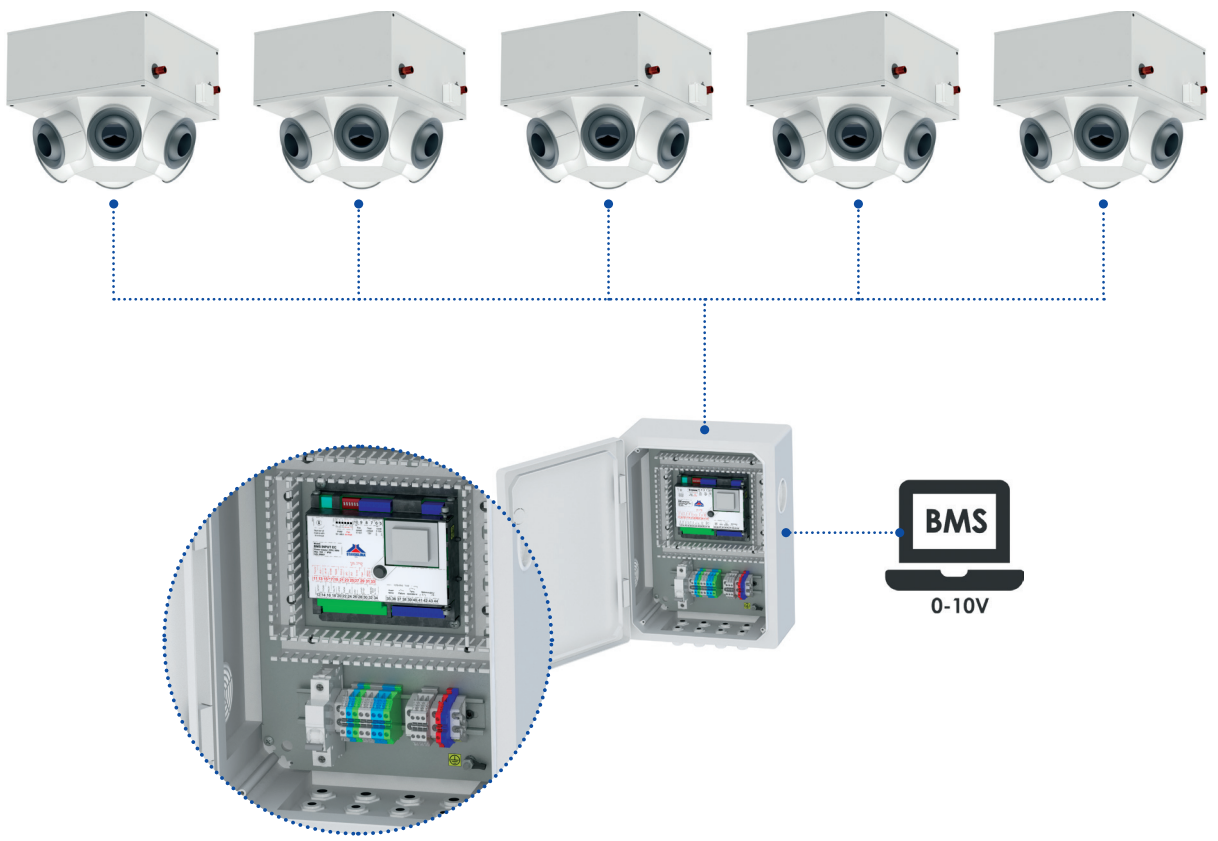


Control: Unireg + BMS input EC

Main properties:

- fan and valve control using the external control signal 0-10V
- possible fan rundown configuration (10-70 sec)
- operation signal (active when the fans are in use)
- failure signal (active as soon as one of the motors indicate zero revolutions with non-zero request)
- functional only with a proportionally controlled valve 0-10V (or a termostatic valve may be used)
- optional delivery of a thermostat to control the fan autonomously

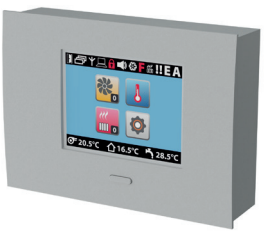
Unireg BMS input EC max 5 units may be combined together



Control

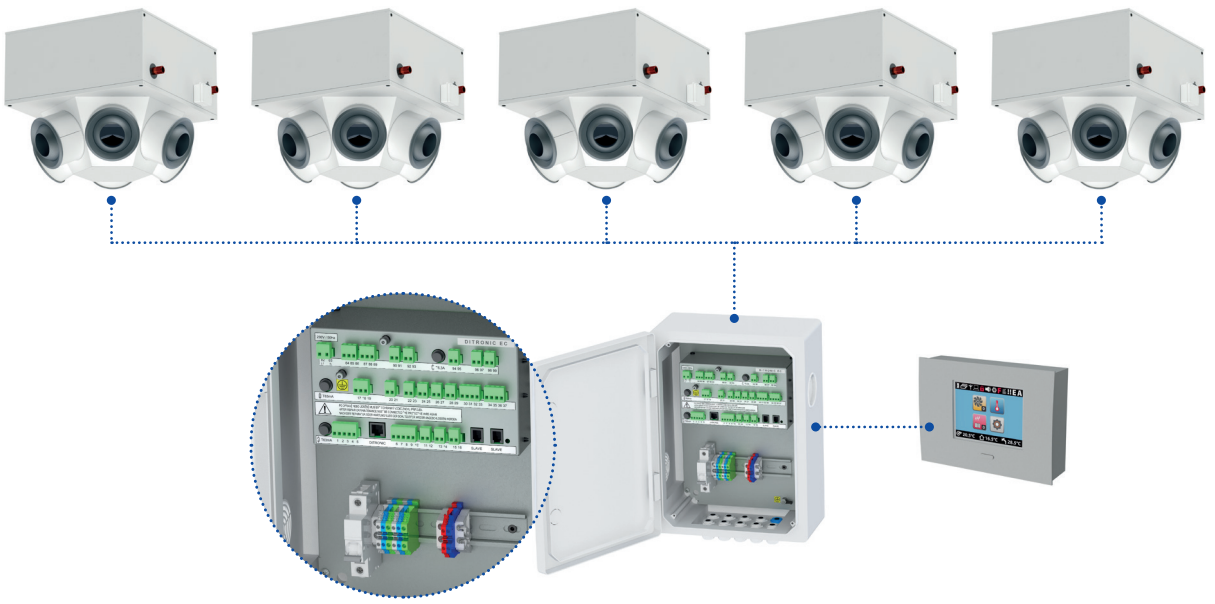
Control: Unireg + Ditronic Touch EC

The Ditronic Touch controller is an intelligent touch controller developed for control of the heating units with fans fitted with AC as well as EC fans. The design and well-arranged display makes the controller suitable for all types of operation (from basic up to comfort interiors). The controller permits the user to control the curtain manually, from a building management system, or via Modbus protocol. An UTP cable with RJ-45 connector is used for interconnection between the heating unit and the controller.

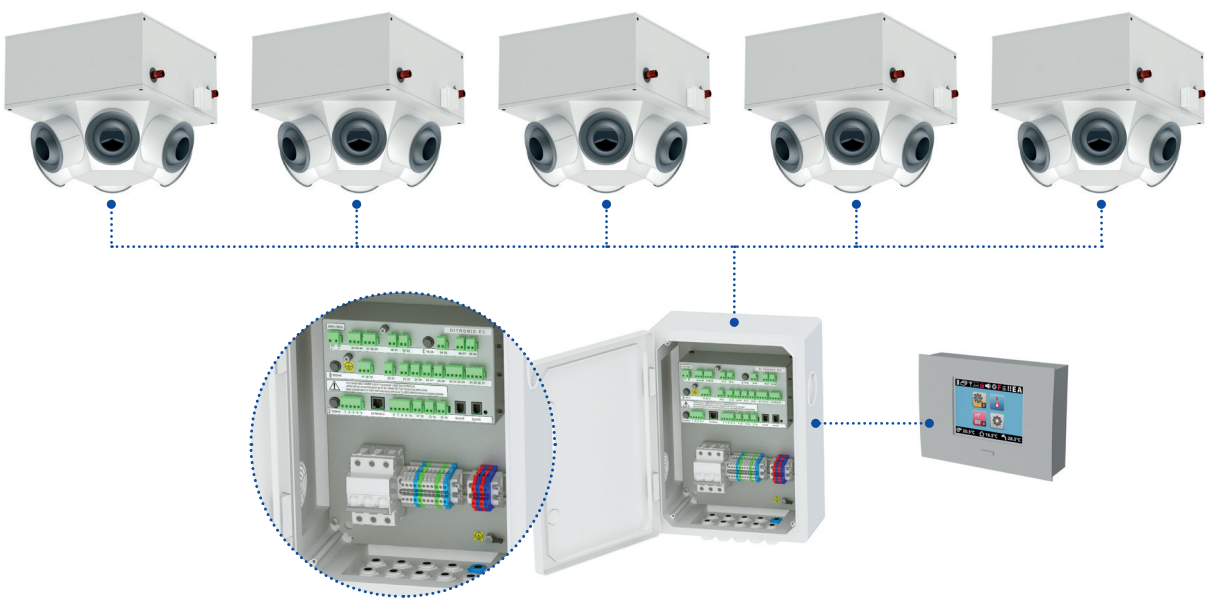


Dimensions: l.125 x h.90 x w.32 [mm]
Wall mounting, IP 20

Unireg DIT EC 230V for Nevada N3 JET - max 5 units may be combined together



Unireg DIT EC 400V for Nevada N4 JET - max 5 units may be combined together



Comparing key properties of OE, Ditronic Touch, and BMS input controllers

	Description of function	OE	BMS input	Ditronic Touch
	Wall-mounted control panel	X	✓	✓
	Local fan revolutions control	✓	✓	✓
	Global system fan revolutions control – 3-step	X	X	✓
	Global system fan revolutions control – 0–10V signal	X	X	✓*
	ModBUS protocol fan revolutions control	X	X	✓
	Fan revolutions control based on outdoor temperature	X	X	✓
	Local heating control	✓**	✓	✓
	Global system heating control – 3-step	X	X	✓
	Global system heating control – 0–10V signal	X	X	✓*
	ModBUS protocol heating control	X	X	✓
	Heating control based on room or exhaust temperature	X	X	✓
	Operation and failure signalling to the global system	X	X	✓
	Week time hours	X	X	✓
	Anti-freeze heat exchanger protection	X	X	✓
	Heat up mode selection – winter/summer	X	X	✓
	Keyboard lock to protect against unintentional change	X	X	✓
	MASTER/SLAVE concatenation	X	✓	✓
	Optional connection of external contact	X	X	✓
	Limiting exterior thermostat	X	X	✓
	Device automatic operation	X	X	✓
	Valve function configuration for door interlock	X	X	✓
	Radio remote control	X	X	✓
	Exhaust and room temperature display, medium temperature display	X	X	✓

* with an external module 0-10V
** when using a room thermostat

Accessories

Underceiling suspensions
- 4 pieces kit

Valves

As required by the customer, a non-embedded 2-way valve with control drive can be delivered for the hot water heat exchanger. A suitable head need to be selected depending on type of the controller of the heating unit.

Identification	Vavle properties	Permissible pressure difference [bar]	Permissible operation temperature [°C]	Permissible operation pressure [bar]	Drive properties
ETVQ 1"- N	2-way, independent on pressure, not embedded	0,23 / 4	90	16	electrothermic, IP 54*
					electric servo drive with 0-10V output, IP 54**
ETVQ 5/4"- N	2-way, independent on pressure, not embedded	0,23 / 4	90	16	electrothermic, IP 54*
					electric servo drive with 0-10V output, IP 54**

* Electrothermic drive 230V designed to be controlled by Ditronic Touch controller only. Power voltage 230V AC, opening time about 4 minutes upon start. When power is interrupted, smooth opening of the drive or of valve occurs.
The drive is always delivered in "normally open" (NO - 230 V) version.

** Electric servo drive 24V designed to be controlled by BMS input EC only. Power voltage 24 VAC/VDC, opening time about 1 minute. Proportional control with output control signal 0 - 10 VDC.

Order key

Nevada - N3 - JET - 4RR

- **Nevada** (Type) - name of heating unit
- **N3** (Location of the unit) – output variant – max 3700 m³/h
  N4 – output variant – max 8300 m³/h
- **JET** (Model) - heating unit model
- **4RR** (Design) – Water heater design:
  3RR – three-row heat exchanger
  4RR – four-row heat exchanger

Distributor:

STAVOKLIMA s.r.o.
BUDĚJOVICKÁ 450 • 370 01 HOMOLE
tel.: +420 387 001 931
e-mail: info@stavoklima.cz
www.stavoklima.eu