

ENGINEERING MANUAL



NIRVANA
TAS

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Point of Manufacture - Unicov, Czech Republic & Campbellsville, Kentucky USA
ENGINEERING DATA

Model Name International	IRN7K-TAS-7	IRN7K-TAS-9	IRN7K-TAS-12H
Model Name North America	IRN10H-TAS-100	IRN10H-TAS-130	IRN10H-TAS-175H

GENERAL COMPRESSOR DATA

Capacity (Ref. Intake Cond.) FAD ⁽¹⁾	m³/min (cfm)	1.10 (39.5)	0.90 (33.4)	0.70 (24.8)
Capacity at Minimum Speed	m³/min (cfm)	0.39 (13.9)	0.54 (19)	0.54 (19)
Maximum Target Pressure ⁽¹²⁾	barg (psig)	7.0 (100)	9.0 (130)	12.1 (175)
Maximum Operating Pressure ⁽¹³⁾	barg (psig)	7.6 (110)	9.7 (140)	12.8 (185)
Minimum Target Pressure	barg (psig)	5.86 (85)	7.58 (110)	10.69 (155)
Maximum Operating Temperature	°C (°F)	46 (115)	46 (115)	46 (115)
Minimum Operating Temperature	°C (°F)	2 (36)	2 (36)	2 (36)

SOUND LEVEL ⁽²⁾

Base Mount Enclosed	dB(A)	68	67	67
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COOLING DATA

Air-cooled (Ambient Temperature 40°C/104°F)

Coolant Discharge Temperature	°C (°F)	88.9 (192)	88.3 (191)	88.9 (192)
A/E Injection Temperature	°C (°F)	71.1 (160)	73.3 (164)	74.4 (166)
Aftercooler - Inlet ⁽³⁾	°C (°F)	82.8 (181)	82.2 (180)	81.7 (179)
Aftercooler - Outlet	°C (°F)	45.6 (114)	43.9 (111)	42.8 (109)
Heat Removal Oil Cooler	kW (1000 Btu/hr)	7 (23.9)	7.1 (24.3)	7.2 (24.6)
Heat Removal Oil and Aftercooler	kW (1000 Btu/hr)	7.8 (26.7)	7.8 (26.7)	7.8 (26.7)
Heat Removal Dryer Condenser (Max)	kW (1000 Btu/hr)	1.4 (4.8)	1.4 (4.8)	1.4 (4.8)
Maximum Added Static Pressure	Pa (in H ₂ O)	62 (0.25)	62 (0.25)	62 (0.25)
Coolant Flow	lpm (gpm)	17 (3.75)	20.8 (4.58)	32 (7.0)
Fan Air Flow (Dryer Included)	m³/min (cfm)	45.3 (1600)	45.3 (1600)	45.3 (1600)
Cooling Air CTD	°C (°F)	40 (72)	40 (72)	40 (72)
Aftercooler CTD ⁽³⁾	°C (°F)	5.6 (10)	3.9 (7)	2.8 (5)

CONSTRUCTION FOUNDATION AND MOUNTING DATA

PIPING CONNECTIONS

Air Discharge Base Mount	Inches NPT ⁽⁹⁾	0.75
Air Discharge from ASME Receiver	Inches NPT	0.75
Air Discharge from CE Receiver	Inches BSPT	0.75
Package Automatic Condensate Drain	Inches NPT	0.25
Coolant Drain	Drain Plug	9/16-SAE
Diameter of Power Inlet	mm (inch)	25 mm (1 inch)
Diameter of Power Inlet (Dryer)	mm (inch)	13 mm (1/2 inch)

COOLANT LUBRICATION DATA

Coolant Sump Capacity	Litres (US gal)	3.0 (0.8)
Total Coolant Fill Capacity	Litres (US gal)	4.5 (1.2)

DIMENSIONS & WEIGHT	ASME Receiver	Base Mounted	80 Gal Rec	120 Gal Rec
Length, Width, Height	mm	1315 / 731 / 835	1349 / 731 / 1460	1897 / 731 / 1460
Length, Width, Height	Inches	51.8 / 28.8 / 32.9	53.1 / 28.8 / 57.5	74.7 / 28.8 / 57.5
Net Weight	kg (lbs)	350 (780)	472 (1040)	487 (1072)
Air Discharge Connection	Inches	3/4" NPT ⁽⁹⁾	3/4" NPT	3/4" NPT
GA Drawing Number		22537088	22537047	22537054

	EN 87/404 Receiver	Base Mounted	272 L Rec	500 L Rec
Length, Width, Height	mm	1315 / 731 / 835	1311 / 731 / 1460	2059 / 731 / 1460
Length, Width, Height	Inches	51.8 / 28.8 / 32.9	51.6 / 28.8 / 57.5	81.1 / 28.8 / 57.5
Net Weight	kg (lbs)	350 (780)	458 (1008)	513 (1129)
Air Discharge Connection	Inches	3/4" BSPT	3/4" BSPT	3/4" BSPT
GA Drawing Number		22537096	22537062	22537070

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PERFORMANCE DATA

Compressor Module

Rotor Diameter (male)	mm	74.25	74.25	74.25
Package Discharge Pressure	barg (psig)	7.0 (100)	9.0 (130)	12.1 (175)
Male Rotor Shaft Speed ⁽⁸⁾	rpm	4670	4065	3300
Tip Speed ⁽⁸⁾	m/sec	18.16	15.80	12.82
Tip Speed ⁽⁸⁾	ft/sec	59.56	51.85	40.1

IntelliDrive Unit

Nominal Power IntelliDrive Module	kW (HP)	7.5 (10)	7.5 (10)	7.5 (10)
Applied Power ⁽⁸⁾	kW (HP)	7.6 (10.2)	7.3 (9.8)	7.3 (9.8)
Rated Power - Fan	kW (HP)	0.37 (0.5)	0.37 (0.5)	0.37 (0.5)
Applied Power - Full Package ⁽⁸⁾	kW (HP)	8.0 (10.7)	7.7 (10.3)	7.7 (10.3)
IntelliDrive Efficiency ⁽⁵⁾	Percent	96%	96%	96%
Main Motor Efficiency	Percent	91%	91%	91%
Fan Motor Efficiency	Percent	74%	74%	74%
Applied Power - Dryer Compressor	kW	0.5	0.5	0.5
Input kW at Maximum Target Pressure	kW (Compressor)	9.2	9.0	8.7
Input kW at Maximum Target Pressure	kW (TAS Package)	9.7	9.5	9.2
Specific Power ⁽⁴⁾	kW/100cfm	24.6	28.4	37.1
	kW/m ³ /min	8.8	10.6	13.1

ELECTRICAL DATA

Motor / Drive Protection		Single Phase	IP55 / NEMA 12 / TEAO			IP55 / NEMA 12 / TEAO		
Drive Motor Frame			132S	132S	132S	132S	132S	132S
Current - Intellidrive ⁽⁸⁾	Amps		26.3	24.9	23.8	14.0	13.3	13.3
Current - Cooling Fan	Amps		2.4	2.3	2.2	1.5	1.4	1.2
Package Current @ Max Target Press	Amps		28.8	27.2	26.0	15.5	14.7	14.5
Intellidrive Inrush Current	Amps		26.3	24.9	23.8	14.0	13.3	13.3
Package Inrush Current	Amps		38.2	36.8	35.5	21.5	20.3	19.3
Package Power Factor ⁽⁸⁾			0.91	0.91	0.91	0.92	0.92	0.82

Dryer Electrical Data

Full Load Current	Amps	5	2.7
Starting Current	Amps	30	12.6

Electrical Installation

Recommended Supply Cable Size ⁽¹⁰⁾	mm ² /Cu	16.0	10.0	10.0	6.0	4.0	2.5
Minimum Supply Cable Size (NEC) ^{(10) (6)}	AWG	6	8	8	10	12	14
Maximum Fuse Rating ^{(7) (10)}	Amps	60	60	60	30	30	30
Recommended Wire Size - Dryer ⁽⁶⁾⁽¹⁰⁾	mm ² /AWG	0.9/18	0.9/18				

Refrigerated Dryer Data

ISO Class 5

Pressure Dew Point ISO Class ⁽¹¹⁾	°C (°F)	lower than 7°C (44°F)
Refrigerant Weight of R-134a	Grams (Oz)	350 (12.7)

Filter Data	CCN	Particulate		Liquid	
		ISO Class	Filtration	ISO Class	Filtration
Primary Filter Detail - at 21°C (70°F)	85567162	3	1 micron	3	0.6 mg/m ³ (0.5 ppm)
Final Filter Detail - at 21°C (70°F)	85537170	2	0.01 micron	1	0.01 mg/m ³ (0.01 ppm)

Pressure Drop Data

Dry Pressure Drop	barG / (psig)	0.17	2.5	0.17	2.5	0.10	1.5
Primary Filter Wet Pressure Drop	barG / (psig)	0.10	1.5	0.07	1	0.03	0.5
Final Filter Wet Pressure Drop	barG / (psig)	0.14	2	0.10	1.5	0.07	1
Total Pressure Drop ⁽¹⁴⁾ ISO Class 2.5.1 Air	barG / (psig)	0.41	6	0.34	5	0.21	3

Notes :

- (1) FAD (Free Air Delivery at actual inlet conditions) is full package performance including all losses. Tested in accordance with 'ISO 1217 : 1996 Annex C.
- (2) Measured in free field conditions per ISO 2151 using Hemispherical Method, with + 3 dB(A) tolerance.
- (3) 40% Relative Humidity Inlet Air and maximum speed (For alternate conditions refer to SSR toolbox or contact IR)
- (4) Specific power guaranteed in accordance with ISO 1217 : 1996 Annex C
- (5) "Intellidrive" includes variable frequency drive electronics
- (6) This is a minimum requirement based on 90°C wire - It may be necessary to use larger cables to comply with local regulations or if the voltage drop exceeds 5% of the nominal voltage.
- (7) Must be Fast acting Class-J, T or semiconductor type, Current limiting, Interrupt rating-200,000 Amps RMS SYM
- (8) Measured at rated capacity and maximum target pressure
- (9) Regional Installation kit will provide flexible connection to NPT or BSPT
- (10) Always apply local electrical codes for sizing cables and fusing.
- (11) Dew point measured in accordance with Iso 8573-1:2001 with inlet air to package of 25 °C (77°F) and RH of 60%
- (12) Target discharge pressure, sensed by pressure transducer located at package discharge
- (13) Maximum pressure at package discharge, value at which compressor will stop when unit operating at maximum target pressure
- (14) Total Air System package including compressor, integral dryer with pre and final compressed air filters