YAMATAKE

International Business Department
Control Products Headquarters
Advanced Automation Company

No. 03-A-0149E

Date: May 11, 2004
To: Those listed
Issued by: CC Chang – International Business Department
Subject: ECM3000 Electrical Control Motor

Purpose: To announce the sales release of the ECM3000 electric control motor for industrial applications.

Summary: The ECM3000 is an electric control motor for control valves used in industrial applications, and it can replace the conventional Yamatake Modutrol motors.

1 Required actions

(1) Promote the sales to furnace manufacturers (OEMs).

- The main sales target for the ECM3000 is the furnace market. As a first priority, propose the ECM3000 to the furnace and related equipment manufacturers using competitive motors.
- Conventional Modutrol motors do not have 100Vac and 200Vac models, and it allowed the competitor to replace with their 100Vac/200Vac motors. The EMC3000 covers 100Vac, 200Vac and 85 to 264Vac models in addition to the current 24Vdc model.

ECM300 Features

Three input types:	Relay contact, 4 to 20mAdc and potentiometer
Two angular stroke:	90° and 160°
Power supply voltage:	24Vac, 100Vac, 200Vac and 85 to 264Vac (for 4 to 20mA input model)
Output torque:	12.5Nm
Auxiliary switches:	4 points (option)

(2) Propose the system of whole control loop.

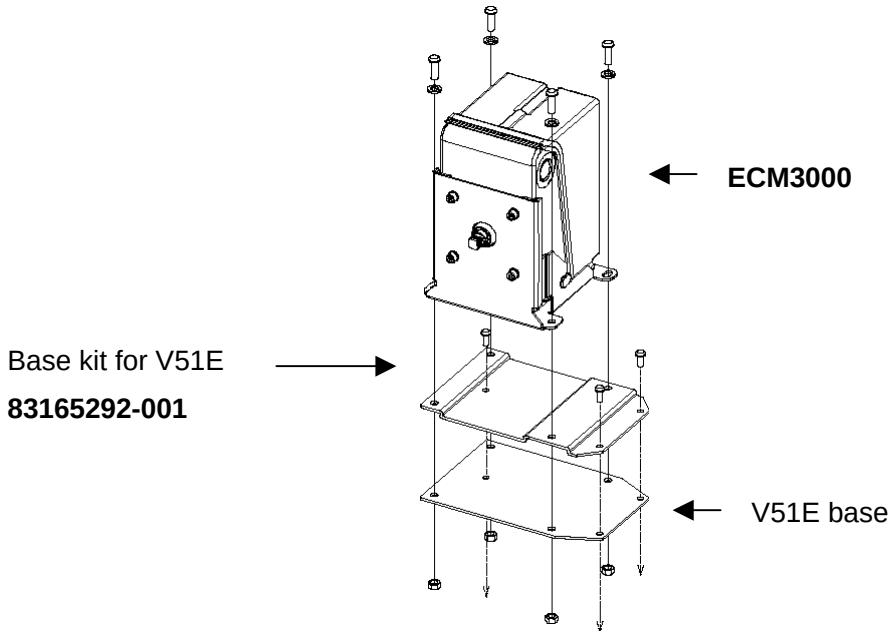
- During the ECM3000 promotion, propose our products in whole control loop. Yamatake is the only one manufacturer who can provide all products for a furnace control loop: controllers, control motors and flame safeguard controls.
- On the furnace market, we have large market shares in flame safeguard controls and controllers. Use the advantages effectively for the ECM3000 promotion.

(3) Replace the control motors being used now in the field.

- Propose the ECM3000 to the major end users of our motors.
- For end user inquiry of control motor replacement, propose the ECM3000, and check the user potential by the existing control motors in field.
- As the first step, propose to the end user replacing one unit of control motor with the ECM3000. After that, propose to make budgets for replacing another motors sequentially.

(4) Take care for the instrumentation with V51E valve.

- For instrumentation combining with the V51E butterfly valve for air/gas control, order 83165292-001 bracket for the V51E separately, and mount it between the ECM3000 and the V51E.



(5) Take care for the parameter setup at controller side and the auxiliary relay installation between controller and motor.

- Avoid hunting by adjusting the controller parameters. For example, set the derivative time to 0 second, or set the position proportional dead zone to larger value. Failure to do so shortens the service life of the motor and controller internal relays due to the frequent relay ON/OFF operation.
- When the frequent ON/OFF operation cannot be avoided, use an auxiliary relay between controller and motor for 100Vac or 200Vac applications.
- When compared with the conventional motors, the power consumption of the ECM3000 is 1/2, and the generation of rush current and counter electromotive force has been largely suppressed. However, the mechanical life of the internal relays used in controller might be shorten as a result of their downsized design. Therefore, install the auxiliary relay between motor and controller for 100Vac or 200Vac applications.

2 Features

(1) 100Vac/200Vac power supply models

- The 100Vac or 200Vac power is commonly used on industrial market.
- The 100Vac and 200Vac models match the market requirement. Promote the ECM3000 to the industrial market actively.
- No additional transformer is necessary.

(2) Long life potentiometer

- The internal feedback potentiometer, which is used for the rotation angle feedback to the controller, is the critical component for control motors.
- Long life type potentiometer is used for the feedback potentiometer.
- For bearings of internal motor and rotation shaft, long life parts are also selected.

(3) Free mounting direction (90° model)

- The 90° model can be mounted in a direction with its shaft upward, responding to furnace application requirement. Due to the mounting space restrictions, upward direction mounting is sometimes unavoidable.
- Upward mounting is not allowed for the conventional Modutrol motor because they seal oil inside.
- However, upward mounting is not allowed even for the ECM3000 90° model for the applications where water might enter the motor casing.

(4) Easy replacement

- Conventional Modutrol motors can be easily replaced with the ECM3000. Mounting dimensions and height of the shaft are same using the mounting bracket. Mounting bracket is packaged as an accessory.
- Mounting dimension is also compatible with the Nissho Keiki Kogyo motors.

(5) Optional auxiliary switches (4-point)

- For combustion gas control, the valve fully open/fully closed signals are necessary to secure the safety for equipment. Signals at specified valve opening between fully open and fully closed positions might also be required.
- For 90° model, built-in auxiliary switches option can be specified. For 160° model, order the auxiliary switches (4-point) 83165271-004 separately, and mount it on the ECM3000.

(6) Splash-proof IP54

- The ECM3000 has IP54 protection and can be installed in splashing locations.
- Protection structure might be required on the food machinery market for washing splash.
- IP54 is applied to splash-proof structure. When installing the ECM3000 outdoors, the protective cover having the structure to protect from a storm or direct sunlight must be installed.
- To secure IP54 protection, waterproof cable gland must be used for knockout wiring port.

(7) Pointer (90° model)

- Shaft rotating position is indicated by pointer for 90° model.
- On rotating direction label, “L” and “R” signs are shown, and “0” and “100” labels are affixed under them by user because fully open/fully closed position depends on applications.
- There are neither a pointer nor a label for 160° model because it is generally instrumented with the valve linkage Q455. Use the Q455 pointer.

(8) Manual open/close switch function (90° model)

- The manual open/close switch declutches the motor shaft to rotate manually.
- When testing the furnace equipment before wiring, motor shaft is required to be rotated for linkage alignment.
- The function is available only for the 90° model. For the 160° model, the function is not available because it is hazardous to be used when pressure is applied to the valve.
- Turn the ECM3000 power OFF when the switch function is used.

3 Target markets

(1) Furnace

- The main sales target market for the ECM3000 is the burners and furnaces manufacturers.
- Promote the sales of the ECM3000 in the first priority using our advantages in flame safeguard controls and controllers.

(2) Food machinery

- Control motor is used to control heat source gas/steam. For Modutrol motor inquiry, check the user potential and propose the ECM3000.
- The butterfly valve V51E is often used. Check the user valve specifications and order the mounting bracket separately for instrumentation with the V51E.

(3) Drier

- Control motor is used to control heat source. For Modutrol motor inquiry, check the user potential and propose the ECM3000.

MODEL SELECTION GUIDE

Model No.	Product specifications							Option
	Power supply voltage	Control signal input	Anguler stroke	Stroke timing 50Hz	Stroke timing 60Hz	Torque	Remarks	
ECM3000D01✻0 *	24Vac	Relay contact	90°	39s	33s	12.5N•m	ON-OFF control action	4 switches can be built-in.
ECM3000D11✻0 *	100Vac	Relay contact						
ECM3000D21✻0 *	200Vac	Relay contact						
ECM3000E01✻0 *	24Vac	Resistance					Nominal 135Ω resistance	
ECM3000F01✻0 *	24Vac	Relay contact					Nominal 135Ω feedback potentiometer built-in	
ECM3000F11✻0 *	100Vac	Relay contact						
ECM3000F21✻0 *	200Vac	Relay contact						
ECM3000G01✻0 *	24Vac	4 to 20mAdc					Input impedance: 50Ω	
ECM3000G91✻0 *	85 to 264Vac	4 to 20mAdc		39s				
ECM3000F03✻0 *	24Vac	Relay contact		20s	16s	6N•m	High-speed motor type feedback potentiometer built-in	
ECM3000D0200	24Vac	Relay contact	160°□	69s	58s	12.5N•m	ON-OFF control action	None
ECM3000E0200	24Vac	Resistance					Nominal 135Ω resistance	
ECM3000F0200	24Vac	Relay contact					Nominal 135Ω feedback potentiometer built-in	
ECM3000F1200	100Vac	Relay contact						
ECM3000F2200	200Vac	Relay contact						
ECM3000G0200	24Vac	4 to 20mAdc					Input impedance: 50Ω	
ECM3000G9200	85 to 264Vac	4 to 20mAdc		72s				
ECM3000F0400	24Vac	Relay contact		35s	29s	6N•m	High-speed motor type nominal 135Ω feedback potentiometer built-in	

*An internal auxiliary switch (4 units) can be built into the angular stroke 90° motor by specifying a model No.
Meaning of ✻ in model No. 0: Auxiliary switch is not built-in.
1: 4 internal auxiliary switches built-in.

Manufacturer	Yamatake	Nissho Keiki Kogyo	Shin-Nippon Keisetsu
Model No.	**ECM3000**	**CM-101T**	**CMS-020**
External view			
Input type	Relay contact, 4 to 20mAdc or potentiometer	Relay contact, 4 to 20mAdc or potentiometer	Relay contact, 4 to 20mAdc or potentiometer
Operation mode	ON-OFF or position proportioning	ON-OFF or position proportioning	ON-OFF or position proportioning
Angular stroke	90° or 160°	90°	90°
Stroke timing	33s (Relay contact, 90° model, no-load, 60Hz) 60s (Relay contact, 160° model, no-load, 60Hz)	36s (60Hz)	15 to 240s (60Hz, specified by model No.)
Power supply voltage	24Vac, 100Vac, 200Vac or 85 to 264Vac (50/60Hz)	100Vac or 200Vac (50/60Hz)	100Vac or 200Vac (50/60Hz)
Allowable power supply voltage	24Vac±15%, 100Vac/200Vac±10%	Unspecified	Unspecified
Power consumption	9VA	20W	Unspecified
Output torque	12.5Nm	12.5Nm	5, 10 or 20Nm
Input potentiometer	135Ω	135, 200, 500Ω, 1 or 2kΩ	100, 135, 200Ω, 1 or 2kΩ
Protection	IP54	IP40	Splash-proof model available
Mounting direction	Free direction (90° model)	Unspecified	Horizontal mounting
Manual open/close switch	Available	None	None
Pointer	Available	Available	None
Shaft shape	Square □	Round ○	Round ○
Allowable temperature	-20 to +60°C	-5 to +50°C	-20 to +50°C
Auxiliary switch	4 points (option)	4 points (option)	2 points (option)
Auxiliary switch contact rating	250Vac, 5A	250Vac, 10A	250Vac, 5A
Mass	3kg	4kg	—
Shaft protrusion dimension	32.5mm	35mm	34.5mm
Mounting dimensions	124mm × 100 to 105mm	124mm × 103mm	145mm × 60mm
Conformity	CE, UL, CSA (soon)	None	None

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Manufacturer	Siemens Building Technologies (former Landis & Gyr)	Yamatake	Honeywell
Model No.	**SQM10**	**M931F/M904H**	**M6284/M7284**
External view			
Input type	Relay contact	Relay contact, 4 to 20mAdc or potentiometer	Relay contact, 4 to 20mAdc or potentiometer
Operation mode	ON-OFF or position proportioning	ON-OFF or position proportioning	ON-OFF or position proportioning
Angular stroke	90° or 160°	90° or 160°	90° or 160°
Stroke timing	13, 25, 59, 38s (Relay contact, 90° model, no-load, 60Hz)	33s (Relay contact, 90° model, no-load, 60Hz) 60s (Relay contact, 160° model, no-load, 60Hz)	34s (Relay contact, 90° model, no-load, 60Hz) 60s (Relay contact, 160° model, no-load, 60Hz)
Power supply voltage	100Vac or 200Vac	24Vac, 100Vac or 200Vac (50/60Hz)	24Vac (50/60Hz)
Allowable power supply voltage	—	Rated voltage+10%-15%	24Vac±10%
Power consumption	9VA	17W	17W
Output torque	10, 15 or 20Nm	12.5Nm	17Nm
Input potentiometer	—	135Ω	115Ω
Protection	IP54	Unspecified	NEMA3
Mounting direction	Unspecified	Upward mounting not allowed	Upward mounting not allowed
Manual open/close switch	Available	None	None
Pointer	None	None	None
Shaft shape	Round ○	Square □	Square □
Allowable temperature	-20 to +60°C	-20 to +51°C	+40°C
Auxiliary switch	5 points	2 points (option)	2 points (option)
Auxiliary switch contact rating	250Vac, 10A	250Vac, 5A	240Vac, 11A
Mass	1.7kg	4.7kg	3kg
Shaft protrusion dimension	26mm	21.5mm	19.5mm
Mounting dimensions	Body is mounted directly	124mm × 103mm	124mm × 105mm
Conformity	CE	None	CE, UL, CSA