

High Efficiency Low Height Air Handler With Side Discharge Condensing Unit USIN-USON Scroll Series



TABLE OF CONTENTS

Nomenclature	.03
Engineering Features	.4-5
Operating Range & Physical And Electrical Data	.06

NOMENCLATURE





ENGINEERING FEATURES

Indoor Units

Cabinet:

Polyester based powder coated, made from hot dip galvanized steel sheet metal for high corrosion resistance of 1008 hrs salt spray test as per ASTM-B117 std.



Silent Operation:

The motor and fans are designed to achieve performance by running at lower RPM to reduce tip speeds for extremely silent operation. Motors used in the units are 6 pole. The fans are designed to operate at lower blower outlet and coil face velocity for quiet and highly efficient operation of units.

Motor:

Multi speed, internally protected ultra high efficiency with Class-B insulation mounted on resilient neoprene rubber mountings to reduce noise level.

Ultra high efficiency and low RPM 6 Pole motors:



Motor Mounting Arrangement:

Specially designed mounting arrangement for motors to have center alignment of motor and fan blower assembly with housing, which provides absolute sturdiness against vibrations.







Low Height:

Height 12 to 16 inches. Allows for horizontal installation in most standard or replacement work.

Brass Distributor:

Distributor is used in all the indoor units to uniformly distribute refrigerant in the evaporator circuits for best performance in the evaporator coil.



ENGINEERING FEATURES

Blower:

Direct driven, centrifugal, forward curved, double inlet double width type, made from galvanized steel sheet.

Blower Housing:

Double inlet orifice, profile to give advantage in low noise, high efficiency and uniform air flow, made from galvanized steel sheet.





Old Conventional Design



Desian

Insulation:

Irradiated grade EPE, fire retardant, odour free material for thermal, hygiene and acoustic application.



Evaporator Coil:

Coils are constructed with inner grooved copper tubes (IGT) and aluminium fins. Fins mechanically bonded to the tubes for maximum heat transfer capabilities. Coated highly corrosion resistant aluminium fins are provided as standard features in all the units.

Antifreeze Protection For Coil:

Antifreeze temperature sensor is provided on coil against freezing during abnormal operating conditions.

Refrigerant Connections :

For field piping connections, sweat solder type joints are provided outside the unit. Rubber plugs with positive pressure inside the coil are provided on the connection for ease of installation.

Drain Pan:

Insulated and powder coated galvanized steel drain pan is designed with adequate slope to have proper condensate drain. The sandwich insulation kept between upper and lower sheet metal panels provides drip free performance.

Drain Pan Cleaning:

The construction of cabinet is designed to remove the drain pan for servicing and cleaning purpose through bottom access under installed condition without disturbing the installation of the unit.



Unit Suspension:

Rolled up rigid brackets for proper and easy mounting / installation of units. Rubberized cushions are provided at hanging brackets for suspending the unit from the ceiling / concrete slab to eliminate vibration.

Filters:

5mm thick woven synthetic, permanent washable filters are standard on all units. Provision for fixing 1/2" thick field supplied filters is a standard feature on all the units.



Service Access:

Removable panels at the bottom of the unit are provided for service access to blower, blower housing, motors and expansion device. Entire fan and motor section assembly can be separated from the cabinet by opening special bolts for servicing and maintenance purposes in all the units. This feature provides the complete access of components without opening the ducting and refrigerant connections. Filter access provision is made without removing any part of unit (Lift and Remove from backside).



Microprocessor Based Controller:

Microprocessor based electronic controller with built-in programming for complete control of system, time delays for refrigeration systems protection and interlocking arrangement with safeties are provided as standard features on all the indoor units.

Controller Features:

- -Standard with all units
- -Microprocessor based unit
- -High pressure and low pressure protection
- -Antifreeze protection
- -Built-in time delay for compressor

Advance Controller Features (Optional):

Weekly Scheduling Remote ON/OFF **BMS** Compatibility Wireless remote controller Drain Pump supply



ENGINEERING FEATURES

Connecting Cable Flexibility:

Quick connector is provded for interconnecting communication cable (10 meter long) from main controller to Controller User Interface. This provides flexibility for quick connections, avoiding miss connections in terminals and ensures safety to service personnel.



Provision For Direct Duct Connection:

Flanges are provided on the front of units, suitable to connect flexible duct.

Riveted Panels:

Non serviceable panels in the cabinet are joined with the help of rigid steel rivets. The riveted panel provides very good stability, fit and finish.

Outdoor Units

Compressor:

Compressors used in the units are hermetically sealed scroll type and incorporate internal high temperature motor overload protection, and durable insulation on the motor winding. The compressors used are tropical compressors optimized for performance and reliability for high temperature environmental conditions. Internally it is spring mounted and externally mounted on rubber grommets to reduce vibration and noise.

Condenser Fan Motor:

Internally protected, totally enclosed Class B insulation and permanently lubricated type motors are tested for high ambient operation.



Metallic Condenser fan blades ensure safety and high durability. Suitable for operation in high ambient temperature and heavy wind pressure.



Fan Guard:

Fan:

Metallic wire guard confirms to IEC safety standard and high durability. **Cabinet:**

Polyester Powder coated, made from hot dip galvanized steel sheet metal for high corrosion resistance of 1008 hrs salt spray as per ASTM-B117 std. Pressed parts like Base, Foot, Top, Front, Fan Motor Bracket and Side grille add sturdiness to the cabinet.

Refrigerant Connections:

All connections are sweat and soldered type on exterior of the unit, located close to the ground for neat appearing installation.

Service Valves:

Standard on all models. These valves are provided outside the unit with service port for connecting gauges the ease of installation, additional refrigerant charging and monitoring of system.





Serviceability:

The compressor and the electrical box is located in separate compartment of the cabinet providing for easy access through service panel.



Filter Drier:

Filter drier is supplied loose as standard accessory with the units for installation in liquid line in field. The filter drier prevents the unwanted moisture in the system and helps in enhancing the life of the system.



Precharged:

Every unit is factory charged and run tested before shipment.

Pressure Cut-Outs:

High Pressure and Low Pressure safety controls are a standard feature on all the models.





Condenser Coil:

RELY ON RUUD."

Coils are constructed with inner grooved copper tube (IGT) and aluminum fins mechanially bonded to the tubes for maximum heat transfer capabilites (Optional coated highly corrosion resistant aluminium fins.)

PHYSICAL & ELE	CTRICAL DATA											
					TABLE FO	R TECHNICAL DATA	Ð					
AIR HANDLING	UNIT MODEL			USIN-021T	USIN-025T	USIN-029T	USIN-036T	USIN-036T	USIN-042T	USIN-048T	USIN-054TN	USIN-054TN
CONDENSING U	NIT MODEL			USON-021TS	USON-025TS	USON-030TS	USON-036TS	USON-036NS	USON-042NS	USON-048NS	USON-048NS	USON-054NS
AMBIENT	EVAP		TMBH	22.7	26.0	31.1	37.3	35.6	41.0	48.2	48.5	58.0
TEMP	ENTERING	26.7 DB / 19.4 WB °C	SMBH	16.9	19.3	23.7	26.1	26.0	29.3	34.0	37.3	41.3
35 °C	AIR TEMP.		EER	11.88	11.82	11.80	11.80	12.03	12.13	11.81	11.83	11.91
			TMBH	22.0	25.4	30.4	36.4	35.3	40.9	47.0	47.5	57.0
AMBIENT	EVAP	27 DB / 19 WB °C	SMBH	18.7	20.4	24.7	28.0	27.4	32.6	35.8	39.2	43.6
TEMP	ENTERING		EER	11.518	11.545	11.515	11.519	11.846	12.029	11.520	11.529	11.680
35 °C	AIR TEMP.		TMBH	21.0	24.1	28.7	33.8	32.4	39.2	45.0	44.6	53.8
_		24.4 UB / 1/.2 WB C	SMBH	17.6	19.4	23.6	27.0	26.1	31.6	34.5	37.1	41.4
			TMBH	19.5	22.0	27.5	31.1	31.2	37.3	41.0	41.5	50.0
		29 DB / 19 WB °C	SMBH	19.4	21.1	25.1	31.0	30.4	35.7	39.3	39.8	48.5
AMBIENT	EVAP		EER	8.667	8.318	8.594	8.316	8.667	9.564	8.316	8.333	8.475
TEMP	ENTERING	24.4 DB / 17.2 WB °C	TMBH	18.70	22.70	25.30	31.70	31.30	34.20	39.50	42.70	50.30
46 °C	AIR TEMP.	(Medium Speed)	SMBH	15.60	19.20	20.80	26.80	26.40	28.70	34.00	36.30	43.00
		24.4 DB / 17.2 WB °C	TMBH	18.90	22.90	25.40	32.00	31.60	35.00	39.90	43.30	50.7
_		(High Speed)	SMBH	15.70	19.10	20.60	26.80	26.40	28.70	33.70	36.30	42.8
A.	R FLOW	NON		745	945	1170	1200	1200	1260	1250	1640	1640
PERF	ORMANCE	MED	CFM	770	890	1225	1250	1250	1390	1400	1720	1720
0)	RY COIL)	HIGH	1	790	840	1275	1290	1290	1560	1560	1825	1825
		NON		40.8	48.8	45.8	45.4	45.4	48.1	49.1	51.8	51.8
NO	ISE LEVEL	MED	dBA	41.3	47.5	46.3	45.9	45.9	49.1	50.7	52.6	52.6
		HIGH	1	41.7	46.5	47.1	46.7	46.7	50.7	52.5	53.4	53.4
EXTERNAL STATI	C PRESSURE (ESP)		IN (Pa)	0.1 (25)	0.1 (25)	0.15 (37)	0.15 (37)	0.15 (37)	0.15 (37)	0.2 (50)	0.2 (50)	0.2 (50)
NUMBER OF COMF	RESSORS			1	1	1	1	1	1	1	1	1
NUMBER OF REFRI	GERANT CIRCULT FOR AHU			1	1	1	1	1	1	1	1	1
EXPANSION DEVIC	E/REFRI GERANT - R410A							Orifice				
	POWER	AIR HANDLING UNIT		220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1
	SUPPLY	CONDENSING UNIT		220-240/50/1	220-240/50/1	220-240/50/1	220-240/50/1	380-415/50/3	380-415/50/3	380-415/50/3	380-415/50/3	380-415/50/3
٦	POWER	AIR HANDLING UNIT		0.100	0.145	0.160	0.175	0.175	0.260	0.300	0.385	0.385
RIC.	INPUT	CONDENSING UNIT		1.810	2.055	2.480	2.985	2.805	3.140	3.780	3.735	4.495
JO3.	CIRCUIT	AIR HANDLING UNIT	AMADS	15	15	15	15	15	15	15	15	15
13	BREAKER SIZE	CONDENSING UNIT		25	25	32	32	25	25	25	25	25
	FULL LOAD	AIR HANDLING UNIT	AMAC	0.4	0.6	0.8	0.9	0.9	1.2	1.6	1.67	1.67
	CURRENT	CONDENSING UNIT		7.6	9.8	11.2	12.7	4.5	5.3	5.6	5.6	6.5
		AIR HANDLING UNIT	5	3.6	3.6	4.5	4.5	4.5	5.1	5.1	6.2	6.2
	באוגרא איני א	CONDENSING UNIT	34.1	6.0	6.7	9.2	9.2	9.2	9.2	9.2	9.2	11.9
	OF EANS	AIR HANDLING UNIT	SON	2	2	2	2	2	2	2	2	2
		CONDENSING UNIT	NO3.	1	1	1	1	1	1	1	1	1
		AIR HANDLING UNIT	MM	1252*310*600	1252*310*600	1252*400*700	1252*400*700	1252*400*700	1402*400*700	1402*400*700	1402*479*700	1402*479*700
		CONDENSING UNIT	MM	850*690*310	850*800*310	1020*930*416	1020*930*416	1020*930*416	1020*930*416	1020*930*416	1020*930*416	1020*1045*416
NE	- WEIGHT	INDOOR UNIT	КG	44	44	55	58	58	64	64	74	74
	MEICH	OUTDOOR UNIT	КG	53	57	78	86	86	06	92	92	100

Operating Range & Physical And Electrical Data USIN-USON Series

PHYSICAL & ELECTRICAL DATA

6