Terminator I/O
Features

Distributed Remote Terminal

- Most suitable for distributed control systems that use remote PLC I/O, SCADA and computers
- Seven network I/F are available.
- Module expansion functions: Up to 16 units for three systems
- Module group that realizes various I/O configurations

■Features

Functions

The terminator I/O contains all functions of terminal blocks and input/output modules in one easy-to-use package.

With the use of a terminator I/O system that can be mounted on the DIN rail, the flexibility of the system can be maximized. If the input/output is placed near the field device, wiring cables can be shortened. You can expand the modules without purchasing new bases in the future.

This removable input/output module is internally connected by a three-tiered spring clamp or screw-type terminal block.

The cost to separately purchase terminal blocks is unnecessary. (Moreover, you can avoid the trouble of having to wire existing PLC inputs/outputs to the standalone terminal block.) If installing a fuse on the output, we make available products most suitable for needs.

The greatest advantage of the terminator I/O is its connectivity. Since seven kinds of plug-compatible network interface modules are available, a module can be selected according to the network connections of the user.

Although each system requires at least one AC power source or DC power source, the power source can be increased according to needs. Moreover, discrete / analog input/output modules that cover a wide area are available.

Assembly of the System Using the Components for Terminator I/O

In the case of a terminator I/O, system assembly is completed by simply mounting necessary input/output modules on the DIN rail. (Or, the modules can be mounted on the panel.) System assembly is not limited to a fixed base size. Moreover, the fieldbus network master of compatible computers and PLCs can be freely selected.

Local Expansion

The terminator I/O system can store up to 16 modules per node. Since each node can be divided into two lines for local expansion (one network interface base + two expansion bases), the system can flexibly meet the space conditions of the remote side distributing board. The terminator I/O can be mounted both horizontally and vertically.

Address of the Input/Output Module

The address of the terminator I/O module differs depending on the network interface protocol used. For example, DeviceNet and Profibus support the "word" data type in the allocation of the analog module. Meanwhile, in the case of Koyo Remote I/O, only discrete data type ("I" input and "Q" output) is supported, and the analog module is allocated in units of input/output block (32 units per channel). The specifications of each input/output module are introduced on the following page and afterwards, and the input/output points per module are also listed.

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Terminator I/O
Specifications

■Model Number List

Name	Outline			
Base Controller	**Base Controller**			
	Model Number	Functions	Weight (g)	Price
	T1H-EBC100	Ethernet communication (10/100BASE-T/TX)	44	Open
	T1K-DEVNETS	DeviceNet slave	54	Open
	T1K-MODBUS	MODBUS RTU communication	52	Open
	T1K-HSIO	CUnet communication	44	Open
Power Supply Module	**Power Supply Module**			
	Model Number	Functions	Weight (g)	Price
	T1K-01AC	100/200 V AC (At least 1 unit is required per system.)	65	Open
	T1K-01DC	12/24 V DC (At least 1 unit is required per system.)	61	Open
Base Unit	**Half-size Base Unit**			
	Model Number	Functions	Weight (g)	Price
	T1K-08B	3 lines / 24 poles, screw type terminal block, 12 AWG (Maximum)	45	Open
	T1K-08B-1	3 lines / 24 poles, spring type terminal block, 14 AWG (Maximum)	44	Open
	Full-size Base Unit			
	Model Number	Functions	Weight (g)	Price
	T1K-16B	3 lines / 48 poles, screw type terminal block, 12 AWG (Maximum)	69	Open
	T1K-16B-1	3 lines / 48 poles, spring type terminal block, 14 AWG (Maximum)	67	Open
Base Expansion Cable	**Base Expansion Cable**			
	Model Number	Functions	Weight (g)	Price
	T1K-10CBL	1 m, 24 V DC without pin	44	Open
	T1K-10CBL-1	1 m, 24 V DC with pin	48	Open

Input/Output Module

Model Number	Input Points	Input Functions	Output Points	Output Functions	Weight (g)	Price
T1K-08ND3	8	12 to 24 V DC Sink/source			70	Open
T1K-16ND3	16	12 to 24 V DC Sink/source			160	Open
T1K-08NA-1	8	100 V AC			70	Open
T1K-16NA-1	16	100 V AC			120	Open
T1K-08TD1			8	12 to 24 V DC Sink	85	Open
T1K-08TD2-1			8	12 to 24 V DC Source	100	Open
T1K-16TD1			16	12 to 24 V DC Sink	140	Open
T1K-16TD2-1			16	12 to 24 V DC Source	140	Open
T1K-08TA			8	100 to 240 V AC	140	Open
T1K-08TAS			8	100 to 240 V AC	190	Open
T1K-16TA			16	100 to 240 V AC	190	Open
T1K-08TR			8	Relay 1 A	110	Open
T1K-16TR			16	Relay 2 A	200	Open
T1K-08TRS			8	Relay 7 A	185	Open
T1F-08AD-1	8	-20 to 20 mA/0 to 20 mA/4 to 20 mA			136	Open
T1F-08AD-2	8	0 to 5 V DC/0 to 10 V DC/±5 V/±10 V			136	Open
T1F-16AD-1	16	-20 to 20 mA/0 to 20 mA/4 to 20 mA			168	Open
T1F-16AD-2	16	0 to 5 V DC/0 to 10 V DC			160	Open
T1F-08DA-1			8	0 to 20 mA/4 to 20 mA	145	Open
T1F-08DA-2			8	0 to 5 V DC/0 to 10 V DC/±5 V/±10 V	145	Open
T1F-16DA-1			16	0 to 20 mA/4 to 20 mA	172	Open
T1F-16DA-2			16	0 to 5 V DC/0 to 10 V DC/±5 V/±10 V	172	Open
T1F-8AD4DA-1	8	-20 to 20 mA/0 to 20 mA/4 to 20 mA	4	4 to 20 mA	136	Open
T1F-8AD4DA-2	8	0 to 5 V DC/0 to 10 V DC/±5 V/±10 V	4	0 to 5 V DC/0 to 10 V DC/±5 V/±10 V	136	Open
T1F-14THM	14	Thermocouple			168	Open

Extension IO Module

Accessories/Maintenance Product

| Model Number	Functions	Weight (g)	Price
T1K-FUSE-1	Replacement fuse kit: 5 units, for DC output module	1	Open
T1K-FUSE-2	Replacement fuse kit: 5 units, for T1K-08TA, T1K-16TA, T1K-08TR, T1K-16TR	1	Open
T1K-FUSE-3	Replacement fuse kit: 5 units, for T1K-08TAS, T1K-08TRS	1	Open

Associated Equipment

Terminator I/O
Specifications

■Environmental Specifications of Terminator I/O

Items	Specifications
Use Ambient Temperature	0°C to 55°C
Storage Ambient Temperature	-20°C to 70°C
Ambient Humidity	5% to 95% (No condensation)
Surrounding Atmosphere in Place of Use	No corrosive gases Environmental pollution level 2 (UL 840)
Vibration Resistance	Compliant with MIL STD 810C, Method 514.2, JIS C0040, and sine wave oscillation test method
Impact Resistance	Compliant with JIS C0041 Compliant with MIL STD 810C, Method 516.2
Withstand Voltage	1,500 V AC, 1 minute
Insulation Resistance	500 V DC, 10 MΩ
Noise Resistance	NEMA ICS3-304 Impulse noise = 1 μs, 1,000 V FCC Class A RFI (144 MHz, 430 MHz, 10 W, 0.1 m)

■Power Source

The terminator I/O has two kinds of power sources (AC and DC). The power source is installed on the left side of the module. For details about the location of the power source, see the example system configuration and the sample calculation of power conditions.

AC   DC
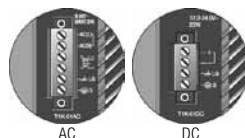
■Power Supply Specifications

| Power Supply Specifications		T1K-01AC	T1K-01DC
Input Voltage Range		100/200 V AC (85 to 264 V AC)	12/24 V DC (10.8 to 26.4 V DC)
Input Frequency		50/60 Hz	—
Maximum Power		50 VA	20 W
Maximum Inrush Current		20 A	10 A
Insulation Resistance		> 10 MΩ (500 V DC)	
Withstand Voltage		1 min, 1,500 V AC, between primary, secondary, and ground	
5 V DC Power Supply	Voltage	5.25 V DC	5.25 V DC
	Current Rating	Up to 2.0 A (See the note of current option below.)	Up to 2.0 A
	Ripple	Up to 5%	Up to 5%
24 V DC Power Supply	Voltage	24 V DC	—
	Current Rating	Up to 300 mA (See the note of current option below.)	—
	Ripple	Up to 10%	—
Fuse		1 unit (primary side), unexchangeable	

Note: If 5 V DC is lowered from 2 A to 1.5 A, 0.5 A is obtained at 24 V DC.

Example of Current Conditions

Module	5 V DC	24 V DC
T1K-01AC	+2,000 mA	+300 mA
T1K-16ND3	-70 mA	-0 mA
T1K-16TD2-1	-200 mA	-0 mA
T1F-08AD-1	-75 mA	-50 mA
Residual Current	+1,659 mA	+250 mA

Expansion of the Power Source

A single power source feeds only the network interface module and input/output module that are mounted on the right side of the power source. If a second power source is mounted, the electric power loop of the power source mounted on the left side is closed, and the second power source feeds the modules mounted on the right side. Calculate the power conditions per system power source.
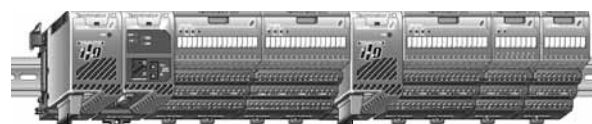
This power source feeds the network interface module and three input/output modules on the right side.

This power source feeds the network interface module and two input/output modules on the right side.

Terminator I/O
Dimensions

PLC
HMI
SENSOR
ENCODER
COUNTER
INFORMATION

■Dimensions   (Unit: mm)

Power Supply	Network Interface Module	Half-size I/O Module (with base)	Full-size I/O Module (with base)	System Depth