MODEL: FR-E800

TITLE: REGARDING THE CONFORMAL COATING OF THE PRINTED CIRCUIT BOARDS FOR THE FR-E800 SERIES

Information regarding the specifications and regulatory compliance of the printed circuit board (PCB) coating for the FR-E800 series is contained below.

1. Coating treatment of the PCB

On the PCB that is used inside the E800 series inverter, a Polyurethane based coating material is applied to the PCB, with the exception of some components that cannot be coated (connectors, terminals blocks, etc.). By adding this coating treatment, it is possible to conform to the IEC60721-3-3 class 3C2 levels.

NOTE: The above treatment is added in consideration of the usage environment. However, there is no guarantee for usage which exceeds that mentioned in the product catalogue, etc.

2. Model name

In the FR- E800 series, the products which have the PCB coating treatment have the “-60” or “-06” dedicated suffix added to the model name. In the “-06” product, conductor plating is performed in addition to the PCB coating treatment.

(Example)

FR - E840 - 0008 - 2 - 60

Dedicated suffix

Dedicated suffix	PCB coating	Plated conductor
None	Without	Without
-60	With	Without
-06	With	With

3. Corrosive gas standards

(1) Definition of corrosive gas

IEC60721-3-3 indicates sea salt, sulfur dioxide, hydrogen sulfide, chlorine, hydrogen chloride, hydrogen fluoride, ammonia, ozone, and nitrogen oxide as environmental parameters as mentioned the Table 1.

(2) Corrosive gas environment

In IEC60721-3-3 class 3C2 levels, the concentration of corrosive gas is defined as in Table 1.

Table.1 Chemical Classification of Active Substances (Quoted from IEC60721-3-3)

No.	Environmental Parameter	Units	3C2	
			Average Value	Maximum Value
1	Sea Salt	N/A	Salt mist	Salt mist
2	Sulfur dioxide (SO_2)	cm3/m3	0.11	0.37
3	Hydrogen sulfide (H_2S)	cm3/m3	0.071	0.36
4	Chlorine (Cl_2)	cm3/m3	0.034	0.1
5	Hydrogen chloride (HCl)	cm3/m3	0.066	0.33
6	Hydrogen fluoride (HF)	cm3/m3	0.012	0.036
7	Ammonia (NH_3)	cm3/m3	1.4	4.2
8	Ozone (O_3)	cm3/m3	0.025	0.05
9	Nitrogen oxide (NO_x)	cm3/m3	0.26	0.52

(3) Verification of coated products

A mixed gas accelerated test assuming IEC60721-3-3 class 3C2 levels with an implementation period equivalent to the 10 year design life span is performed on the coating treated products of the FR-E800 series, and it is confirmed that the product operates normally.

NOTE: In the actual usage environment, the usage environment will not necessarily exactly match that defined as IEC60721-3-3 class 3C2. Therefore, depending on the usage environment, there may be failures earlier than the above 10 year life span.