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**STARLINE**



## Induction Terminal Units

### FM30 Floor Mounted Induction Units

Product Information Release V.2—August 2010



# General Information

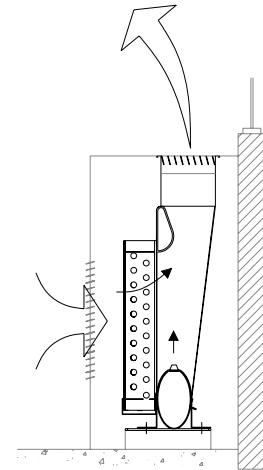
## FM30

Dadanco Starline™ FM30 Floor Mounted Induction Terminal Units are well suited to hidden active chilled beam applications in under-sill enclosures or where the under-sill enclosure is available as a return air plenum. Dadanco Starline™ FM30 Induction Terminal Units provide efficient, effective and whisper-quiet air conditioning for almost any perimeter zone application at lower static pressures than older generation induction terminal units.

FM30 Induction Terminal Units are ideally suited for under-sill floor mounted installations in perimeter zones with supply air discharged away from the façade.

Secondary room air is induced from the conditioned space through the floor mounted enclosure return air plenum to provide a compact terminal unit suited for conventional low resistance individual or continuous air grilles.

Both return air and supply air grilles (supplied by others) must be provided for when using under-sill enclosure (FM30 Units).



### Induction Terminal Unit Advantages

Dadanco FM30 Induction Terminal Units supply cooling, heating and the outdoor air required for ventilation in the conditioned space

Compact dimensions and intrinsically smaller duct sizes offer real savings in under-sill enclosures and ceiling bulkheads for new construction and HVAC refurbishment projects

Fan power requirement is dramatically reduced. The primary air is typically only 30% of the total air supplied by Dadanco FM30 Induction Terminal Units due to the use of efficient induction technology.

Secondary air is induced over the secondary heat exchanger, delivering localized cooling, for **NO FAN ENERGY REQUIREMENT**

FM30 Induction Terminal Units are designed for under-sill installation in floor mounted cabinet enclosures with individual or continuous grilles

FM30 Induction Terminal Units deliver more cooling capacity using less treated air than any all-air system

FM30 Induction Terminal Units offer 2-stage capacity control through control of secondary water flow separate from primary air control

Noise radiated from Dadanco FM30 Induction Terminal Units is very low...

FM30 Induction Terminal Units require minimal maintenance (no moving parts)

### Application Data – FM30

<b>COOLING</b>	40 to 250 W/m <sup>2</sup>
<b>LENGTH</b>	Unit lengths from 700mm to 1500mm available on request for any application
<b>FEATURES</b>	Side or End entry primary air connections Integral Condensate Drain Tray Secondary Air Lint Screen
<b>HEIGHT</b>	305 - 430mm 6, 8 & 10 Tube High Unit Versions
<b>INSULATION</b>	Thermal insulation for the primary air plenum is available
<b>GRILLE</b>	Suitable for use with low resistance individual or continuous ceiling grilles (supplied by others)
<b>CONTROLS</b>	FM30 units can be controlled individually or in groups of units

#### APPLICATIONS:

Dadanco Induction Terminal Units FM30 are designed specifically for ceiling bulkhead and floor mounted perimeter installations in:

- New Construction and HVAC Refurbishment Projects
- Floor mounted induction unit replacements
- Schools and Institutional Buildings
- Healthcare Installations
- Airports



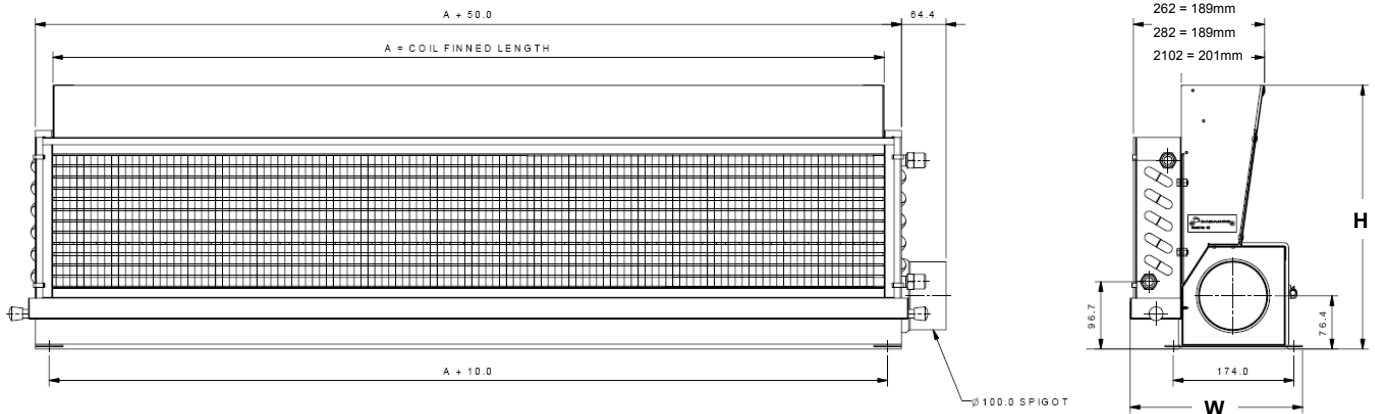
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# Product Details FM30



## General Product Technical Data

MODEL	Coil Finned Length (mm)	Air Plenum Length (mm)	H = Unit Height (mm)			Unit Width (W) (mm)	Primary Air Flow Range (≤250Pa) (L/s) *	Sensible Cooling Capacity Range (W)
			6 Tube	8 Tube	10 Tube			
FM30-0700	700	750	379	443	506	249	6.0 ~ 29.6	296 ~ 1270
FM30-0800	800	850					6.0 ~ 34.2	304 ~ 1430
FM30-0900	900	950					6.4 ~ 37.6	310 ~ 1590
FM30-1000	1000	1050					6.7 ~ 42.1	330 ~ 1750
FM30-1050	1050	1100					7.1 ~ 44.4	348 ~ 1830
FM30-1100	1100	1150					7.4 ~ 46.7	367 ~ 1905
FM30-1200	1200	1250					8.1 ~ 50.1	403 ~ 2045
FM30-1300	1300	1350					8.8 ~ 54.7	438 ~ 2185
FM30-1400	1400	1450					9.6 ~ 59.2	473 ~ 2325
FM30-1500	1500	1550					10.3 ~ 63.8	507 ~ 2475

NOTE: Nominal cooling capacities @ 24°C room air, 12°C primary air, 13°C Secondary Chilled Water & 0.09 L/s Secondary Water Flow

Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures.

For selections at conditions other than those nominated above please contact DADANCO for further assistance.

## New Technologies

Dadanco's Starline™ multi-lobe high performance induction nozzles and superior fluid dynamics design are combined into Dadanco Starline™ FM30 Induction Terminal Units for improved performance and lower noise characteristics.

Rather than relying on high primary air velocities and pressures as with older induction units, Dadanco Starline™ range of Induction Terminal Units require less primary air pressure for delivery of equal or greater amounts of primary air to induce higher rates of secondary room air through the secondary cooling coil; delivering improved cooling performance in one simple ceiling mounted package.

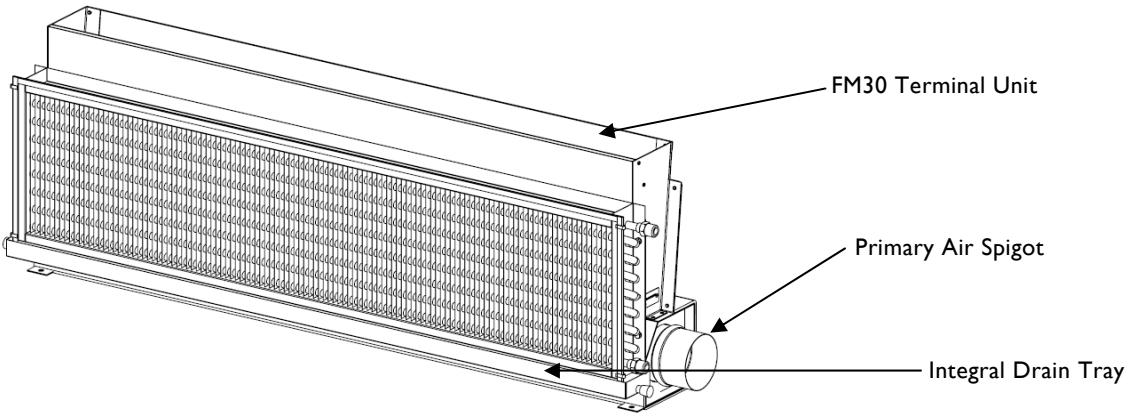
All Dadanco FM30 Induction Terminal Units incorporate Starline™ Multi-Lobe induction nozzles for enhanced performance per liter/second of primary air delivered.

### DISCLAIMER

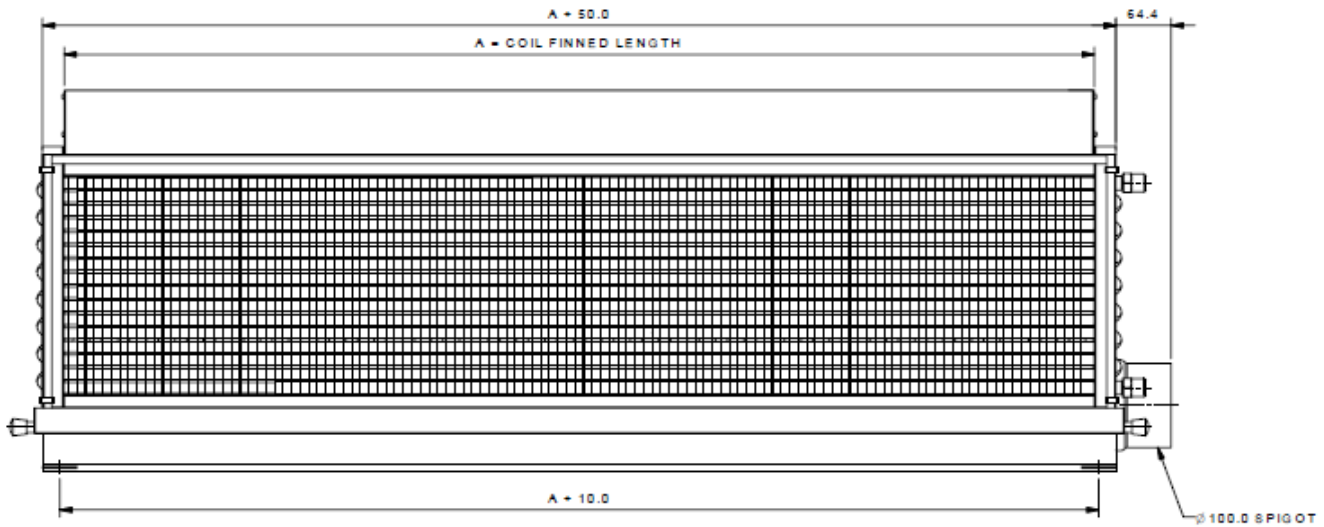
While every effort is made to ensure the details contained herein are kept up to date, in the interests of ongoing product development, Dadanco reserves the right to alter the information without notice



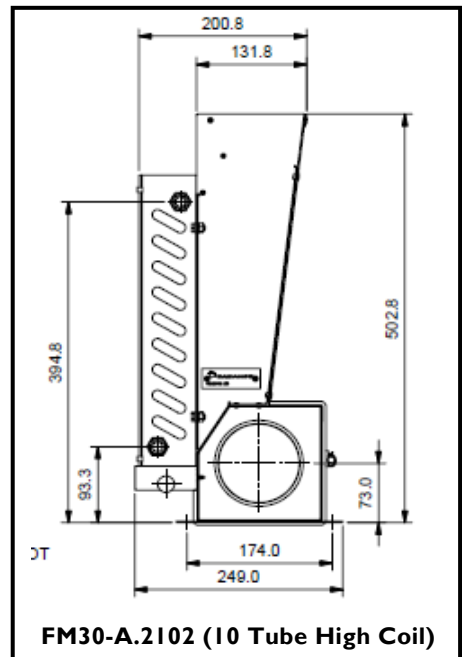
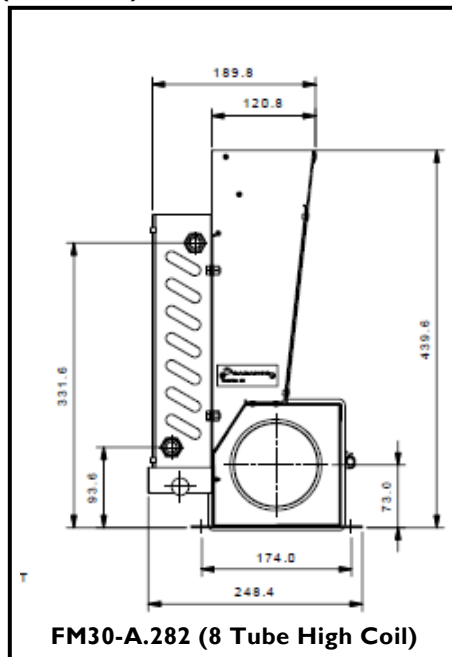
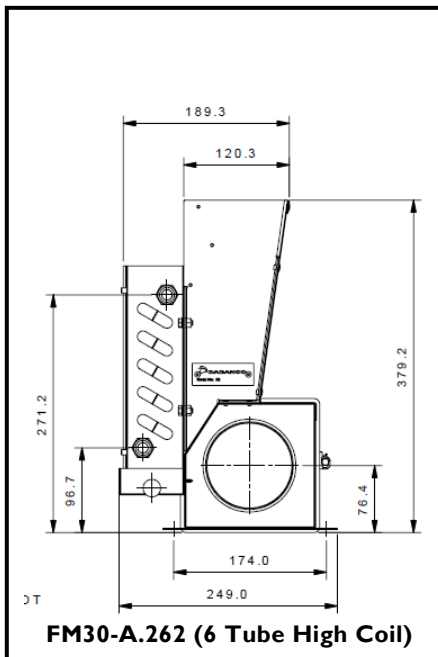
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### FM30-A. General Dimensions (Front View)



### FM30-A. General Dimensions (End View)

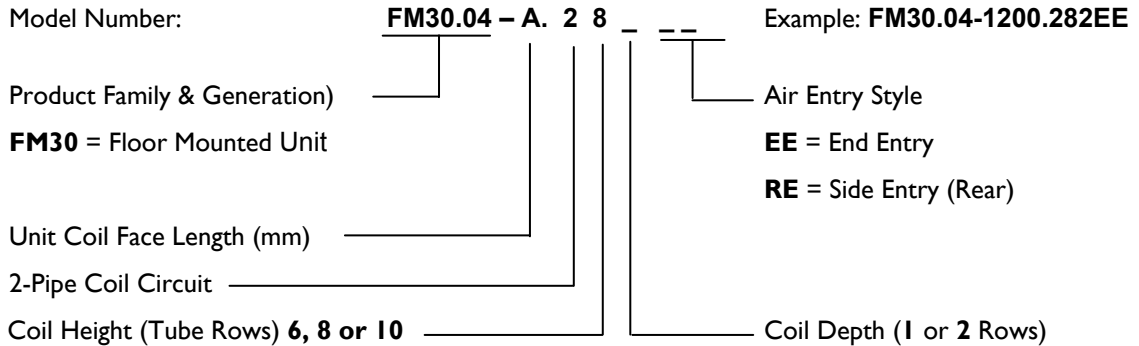


**DISCLAIMER**

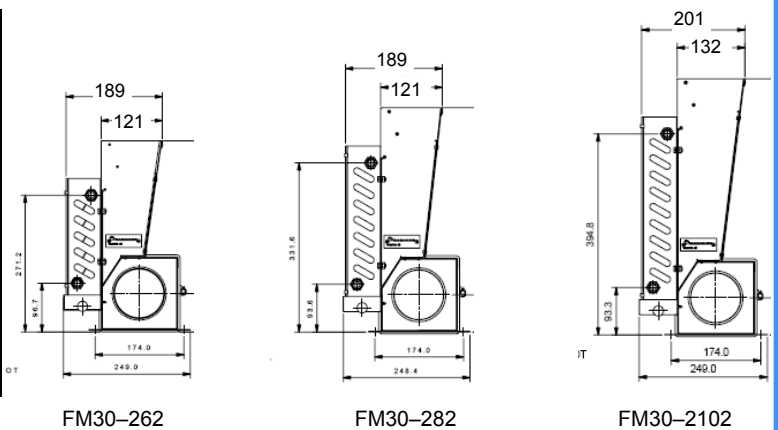
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## Product Details FM30

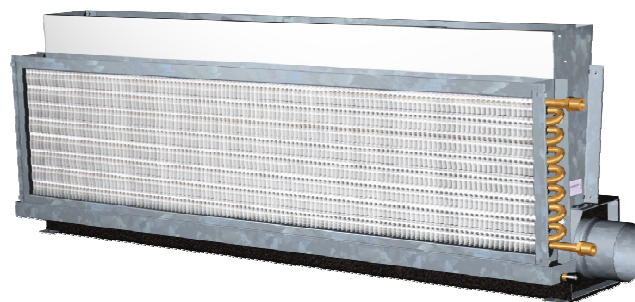
### UNIT NOMENCLATURE



Unit Model	Unit Weight (Kg)		
	6 Row	8 Row	10 Row
FM30.04 -1500.--	24.9	25.8	41.1
FM30.04 -1400.--	23.2	24.0	38.4
FM30.04 -1300.--	21.5	22.3	35.6
FM30.04 -1200.--	19.0	20.6	32.9
FM30.04 -1100.--	17.4	18.9	30.2
FM30.04 -1000.--	15.7	17.2	27.4
FM30.04 - 900.--	14.0	15.5	24.7
FM30.04 - 800.--	13.5	13.7	22.0
FM30.04 - 700.--	11.6	12.0	19.2



### GENERAL CONFIGURATION



FM30 Floor Mounted Unit

### WATER HANDLING OPTIONS

Rear Entry Primary Air—Left or Right Hand fittings as viewed from the secondary coil finned surface side  
 End Entry Primary Air—Left or Right Hand fittings as viewed from the secondary coil finned surface side

### STANDARD FEATURES

- 1/2" male BSP flat face tapered thread fittings
- Insulated condensate drain tray
- Insulated primary air plenum
- Ø100mm round primary air spigot transition (End Entry)
- Ø150mm ovalised primary air spigot (Rear Entry)

### OPTIONAL FEATURES

- Plain copper connections or other brass fittings
- Un-Insulated primary air plenum
- Supply Air Grille (on request)
- Special configurations (custom designs)



## FM30 Quick Selections

The following pages provide quick selection data for determining FM30 unit sensible cooling performance for a nominated range of primary air pressure and air quantities, primary air temperature and fixed secondary water temperature and flow rate.

### Quick Selections

**Step 1:** Choose the preferred unit length and locate the correct table

**Step 2:** Choose the preferred unit height 6, 8 or 10 Tube High unit and locate the correct column in the respective table

**Step 3:** Determine the design primary air quantity and read the sensible cooling performance value from one of the selection table columns, or

Determine the required sensible cooling capacity for the preferred unit length and coil height and read the primary air quantity necessary to achieve that performance at the fixed operating parameters.

FM30 Unit Height (H)		
FM30-1100.262 6 Tube High Coil	FM30-1100.282 8 Tube High Coil	FM30-1100.2102 10 Tube High Coil
379mm	443mm	506mm

Step 1

FM30-1100 Quick Selection @ 150Pa			
	Sensible Cooling (Watts)		
Primary Air (L/s)	FM30-1100.262 6 Tube High Coil	FM30-1100.282 8 Tube High Coil	FM30-1100.2102 10 Tube High Coil
14	637	888	934
16	689	938	997
18	749	1031	1108
20	824	1099	1175
22	915	1168	1231
24	1018	1237	1276
26	1073	1307	1315
28	1138	1347	1407
30	1199	1402	1445
32	1289	1430	1491

Step 2

Step 3

**NOTE:** Due to the wide range of primary air quantities for any given coil length and height, and these influences on coil efficiency, interpolation of water side cooling performance is not permitted.

FM30 2-pipe - Cooling Only Unit	
Room Design Temperature (°C) =	24
Chilled Water Supply Temperature (°C) =	13
Chilled Water ΔT (°C) =	1.5-3.0
Min. Chilled Water Flow Rate (L/s) =	0.09
Primary Air Supply Temperature (°C) =	12
Primary Air Inlet Static Pressure (Pa) =	150

**NOTE:** Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures. Consult Dadanco for assistance with selections at different operating parameters.

# STARLINE

## FM30 Quick Selections

FM30 Unit Height (H)		
FM30-0700.262 6 Tube High Coil	FM30-0700.282 8 Tube High Coil	FM30-0700.2102 10 Tube High Coil
379mm	440mm	503mm

### 700mm Active Coil Length

FM30-0700 Quick Selection @ 150Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-0700.262 6 Tube High Coil	FM30-0700.282 8 Tube High Coil	FM30-0700.2102 10 Tube High Coil
10	432	612	648
12	492	684	731
14	583	756	793
16	695	829	860
18	762	890	920
20	826	928	964
22	887	953	989
Water (kPa)	8.60	11.3	16.3

FM30-0700 Quick Selection @ 250Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-0700.262 6 Tube High Coil	FM30-0700.282 8 Tube High Coil	FM30-0700.2102 10 Tube High Coil
12	559	774	820
14	611	835	896
16	700	910	980
18	771	968	1031
20	850	1040	1067
22	880	1077	1129
24	958	1129	1181
26	1033	1169	1222
28	1100	1198	1254
30	1142	1210	1270
Water (kPa)	8.60	11.3	16.3

**NOTE 1:** The range of primary air quantities listed for each unit length represents the minimum to maximum primary air capability for that unit length for the nominated static pressure value. To achieve higher or lower primary air values, static pressure or unit length can be changed. Please consult Dadanco for design assistance.

**NOTE 2:** Due to the wide range of primary air quantities for any given coil length and height, and these influences on coil efficiency, interpolation of water side cooling performance is not permitted.

FM30 2-pipe - Cooling Only Unit	
Room Design Temperature (°C) =	24
Chilled Water Supply Temperature (°C) =	13
Chilled Water ΔT (°C) =	1.5-3.0
Min. Chilled Water Flow Rate (L/s) =	0.09
Primary Air Supply Temperature (°C) =	12

**NOTE:** Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures. Consult Dadanco for assistance with selections at different operating parameters.



## FM30 Quick Selections

### 1100mm Active Coil Length

FM30-1100 Quick Selection @ 150Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-1100.262 6 Tube High Coil	FM30-1100.282 8 Tube High Coil	FM30-1100.2102 10 Tube High Coil
14	637	888	934
16	689	938	997
18	749	1031	1108
20	824	1099	1175
22	915	1168	1231
24	1018	1237	1276
26	1073	1307	1315
28	1138	1347	1407
30	1199	1402	1445
32	1289	1430	1491
34	1346	1457	1518
36	1401	1477	1540
Water (kPa)	11.2	16.0	22.5

FM30-1100 Quick Selection @ 250Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-1100.262 6 Tube High Coil	FM30-1100.282 8 Tube High Coil	FM30-1100.2102 10 Tube High Coil
18	822	1311	1200
20	876	1192	1273
22	951	1278	1372
24	1005	1330	1430
26	1096	1405	1502
28	1162	1452	1544
30	1266	1520	1596
32	1338	1564	1627
34	1348	1624	1654
36	1421	1675	1694
38	1457	1697	1765
40	1527	1738	1807
42	1570	1773	1843
44	1664	1805	1876
46	1730	1830	1905
Water (kPa)	11.2	16.0	22.5

**NOTE:** Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures. Consult Dadanco for assistance with selections at different operating parameters.



## FM30 Quick Selections

### 1500mm Active Coil Length

FM30-1500 Quick Selection @ 150Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-1500.262 6 Tube High Coil	FM30-1500.282 8 Tube High Coil	FM30-1500.2102 10 Tube High Coil
20	868	1219	1283
22	919	1282	1368
24	975	1348	1445
26	1042	1412	1511
28	1147	1496	1569
30	1238	1558	1635
32	1337	1619	1677
34	1440	1679	1714
36	1443	1718	1787
38	1535	1758	1827
40	1593	1812	1879
42	1649	1845	1912
44	1703	1874	1941
46	1782	1914	1982
48	1833	1935	2004
Water (kPa)	13.9	20.6	28.0

FM30-1500 Quick Selection @ 250Pa			
Primary Air (L/s)	Sensible Cooling (Watts)		
	FM30-1500.262 6 Tube High Coil	FM30-1500.282 8 Tube High Coil	FM30-1500.2102 10 Tube High Coil
24	1105	1495	1577
27	1185	1576	1666
30	1284	1673	1774
33	1363	1741	1845
36	1479	1828	1932
39	1603	1912	2007
42	1700	1975	2057
45	1760	2060	2114
48	1827	2133	2213
51	1925	2209	2292
54	1989	2253	2337
57	2084	2311	2399
60	2179	2358	2450
63	2244	2381	2475
Water (kPa)	13.9	20.6	28.0

**NOTE:** Different performance results can be achieved for varying secondary water flow rates, entering water temperatures, primary air conditions and primary air static pressures. Consult Dadanco for assistance with selections at different operating parameters.



# FM30 Floor Mounted Induction Units

## Guide Specification

### Scope

Supply DADANCO floor mounted induction terminal units type STARLINE FM30-\_\_\_\_.\_\_\_\_, or equal and approved, fitted with low-noise, high efficiency patented nozzles capable of delivering the primary air quantities as listed in the specification schedule.

Connect the units to the primary air duct and secondary water loop in the configuration shown on the drawings.

### Construction

The STARLINE FM30 induction terminal unit shall be manufactured to provide a compact unit with a primary air plenum, mounting support points, air entrainment chamber with supply air outlet, secondary heat exchanger coil with condensate drain tray and an inlet air lint screen.

Plenum: The medium pressure primary air plenum shall be manufactured of 0.8mm wall thickness galvanised sheet steel designed to incorporate DADANCO multi lobe induction nozzles of the nominated number and size to discharge the specified primary air quantity into the air entrainment chamber.

Nozzles shall be DADANCO multi-lobed induction nozzles of flexible fire retardant polymer, designed for low noise generation and rapid secondary air entrainment.

Provide a circular sheet metal spigot of 100mm equivalent diameter for the primary air flexible duct connection at one end of the unit, or alternatively provide an ovalised sheet metal spigot of 100mm or 150mm equivalent diameter in the centre rear or bottom of the primary air plenum as indicated on the drawings.

Insulation (*if required*): Self adhesive, fire retardant foil faced cellular thermal insulation to the exterior of the primary air plenum to prevent condensation forming on the outside of the unit.

The secondary air entrainment chamber shall be constructed of galvanized sheet steel end panels and back plate sealed as an integral part to the primary air plenum. The entrainment chamber will facilitate mounting of the secondary heat exchanger.

Secondary cooling coil: Fit a removable single two-row (2-Pipe or 4-Pipe) secondary air coil of the specified length required to achieve the specified secondary cooling capacity. Coil shall be constructed of galvanised steel end plates and frames with ½" copper tubes mechanically expanded into 0.145mm thickness rippled edge aluminium fins. Provide ½" BSP male flat face tapered thread fittings on all coil connections.

Secondary coil maximum recommended site test pressure not to exceed 2500 kPa (25 Bar) with continuous maximum recommended operating pressure of 1680 kPa (16.8 Bar). Coil to be factory pressure tested to 2500 kPa and conform to a burst pressure rating of 13,000 kPa (130 Bar) at 50°C.

Coil capacities shall be equal to the specified secondary air sensible cooling capacity when operated at the scheduled secondary chilled water flow and inlet temperature.

Lint screen (*if required*): Fit a serviceable lint screen with frame over the face of the secondary heat exchanger. Fabricate the lint screen from fine plastic fabric mesh, as specified, held in a rectangular aluminium frame. Provide fixing clips to secure the lint screen frame to the secondary heat exchanger coil.

The unit shall be mounted by its support brackets to a suitable frame or support structure in an under-sill enclosure in a manner to ensure the unit is level with leak free connection to the supply air discharge vents and providing unrestricted secondary air entry to the unit.

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For more information on Induction Terminal Units, Active Chilled Beams, Infusers or other Dadanco solutions delivery products, contact:



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