

Honeywell

Honeywell Process Solutions

Digital Input/Output Modules
ML 200 DI/DO Module
User's Guide

ML200 - DI/DO

R200

February 2011

Release 200

Honeywell

Notices and Trademarks

**Copyright 2011 by Honeywell International Srl.
Release 200 February 2011**

While this information is presented in good faith and believed to be accurate, Honeywell disclaims the implied warranties of merchantability and fitness for a particular purpose and makes no express warranties except as may be stated in its written agreement with and for its customers.

In no event is Honeywell liable to anyone for any indirect, special or consequential damages. The information and specifications in this document are subject to change without notice.

Honeywell, PlantScape, Experion PKS, and **TotalPlant** are registered trademarks of Honeywell International Inc.

Other brand or product names are trademarks of their respective owners.

Honeywell Process Solutions
1860 W. Rose Garden Lane
Phoenix, AZ 85027 USA
1-800 822-7673

About This Document

Describe the purpose of the document. Example: This document describes how to install and configure the Experion Station-TPS (ES-T) and Experion Server TPS (ESVT) nodes. The nodes become full members in Experion PKS as well as connect directly to the TPN (TotalPlant Network).

Release Information

Document Name	Document ID	Release Number	Publication Date
ML 200 DI/DO Module User's Guide -	ML200 - DI/DO	200	February 2011

Document Category

This document describes how to install and configure the 2MLF-DI DO modules.

Release Information

Document Name	Document ID	Release Number	Publication Date
ML 200 DI/DO Module User's Guide	ML200 - DI/DO	200	February 2011

References

The following list identifies all documents that may be source of reference for material discussed in this publication.

Document Title
SoftMaster User's Guide

Support and Other Contacts

United States and Canada

Contact: Honeywell Solution Support Center
Phone: 1-800-822-7673
Calls are answered by dispatcher between 6:00 am and 4:00 pm Mountain Standard Time. Emergency calls outside normal working hours are received by an answering service and returned within one hour.
Fascimile: 1-973-455-5000
Mail: Honeywell TAC, MS L17
1860 W. Garden Lane
Phoenix, AZ, 85027 USA

Europe, Middle East, and Africa (EMEA)

Contact: Honeywell TAC-EMEA
Phone: +32-2-728-2345
Fascimile: +32-2-728-2696
Mail: TAC-BE02
Hermes Plaza
Hermeslaan, 1H
B-1831 Diegem, Belgium

Pacific

Contact: Honeywell Global TAC – Pacific
Phone: 1300-364-822 (toll free within Australia)
+61-8-9362-9559 (outside Australia)
Fascimile: +61-8-9362-9564
Mail: Honeywell Limited Australia
5 Kitchener Way
Burswood 6100, Western Australia
Email: GTAC@honeywell.com

India

Contact: Honeywell Global TAC – India
Phone: +91-20- 6603-9400
Fascimile: +91-20- 6603-9800
Mail: Honeywell Automation India Ltd
56 and 57, Hadapsar Industrial Estate
Hadapsar, Pune –411 013, India
Email: Global-TAC-India@honeywell.com

Korea

Contact: Honeywell Global TAC – Korea
Phone: +82-80-782-2255 (toll free within Korea)
Facsimile: +82-2-792-9015
Mail: Honeywell Co., Ltd
4F, Sangam IT Tower
1590, DMC Sangam-dong, Mapo-gu
Seoul, 121-835, Korea
Email: Global-TAC-Korea@honeywell.com

People's Republic of China

Contact: Honeywell Global TAC – China
Phone: +86- 21-2219-6888
800-820-0237
400-820-0386
Mail: Honeywell (China) Co., Ltd
33/F, Tower A, City Center, 100 Zunyi Rd.
Shanghai 200051, People's Republic of China
Email: Global-TAC-China@honeywell.com

Singapore

Contact: Honeywell Global TAC – South East Asia
Phone: +65-6580-3500
Facsimile: +65-6580-3501
+65-6445-3033
Mail: Honeywell Private Limited
Honeywell Building
17, Changi Business Park Central 1
Singapore 486073
Email: GTAC-SEA@honeywell.com

Taiwan

Contact: Honeywell Global TAC – Taiwan
Phone: +886-7-536-2567
Facsimile: +886-7-536-2039
Mail: Honeywell Taiwan Ltd.
17F-1, No. 260, Jhongshan 2nd Road.
Cianjhen District
Kaohsiung, Taiwan, ROC
Email: Global-TAC-Taiwan@honeywell.com

Japan

Contact: Honeywell Global TAC – Japan
Phone: +81-3-6730-7160
Fascimile: +81-3-6730-7228
Mail: Honeywell Japan Inc.
New Pier Takeshiba, South Tower Building,
20th Floor, 1-16-1 Kaigan, Minato-ku,
Tokyo 105-0022, Japan
Email: Global-TAC-JapanJA25@honeywell.com

Elsewhere

Call your nearest Honeywell office.

World Wide Web

Honeywell Solution Support Online:

<http://www.honeywell.com/ps>








Training Classes






Honeywell Automation College:

<http://www.automationcollege.com>

Symbol Definitions

The following table lists the symbols used in this document to denote certain conditions.

Symbol	Definition
	ATTENTION: Identifies information that requires special consideration.
	TIP: Identifies advice or hints for the user, often in terms of performing a task.
	REFERENCE -EXTERNAL: Identifies an additional source of information outside of the bookset.
	REFERENCE - INTERNAL: Identifies an additional source of information within the bookset.
CAUTION	Indicates a situation which, if not avoided, may result in equipment or work (data) on the system being damaged or lost, or may result in the inability to properly operate the process.
	CAUTION: Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices. CAUTION symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING: Indicates a potentially hazardous situation, which, if not avoided, could result in serious injury or death. WARNING symbol on the equipment refers the user to the product manual for additional information. The symbol appears next to required information in the manual.
	WARNING, Risk of electrical shock: Potential shock hazard where HAZARDOUS LIVE voltages greater than 30 Vrms, 42.4 Vpeak, or 60 VDC may be accessible.

Symbol	Definition
	<p>ESD HAZARD: Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatically sensitive devices.</p>
	<p>Protective Earth (PE) terminal: Provided for connection of the protective earth (green or green/yellow) supply system conductor.</p>
	<p>Functional earth terminal: Used for non-safety purposes such as noise immunity improvement.</p> <p>NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national local electrical code requirements.</p>
	<p>Earth Ground: Functional earth connection.</p> <p>NOTE: This connection shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.</p>
	<p>Chassis Ground: Identifies a connection to the chassis or frame of the equipment shall be bonded to Protective Earth at the source of supply in accordance with national and local electrical code requirements.</p>

Contents

1.	I/O MODULE SELECTION	11
1.1	Selecting a digital I/O module	11
2.	DIGITAL INPUT MODULE SPECIFICATION.....	15
2.1	8-point digital input module (source/sink type)	15
2.2	16-point digital input module (source/sink type)	17
2.3	16-point digital input module (source type)	20
2.4	32-point digital input module (source/sink type)	23
2.5	32-point digital input module (source type)	26
2.6	64-point digital input module (source/sink type)	29
	Circuit configuration 64-point DC24V digital input module (source/sink type)	31
2.7	64-point digital input module (source type)	32
	Circuit configuration of 64-point DC24V digital input module (source type)	34
2.8	16-point digital input module	35
2.9	8-point digital input module	37
3.	DIGITAL OUTPUT MODULE SPECIFICATION.....	39
3.1	8-point relay digital output module	39
3.2	16-point relay digital output module	41
3.3	16-point relay digital output module (surge absorber type).....	43
3.4	16-point triac digital output module	46
3.5	16-point transistor digital output module (sink type).....	48
3.6	32-point transistor digital output module (sink type).....	50
3.7	64-point transistor digital output module (sink type).....	52
	Circuit configuration 64-point transistor digital output module (sink type)	54
3.8	16-point transistor digital output module (source type)	55
3.9	32-point transistor digital output module (source type)	57

Contents
Symbol Definitions

Circuit configuration of 32-point transistor digital output module (source type)	59
3.10 64-point transistor digital output module (source type)	60
Circuit configuration of 64-point transistor digital output module (source type)	62
4. APPLICATIONS OF SMART LINK	63
4.1 Modules accessible to smart link	63
4.2 Smart link connection	65
4.3 Connection diagram with ML200	66
5. EVENT INPUT MODULE SPECIFICATION	69
5.1 Event Input Module (Source/Sink type).....	69

1. I/O Module Selection

1.1 Selecting a digital I/O module

This user's guide describes the factors considered, when you select the digital I/O module used for MasterLogic-200 series.

There are two types of digital input modules.

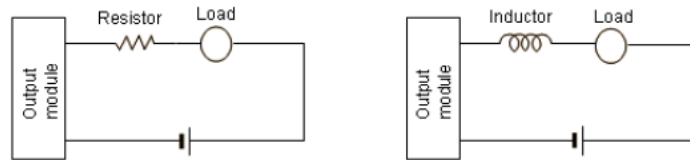
- Current sink input
- Current source input

The following sequence describes the procedure to select a digital I/O module.

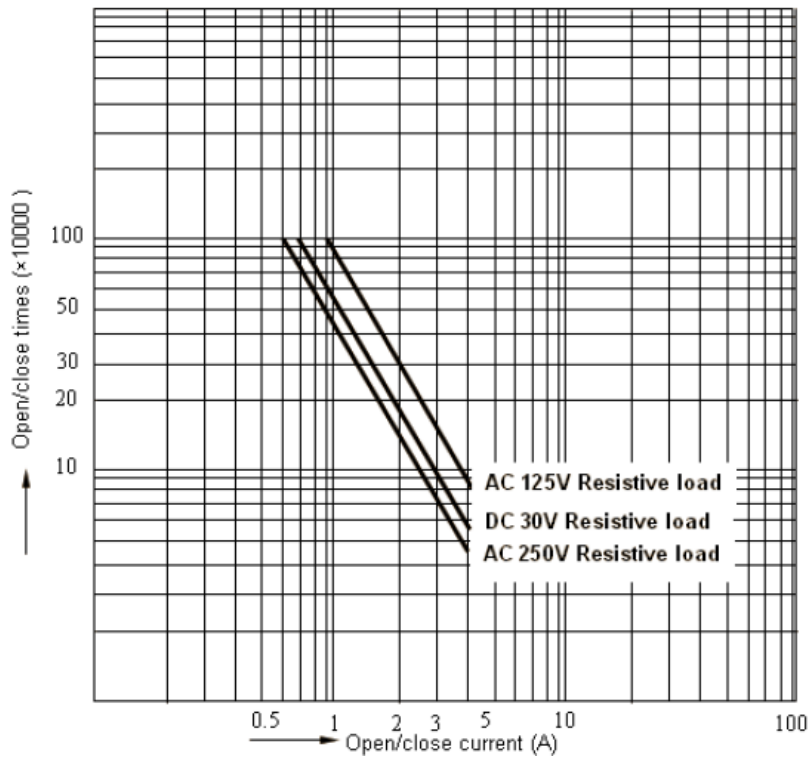
1. When you select the digital input module, consider the specifications of input connecting device carefully. When you select the wiring method, external input power varies according to the type of digital input module.
2. Maximum simultaneous input point depends on the module type. It is subject to input voltage, ambient temperature. Before usage, review the specification of input module.
3. In case high-speed input is required, use interrupt module. However, interrupt module has a limited use and enables you to install only one module for one CPU module.
4. In case open/close frequency is high or used for conductive load open/close, use transistor output module or triac output module as the durability of relay output module can be reduced.
5. For output module to run the conductive (L) load, maximum open/close frequency should be used as 1s On, 1s Off.
6. For output module, in case a counter timer using DC converter is used as a load, inrush current will flow in a certain cycle when it is ON. Here, if you select average current, it may cause a failure. Accordingly, if the previous load is used, it is recommended to connect a resistor or inductor to the load in serial, in order to reduce the impact of inrush current or use the large module having a maximum load current value.

1. I/O Module Selection

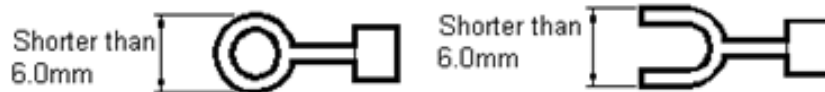
1.1. Selecting a digital I/O module



7. For output module, you cannot change the fuse. This is to prevent burnout of external wiring in case of short circuit of module output. This may not protect output module. In case output module is destroyed in error mode except short circuit, fuse may not work.
8. The following figure displays the maximum life of relay used for relay output module.



9. MasterLogic-200 terminal block is not allowed to use the compressed terminal attached with sleeve. The proper compressed terminal to connect to terminal blocks is as shown below.



10. The cable size connected to terminal block should be twisted pair 0.3~0.75mm², thickness less than 2.8mm. Care should be taken as cable varies the allowable current by insulation thickness.
11. The attachment torque of fixed screw of the module and the screw of terminal block should be within the range below.

Attachment part	Attachment Torque range
I/O module terminal block screw (M3 screw)	42 ~ 58 Ncm
I/O module terminal block fixed screw (M3 screw)	66 ~ 89 Ncm

12. Transistor output module (2MLQ-TR4A, 2MLQ-TR8A) has Thermal Protector Function.
13. Thermal Protector Function is the protection function for overload and overheats.

1. I/O Module Selection

1.1. Selecting a digital I/O module

2. Digital Input Module Specification

2.1 8-point digital input module (source/sink type)

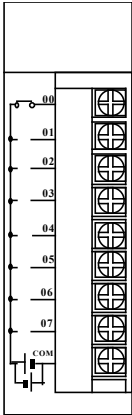
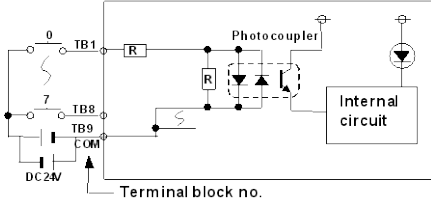
The following table displays the source types for 8-point DC 24V.

Model Specification		Digital Input Module
		2MLI-D21A
Input point		8 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		None
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6k Ω
Response time	Off \rightarrow On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default:3ms
	On \rightarrow Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default:3ms
Isolation pressure		AC560V rms/3 cycle (altitude 2000m)
Isolation resistance		10M Ω or more by megger
Common method		8 point / COM
Proper cable size		Twisted pair 0.3~0.75mm ² (external diameter 2.8mm or less)
Proper compressed		R1.25-3 (not allowed to use a sleeve attached compressed)

2. Digital Input Module Specification

2.1. 8-point digital input module (source/sink type)

Model Specification	Digital Input Module
	2MLI-D21A
terminal	terminal.)
Current consumption (mA)	20mA
Operation indicator	Input On, LED On
External connection method	9-point terminal block connector (M3×6screw)
Weight	0.1kg

Model Specification	Digital Input Module		
	2MLI-D21A		
Circuit configuration	Terminal block	Contact	
	TB1	P0	
	TB2	P1	
	TB3	P2	
	TB4	P3	
	TB5	P4	
	TB6	P5	
	TB7	P6	
	TB8	P7	
	TB9	COM	

2.2 16-point digital input module (source/sink type)

The following table displays the source types for 16-point DC 24V.

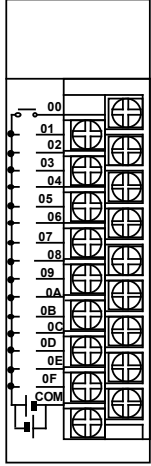
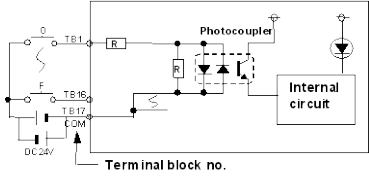
Model		Digital Input Module
Specification		2MLI-D22A
Input point		16 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		None
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10 MΩ or more by megger
Common method		16 point / COM
Proper cable size		Twisted pair 0.3~0.75mm ² (external diameter 2.8mm or less)
Proper compressed terminal		R1.25-3 (not allowed to use a sleeve attached compressed terminal.)
Current consumption (mA)		30mA

2. Digital Input Module Specification

2.2. 16-point digital input module (source/sink type)

Model Specification	Digital Input Module
	2MLI-D22A
Operation indicator	Input On, LED On
External connection method	18-point terminal block connector (M3×6screw)
Weight	0.12kg

2. Digital Input Module Specification
 2.2. 16-point digital input module (source/sink type)

Model Specification	Digital Input Module		
	2MLI-D22A		
Circuit configuration	Terminal block	Contact	
 <p>Terminal block no.</p>	TB1	P0	
	TB2	P1	
	TB3	P2	
	TB4	P3	
	TB5	P4	
	TB6	P5	
	TB7	P6	
	TB8	P7	
	TB9	P8	
	TB10	P9	
	TB11	PA	
	TB12	PB	
	TB13	PC	
	TB14	PD	
	TB15	PE	
	TB16	PF	
	TB17	COM	
TB18	NC		

2. Digital Input Module Specification
2.3. 16-point digital input module (source type)

2.3 16-point digital input module (source type)

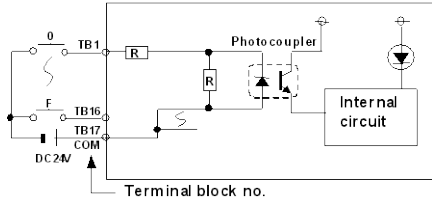
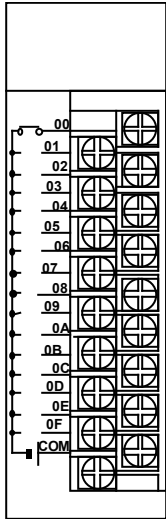
The following table displays the source types for 16-point DC 24V.

Model Specification		Digital Input Module
		2MLI-D22B
Input point		16 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		None
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10MΩ or more by megger
Common Method		16 point / COM
Proper cable size		Twisted pair 0.3~0.75mm ² (external diameter 2.8mm or less)
Proper compressed terminal		R1.25-3 (not allowed to use a sleeve attached compressed terminal.)
Current consumption (mA)		30mA

2. Digital Input Module Specification
2.3. 16-point digital input module (source type)

Model Specification	Digital Input Module
	2MLI-D22B
Operation indicator	Input On, LED On
External connection method	18-point terminal block connector (M3×6screw)
Weight	0.12kg

2. Digital Input Module Specification
 2.3. 16-point digital input module (source type)

Model Specification	Digital Input Module	
	2MLI-D22B	
Circuit configuration	Terminal block	Contact
 <p>Terminal block no.</p>	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
	TB17	COM
TB18	NC	
		

2.4 32-point digital input module (source/sink type)

The following table displays the source types for 32-point DC 24V.

Model Specification		Digital Input Module
		2MLI-D24A
Input point		32 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		Refer to the below derating diagram
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10MΩ or more by megger
Common Method		32 point / COM
Proper cable size		0.3mm ²
Current consumption (mA)		50mA
Operation indicator		Input On, LED On

2. Digital Input Module Specification

2.4. 32-point digital input module (source/sink type)

Model Specification	Digital Input Module
	2MLI-D24A
External connection method	40-point connector
Weight	0.1kg

2. Digital Input Module Specification
2.4. 32-point digital input module (source/sink type)

Model Specification	Digital Input Module				
	2MLI-D24A				
Circuit configuration	No	Contact	No	Contact	
 	B20	P00	A20	P10	
	B19	P01	A19	P11	
	B18	P02	A18	P12	
	B17	P03	A17	P13	
	B16	P04	A16	P14	
	B15	P05	A15	P15	
	B14	P06	A14	P16	
	B13	P07	A13	P17	
	B12	P08	A12	P18	
	B11	P09	A11	P19	
	B10	P0A	A10	P1A	
	B09	P0B	A09	P1B	
	B08	P0C	A08	P1C	
	B07	P0D	A07	P1D	
	B06	P0E	A06	P1E	
	B05	P0F	A05	P1F	
	B04	NC	A04	NC	
	B03	NC	A03	NC	
	B02	COM	A02	COM	
	B01	COM	A01	COM	

2. Digital Input Module Specification
2.5. 32-point digital input module (source type)

2.5 32-point digital input module (source type)

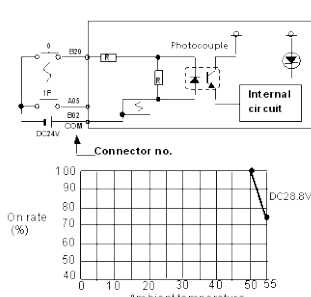
The following table displays the source types for 32-point DC 24V.

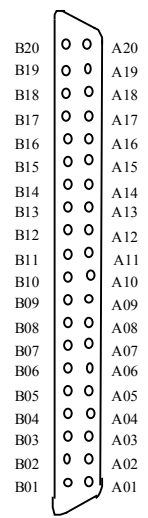
Model		Digital Input Module
Specification		2MLI-D24B
Input point		32 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		Refer to the below derating diagram
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10MΩ or more by megger
Common method		32 point / COM
Proper cable size		0.3mm ²
Current consumption (mA)		50mA

2. Digital Input Module Specification
2.5. 32-point digital input module (source type)

Model Specification	Digital Input Module
	2MLI-D24B
Operation indicator	Input On, LED On
External connection method	40-point connector
Weight	0.1kg

2. Digital Input Module Specification
2.5. 32-point digital input module (source type)

Model Specification	Digital Input Module			
	2MLI-D24B			
Circuit configuration	No	Contact	No	Contact
	B20	P00	A20	P10
	B19	P01	A19	P11
	B18	P02	A18	P12
	B17	P03	A17	P13
	B16	P04	A16	P14
	B15	P05	A15	P15
	B14	P06	A14	P16
	B13	P07	A13	P17
	B12	P08	A12	P18
	B11	P09	A11	P19
	B10	P0A	A10	P1A
	B09	P0B	A09	P1B
	B08	P0C	A08	P1C
	B07	P0D	A07	P1D
	B06	P0E	A06	P1E
	B05	P0F	A05	P1F
	B04	NC	A04	NC
	B03	NC	A03	NC
	B02	COM	A02	COM
	B01	COM	A01	COM



2.6 64-point digital input module (source/sink type)

The following table displays the source types for 64-point DC 24V.

Model Specification		Digital Input Module
		2MLI-D28A
Input point		64 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		Refer to the below derating diagram
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default: 3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10 MΩ or more by megger
Common Method		32 point / COM
Proper cable size		0.3mm ²
Current consumption (mA)		60mA
Operation indicator		Input On, LED On (32-point LED On by switch operation)
External connection method		40-point connector×2ea

2. Digital Input Module Specification

2.6. 64-point digital input module (source/sink type)

Model Specification	Digital Input Module
	2MLI-D28A
Weight	0.15kg

Digital Input Module							
2MLI-D28B							
No	Contact	No	Contact	No	Contact	No	Contact
1B20	P00	1A20	P10	2B20	P20	2A20	P30
1B19	P01	1A19	P11	2B19	P21	2A19	P31
1B18	P02	1A18	P12	2B18	P22	2A18	P32
1B17	P03	1A17	P13	2B17	P23	2A17	P33
1B16	P04	1A16	P14	2B16	P24	2A16	P34
1B15	P05	1A15	P15	2B15	P25	2A15	P35
1B14	P06	1A14	P16	2B14	P26	2A14	P36
1B13	P07	1A13	P17	2B13	P27	2A13	P37
1B12	P08	1A12	P18	2B12	P28	2A12	P38
1B11	P09	1A11	P19	2B11	P29	2A11	P39
1B10	P0A	1A10	P1A	2B10	P2A	2A10	P3A
1B09	P0B	1A09	P1B	2B09	P2B	2A09	P3B
1B08	P0C	1A08	P1C	2B08	P2C	2A08	P3C
1B07	P0D	1A07	P1D	2B07	P2D	2A07	P3D
1B06	P0E	1A06	P1E	2B06	P2E	2A06	P3E
1B05	P0F	1A05	P1F	2B05	P2F	2A05	P3F
1B04	NC	1A04	NC	2B04	NC	2A04	NC
1B03	NC	1A03	NC	2B03	NC	2A03	NC

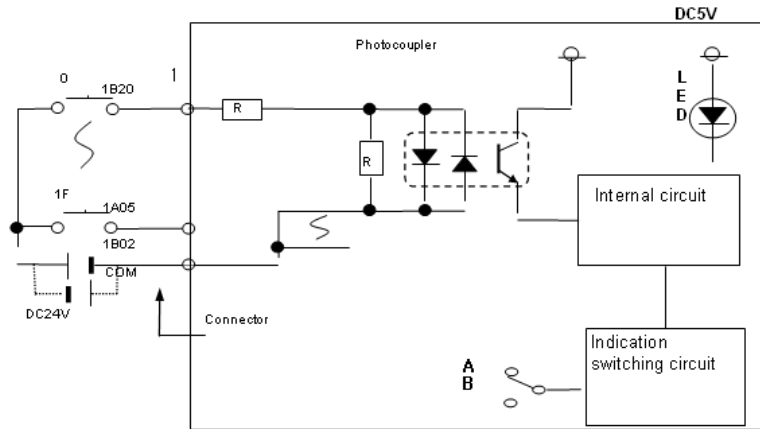
B20B19B18B17B16B15B14B13B12B11B10B09B08B07B06B05B04B03B02B01

A20A19A18A17A16A15A14A13A12A11A10A09A08A07A06A05A04A03A02A01

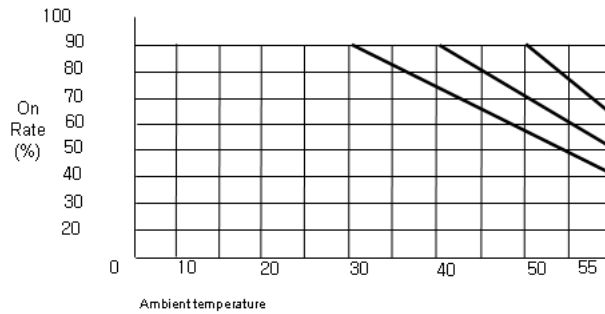
2. Digital Input Module Specification
 2.7. 64-point digital input module (source type)

Digital Input Module							
2MLI-D28B							
1B02	COM	1A02	NC	2B02	COM	2A02	NC
1B01	COM	1A01	NC	2B01	COM	2A01	NC

Circuit configuration 64-point DC24V digital input module (source/sink type)



A: P00-P1F indication
B: P20-P3F indication



2. Digital Input Module Specification
2.7. 64-point digital input module (source type)

2.7 64-point digital input module (source type)

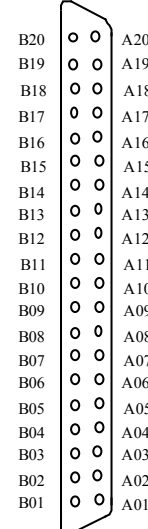
The following table displays the source types for 64-point DC 24V.

Model Specification		Digital Input Module
		2MLI-D28B
Input point		64 point
Isolation method		Photo coupler isolation
Rated input voltage		DC24V
Rated input current		About 4mA
Operation voltage range		DC20.4~28.8V (ripple rate < 5%)
Input derating		Refer to the below derating diagram
On voltage/current		DC19V or higher / 3mA or higher
Off voltage/current		DC11V or lower / 1.7mA or lower
Input resistance		About 5.6kΩ
Response time	Off → On	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default:3ms
	On → Off	1ms/3ms/5ms/10ms/20ms/70ms/100ms (set by CPU parameter) Default:3ms
Isolation pressure		AC560V rms/3 Cycle (altitude 2000m)
Isolation resistance		10MΩ or more by megger
Common Method		32 point / COM
Proper cable size		0.3mm ²
Current consumption (mA)		60mA
Operation indicator		Input On, LED On (32-point LED On by switch operation)
External connection method		40-point connector×2ea

2. Digital Input Module Specification
2.7. 64-point digital input module (source type)

Model Specification	Digital Input Module
	2MLI-D28B
Weight	0.15kg

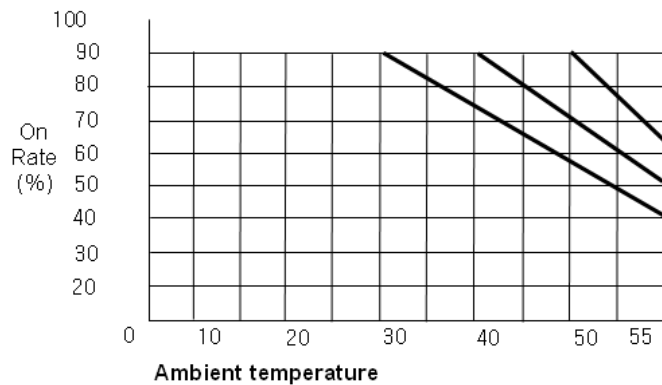
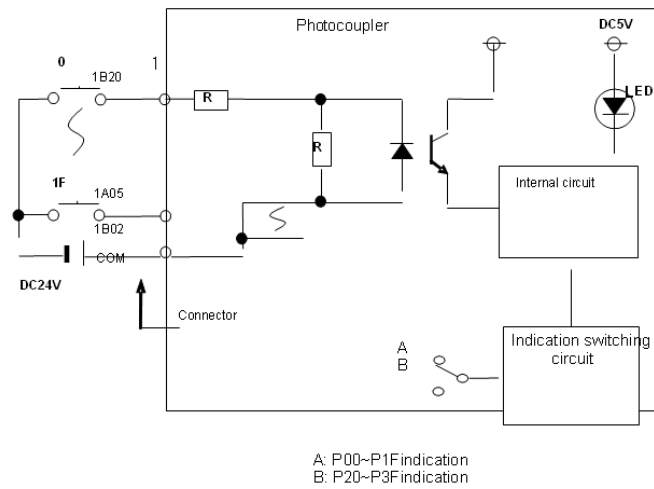
Digital Input Module							
2MLI-D28B							
No	Contact	No	Contact	No	Contact	No	Contact
1B20	P00	1A20	P10	2B20	P20	2A20	P30
1B19	P01	1A19	P11	2B19	P21	2A19	P31
1B18	P02	1A18	P12	2B18	P22	2A18	P32
1B17	P03	1A17	P13	2B17	P23	2A17	P33
1B16	P04	1A16	P14	2B16	P24	2A16	P34
1B15	P05	1A15	P15	2B15	P25	2A15	P35
1B14	P06	1A14	P16	2B14	P26	2A14	P36
1B13	P07	1A13	P17	2B13	P27	2A13	P37
1B12	P08	1A12	P18	2B12	P28	2A12	P38
1B11	P09	1A11	P19	2B11	P29	2A11	P39
1B10	P0A	1A10	P1A	2B10	P2A	2A10	P3A
1B09	P0B	1A09	P1B	2B09	P2B	2A09	P3B
1B08	P0C	1A08	P1C	2B08	P2C	2A08	P3C
1B07	P0D	1A07	P1D	2B07	P2D	2A07	P3D
1B06	P0E	1A06	P1E	2B06	P2E	2A06	P3E
1B05	P0F	1A05	P1F	2B05	P2F	2A05	P3F
1B04	NC	1A04	NC	2B04	NC	2A04	NC
1B03	NC	1A03	NC	2B03	NC	2A03	NC



2. Digital Input Module Specification
2.8. 16-point digital input module

Digital Input Module							
2MLI-D28B							
1B02	COM	1A02	NC	2B02	COM	2A02	NC
1B01	COM	1A01	NC	2B01	COM	2A01	NC

Circuit configuration of 64-point DC24V digital input module (source type)



2.8 16-point digital input module

The following table displays the source types for 16-point AC 110V.

Model Specification		Digital Input Module
		2MLI-A12A
Input point		16 point
Isolation method		Photo coupler isolation
Rated input voltage		AC100-120V (+10/-15%) 50/60Hz (±3Hz) (distortion rate < 5%)
Rated input current		About 8mA (AC100, 60Hz), About 7mA (AC100, 50Hz)
Inrush current		Maximum 200mA 1ms (AC132V)
Input derating		Refer to the below derating diagram
On voltage/current		AC80V or higher / 5mA or higher (50Hz, 60Hz)
Off voltage/current		AC30V or higher / 1mA or lower (50Hz, 60Hz)
Input resistance		About 12kΩ (60Hz), About 15kΩ (50Hz)
Response time	Off → On	15ms or less (AC100V 50Hz, 60Hz)
	On → Off	25ms or less (AC100V 50Hz, 60Hz)
Isolation pressure		AC1780V rms/3 Cycle (altitude 2000m)
Isolation resistance		10MΩ or more by megger
Common method		16 point / COM
Proper cable size		Twisted pair 0.3~0.75mm ² (external diameter 2.8mm or less)
Proper compressed terminal		R1.25-3 (not allowed to use a sleeve attached compressed terminal.)
Current consumption (mA)		30mA
Operation indicator		Input On, LED On
External connection method		18-point terminal block connector (M3×6screw)

2. Digital Input Module Specification
2.8. 16-point digital input module

Model Specification	Digital Input Module
	2MLI-A12A
Weight	0.13kg

Model Specification	Digital Input Module		
	2MLI-A12A		
Circuit configuration	Terminal block	Contact	
 	TB1	P0	
	TB2	P1	
	TB3	P2	
	TB4	P3	
	TB5	P4	
	TB6	P5	
	TB7	P6	
	TB8	P7	
	TB9	P8	
	TB10	P9	
	TB11	PA	
	TB12	PB	
	TB13	PC	
	TB14	PD	
	TB15	PE	
	TB16	PF	
TB17	COM		
TB18	NC		

2.9 8-point digital input module

The following table displays the source types for 8-point AC 220V.

Model Specification		Digital Input Module
		2MLI-A21A
Input point		8 point
Isolation method		Photo coupler isolation
Rated input voltage		AC100-240V (+10/-15%) 50/60Hz (±3Hz) (distortion rate 5%)
Rated input current		About 17mA (AC200,60 Hz), About 14mA (AC200, 50 Hz)
Inrush current		Maximum 500mA, 1ms below (AC264V)
Input derating		Refer to the below derating diagram
On voltage/current		AC80V or higher / 5mA or higher (50Hz, 60Hz)
Off voltage/current		AC30V or higher / 1mA or lower (50Hz, 60Hz)
Input resistance		About 12kΩ (60Hz), About 15kΩ (50Hz)
Response time	Off → On	15ms or less (AC200V 50Hz, 60 Hz)
	On → Off	25ms or less (AC200V 50Hz, 60 Hz)
Isolation pressure		AC2830V rms/3 Cycle (altitude 2000m)
Isolation resistance		10 MΩ or more by megger
Common Method		8 point / COM
Proper cable size		Twisted pair 0.3~0.75mm ² (external diameter 2.8mm or less)
Proper compressed terminal		R1.25-3 (not allowed to use a sleeve attached compressed terminal.)
Current consumption (mA)		20mA
Operation indicator		Input On, LED On
External connection method		9-point terminal block connector (M3×6screw)
Weight		0.13kg

2. Digital Input Module Specification
2.9. 8-point digital input module

Model Specification	Digital Input Module		
	2MLI-A21A		
Circuit configuration	Terminal block	Contact	
 	TB1	P0	
	TB2	P1	
	TB3	P2	
	TB4	P3	
	TB5	P4	
	TB6	P5	
	TB7	P6	
	TB8	P7	
	TB9	COM	

3. Digital Output Module Specification

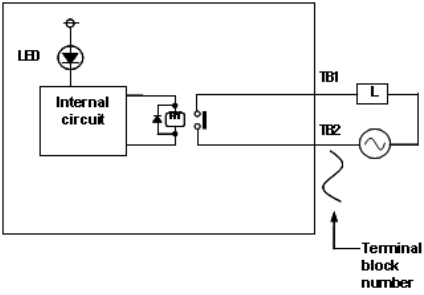
3.1 8-point relay digital output module

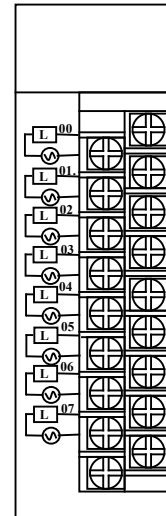
Model Specification		Digital Output Module
		2MLQ-RY1A
Output point		8 point
Isolation method		Relay isolation
Rated load voltage/current		DC24V 2A(resistive load) / AC220V 2A(COS Ψ = 1)
Minimum load voltage/current		DC5V / 1mA
Maximum load voltage/current		AC250V, DC125V
Off leakage current		0.1mA (AC220V, 60Hz)
Maximum on/off frequency		3600 times/h
Surge absorber		None
Service life	Mechanical	20 million times or more
	Electrical	Rated load voltage/current 100000 times or more
		AC200V / 1.5A, AC240V / 1A (COS Ψ = 0.7) 100000 times or more
		AC200V / 1A, AC240V / 0.5A (COS Ψ = 0.35) 100000 times or more
	DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 100000 times or more	
Response time	Off \rightarrow On	10ms or less
	On \rightarrow Off	12ms or less
Common method		1 point / 1COM (independent contact)
Current consumption		260mA (when all point On)
Operation indicator		Output On, LED On
External connection method		18-point terminal block connector (M3 \times 6screw)

3. Digital Output Module Specification

3.1. 8-point relay digital output module

Model Specification	Digital Output Module
	2MLQ-RY1A
Weight	0.13kg

Model Specification	Digital Output Module	
	2MLQ-RY1A	
Circuit configuration	Terminal block	Contact
	TB1	P0
	TB2	COM
	TB3	P1
	TB4	COM
	TB5	P2
	TB6	COM
	TB7	P3
	TB8	COM
	TB9	P4
	TB10	COM
	TB11	P5
	TB12	COM
	TB13	P6
	TB14	COM
	TB15	P7
	TB16	COM
	TB17	NC
	TB18	NC



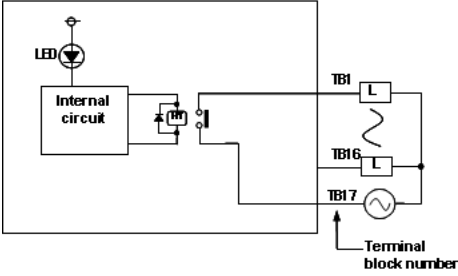
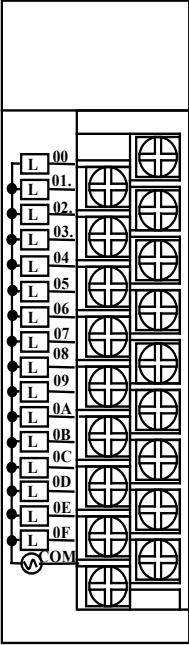
3.2 16-point relay digital output module

Model Specification		Digital Output Module
		2MLQ-RY2A
Output point		16 point
Isolation method		Relay isolation
Rated load voltage/current		DC24V 2A(resistive load) / AC220V 2A(COS Ψ = 1)
Minimum load voltage/current		DC5V / 1mA
Maximum load voltage/current		AC250V, DC125V
Off leakage current		0.1mA (AC220V, 60Hz)
Maximum on/off frequency		3600times/h
Surge absorber		None
Service life	Mechanical	20 million times or more
	Electrical	Rated load voltage/current 100,000 times or more
		AC200V / 1.5A, AC240V / 1A (COS Ψ = 0.7) 100000 times or more
		AC200V / 1A, AC240V / 0.5A (COS Ψ = 0.35) 100000 times or more
	DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 100000 times or more	
Response time	Off \rightarrow On	10ms or less
	On \rightarrow Off	12ms or less
Common method		16 point / 1COM
Current consumption		500mA (when all points On)
Operation indicator		Output On, LED On
External connection method		18-point terminal block connector (M3 \times 6screw)

3. Digital Output Module Specification

3.3. 16-point relay digital output module (surge absorber type)

Model Specification	Digital Output Module
	2MLQ-RY2A
Weight	0.17kg

Model Specification	Digital Output Module	
	2MLQ-RY2A	
Circuit configuration	Terminal block	Contact
	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
	TB17	COM
TB18	NC	
		

3. Digital Output Module Specification

3.3. 16-point relay digital output module (surge absorber type)

3.3 16-point relay digital output module (surge absorber type)

Model Specification		Digital Output Module
		2MLQ-RY2B
Output point		16 point
Isolation method		Relay isolation
Rated load voltage/current		DC24V 2A(resistive load) / AC220V 2A(COS Ψ = 1)
Minimum load voltage/current		DC5V / 1mA
Maximum load voltage/current		AC250V, DC125V
Off leakage current		0.1mA (AC220V, 60Hz)
Maximum on/off frequency		3600times/h
Surge absorber		Varistor (387 ~ 473V), C.R Absorber
Service life	Mechanical	20 million times or more
	Electrical	Rated load voltage/current 100000 times or more
		AC200V / 1.5A, AC240V / 1A (COS Ψ = 0.7) 100000 times or more
		AC200V / 1A, AC240V / 0.5A (COS Ψ = 0.35) 100000 times or more
	DC24V / 1A, DC100V / 0.1A (L / R = 7ms) 100000 times or more	
Response time	Off → On	10ms or less
	On → Off	12ms or less
Common method		16 point / 1COM
Current consumption		500mA (when all points On)

3. Digital Output Module Specification

3.3. 16-point relay digital output module (surge absorber type)

Model Specification	Digital Output Module
	2MLQ-RY2B
Operation indicator	Output On, LED On
External connection method	18-point terminal block connector (M3×6screw)
Weight	0.19kg

3. Digital Output Module Specification

3.3. 16-point relay digital output module (surge absorber type)

Model Specification	Digital Output Module	
	2MLQ-RY2B	
Circuit configuration	Terminal block	Contact
<p>Terminal block number</p>	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
	TB17	COM
TB18	NC	

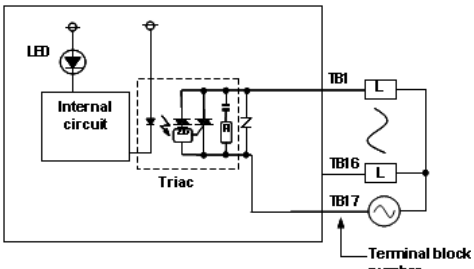
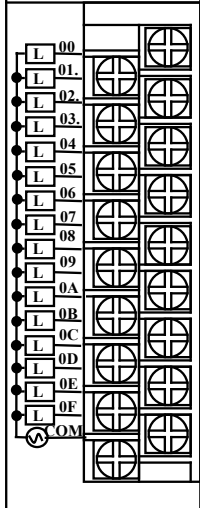
3. Digital Output Module Specification

3.4. 16-point triac digital output module

3.4 16-point triac digital output module

Model Specification		Digital Output Module
		2MLQ-SS2A
Output point		16 point
Isolation method		Photo coupler isolation
Rated load voltage		AC 100-240V (50 / 60 Hz)
Maximum load voltage		AC 264V
Maximum load current		0.6A / 1 point 4A / 1COM
Minimum load current		20mA
Off leakage current		2.5mA (AC 220V 60 Hz)
Maximum inrush current		20A / Cycle or less
Maximum voltage drop (On)		AC 1.5V or less (2A)
Surge absorber		Varistor (387 ~ 473V), C.R Absorber
Response time	Off → On	1ms or less
	On → Off	0.5 Cycle + 1ms or less
Common method		16 point / 1 COM
Current consumption		300 mA (when all points On)
Operation indicator		Output On, LED On
External connection method		18-point terminal block connector (M3×6screw)
Weight		0.2kg

3. Digital Output Module Specification
 3.4. 16-point triac digital output module

Model Specification	Digital Output Module	
	2MLQ-SS2A	
Circuit configuration	Terminal block	Contact
	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
	TB17	COM
TB18	NC	
		

3. Digital Output Module Specification

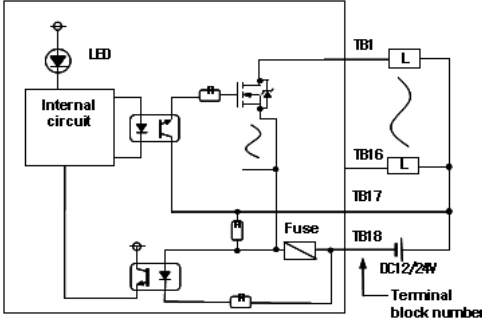
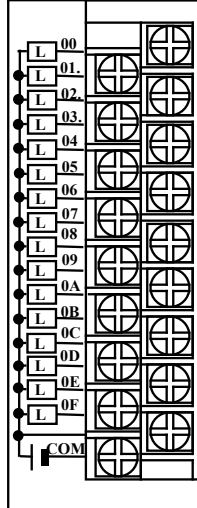
3.5. 16-point transistor digital output module (sink type)

3.5 16-point transistor digital output module (sink type)

Model Specification		Digital Output Module
		2MLQ-TR2A
Output point		16 point
Isolation method		Photo coupler isolation
Rated load voltage		DC 12 / 24V
Load voltage range		DC 10.2 ~ 26.4V
Maximum load current		0.5A / 1 point, 4A / 1COM
Off leakage current		0.1mA or less
Maximum inrush current		4A / 10ms or less
Maximum voltage drop (On)		DC 0.3V or less
Surge absorber		Zener diode
Fuse		4A×2ea (no change) (fuse shutdown capacity:50A)
Fuse cutoff indication		Yes (fuse cutoff, LED On, transmit the signal to CPU) External power supply Off, not detected Fuse cutoff
Response time	Off → On	1ms or less
	On → Off	1ms or less (Rated load, resistive load)
Common method		16 point / 1COM
Current consumption		70mA (when all points On)
External power Supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)
	Current	10mA or less (DC24V connection)
Operation indicator		Output On, LED On
External connection method		18-point terminal block connector
Weight		0.11kg

3. Digital Output Module Specification

3.5. 16-point transistor digital output module (sink type)

Model Specification	Digital Output Module	
	2MLQ-TR2A	
Circuit configuration	Terminal block	Contact
	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
	TB17	DC24V
TB18	COM	
		

3. Digital Output Module Specification

3.6. 32-point transistor digital output module (sink type)

3.6 32-point transistor digital output module (sink type)

Model Specification		Digital Output Module	
		2MLQ-TR4A	
Output point		32 point	
Isolation method		Photo coupler isolation	
Rated load voltage		DC 12 / 24V	
Load voltage range		DC 10.2 ~ 26.4V	
Maximum load current		0.1A / 1 point, 2A / 1COM	
Off leakage current		0.1mA or less	
Maximum inrush current		0.7A / 10ms or less	
Maximum voltage drop (On)		DC 0.2V or less	
Surge absorber		Zener diode	
Response time	Off → On	1ms or less	
	On → Off	1ms or less (rated load, resistive load)	
Common method		32 point / 1COM	
Current consumption		130mA (when all points On)	
External power supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)	
	Current	10mA or less (DC24V connection)	
Operation indicator		Input On, LED On	
External connection method		40 Pin Connector	
Proper cable size		0.3mm ²	
Weight		0.1kg	

3. Digital Output Module Specification
 3.6. 32-point transistor digital output module (sink type)

Model Specification	Digital Output Module				
	2MLQ-TR4A				
Circuit configuration	No	Contact	No	Contact	
	B20	P00	A20	P10	
	B19	P01	A19	P11	
	B18	P02	A18	P12	
	B17	P03	A17	P13	
	B16	P04	A16	P14	
	B15	P05	A15	P15	
	B14	P06	A14	P16	
	B13	P07	A13	P17	
	B12	P08	A12	P18	
	B11	P09	A11	P19	
	B10	P0A	A10	P1A	
	B09	P0B	A09	P1B	
	B08	P0C	A08	P1C	
	B07	P0D	A07	P1D	
	B06	P0E	A06	P1E	
	B05	P0F	A05	P1F	
	B04	NC	A04	NC	
	B03	NC	A03	NC	
	B02	DC12/24 V	A02	COM	
	B01		A01	COM	

3. Digital Output Module Specification

3.7. 64-point transistor digital output module (sink type)

3.7 64-point transistor digital output module (sink type)

Model Specification		Digital Output Module
		2MLQ-TR8A
Output point		64 point
Isolation method		Photo coupler isolation
Rated load voltage		DC 12 / 24V
Load voltage range		DC 10.2 ~ 26.4V
Maximum load current		0.1A / 1 point, 2A / 1COM
Off leakage current		0.1mA or less
Maximum inrush current		0.7A / 10ms or less
Maximum voltage drop (On)		DC 0.2V or less
Surge absorber		Zener diode
Response time	Off → On	1ms or less
	On → Off	1ms or less (rated load, resistive load)
Common method		16 point / 1COM
Current consumption		230mA (when all points On)
Common method		32 point / COM
External power supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)
	Current	10mA or less (DC24V connection)
Operation indicator		Input On, LED On (32-point LED On by switch operation)
External connection method		40 Pin Connector×2ea
Proper cable size		0.3mm ²
Weight		0.15kg

3. Digital Output Module Specification
3.7. 64-point transistor digital output module (sink type)

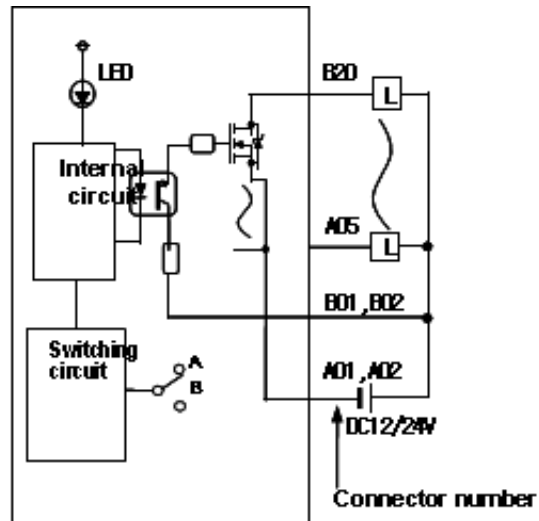
Digital Output Module							
2MLQ-TR8A							
No	Contact	No	Contact	No	Contact	No	Contact
1B20	P00	1A20	P10	2B20	P20	2A20	P30
1B19	P01	1A19	P11	2B19	P21	2A19	P31
1B18	P02	1A18	P12	2B18	P22	2A18	P32
1B17	P03	1A17	P13	2B17	P23	2A17	P33
1B16	P04	1A16	P14	2B16	P24	2A16	P34
1B15	P05	1A15	P15	2B15	P25	2A15	P35
1B14	P06	1A14	P16	2B14	P26	2A14	P36
1B13	P07	1A13	P17	2B13	P27	2A13	P37
1B12	P08	1A12	P18	2B12	P28	2A12	P38
1B11	P09	1A11	P19	2B11	P29	2A11	P39
1B10	P0A	1A10	P1A	2B10	P2A	2A10	P3A
1B09	P0B	1A09	P1B	2B09	P2B	2A09	P3B
1B08	P0C	1A08	P1C	2B08	P2C	2A08	P3C
1B07	P0D	1A07	P1D	2B07	P2D	2A07	P3D
1B06	P0E	1A06	P1E	2B06	P2E	2A06	P3E
1B05	P0F	1A05	P1F	2B05	P2F	2A05	P3F
1B04	NC	1A04	NC	2B04	NC	2A04	NC
1B03	NC	1A03	NC	2B03	NC	2A03	NC
1B02	12/24 VDC	1A02	COM1	2B02	12/24V DC	2A02	COM2
1B01		1A01		2B01		2A01	

B20	○	○	A20
B19	○	○	A19
B18	○	○	A18
B17	○	○	A17
B16	○	○	A16
B15	○	○	A15
B14	○	○	A14
B13	○	○	A13
B12	○	○	A12
B11	○	○	A11
B10	○	○	A10
B09	○	○	A09
B08	○	○	A08
B07	○	○	A07
B06	○	○	A06
B05	○	○	A05
B04	○	○	A04
B03	○	○	A03
B02	○	○	A02
B01	○	○	A01

3. Digital Output Module Specification

3.7. 64-point transistor digital output module (sink type)

Circuit configuration 64-point transistor digital output module (sink type)



A: displaying 0~31
B: displaying 32~63

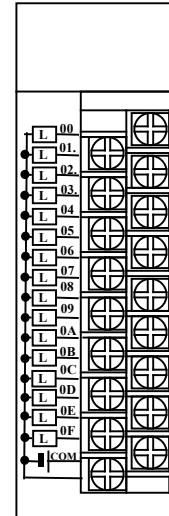
3.8 16-point transistor digital output module (source type)

Model Specification		Digital Output Module
		2MLQ-TR2B
Output point		16 point
Isolation method		Photo coupler isolation
Rated load voltage		DC 12 / 24V
Load voltage range		DC 10.2 ~ 26.4V
Maximum load current		0.5A / 1 point, 4A / 1COM
Off leakage current		0.1mA or less
Maximum inrush current		4A / 10ms or less
Maximum voltage drop (On)		DC 0.3V or less
Surge absorber		Zener diode
Fuse		4A×2ea (no change) (fuse shutdown capacity:50A)
Fuse cutoff indication		Yes (fuse cutoff, LED On, transmit the signal to CPU)
Response time	Off → On	1ms or less
	On → Off	1ms or less (rated load, resistive load)
Common method		16 point / 1COM
Current consumption		70mA (when all points On)
External power supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)
	Current	10mA or less (DC24V connection)
Operation indicator		Output On, LED On
External connection method		18-point terminal block connector
Weight		0.12kg

3. Digital Output Module Specification

3.8. 16-point transistor digital output module (source type)

Digital Output Module		
2MLQ-TR2B		
Circuit configuration	Terminal block	Contact
<p>The diagram shows the internal circuit of the digital output module. It includes an internal circuit block, an LED, a transistor, a fuse, and terminal block connections. The terminal block is labeled with TB1, TB16, TB17, and TB18. A DC12/24V source is connected to TB18. The terminal block number is indicated as 'Terminal block no.'.</p>	TB1	P0
	TB2	P1
	TB3	P2
	TB4	P3
	TB5	P4
	TB6	P5
	TB7	P6
	TB8	P7
	TB9	P8
	TB10	P9
	TB11	PA
	TB12	PB
	TB13	PC
	TB14	PD
	TB15	PE
	TB16	PF
TB17	COM	
TB18	0V	



3.9 32-point transistor digital output module (source type)

Model Specification		Digital Output Module
		2MLQ-TR4B
Output point		32 point
Isolation method		Photo coupler isolation
Rated load voltage		DC 12 / 24V
Load voltage range		DC 10.2 ~ 26.4V
Maximum load current		0.1A / 1 point, 2A / 1COM
Off leakage current		0.1mA or less
Maximum inrush current		4A / 10ms or less
Maximum voltage drop (On)		DC 0.3V or less
Surge absorber		Zener diode
Response time	Off → On	1ms or less
	On → Off	1ms or less (rated load, resistive load)
Common method		32 point / 1COM
Current consumption		130mA (when all points On)
External power supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)
	Current	10mA or less (DC24V connection)
Operation indicator		Input On, LED On
External connection method		40 Pin Connector
Proper cable size		0.3mm ²
Weight		0.1kg

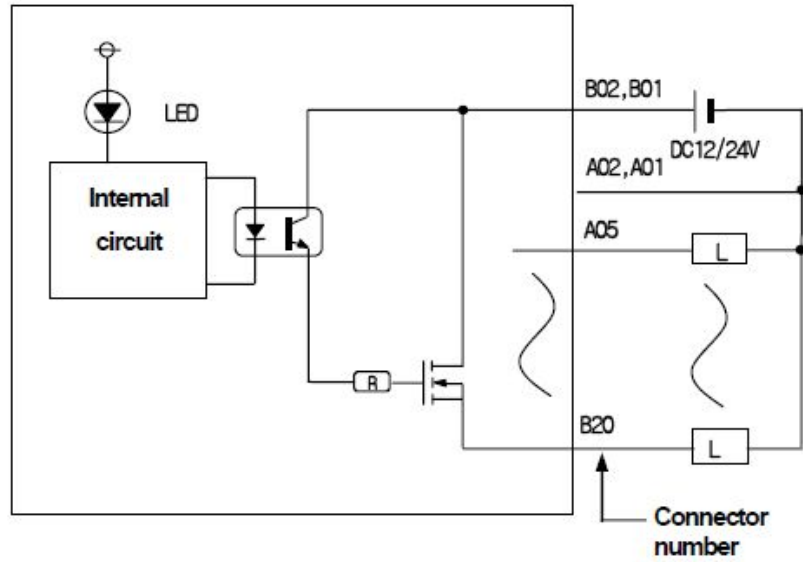
3. Digital Output Module Specification

3.9. 32-point transistor digital output module (source type)

Digital Output Module			
2MLQ-TR4B			
No	Contact	No	Contact
B20	P00	A20	P10
B19	P01	A19	P11
B18	P02	A18	P12
B17	P03	A17	P13
B16	P04	A16	P14
B15	P05	A15	P15
B14	P06	A14	P16
B13	P07	A13	P17
B12	P08	A12	P18
B11	P09	A11	P19
B10	P0A	A10	P1A
B09	P0B	A09	P1B
B08	P0C	A08	P1C
B07	P0D	A07	P1D
B06	P0E	A06	P1E
B05	P0F	A05	P1F
B04	NC	A04	NC
B03		A03	
B02	COM	A02	0V
B01		A01	

3. Digital Output Module Specification
3.9. 32-point transistor digital output module (source type)

Circuit configuration of 32-point transistor digital output module (source type)



3. Digital Output Module Specification

3.10. 64-point transistor digital output module (source type)

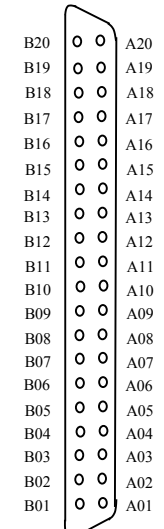
3.10 64-point transistor digital output module (source type)

Model Specification		Digital Output Module
		2MLQ-TR8B
Output point		64 point
Isolation method		Photo coupler Isolation
Rated load voltage		DC 12 / 24V
Load voltage range		DC 10.2 ~ 26.4V
Maximum load current		0.1A / 1 point, 2A / 1COM
Off leakage current		0.1mA or less
Maximum inrush current		4A / 10ms or less
Maximum voltage drop (On)		DC 0.3V or less
Surge absorber		Zener diode
Response time	Off → On	1ms or less
	On → Off	1ms or less (rated load, resistive load)
Common method		32 point / 1COM
Current consumption		230mA (when all points On)
Common method		32 point / COM
External power supply	Voltage	DC12/24V ± 10% (ripple voltage 4 Vp-p or less)
	Current	10mA or less (DC24V connection)
Operation indicator		Input On, LED On (32-point LED On by switch operation)
External connection method		40 Pin Connector×2ea
Proper cable size		0.3mm ²
Weight		0.15kg

3. Digital Output Module Specification

3.10. 64-point transistor digital output module (source type)

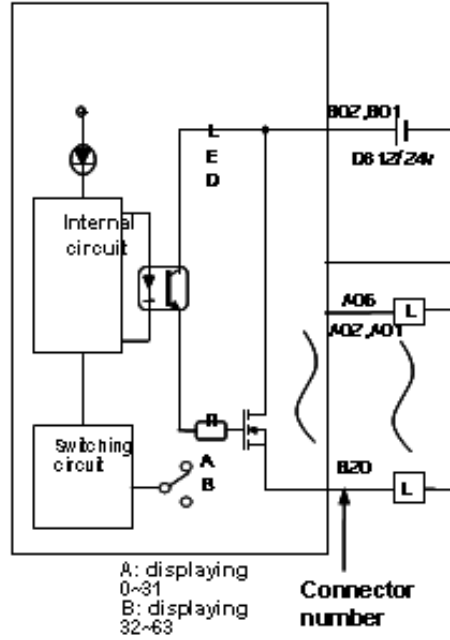
Digital Output Module							
2MLQ-TR8B							
No	Contact	No	Contact	No	Contact	No	Contact
1B20	P00	1A20	P10	2B20	P20	2A20	P30
1B19	P01	1A19	P11	2B19	P21	2A19	P31
1B18	P02	1A18	P12	2B18	P22	2A18	P32
1B17	P03	1A17	P13	2B17	P23	2A17	P33
1B16	P04	1A16	P14	2B16	P24	2A16	P34
1B15	P05	1A15	P15	2B15	P25	2A15	P35
1B14	P06	1A14	P16	2B14	P26	2A14	P36
1B13	P07	1A13	P17	2B13	P27	2A13	P37
1B12	P08	1A12	P18	2B12	P28	2A12	P38
1B11	P09	1A11	P19	2B11	P29	2A11	P39
1B10	P0A	1A10	P1A	2B10	P2A	2A10	P3A
1B09	P0B	1A09	P1B	2B09	P2B	2A09	P3B
1B08	P0C	1A08	P1C	2B08	P2C	2A08	P3C
1B07	P0D	1A07	P1D	2B07	P2D	2A07	P3D
1B06	P0E	1A06	P1E	2B06	P2E	2A06	P3E
1B05	P0F	1A05	P1F	2B05	P2F	2A05	P3F
1B04	NC	1A04	NC	2B04	NC	2A04	NC
1B03	NC	1A03	NC	2B03	NC	2A03	NC
1B02	COM	1A02	0V	2B02	COM	2A02	0V
1B01		1A01		2B01		2A01	



3. Digital Output Module Specification

3.10. 64-point transistor digital output module (source type)

Circuit configuration of 64-point transistor digital output module (source type)



4. Applications of Smart Link

4.1 Modules accessible to smart link

The following modules are accessible to smart link, from digital I/O modules used for ML200 series.

Model	Specification	Number of Pins
2MLI-D24A/B	DC input 32-point module	40 Pin Connector × 1
2MLI-D28A/B	DC input 64-point module	40 Pin Connector × 2
2MLQ-TR4A	TR output 32-point module (sink type)	40 Pin Connector × 1
2MLQ-TR4B	TR output 32-point module (source type)	40 Pin Connector × 1
2MLQ-TR8A	TR output 64-point module(sink type)	40 Pin Connector × 2
2MLQ-TR8B	TR output 64-point module (source type)	40 Pin Connector × 2

4. Applications of Smart Link

4.1. Modules accessible to smart link

The smart link products prepared for the convenience of using products such as easy wiring of connector type I/O module.

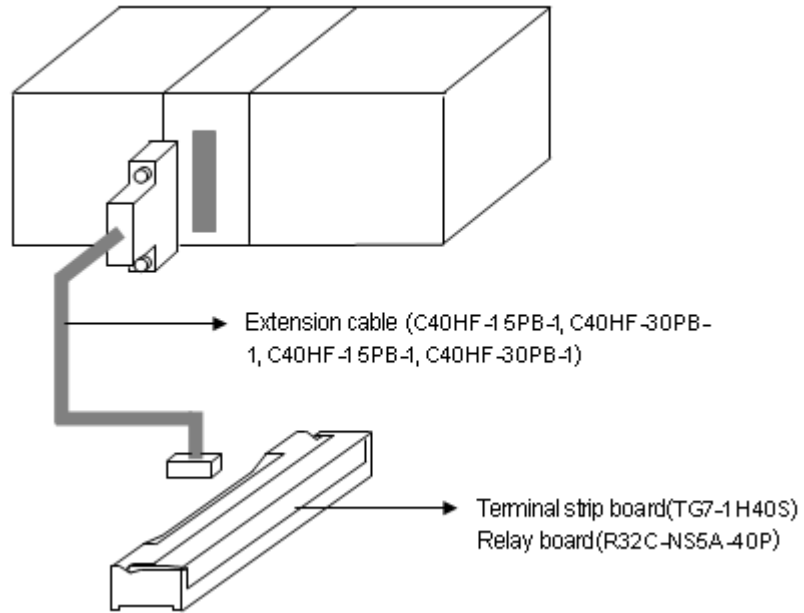


REFERENCE - INTERNAL

For more information, refer to the data sheet contained in a smart link product.

Type	Product	Specification
Terminal strip board	TG7-1H40S	40 Pin Terminal Strip
Relay board	R32C-NS5A-40P	32 Point Relay Built In
Cable	C40HF-15PB-1	Cable Assembly for Terminal Board, 40p-40p, 1.5m
	C40HF-30PB-1	Cable Assembly for Terminal Board, 40p-40p, 3.0m
	C40HF-15PB-1	Cable Assembly for Relay Board, 40p-40p, 1.5m
	C40HF-30PB-1	Cable Assembly for Relay Board, 40p-40p, 3.0m

4.2 Smart link connection



4. Applications of Smart Link

4.3. Connection diagram with ML200

4.3 Connection diagram with ML200

Relay Board (NPN Type)				Terminal Board			
For 2MLQ-TR4A, TR8A				For 2MLQ-D24A/B, D28A/B, TR4A/B, TR8A/B			
PLC I/O Terminal No.	Relay Board Connector No.		PLC I/O Terminal No.	PLC I/O Terminal No.	Terminal Board Connector No.		PLC I/O Terminal No.
B20	R1	R17	A20	B20	B20	A20	A20
B19	R2	R18	A19	B19	B19	A19	A19
B18	R3	R19	A18	B18	B18	A18	A18
B17	R4	R20	A17	B17	B17	A17	A17
B16	R5	R21	A16	B16	B16	A16	A16
B15	R6	R22	A15	B15	B15	A15	A15
B14	R7	R23	A14	B14	B14	A14	A14
B13	R8	R24	A13	B13	B13	A13	A13
B12	R9	R25	A12	B12	B12	A12	A12
B11	R10	R26	A11	B11	B11	A11	A11
B10	R11	R27	A10	B10	B10	A10	A10
B09	R12	R28	A09	B09	B09	A09	A09
B08	R13	R29	A08	B08	B08	A08	A08
B07	R14	R30	A07	B07	B07	A07	A07
B06	R15	R31	A06	B06	B06	A06	A06
B05	R16	R32	A05	B05	B05	A05	A05

4. Applications of Smart Link
4.3. Connection diagram with ML200

Relay Board (NPN Type)				Terminal Board			
For 2MLQ-TR4A, TR8A				For 2MLQ-D24A/B, D28A/B, TR4A/B, TR8A/B			
PLC I/O Terminal No.	Relay Board Connector No.		PLC I/O Terminal No.	PLC I/O Terminal No.	Terminal Board Connector No.		PLC I/O Terminal No.
B04	NC	NC	A04	B04	B04	A04	A04
B03	NC	NC	A03	B03	B03	A03	A03
B02	+24V	-24G	A02	B02	B02	A02	A02
B01	+24V	-24G	A01	B01	B01	A01	A01

4. Applications of Smart Link
4.3. Connection diagram with ML200

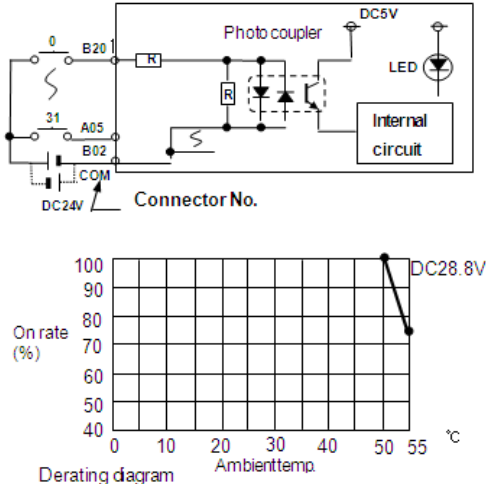
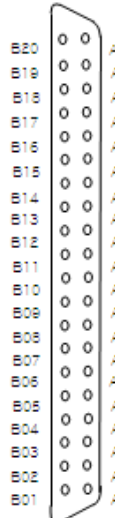
5. Event Input Module Specification

5.1 Event Input Module (Source/Sink type)

Model Specification		Event Input Module
		2MLF-SOEA
Input point		32 point
Isolation method		Photo coupler isolation
Memory size		Records 1 Mbit event information (300 event information per 2MLF-SOEA module)
Precision		1 ms (± 2 ms: error between modules)
Rated input voltage		DC24V
Rated input current		4mA
Used voltage range		DC20.4 ~ 28.8V (within ripple rate 5%)
On voltage/current		DC19V or above / 3 mA or above
Off voltage/ Off current		DC11V or less / 1.7 mA or less
Input resistance		About 5.6 k Ω
Response time	Off \rightarrow On	H/W delay (10 μ s: Normal) + input filter time (user setting: 0~100ms) + CPU scan time delay (50 μ s)
	On \rightarrow Off	H/W delay (84 μ s: Normal) + input filter time (user setting: 0~100ms) + CPU scan time delay (50 μ s)
Working voltage		AC560V rms/3 Cycle (Altitude 2000m)
Isolation resistance		10M Ω or above (DC500V)
COMM method		32 point / COM
Maximum Current consumption (A)		0.7A

5. Event Input Module Specification
5.1. Event Input Module (Source/Sink type)

Model Specification	Event Input Module
	2MLF-SOEA
Operation indicator	LED is ON when input is ON
External connection method	40 pin connector
Size	27x98x90
Weight	0.2 kg

Model Specification	Digital Output Module					
	2MLF-SOEA					
Circuit configuration	No	Contact	No	Contact		
 <p>Derating diagram</p>	B20	P00	A20	P10		
	B19	P01	A19	P11		
	B18	P02	A18	P12		
	B17	P03	A17	P13		
	B16	P04	A16	P14		
	B15	P05	A15	P15		
	B14	P06	A14	P16		
	B13	P07	A13	P17		
	B12	P08	A12	P18		
	B11	P09	A11	P19		
	B10	P0A	A10	P1A		
	B09	P0B	A09	P1B		
	B08	P0C	A08	P1C		
	B07	P0D	A07	P1D		
	B06	P0E	A06	P1E		
						

5. Event Input Module Specification
 5.1. Event Input Module (Source/Sink type)

Model Specification	Digital Output Module				
	2MLF-SOEA				
	B05	P0F	A05	P1F	
B04	NC	A04	NC		
B03	NC	A03	NC		
B02	COM	A02	COM		
B01		A01			

5. Event Input Module Specification
5.1. Event Input Module (Source/Sink type)

5. Event Input Module Specification
5.1. Event Input Module (Source/Sink type)

Honeywell

Honeywell Process Solutions
1860 W. Rose Garden Lane
Phoenix, AZ 85027 USA