Honeywell

DATASHEET

MasterLogic-200

DeviceNet I/F Module

2MLL-DMEA

10310000656 Printed in Korea

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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 MasterLogic-200 Series.
  For safety precautions on the PLC system, refer to Dnet I/F 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 a considerable loss of property.

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

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

⚠ Give warnings and cautions to prevent from risk of injury, fire, or malfunction.

⚠ Give warnings and cautions to prevent from risk of electric 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

▸ **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.

▸ **Ensure that external load do not exceed the rating of output module.**
Risk of fire and erroneous operation.

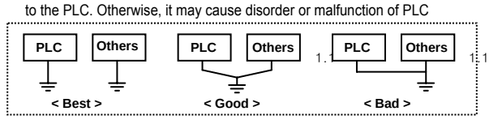
▸ **Do not use the PLC in the environment of direct vibration**
Risk of electrical shock, fire and erroneous operation.

▸ **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

Read this data sheet carefully prior to any operation, mounting, installation or start-up of the product.

Materials for MasterLogic-200

Name	Code
2MLK-CPUH/CPUS	10310000648
MasterLogic-200 BASIC INSTRUCTION	10310000649
MasterLogic-200 SOFTWARE	10310000650

Name	DeviceNet I/F Module datasheet
Code	10310000656

1. Introduction

This data sheet contains the brief information about the characteristics, configurations, and operating of MasterLogic-200 PLC DeviceNet I/F module (Dnet I/F module).

2. General Specifications

No.	Item	Specification				Standard
1	Operating temperature	0 ~ 55℃				
2	Storage temperature	-25 ~ 70℃				
3	Operating Humidity	5 ~ 95%RH, non-condensing				
4	Storage humidity	5 ~ 95%RH, non-condensing				
5	Vibration	Occasional vibration				IEC61131-2
		Frequency	Acceleration	Amplitude	Sweep count	
		10≤f∠57 Hz	-	0.075 mm	10 times in each direction for X, Y, Z	
		57 ≤f≤150 Hz	9.8 ㎨ {1G}	-		
		Continuous vibration				
		Frequency	Acceleration	Amplitude		
		10≤f∠57 Hz	-	0.035 mm		
		57≤f≤150 Hz	4.9 ㎨{0.5G}	-		
6	Shocks	*Maximum shock acceleration: 147 ㎨ {15G} *Duration time :11 ms *Pulse wave: half sine wave pulse (3 times in each of X, Y and Z directions)				IEC61131-2
7	Noise immunity	Square wave impulse noise	±1,500 V			
		Electrostatic discharge	Voltage :4kV(contact discharge)			IEC61131-2 IEC61000-4-2
		Radiated Electromagnetic field	27 ~ 500 MHz, 10 V/m			IEC61131-2 IEC61000-4-3
		Fast transient burst noise	Severity Level	All power modules	Digital, Analog I/Os communications	IEC61131-2 IEC61000-4-4
			Voltage	2 kV	1 kV	
8	Atmosphere	Free from corrosive gases and excessive dust				
9	Altitude for use	Up to 2,000m				
10	Pollution degree	2 or lower				
11	Cooling method	Self-cooling				

3. Performance Specification

Following presents performance specification of Dnet I/F module.

Items			Performance spec.
Trans-mission spec.	Communication speed		125/250/500 kbps
	Max. drop length	125 kbps	6m(Max. extension 156m)
		250 kbps	6m(Max. extension 78m)
		500 kbps	6m(Max. extension 39m)
	Data packet		0 ~ 8 Byte(64 Bits)
	Network structure		• Trunk. Drop line • Power/signal in the network
	Bus type		• Multicasting • Peer-to-Peer • Bit-Strobe, Poll, COS/Cyclic
	Max. Node No.		Maximum 64 of MAC ID(Identifier)
	System type		Node insert/remove on the status of power on is possible
	Diagnostic function		• Duplicate MAC ID & CRC error check • SyCon: Network state monitoring /Bus Off check /Automatic Network Scan • SoftMaster-PD : HS-Link monitoring
	Node type		Master Only
	Rated voltage		DC 24V
SoftMaster-PD (HS-Link)	Data unit		byte
	Send/Receive period		20ms, 50ms, 100ms, 200ms, 500ms, 1s, 5s, 10s (Default: 50ms)
	Max. message length		Send: 28672 points (3584 bytes) Receive:28672 points (3584 bytes)
	Max, block number		63
	Max. I/O points/BL.		2040 points(255 bytes)
Basic spec.	Max. number of mounted module		12 EA(Main Base ~ Expansion Base)
	Internal power Consumption (mA)		440
	Weight (g)		110

3.1 Maximum transmitting distance with thick and thin cables coexist

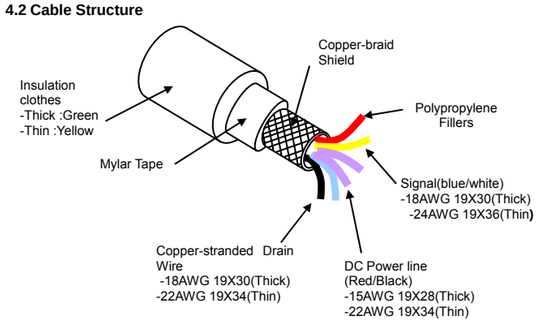
Communication Speed	Max. Transmitting Distance	
	Thick Cable	Thin Cable
125kbps	500m	100m
250kbps	250m	100m
500kbps	100m	100m

4. Cable specification

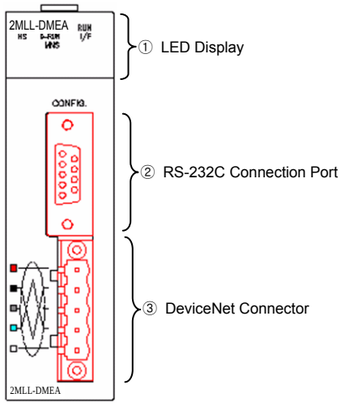
4.1 Dnet cable specification

Item	Class 2 Thick/Thin Cable	
Cable type	Round	Trunk/Drop
Rated output voltage	30V/100VA	
Max. Ampere tolerance	100VA/24V or 4A	
Outside Diameter	12.2mm(6.9mm)	
Core number	5-wire	

4.2 Cable Structure



5. Parts Name and Descriptions



5.1 LED Description

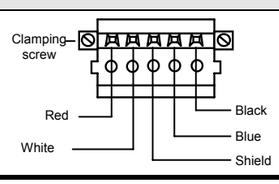
LED	LED Status	Status	LED Description
RUN	On	Normal	Initialization
	Off	Error	when a fatal error occurs
I/F	Blink	Normal	Interface Normal with CPU
	Off	Error	Interface Error with CPU
HS	On	Normal	HS Link normal Operating State
	Blink	Waiting	During download through the SyCon tool, Communicate is stopped.
	Off	Error	HS Link is disable when a fatal error occurs in HS Link
D-RUN	Blink	Comm. Stop	Comm. Stop (Dnet I/F module and slave module)
	On	Normal	Normal Operating (Dnet I/F and slave module)
MNS	Off	Power Off	Dnet I/F module is net online - It has not completed the Duplicate MAC ID test - may not be powered
	Green Blink	Waiting	Dnet I/F module is operational and online, no connection established -Configuration missing -Device has passed the Duplicate MAC ID check but has no established connection to other devices
	Green On	Normal	Completed connection setting and normal communication.
	Red Blink	Error	In case recoverable error takes place (One or more I/O Connection are in the Time-Out state.)
	Red On	Fatal Error	Dnet I/F module incapable to access to the network. -BUS Off because of heavy CAN faults. -Duplicate MAC ID detected.

5.2 RS-232C Cable for SyCon port

Dnet I/F Module		Pin Number & Signal Direction	PC
Pin	Name		Name
1	CD		CD
2	RXD		RXD
3	TXD		TXD
4	DTR		DTR
5	SG		SG
6	DSR		DSR
7	RTS		RTS
8	CTS		CTS
9	RI		RI

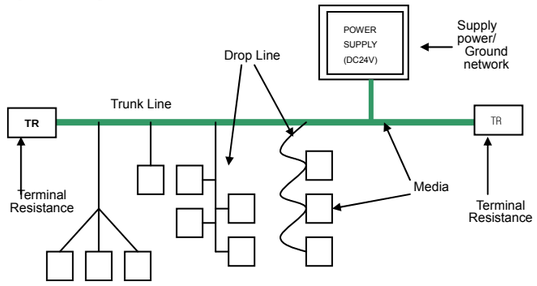
5.3 Open-Style DeviceNet connector

Wire color	Wire Identity	Usage	5-Pin Linear Plug(Open)
Black	24V(-)	Power	
Blue	CAN_L	Signal	
Bare	Drain	N/a	
White	CAN_H	Signal	
Red	24V(+)	Power	



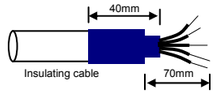
6. System Configuration & Wiring

6.1 System Configuration

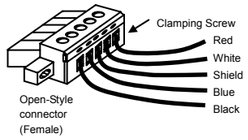


6.2 Installation of connector

1) Strip about 70mm of outer jacket from the end of the cable.
2) Wrap the end of the cable of shrink wrap, covering part of the exposed conductors and part of the trunk line insulation.



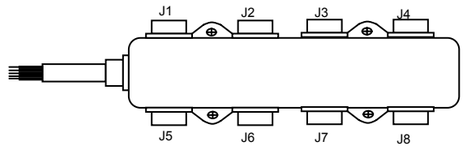
3) Strip the clothing of cable about 8mm from both ends and adhere to cable through getting shrinking packaging cover heated.



4) Insert the peel off cable into clamp screw on adequate area and tighten the screw(Please be careful whether the signal between both cable and connector is coincident from each other).

6.3 Installation of DevicePort Tab(8-Port tap example)

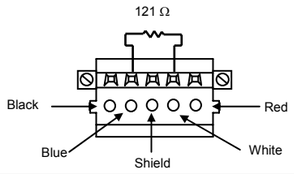
As a max. 8-connection and separate is possible through connection to trunk line of DevicePort tap.



1) Drop line consisted with Thick or Thin cable is capable for connection to device with tap. In case of open-style tap, can use following 3 types of connector
   - Pluggable screw type
   - Hard-wired screw type
   - Soldered type
2) The best way of cable connection is connection of drop line while system is not powered on status. If you connect while the system is operating, then check the connection status with other devices and connect to trunk line in oredr not to impact communication.
3) When connect to trunk line do not excess over maximum tolerance length.

6.4 Terminal Resistance

- Attach 121Ω, 1%, 1/4W resister on both ends of network
- Connect to CAN_H and CAN_L signal of connector



Remark

Terminal Resistance must be attached on both ends of Trunk line of Network, and on both ends of the Tab in case consisted of Device port Tab. If missing terminal resistance, the communication does not work properly.

7. Precautions for system configuration

1) If it is the system structured with single network, please set without any duplicated station number. If not, the system does not work properly.
2) Please use standard cable, tab, and terminal resistance for DeviceNet system. If you use improper parts the system will not work properly and communication error will occur.
3) According to the communication speed which will be used for this communication module, all communication module speed must be coincident to that speed respectively and must follow specification of the cable. .
4) Please tighten the connector with communication module for normal operation.
5) be sure to mount correctly on the base board. Improper mounting may cause the problems on CPU and interface.

7.1 Usable software and accessory

Item	Name	Description
Software	SyCon	It is used to set MAC ID, baud rate, I/O connection and network structure.
	EDS	An Electronic Data Sheet(EDS) is an external file that contains Module Information(Product Code/Type, Vendor ID/ Number). -When SyCon is launched, it automatically retrieves all the EDS files stored in the EDS directory
	SoftMaster-200	PLC programming tool
	SoftMaster-PD	It is used to set communication parameters.
Accessory	Terminal Resistance	121Ω, 1%, 1/4W resister
	Connector	5 pin connector

8. Outward Dimension

Unit: ㎜