

SUBJECT: VRF DX Coil Interface (SMMS_e Specification)

TOSHIBA would like to announce the release of the SMMS_e Specification for the VRF DX Coil Interface range with capacity up to 60HP.

1. Product Line Up

The VRF DX Coil Interface enables a third party air handling unit with a DX Coil to be connected to a Toshiba VRF system (MiNi-SMMS / SMMS / SMMS-i / SMMS-e / SHRM / SHRM-i). The interface consists of a VRF DX Coil Controller (MM-DXC010 / MM-DXC012) and a VRF DX Coil Valve Kit (MM-DXV080 / DXV140 / DXV280).

MM-DXC010	VRF DX COIL CONTROLLER (Individual / Header)
MM-DXC012	VRF DX COIL CONTROLLER (Follower)
MM-DXV080	VRF DX COIL VALVE KIT (4.5, 5.6, 7.1, 8.0, 9.0kW)
MM-DXV140	VRF DX COIL VALVE KIT (11.2, 14.0, 16.0kW)
MM-DXV280	VRF DX COIL VALVE KIT (22.4, 28.0kW)



The MM-DXC010 when configured as an (Individual) has a capacity range up to 10HP. When configured as a (Header) in combination with the MM-DXC012 VRF DX Coil Controller (Follower) the capacity range is up to 60HP (SMMS_e).

This is achieved by grouping 1 x MM-DXC010 VRF DX Coil Controller (Header) with up to 5 x MM-DXC012 VRF DX Coil Controller (Follower).

2. Specifications

2.0 - 16.0HP	SMMS _e	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10.0	12.0	14.0	16.0
MM-DXC010	-	1	1	1	1	1	1	1	1	1	1	1
MM-DXC012	-									1	1	1
MM-DXV080	2.0	1										
MM-DXV080	2.5		1									
MM-DXV080	3.0			1								
MM-DXV140	4.0				1							
MM-DXV140	5.0					1						
MM-DXV140	6.0						1			2	1	
MM-DXV280	8.0							1			1	2
MM-DXV280	10.0								1			
Nominal Capacity (kW)	Cool	5.6	7.1	8.0	11.2	14.0	16.0	22.4	28.0	33.5	40.0	45.0
	Heat	6.3	8.0	9.0	12.5	16.0	18.0	25.0	31.5	37.5	45.0	50.0
DX Coil Internal Volume (cc)	Min	850	1063	1275	1700	2125	2550	3400	4250	5100	5950	6800
	Std	1000	1250	1500	2000	2500	3000	4000	5000	6000	7000	8000
	Max	1150	1438	1725	2300	2875	3450	4600	5750	6900	8050	9200
Recommended Liquid Capillary Orifice	mm	3.2 ~ 3.5	3.4 ~ 3.8	3.5 ~ 4.0	4.5 ~ 5.0	5.0 ~ 5.5	5.5 ~ 6.0	6.5 ~ 7.0	7.0 ~ 8.0	*1	*1	*1
	Air volume flow rate (m ³ /hr)	Min	720	900	1060	1280	1680	1850	2880	3360	3700	4730
	Std	900	1125	1320	1600	2100	2800	3600	4200	5600	6400	7200
	Max	1080	1350	1580	1920	2520	3740	4320	5040	7480	8060	8640

18.0 - 38.0HP	SMMSe	18.0	20.0	22.0	24.0	26.0	28.0	30.0	32.0	34.0	36.0	38.0
MM-DXC010	-	1	1	1	1	1	1	1	1	1	1	1
MM-DXC012	-	1	1	2	2	2	2	2	3	3	3	3
MM-DXV140	6.0			1								
MM-DXV280	8.0	1		2	3	2	1		4	3	2	1
MM-DXV280	10.0	1	2			1	2	3		1	2	3
Nominal Capacity (kW)	Cool	50.4	56.0	61.5	67.0	73.5	78.5	85.0	90	95.4	101	106.5
	Heat	56.0	63.0	64.0	75.0	82.5	87.5	95.0	100	106.5	113	114
DX Coil Internal Volume (cc)	Min	7650	8500	9350	10200	11050	11900	12750	13600	14450	15300	16150
	Std	9000	10000	11000	12000	13000	14000	15000	16000	17000	18000	19000
	Max	10350	11500	12650	13800	14950	16100	17250	18400	19550	20700	21850
Recommended Liquid Capillary Orifice	mm	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
Air volume flow rate (m3/hr)	Min	6240	6720	7610	8640	9120	9600	10080	11520	12000	12480	12960
	Std	7800	8400	10000	10800	11400	12000	12600	14400	15000	15600	16200
	Max	9360	10080	12380	12960	13680	14400	15120	17280	18000	18720	19440

40.0 - 60.0HP	SMMSe	40.0	42.0	44.0	46.0	48.0	50.0	52.0	54.0	56.0	58.0	60.0
MM-DXC010	-	1	1	1	1	1	1	1	1	1	1	1
MM-DXC012	-	3	4	4	4	4	4	5	5	5	5	5
MM-DXV280	8.0		4	3	2	1		4	3	2	1	
MM-DXV280	10.0	4	1	2	3	4	5	2	3	4	5	6
Nominal Capacity (kW)	Cool	112	117.5	123	130	135	140.4	146	151.5	157	162.5	168
	Heat	126	127	128	145	150	156	163	164	176	177	178
DX Coil Internal Volume (cc)	Min	17000	17850	18700	19550	20400	21250	22100	22950	23800	24650	25500
	Std	20000	21000	22000	23000	24000	25000	26000	27000	28000	29000	30000
	Max	23000	24150	25300	26450	27600	28750	29900	31050	32200	33350	34500
Recommended Liquid Capillary Orifice	mm	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
Air volume flow rate (m3/hr)	Min	13440	14880	15360	15840	16320	16800	18240	18720	19200	19680	20160
	Std	16800	18600	19200	19800	20400	21000	22800	23400	24000	24600	25200
	Max	20160	22320	23040	23760	24480	25200	27360	28080	28800	29520	30240

***1 DX-Coils > 10Hp must be designed with multiple sections each 10HP or less. These sections must have dedicated Headers and Liquid Capillary distributors. Therefore recommended Orifice sizes only 2 - 10HP.**

Notes:

Heating & Cooling Capacity are guide-line figures, the design of each customer's AHU and DX Coil will have an impact on the actual system performance.

Heating Capacity Conditions (Indoor 20 °Cdb & Outdoor 7 °Cdb / 6 °Cwb) at Standard Air Flow rate.

Cooling Capacity Conditions (Indoor 27 °Cdb / 19 °Cwb & Outdoor 35 °Cdb) at Standard Air Flow rate.

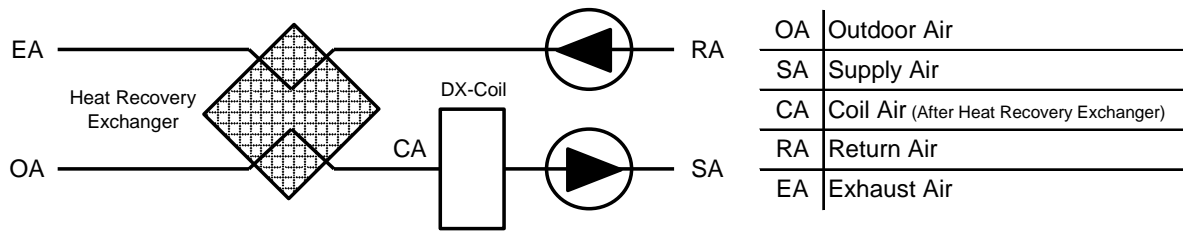
Toshiba Carrier (UK) Ltd does not take any responsibility on the local design of the DX coil.

3. Product Features

- AHU Capacity range from 2.0HP to 60.0HP (Air volume flow rate range: 720m³/hr to 30240m³/hr).
- Control achieved using a standard Toshiba remote controller (RBC-AMT32E) contained within the MM-DXC010 DX Coil Controller (Individual / Header).
- Compatible with Toshiba control accessories.
- External ON / OFF input.
- Safety cut out input (recommended for fan failure input).
- Air temperature control achieved using TA sensor positioned in return air stream (set with remote controller).

4. Design Conditions for Locally Supplied DX Coil

- The DX-Coil **MUST** be operated within the following limits to ensure reliability:-
 - Cooling mode DX coil "air on" temp: Min: 15°CWB (18°CDB) ~ Max: 24°CWB (32°CDB)
 - Heating mode DX coil "air on" temp: Min: 15°CDB ~ Max: 28°CDB
- When used for Ventilation, the DX-Coil **MUST** be combined with other equipment such as heat recovery exchanger or heaters / coolers to ensure that the CA limits are not exceeded:-



- DX Interface SMMSe diversity ratio: 60% to 110%
- Sensor holders must be brazed on to DX coil to ensure accurate temperature sensing.
- In Group combination the larger DX Coils must be sectioned and matched to the appropriate DX Valve Kit. If the DX Coil has a common Heat exchanger this must be split into separate circuits (Distributors and Headers) for each section. Alternatively separate DX Coils could be connected together.
- Where Grouped the Header Controller (MM-DXC010) must be connected to the largest DX Coil Valve Kit.
- AHU fan motor must be interlocked to fan control output.
- Maximum DX-Coil U-pipe Inner Diameter: 12.7mm (Recommended to use 9.52mm or less)

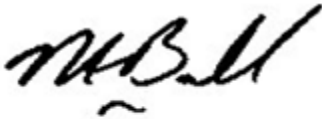
Recommended No. of Circuits v U-Pipe Diameter

U-Pipe Diameter	HP	Nominal Capacity (kW)		No. of Circuits	
		Cool	Heat	Min	Max
8.0	2.0	5.6	6.3	3	4
	2.5	7.1	8.0	3	4
	3.0	8.0	9.0	4	6
	4.0	11.2	12.5	5	8
	5.0	14.0	16.0	6	8
	6.0	16.0	18.0	6	10
	8.0	22.4	25.0	8	12
	10.0	28.0	31.5	10	14
9.52	2.0	5.6	6.3	2	3
	2.5	7.1	8.0	2	3
	3.0	8.0	9.0	3	4
	4.0	11.2	12.5	3	5
	5.0	14.0	16.0	4	6
	6.0	16.0	18.0	5	7
	8.0	22.4	25.0	6	10
	10.0	28.0	31.5	8	12

U-Pipe Diameter	HP	Nominal Capacity (kW)		No. of Circuits	
		Cool	Heat	Min.	Max.
12.7	2.0	5.6	6.3	2	2
	2.5	7.1	8.0	2	2
	3.0	8.0	9.0	2	2
	4.0	11.2	12.5	2	3
	5.0	14.0	16.0	3	3
	6.0	16.0	18.0	3	4
	8.0	22.4	25.0	4	6
	10.0	28.0	31.5	5	7

5. EMEA Availability

- Units are available to be ordered, through Toshiba Central Warehouse. Please contact karen.buick@toshiba-ac.com or ian.davis@toshiba-ac.com for further details.



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