Honeywell

DATASHEET

MasterLogic-200

DA Conver.

2MLF-DV4A

2MLF-DC4A

2MLF-DV8A

2MLF-DC8A

10310000594 Printed in Korea

Contacts

World Wide Web

The following Honeywell web sites may be of interest to Process Solution customers.

Honeywell Organization	WWW Address (URL)
Corporate	http://www.honeywell.com
Process Solutions	http://www.honeywell.com/ps

Telephone

Contact us by telephone at the numbers listed below.

Location	Organization	Phone
United States and Canada	Honeywell IAC Solution Support Center	1-800-822-7673
Europe	Honeywell TAC-EMEA	+32-2-728-2704
Pacific	Honeywell Global TAC – Pacific	1300-300-4822 (toll free within Australia) +61-8-9362-9559 (outside Australia)
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Elsewhere	Call your nearest Honeywell office.	

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Safety Precautions

- Safety Precautions is for using the product safe and correct in order to prevent the accidents and danger, so always follow the instructions.
- The precautions explained here only apply to each module. For safety precautions on the PLC system, refer to the MasterLogic-200 User's manual.
- The precautions are divided into 2 sections, 'Warning' and 'Caution'. Each of the meanings is represented as follows.

⚠ **Warning** If violated instructions, it may cause death, fatal injury or considerable loss of property.

⚠ **Caution** If violated instructions, it may cause a slight injury or slight loss of products

- The symbols which are indicated in the PLC and User's Manual mean as follows

⚠ Gives warning and cautions to prevent from risk of injury, fire, or malfunction

⚠ Gives warning and cautions to prevent from risk of electrical shock

- Store this datasheet in a safe place so that you can take out and read whenever necessary. Always forward it to the end user.

⚠ Warning

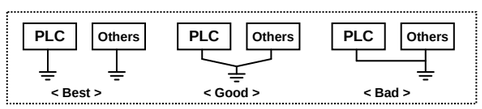
- **Do not contact the terminals while the power is applied.**
  Risk of electric shock and malfunction.
- **Do not drop or insert any metallic object into the product.**
  Risk of fire, electric shock and malfunction.
- **Do not charge, heat, short, solder and break up the battery.**
  Risk of injury and fire by explosion and ignition.

⚠ Caution

- **Before wiring the PLC, ensure to check the rated voltage and terminal arrangement for the module before wiring work.**
  Risk of electric shock, fire and malfunction
- **Tighten the screw of terminal block with the specified torque range.**
  Risk of fire and electric shock if the terminal screw looses.
- **Use the PLC in an environment that meets the general specifications contained in this datasheet.**
  Risk of electrical shock, fire, erroneous operation and deterioration of the PLC
- **Be sure that external load does not exceed the rating of output module.**
  Risk of fire and erroneous operation
- **Do not use the PLC in the environment of direct vibration**
  Risk of electrical shock, fire and erroneous operation
- **Do not disassemble, repair or modify the PLC.**
  Risk of electrical shock, fire and erroneous operation
- **When disposing of PLC and battery, treat it as industrial waste.**
  Risk of poisonous pollution or explosion

Precautions for use

- Do not install in any places other than PLC controlled place.
- Ensure that the FG terminal is grounded with class 3 grounding which is dedicated to the PLC. Otherwise, it may cause disorder or malfunction of PLC



- Connect expansion connector correctly when expansion modules are needed.
- Do not detach PCB from the case of the module and do not modify the module.
- Turn off the power when attaching or detaching module.
- Cellular phone or walkie-talkie should be farther than 30cm from the PLC
- Input signal and communication line should be farther than minimum 100mm from a high-tension line and a power line in order not to be affected by noise and magnetic field.

Before handling the product

Before using the product, read the datasheet and the User's manual through to the end carefully in order to use the product efficiently.

1. Introduction

D/A conversion module designed for MasterLogic-200 series is used to convert the digital value of signed 16-bit binary data (data: 14 bits) specified in MasterLogic-200 CPU to analog signal (voltage or current output).

2. General specifications

General specifications of MasterLogic-200 series are as specified below.

No	Item	Specifications	Related specifications
1	Operating temp.	0℃ ~ +55℃	
2	Storage temp.	-25℃ ~ +70℃	
3	Operating humidity	5 ~ 95%RH (Non-condensing)	
4	Storage humidity	5 ~ 95%RH (Non-condensing)	
5	Vibration	For discontinuous vibration Frequency / Acceleration / Amplitude / Number 10≤f< 57Hz / - / 0.075mm / Each 10 times in X,Y,Z directions 57≤f≤150Hz / 9.8m/s²(1G) / - / Each 10 times in X,Y,Z directions For continuous vibration Frequency / Acceleration / Amplitude 10≤f< 57Hz / - / 0.035mm 57≤f≤150Hz / 4.9m/s²(0.5G) / -	IEC61131-2
6	Shocks	* Max. impact acceleration: 147㎨(15G) * Authorized time: 11㎳ * Pulse wave : Sign half-wave pulse (Each 3 times in X,Y,Z directions)	IEC61131-2
7	Noise	Square wave impulse noise: ±1,500V Electrostatic discharging: Voltage : 4Kv (contact discharging) — IEC61131-2, IEC61000-4-2 Radiated electromagnetic field noise: 27 ~ 500MHz, 10 V/m — IEC61131-2, IEC61000-4-3 Fast Transient /burst noise: Class / Power module / Digital/Analog I/O communication interface Voltage / 2kV / 1 kV — IEC61131-2, IEC61000-4-4	
8	Ambient conditions	No corrosive gas or dust	
9	Operating height	2000m or less	
10	Pollution degree	2 or less	
11	Cooling method	Self-cooling	

3. Performance Specifications

Performance specifications of D/A conversion module are as specified below.

Item	Specification			
	2MLF-DV4A (Voltage output)	2MLF -DV8A (Voltage output)	2MLF -DC4A (Current output)	2MLF -DC8A (Current output)
Analog output	DC 1 ~ 5V, DC 0 ~ 5V, DC 0 ~ 10V, DC -10 ~ 10V (Load resistance : 1kΩ or more)		DC 4 ~ 20㎃, DC 0 ~ 20㎃	
			Load resistance :600Ω or less	Load resistance :550Ω or less
	Analog output range can be selected through user program or Software package. Respective input ranges can be set based on channels.			
Digital input	► 16-bit binary value (data: 14 bits) ► Format of digital output data can be set through user program or S/W package respectively based on channels.			

	1 ~ 5V	0 ~ 5V	0 ~ 10V	-10 ~ 10V
Unsigned Value	0 ~ 16000			
Signed Value	-8000 ~ 8000			
Precise Value	1000~5000	0~5000	0~10000	10000~10000
Percentile Value	0 ~ 10000			

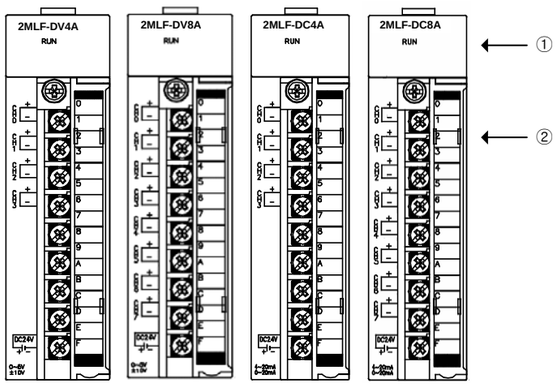
	4 ~ 20mA	0 ~ 20mA
Unsigned Value	0 ~ 16000	
Signed Value	-8000 ~ 8000	
Precise Value	4000 ~ 20000	0 ~ 20000
Percentile Value	0 ~ 10000	

Item				
The max. resolution	1/16000			
	1~5 V	0.250 ㎷	4~20 ㎃	1 .0 ㎂
	0~5 V	0.3125 ㎷		
	0~10 V	0.625 ㎷	0~20 ㎃	1.25 ㎂
	±10 V	1.250 ㎷		
Accuracy	±0.2% or less (when ambient temperature is 25℃) ±0.3% or less (when ambient temperature is 0 ℃ ~ 55 ℃)			
Max. conversion speed	250㎲/Ch			
Absolute max. input output	±15 V		±24 ㎃	
Analog output points	4ch/1module		8ch/1module	
Insulation method	Photo-coupler insulation between input terminal and PLC power (no insulation between channels)			
Terminal connected	18-point terminal			
I/O Occupied points	Fixed point assignment:: 64, Variable point assignment:16			
DC5V consumed current	190 ㎃	190 ㎃	190 ㎃	190 ㎃
DC24V consumed current	140 ㎃	180 ㎃	210 ㎃	300 ㎃
Weight	135g	155g	137g	150g

Note

- ► Please use DC24V/1A for the external power supply.
- ► Offset/Gain value is fixed and can not be changed by user.

4. Part names of functions



No.	Description
①	RUN LED Displays the operation status of module On: Operation normal Blinks: Error occurs (Refer to user's manual 7.1 for more details) Off: Module error
②	Terminal Analog input terminal, whose respective channels can be connected with external devices. External power supply (DC24V) : Pin17~18

5. Handling precaution

1) Do not drop or give impact on the product.
2) Do not detach PCB from the case, it may cause malfunction.
3) During wiring or other work, do not allow any wire chips get inside the product.
4) Switch off the external power before mounting or removing the module and the cable.

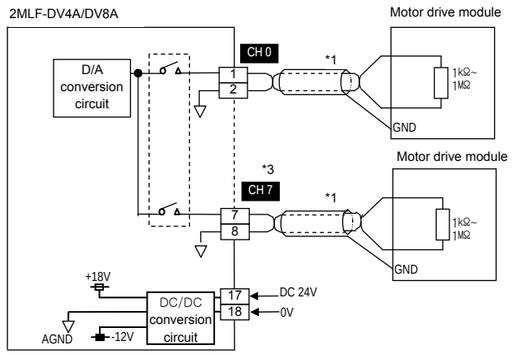
6. Wiring

6.1 Precautions for wiring

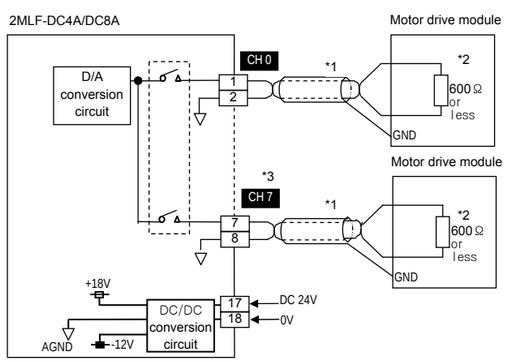
1) Do not place AC power line near to the module's external input signal line. It should be farther than minimum 100mm between both lines in order not to be affected by noise and magnetic field.
2) Cable shall be selected in due consideration of ambient temperature and allowable current, whose size is not less than the max. cable standard of AWG22 (0.3㎟).
3) Do not place the cable too close to hot device and material or in direct contact with oil for long, which will cause damage or abnormal operation due to short-circuit.
4) Check the polarity when wiring the terminal.
5) Wiring with high-voltage line or power line may produce inductive hindrance causing abnormal operation or defect.

6.2 Wiring example

2MLF-DV4A/DV8A



2MLF-DC4A/DC8A



*1 : Use the cable of 2-core twisted shield.
*2 : 2MLF-DC8A : 550.Ω
*3 : 2MLF-DV8A/DC8A is available to use from CH0 to CH7.

7. Analog output status

1) Normal mode

CPU	Output status setting	Channel		Remark
		Run	Stop	
RUN	Enable	D/A conversion value	0V or 0㎃	Parameter value 0 : Previous output 1 : Min. output 2 : Mid. output 3 : Max.output
	Disable	By parameter setting	0V or 0㎃	
STOP	Enable	By parameter setting	0V or 0㎃	
	Disable	By parameter setting	0V or 0㎃	

2) Test mode

CPU	Output status setting	Channel		Remark
		Run	Stop	
STOP	Enable	By parameter setting	0V or 0㎃	Parameter value 0 : Previous output 1 : Min. output 2 : Mid. output 3 : Max.output
	Disable	By parameter setting	0V or 0㎃	

3) Error mode

CPU	Error	Channel		Remark
		Run	Stop	
Error	Setting error (Digital input value)	Max or Min	0V or 0㎃	Parameter value 0 : Previous output 1 : Min. output 2 : Mid. output 3 : Max.output
	Setting error (Parameter)	By parameter setting		
	H/W error	0V or 0㎃		
Power-on		0V or 0㎃		

8. Configuration of internal memory

8.1 Data area

Device (2MLK)	Global variables (2MLI)	Description	R/W
Uxy.00.0	_xy_CH0_ERR	CH0 Error	R
Uxy.00.1	_xy_CH1_ERR	CH1 Error	
Uxy.00.2	_xy_CH2_ERR	CH2 Error	
Uxy.00.3	_xy_CH3_ERR	CH3 Error	
Uxy.00.4	_xy_CH4_ERR	CH4 Error	
Uxy.00.5	_xy_CH5_ERR	CH5 Error	
Uxy.00.6	_xy_CH6_ERR	CH6 Error	
Uxy.00.7	_xy_CH7_ERR	CH7 Error	
Uxy.00.F	_xy_RDY	Module Ready	
Uxy.01.0	_xy_CH0_ACT	CH0 Active	R
Uxy.01.1	_xy_CH1_ACT	CH1 Active	
Uxy.01.2	_xy_CH2_ACT	CH2 Active	
Uxy.01.3	_xy_CH3_ACT	CH3 Active	
Uxy.01.4	_xy_CH4_ACT	CH4 Active*1	
Uxy.01.5	_xy_CH5_ACT	CH5 Active*1	
Uxy.01.6	_xy_CH6_ACT	CH6 Active*1	
Uxy.01.7	_xy_CH7_ACT	CH7 Active*1	
Uxy.02	_xy_OUTEN	Output status setting	R/W
Uxy.03	_xy_CH0_DATA	Ch0 input	R/W
Uxy.04	_xy_CH1_DATA	Ch1 input	
Uxy.05	_xy_CH2_DATA	Ch2 input	
Uxy.06	_xy_CH3_DATA	Ch3 input	
Uxy.07	_xy_CH4_DATA	Ch4 input *1	
Uxy.08	_xy_CH5_DATA	Ch5 input *1	
Uxy.09	_xy_CH6_DATA	Ch6 input *1	
Uxy.10	_xy_CH7_DATA	Ch7 input *1	

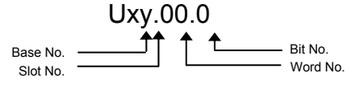
8.2 Parameter area (PUT/GET command)

Address (2MLK)		Global variables (2MLI)	Details	R/W
Hex	Dec			
0_H	0	_Fxy_CH_EN	Channel enable	R/W
1_H	1	_Fxy_OUT_RANGE	Output range	R/W
2_H	2	_Fxy_DATA_TYPE	Input data type	R/W
3_H	3	_Fxy_CH0_STAT	CH0 output status	R/W
4_H	4	_Fxy_CH1_STAT	CH1 output status	
5_H	5	_Fxy_CH2_STAT	CH2 output status	
6_H	6	_Fxy_CH3_STAT	CH3 output status	
7_H	7	_Fxy_CH4_STAT	CH4 output status *1	
8_H	8	_Fxy_CH5_STAT	CH5 output status *1	
9_H	9	_Fxy_CH6_STAT	CH6 output status *1	
A_H	10	_Fxy_CH7_STAT	CH7 output status *1	
B_H	11	_Fxy_CH0_ERR	CH0 setting error	R
C_H	12	_Fxy_CH1_ERR	CH1 setting error	
D_H	13	_Fxy_CH2_ERR	CH2 setting error	
E_H	14	_Fxy_CH3_ERR	CH3 setting error	
F_H	15	_Fxy_CH4_ERR	CH4 setting error*1	
10_H	16	_Fxy_CH5_ERR	CH5 setting error*1	
11_H	17	_Fxy_CH6_ERR	CH6 setting error*1	
12_H	18	_Fxy_CH7_ERR	CH7 setting error*1	

*1 2MLF-DV8A/DC8A only

Remark

How to use U device

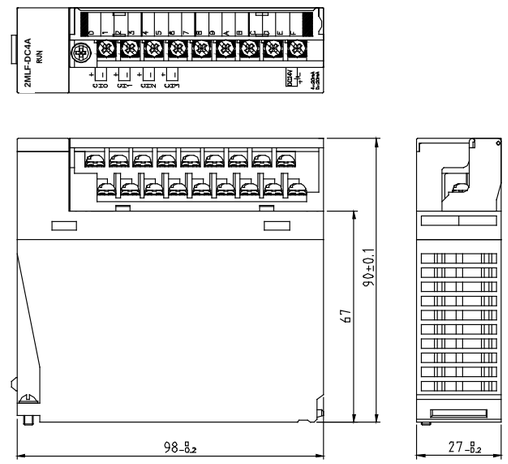
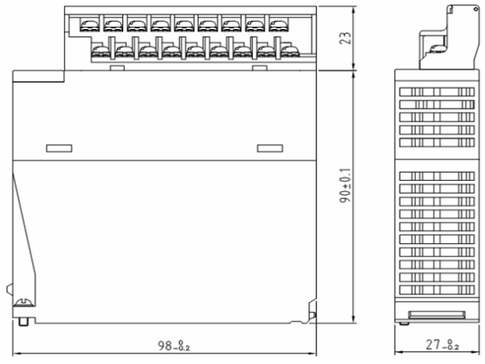


Ex1) When reading "CH0 Active" bit of Base 1, Slot 6 module -> U16.01.0
Ex2) When reading "CH0 Active" bit of Base 0, Slot 11 module -> U0B.01.0

9. Dimensions

Unit: mm

9.1 2MLF-DC4A/DV4A



9.2 2MLF-DC8A/DV8A