

TOSHIBA

S3 L3 C3

S2 L2 C2

L1

Integrated Controller

V series



S3 L3 C3

S2 L2 C2

L1

Integrated Controller V-series

model 1000/2000/3000

FEATURES

Integrated Sequence Control, Loop Control, and Computer

Free "mix and match" selection of sequence control, loop control, and computer modules in a single modular rack allows the designer to optimize the controller for each application. One line of equipment provides for simple construction of everything from a small ladder or loop application to a fully integrated factory management or process DCS.

Scalable Over a Wide Range of Sizes

The product line consists of the large-size model 3000, small-size model 2000, and micro-size model 1000. These provide one consistent architecture across the size range. This new controller lets the designer select a scalable range of integrated circuit options for controllers tailored to a wide variety of industrial applications.

Advanced Engineering Tool

The engineering tool supports both sequence control and loop control for controllers of all size ranges in the V-series integrated controllers.

This web-configured tool provides for simultaneous and remote engineering activities during both initial configuration and downstream troubleshooting.



Sequence control

model 2000/3000

High-Speed processing

The IEC language processor installed in the sequence control module supports ladder diagrams, integer functions, and floating-point functions. Scanning rates are greatly accelerated, at just 40 ns per contact (model 3000) and 40 ns per integer addition (model 3000).



Realtime Online Trace

The processor can store process data calculations for use by the engineering tool in monitoring of realtime values, calculation flow, and the logic timing.



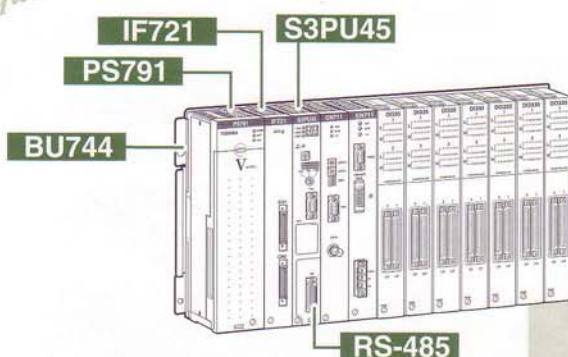
Computer Link

An RS-485 serial communications port built into the sequence control module facilitates connection to a computer or an operator interface device.

Network support

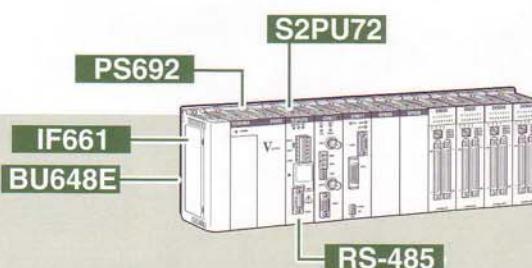
Powerful communications provisions enable networking with other systems via Ethernet, control network TC-net, TOSLINE-S20/S20LP, TOSLINE-F10, DeviceNet, and RS-232C / RS-485 serial interfaces.

Basic configuration



Main base	BU719
Power supply module	PS792/PS736
Expansion interface	IF721/IF741
Control module	S3PU21

Main base	BU744/BU746/BU748
Power supply module	PS791
Expansion interface	IF721/IF741
Control module	S3PU45/S3PU55
TC-net	CN711/CN712
Ethernet	EN711/EN721/EN731/EN741



Main base	BU668/BU666/BU664
Power supply module	PS692
Expansion interface	IF661
Control module	S2PU22/S2PU32

Main base	BU648E
Power supply module	PS692
Expansion interface	IF661
Control module	S2PU72
TC-net	CN611/CN612
Ethernet	EN611/EN621/EN631/EN641

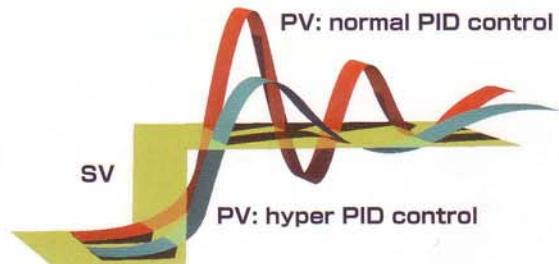
Loop control

model 1000/2000/3000

Hyper PID Control

Loop control

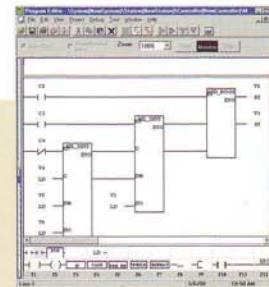
The loop control module can be used for process loop control, sequence control, and batch control applications. This module provides the hyper PID control that was developed by pursuing the essentials of the PID control algorithm with double-cross limit combustion control and separate feedforward/feedback control. The module is very effective for controlling plant disturbance problems.



Monitoring

Loop control

The loop control module supports the connection with the OIS1200 operator station through the Ethernet control LAN. Control loop data can also be easily linked to a SCADA package by the system tag.



Wide range

Loop control

Model 3000 can handle as many as 256 control loops; model 2000 can handle up to 96 control loops; and model 1000 can handle up to 8 control loops.



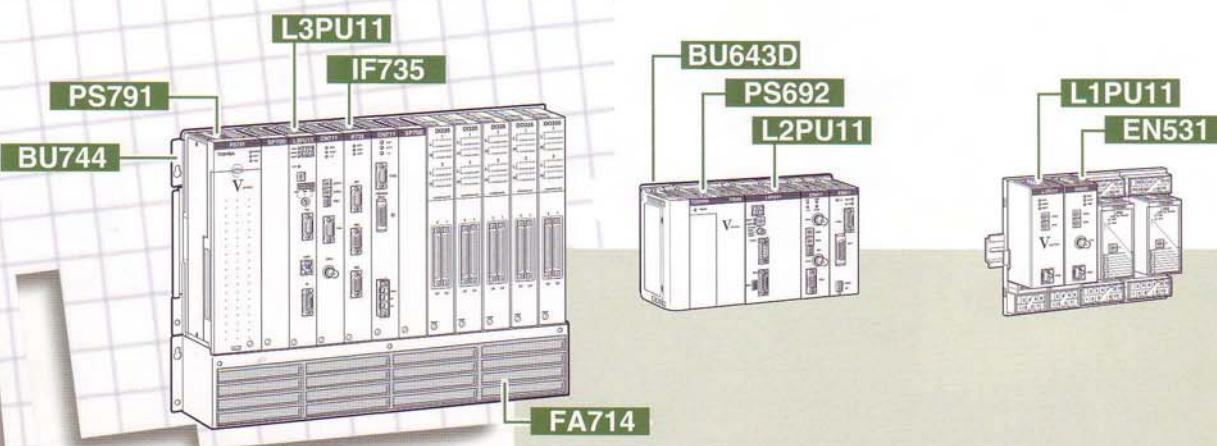
Maintainability

Loop control

In the model 2000 or model 3000, a redundant controller configuration and redundant network ensure a highly reliable system, permitting online maintenance.

Basic configuration

Loop control



Main base	BU744/BU746/BU748
Power supply module	PS791
Expansion interface	IF735
Control module	L3PU11
Ethernet	EN711/EN721/EN731/EN741
TC-net	CN711/CN712
Fan Unit	FA714

Main base	BU648E/BU643D
Power supply module	PS692
Control module	L2PU11/L2PU12
Ethernet	EN611/EN621

Power module	PS591
Control module	L1PU11
Ethernet	EN531

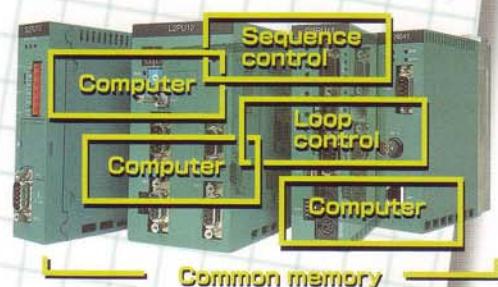
IBM PC/AT Compatible

The computer module is an industrialized PC/AT-compatible personal computer (PC) that runs on the main base. This module share the common memory data with the other control modules via the station bus.

The computer module can access the I/O module directly, making micro control applications possible.

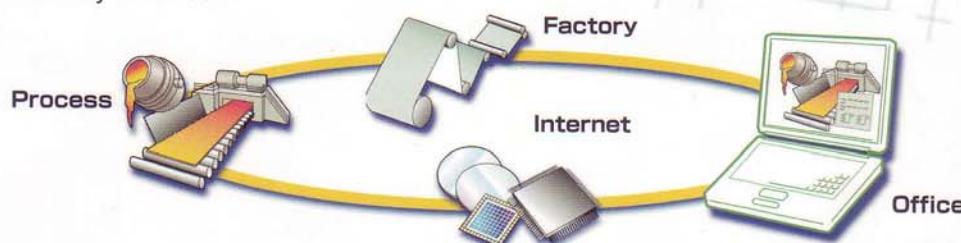
Windows NT OS

The operating system for the computer module is Windows NT(version 4.0) or Windows 2000. You can use many popular Windows application packages.

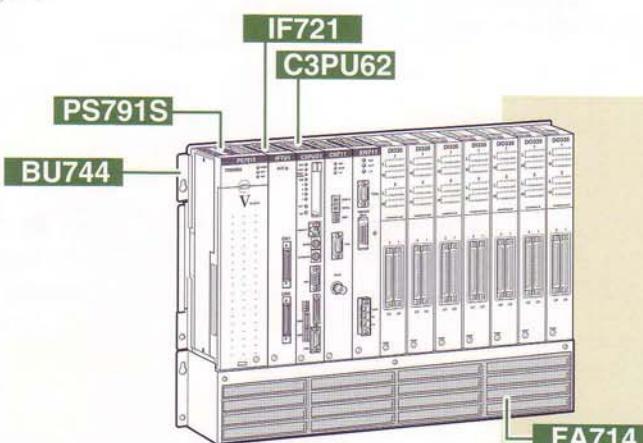


Useful Web Server

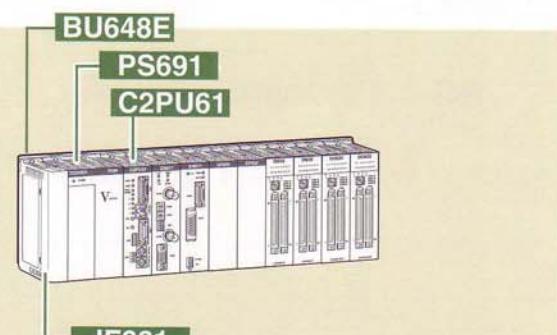
The computer module includes a station bus communication that allows data exchange between a sequence control module and a standard Windows application package. Web server application for remote monitoring & operation is easily realized.



Basic configuration



Main base	BU744/BU746/BU748
Power supply module	PS791S
Expansion interface	IF721/IF741
Control module	C3PU62/C3PU63
TC-net	CN711/CN712
Fan Unit	FA714

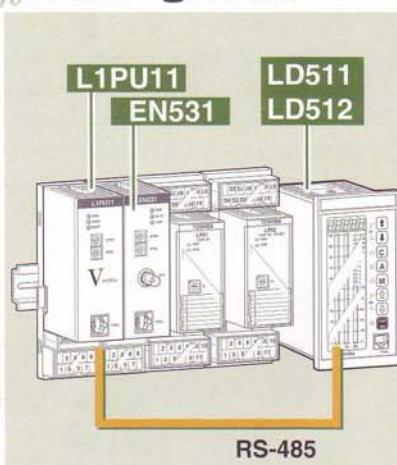


Main base	BU648E/BU643D
Power supply module	PS691
Expansion interface	IF661
Control module	C2PU61/C2PU62/C2PU63
TC-net	CN611/CN612

Typical configuration

model 1000

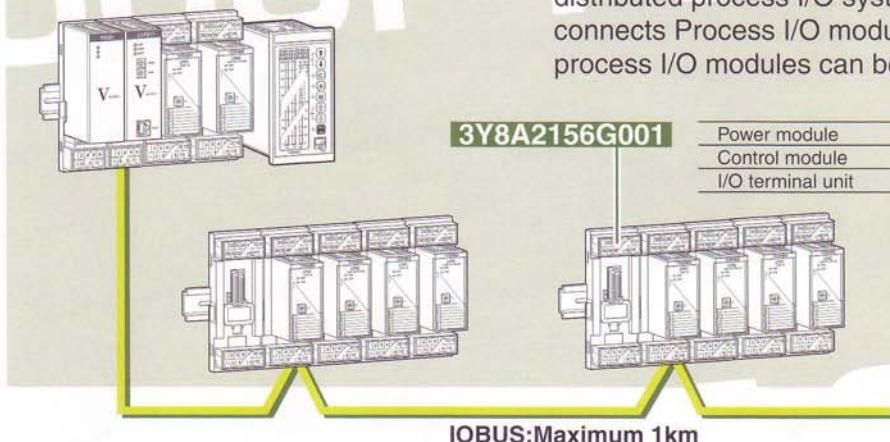
Main unit Configuration



Two types of control modules are available. The L1PU11 supports the Ethernet module, and the L1PU12 has a built-in TOSLINE-S20LP (double-loop fiber optics system). The main unit operates on 24 Vdc; power supply module PS591 is provided for use on 100-120/200-240 Vac. The main unit contains two serial communication ports: an RS-232C port for programming, and an RS-485 port for HMI. The RS-485 port can be used to communicate with the LD511 loop display units, a touch panel, or a computer. Up to 16 process I/O units can be connected to the main unit.

Power module	PS591
Control module	L1PU11/L1PU12
Ethernet	EN531
Loop display unit	LD511/LD512

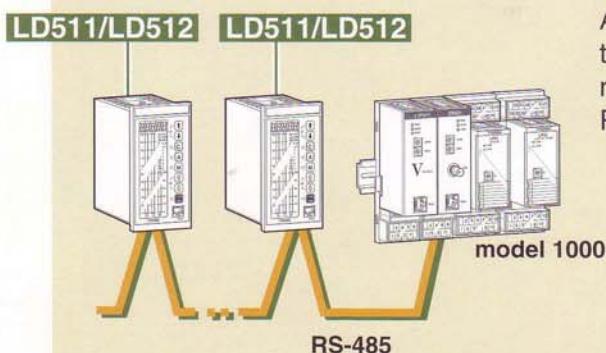
Expansion I/O system



The control module supports IOBUS suitable for distributed process I/O system. The I/O terminal unit connects Process I/O modules to IOBUS. Up to 16 process I/O modules can be connected to one IOBUS.

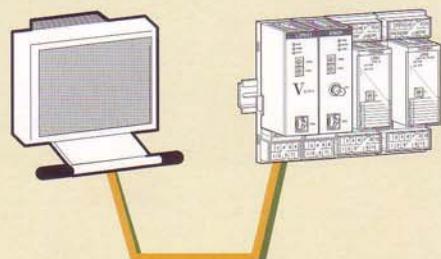
Power module	PS591
Control module	L1PU11/L1PU12
I/O terminal unit	3Y8A2156G001

RS-485 Computer Link



A maximum of eight loop display units can be connected to one model 1000 station through RS-485 link. Multiple model 1000 stations can be connect to graphic panel or PC-based HMI.

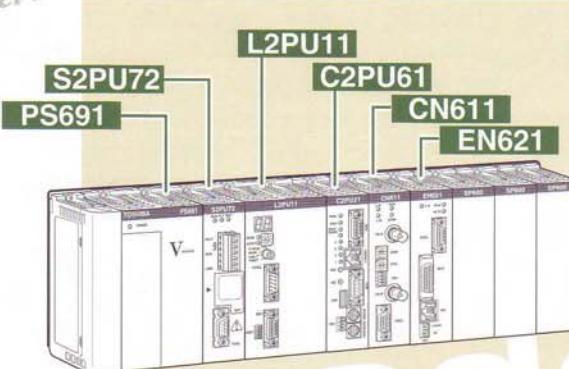
Operator Interface



Typical configuration

model 2000

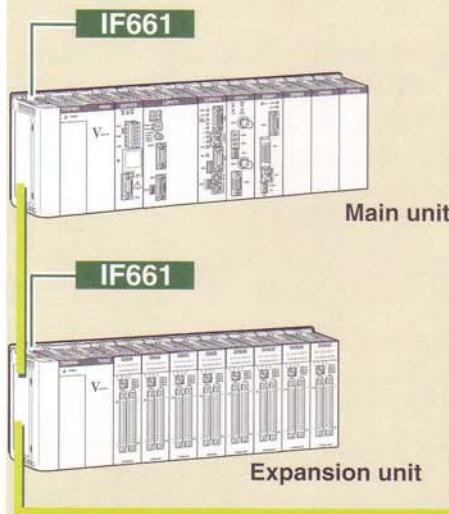
Integrated System configuration



In the integrated system configuration, the model 2000 rack provides for a maximum of 5 control modules and network modules. Sequence control modules, loop control modules, and computer modules can be freely combined on the main base (BU648E). Each control module has a common memory, and a data link is available between control modules.

Main base	BU648E
Power supply module	PS691
Expansion interface	IF661
Sequence control module	S2PU72
Loop control module	L2PU11/L2PU12/L2PU13
Computer module	C2PU61/C2PU62/C2PU63
TC-net	CN611/CN612
Ethernet	EN611/EN621/EN631/EN641

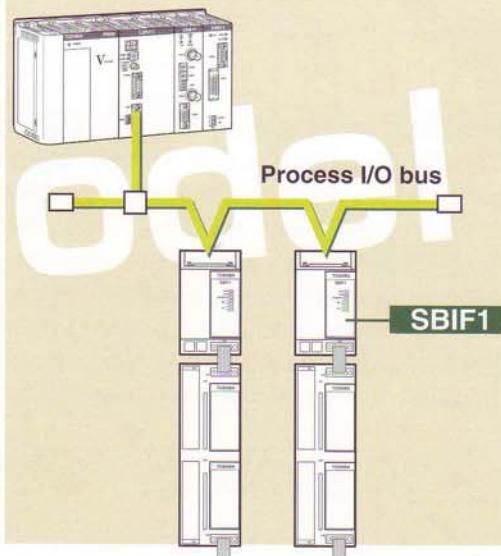
Direct I/O expansion system



Up to three expansion units can be connected to the main unit. In the maximum configuration, the model 2000 provides 32 slots for direct I/O modules.

Expansion base	BU668
Power supply module	PS692
Expansion interface	IF661
Expansion cable	CS6R3/CS6R5/CS6*1

Process I/O expansion system



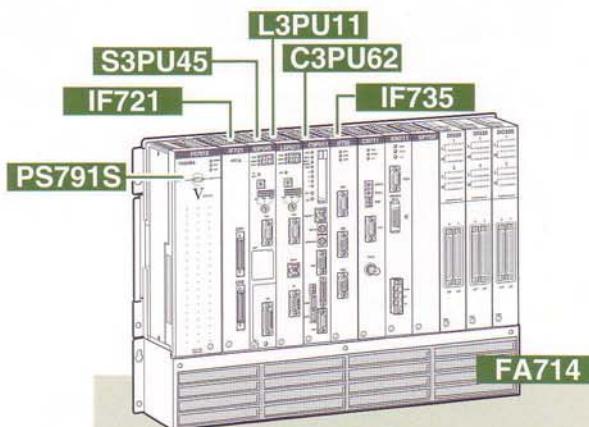
The loop control module supports the process I/O bus. L2PU11 module have a one-channel process I/O bus port, and L2PU12 modules have a three-channel process I/O bus port. Up to 15 communications modules can be connected to one process I/O bus, and up to 14 process I/O modules can be connected to each communications module. Depending on I/O modules and types of terminal blocks, two types of communication modules or communication bases are available for each.

Communication module	SBIF1/SBIF2
Communication base	USCB1/USCB2

Typical configuration

model 3000

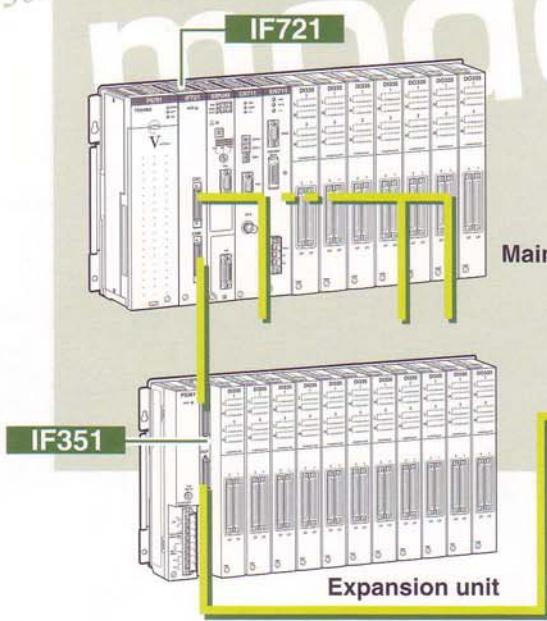
Integrated System configuration



In the integrated system configuration, the model 3000 rack provides for a maximum of 8 control modules, expansion interface modules, and network modules. Sequence control, loop control, and computer modules can be freely combined on the main base. Each control module has a common memory, and a data link is available between control modules.

Main base	BU744/BU746/BU748
Power supply module	PS791S
Expansion interface	IF721/IF741
Sequence control module	S3PU45/S3PU55
Loop control module	L3PU11
Computer module	C3PU62/C3PU63
TC-net	CN711/CN712
Process I/O interface	IF735
Ethernet	EN711/EN721/EN731/EN741
Fan unit	FA714

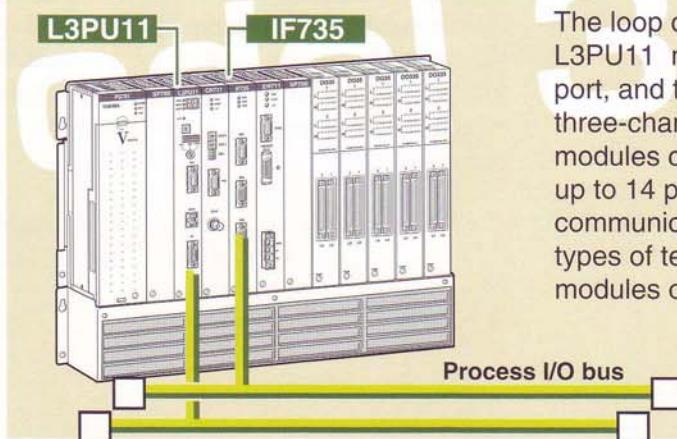
Direct I/O expansion system



There are two expansion I/O interfaces for the model 3000: IF721 supports 2 channel-expansion buses, and IF741 supports 4 channel-expansion buses. A maximum of 7 expansion units can be connected to each expansion bus.

Expansion base	BU35B/BU356
Power supply module	PS361/PS332
Expansion interface	IF351
Expansion cable	CS3R5/CS301/CS302

Process I/O expansion system



The loop control module supports the process I/O bus. L3PU11 module has a one-channel process I/O bus port, and the additional expansion interface, IF735, has a three-channel process I/O bus. Up to 15 communication modules can be connected to one process I/O bus, and up to 14 process I/O modules can be connected to each communication module. Depending on I/O modules and types of terminal blocks, two types of communication modules or communication bases are available for each.

Communication module	SBIF1/SBIF2
Communication base	USCB1/USCB2

Typical Configuration / Network

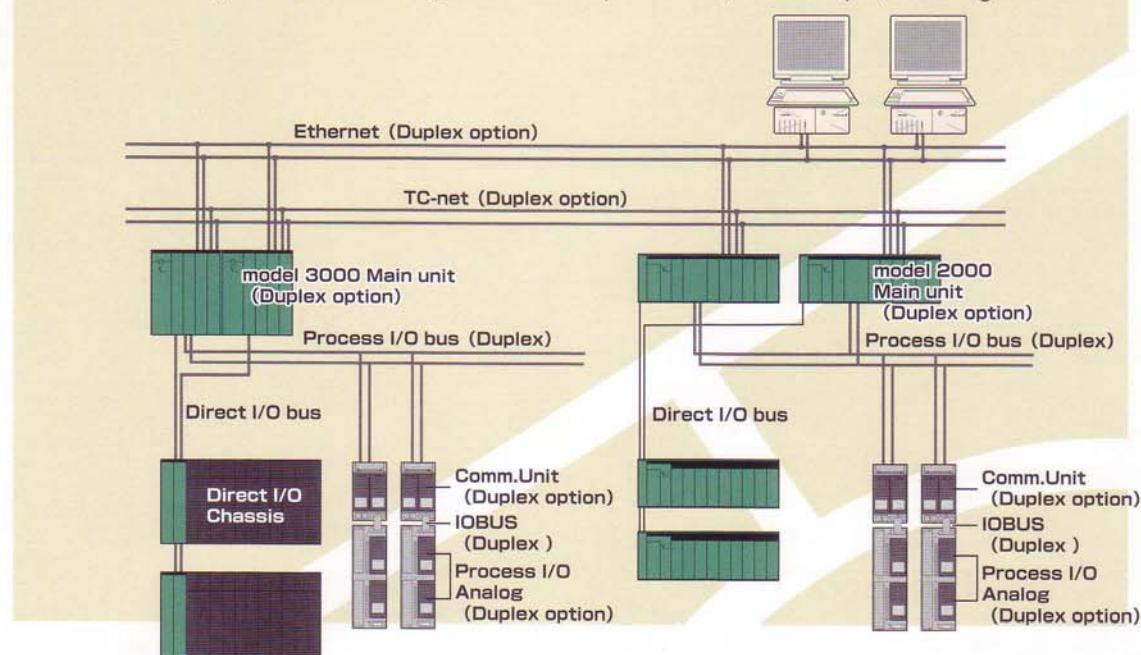
Duplex System Support
Open Network Support

Duplex system Configuration with Direct I/O and Process I/O

Duplex system

Integrated Controller V series is ready to have redundant configuration on fundamental parts of the system such as main unit control module, control network, and Process I/O for model 3000 and model 2000. Duplex configuration is available at each part of the system so that optimal system reliability balancing requirement and cost is realized.

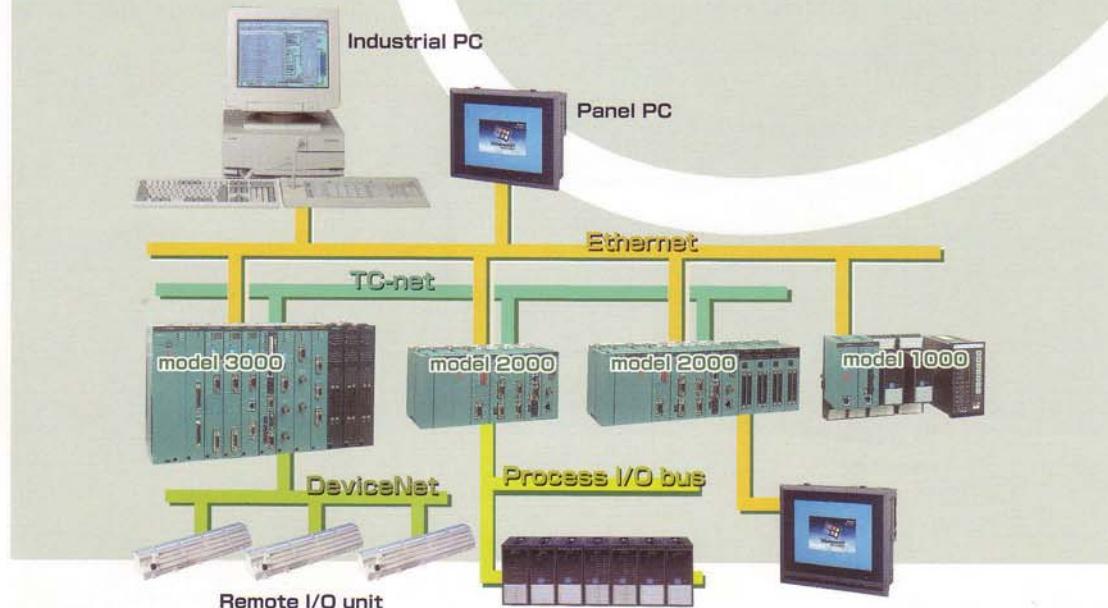
PLC-oriented Direct I/O and DCS-oriented Process I/O are available, which can be handled by one station. A system making use of each I/O's features, Direct I/O for discrete control and Process I/O for continuous loop control and ready for on-line replacement, for example, is configurable.



Network configuration

network

V-series integrated controllers provide flexible network system, including Ethernet, control network TC-net, TOSLINE-S20, TOSLINE-F10, DeviceNet, process I/O bus, and RS-485 computer link.

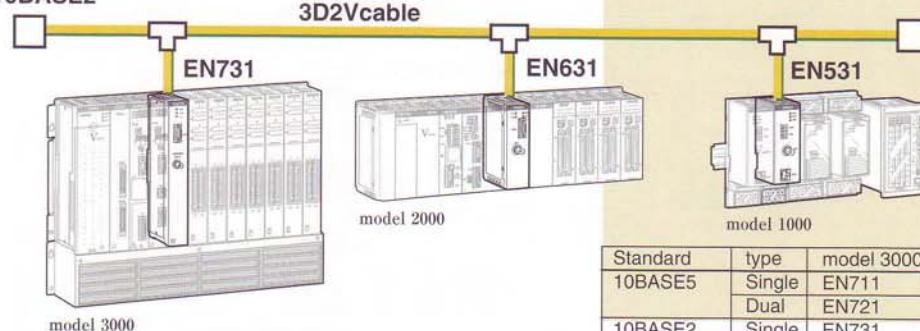


Ethernet network

In the V-series integrated controllers, Ethernet supports PCMP, IRCP, TCP/IP, and UDP/IP protocols just as it does in the TOSDIC-CIE1200 and PROSEC-T series controllers. A multi-host, multi-port function and a multi-cast transmission function are supported for send/receive request processing from multiple hosts. Network path redundancy ensures high reliability.

Typical configuration of single bus

10BASE2



Standard	IEEE802.3
Transmission rate	10Mbps / 100Mbps
Topology	Bus
Max. cable segment length ^(*)	100 m for 100BASE-TX /10BASE-T 500 m for 10BASE5 185 m for 10BASE2
Protocol	TCP/IP, UDP/IP, PCMP, IRCP
Transmission mode	Point to point transmission Multi-cast transmission Broadcast transmission Inter-hierarchy communications
Multiple hosts	Maximum of 4
Multiple ports	Maximum of 4

(*) Extendable by switch / repeater

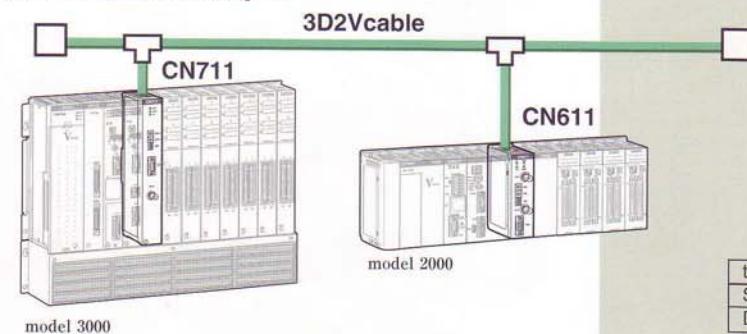
Standard	type	model 3000	model 2000	model 1000
10BASE5	Single	EN711	EN611	--
	Dual	EN721	EN621	--
10BASE2	Single	EN731	EN631	EN531
	Dual	EN741	EN641	--
100BASE-TX & 10BASE-T	Single	EN751	(EN651)	--
	Dual	EN761	(EN661)	--

(EN651 / EN661 are under development)

Control network TC-net network

In V-series integrated controllers, the control network (TC-net) supports both scan transmission for realtime data exchange and event-driven message transmission among controllers. Scan transmission includes both high-speed and medium-speed scans. Network path redundancy ensures high reliability.

Typical configuration of single bus



Transmission rate	10 Mbps
Topology	Bus
Max. cable length	400 m per segment 10 km per system (with repeater)
Number of nodes	Maximum of 64 per system Maximum of 30 per segment
Cable	10D-2V:trunk cable 3D-2V:drop cable
Communication service	Scan data transmission Message transmission
Response	10 ms (High-speed scan)
Number of module	Maximum of 4 per main unit

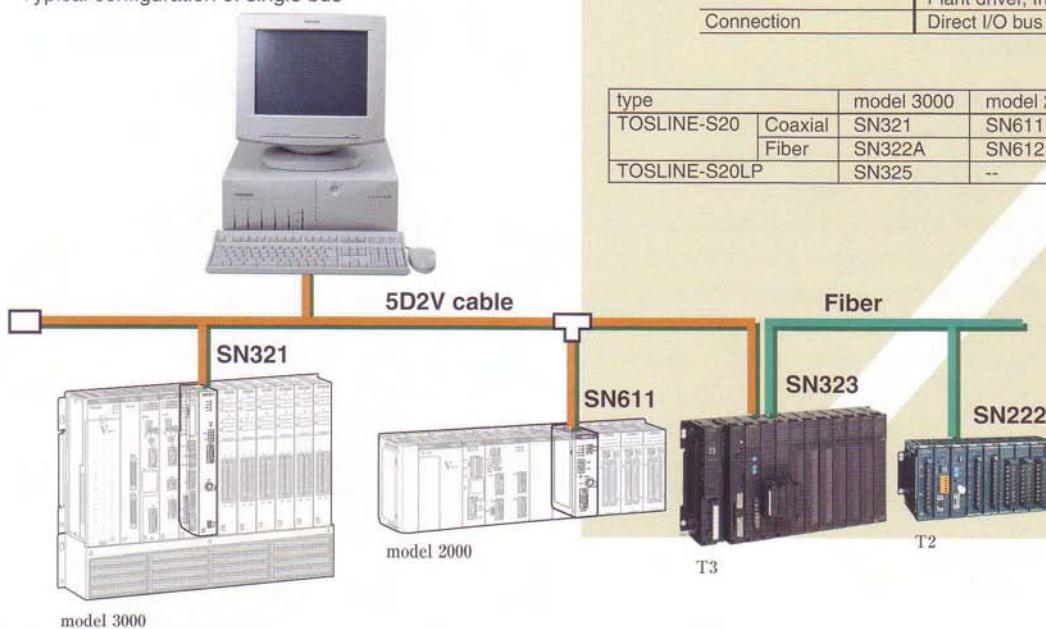
type	model 3000	model 2000	model 1000
Single	CN711	CN611	--
Dual	CN712	CN612	--

TOSLINE-S20/20LP

network

TOSLINE-S20/20LP supports scan transmission for realtime data exchange and event-driven message transmission among Toshiba controllers and variable-frequency drive systems. Either coaxial cable or fiber optic cable can be selected as the transmission medium. A double-loop fiber optic system provides excellent reliability.

Typical configuration of single bus



Transmission rate	2 Mbps
Topology	Bus
Maximum cable length	1 km per coaxial cable 1 km per fiber optic cable 10 km per total system
Number of nodes	Maximum of 64 station
Scan data	Maximum of 1024 w
Communication service	Scan data transmission Message transmission
Update time	25 ms/1024 w
Device	PLC(T3H,T3,T2E,T2N,T2) FA-PC(FA3100,G200) Plant driver, Inverter
Connection	Direct I/O bus

type		model 3000	model 2000	model 1000
TOSLINE-S20	Coaxial	SN321	SN611	--
	Fiber	SN322A	SN612	--
TOSLINE-S20LP		SN325	--	L1PU12

TOSLINE-F10

network

TOSLINE-F10 is a field network suitable for a distributed I/O system, which provides a data link between Toshiba controllers and variable-frequency drive systems.

Remote I/O Units (TOSLINE-F10 model)

Item	Specification
FDI633	DC input: dry contact input 24 Vdc, 10 mA, 16 points
FDO633	DC output: 12 to 24 Vdc, 1 A, 16 points
FRO663	Relay output: 24 Vdc/240 Vdc, 2 A, 16 points

Transmission rate	750 kbps or 250 kbps
Topology	Bus
Maximum cable length	500 m (750 kbps) 1 km (250 kbps)
Number of nodes	Maximum of 32 stations
Scan data	Maximum of 32 w
Communication service	Scan data transmission
Update time	7 ms (750 kbps)
Device	PLC(T3H,T3,T2E,T2N,T2) Inverter, remote I/O set
Connection	Direct I/O bus

DeviceNet

network

DeviceNet is an open-standard field network suitable for a distributed I/O system. The DN611 and DN311 are DeviceNet scanner modules for controllers model 2000 and model 3000 respectively. These modules can read and write data to any manufacturer's ODVA-certified devices, such as I/O blocks, inverters, and motor starters.

Transmission rate	500 kbps, 250 kbps, or 125 kbps
Topology	Bus
Max. cable length	500 m (thick cable, 125 kbps) 250 m (thick cable, 250 kbps) 100 m (thick cable, 500 kbps) 100 m (thin cable)
Number of slaves	Maximum of 64 station
Scan data capacity	Input 128 w, Output 128 w (DN611) Input 378 w, Output 378 w (DN311)
Device	DN311: model 3000 DN611: model 2000
Connection	Direct I/O bus

Programming

Programming Language

IEC 61131-3 is the worldwide language standard for sequence control and loop control modules, covering ladder diagram, function block diagram, and sequential function chart programming. Multiple programming languages give you the flexibility and usability needed to use the right tool for each job.

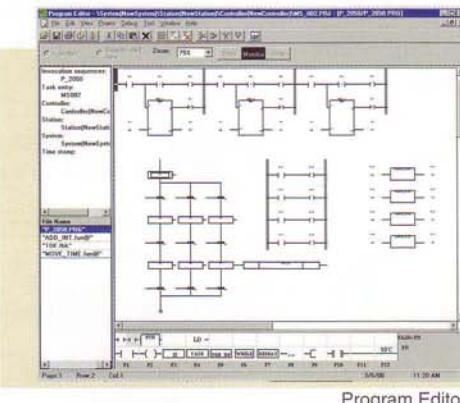
Graphical Language

Ladder diagrams, function block diagrams, and sequential function charts can be written and monitored in a single program. This means that one worksheet can employ the most useful language for each portion.

Global Variable

V-series integrated controllers can be programmed with symbolic addresses only, allowing you to program without concern for hardware configuration or logical addresses.

Both global and local variables are fully supported, with three hierarchical layers of global variables: controller globals, station globals, and LAN globals. A LAN global variable can be accessed from any station or controller that is connected to the control network TC-net. A station global variable can be accessed from any controller that is mounted on the same station. A controller global variable is used in only one controller, so such a variable has no effect on other controllers and stations.



Program Editor

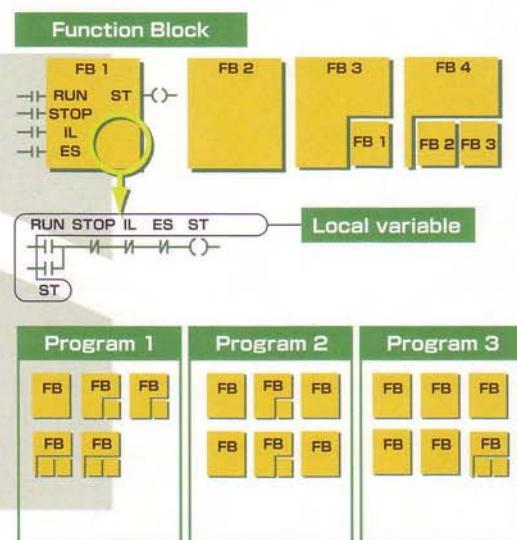


Local Variable

Local variables are used in only one program or function block. The same name thus can be used in different function blocks or programs, with each local variable of that name operating independently.

User-Defined Function Block

The engineering tool integrates user programs into user-defined function blocks. A function block that has been so constructed can then be used in any part of the programs.



Engineering Tool

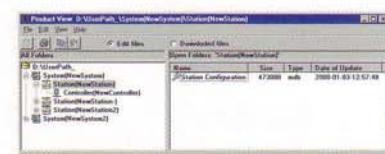
The engineering tool offers practical functions for development and documentation of projects compatible with IEC61131-3. Engineering tool software lets you program, monitor, and manage RAS information for V-series integrated controllers. This tool enables several stations to be handled in a single project, supporting sophisticated applications that may involve several multi-controller, multitasking systems.

CPU	Pentium 200 MHz as minimum
OS	Windows NT4.0+SP5+IE4/IE5 or Windows 2000
Main Memory	64 MB minimum, 128MB preferred.
HDD	300MB free space
Network	Ethernet/RS-232C/RS-485
CD-ROM	For Installation



Product View

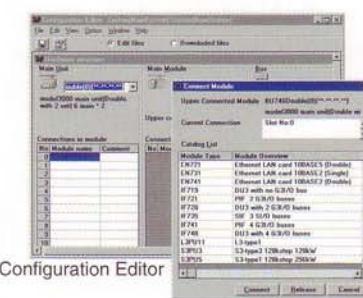
Sets the hierarchical structures in terms of systems, stations, and controllers.



Product View

Configuration Editor

Defines the station's hardware configuration, allowing the setting of configuration and parameters for control modules and I/O modules.



Configuration Editor

Symbol Editor

Assigns symbolic names as global variables to the signals of Direct I/O modules.



Symbol Editor

Program Editor

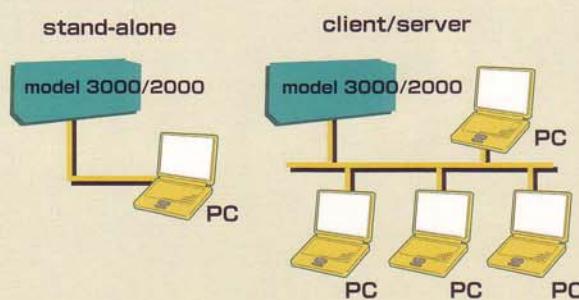
Graphical language can be incorporated in the program editor so that each application can make use of the most suitable language, even on a single worksheet.

Tag Editor

Configures tag database for Loop control module, which consist of tag name, instrument range, Process I/O address, PID parameter, etc.

Client / Server Package (option)

In addition to stand-alone, client/server tool is available to realize group work all through system lifetime.



Specifications

model 2000/3000

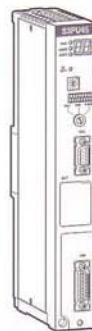
General specifications

V series

Power source	100 to 120/200 to 240 Vac (+10/-15%), 50/60 Hz
Power consumption	model 3000: 80 VA max, model 2000: 50 VA max
Retentive power interruption	20 ms or less
Operating temperature	0 to 55°C (S and L module, C module flash disk type), 5 to 40°C (C module HDD type)
Ambient humidity	5 to 95% RH without condensation (S and L module, C module flash disk type), 10 to 90% RH without condensation (C module HDD type)
Noise immunity	1500 V p-p, 1 micro-second
Withstand voltage	1500 Vac, 1 minute
Vibration immunity	16.7 Hz, 3mm p-p
Shock immunity	98m/s ² , X, Y, Z direction, 3 times
Atmosphere	No corrosive gas, dust concentration of 10mg/cubic-m or less
Cooling	L3 and C3 module should apply Fan unit FA714

Sequence control modules

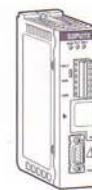
model 3000



S3PU45

Model	model 3000				model 2000										
	S3PU65	S3PU55	S3PU45	S3PU21	S2PU72	S2PU32	S2PU22								
Max No. of programs	405POUs				309POUs										
Max. program capacity	112ks				64ks		32ks								
Station bus link	Yes		No	Yes	No										
Variable	Local/Global	128kw	64kw	48kw											
	Data register	4kw													
	Specified register	0.5kw													
	Station global	1kw	1kw	No	1kw	No									
	I/O register	8kw	5kw	3kw	8kw	5kw	3kw								
Index register	8 registers														
Scan cycle setting	1-1000 ms for Ultra High speed scan task and high speed scan task, floating or 1-500 ms for main scan task														
Max No. of User functions/ Function blocks	512POUs			128POUs											
Duplex System	Option	No			(Option)	No									
Execution speed	[Bit] 40 ns/contact, 80 ns/coil [Floating] 200 ns/add & multiple, 80 ns/load, 120 ns/store				[Bit] 80 ns/contact, 160 ns/coil [Floating] 400 ns/add & multiple, 160 ns/load, 320 ns/store										
Serial communication port	RS-232C: Programming port RS-485: Computer link protocol (1 to n, Toshiba oriented)														
Memory Type	Flash ROM and SRAM														
Network (Station bus link)	Ethernet TC-net		No	Ethernet TC-net	No										
Network (I/O bus link)	TOSLINE-S20/S20LP TOSLINE-F10/F10M DeviceNet				TOSLINE-S20 TOSLINE-F10 DeviceNet										

(Redundancy of S2PU72 is under development. Please check availability when quoting)



S2PU72

Specifications

Loop control modules
Computer modules

Loop control modules

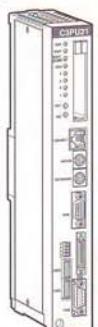


L3PU11

Model		model 3000		model 2000			model 1000		
Module		L3PU21	L3PU11	L2PU11	L2PU12	(L2PU13)	L1PU11	L1PU12	
Max No. of programs		2048POUs				512POUs			
Max program capacity		512ks				64ks			
Approximate scan rate (reference)		32 loop/100ms				8 loop/500 ms			
Scan Cycle setting		10 to 500 ms for Ultra High speed and high speed task, 100 to 1000 ms for main scan task				50 to 5000 ms for main scan task			
Execution speed		[Bit] 3400 ns/contact, 2500 ns/coil [Floating] 5000 ns/add & multiple, 4200 ns/load, 3400 ns/store				N/A			
Tag	Indicator	768	768	128	288	128	128		
	Loop	256	256	32	96	32	8		
	Pushbutton	1024	768	128	288	128	32		
	Sequence	128	64	16	48	16	None		
Duplex system		Option		Option	Option	Yes	No		
Process	Standard	1		1	3	1	1		
I/O Bus	Expansion	3		No	No	No	No		
Network		Ethernet (ONS)		Ethernet			Ethernet	TL-S20LP	
HMI		OIS-DS		OIS 1200			OIS1200	FIX	
Computer link				No			Yes(RS-485)		

(L2PU13 is under development. Please check availability when quoting.)

Computer modules



C3PU62



C2PU61

Model		model 3000			model 2000							
Item		C3PU63	C3PU62	C2PU63	C2PU62	C2PU61	(C2PU65) (C2PU75)					
OS		Windows NT4.0						Windows 2000				
CPU		AMD K6-2EL 166 MHz						Mobile Pentium 3 500 MHz				
Memory	Cash	64KB(in CPU), 512KB(Extended)						L1: 32KB & L2: 256KB (in CPU)				
	Main	128MB	64MB	128MB		64MB		128MB				
	Flash			2Mbyte								
	Ras			128kbyte								
Operation interface		Keyboard, Mouse(PS/2)										
FDD interface		Connector										
Storage		4.8GB HDD				160MB Flash		4.8GB HDD				
RS-232C		1ch DB-9P:300 to 19200 bps										
Ethernet		10BASE-T				100BASE-TX /10BASE-T						
CRT-IF		1ch RGB DB-15S										
PC-Card IF		Type 2: 2 slots			No		Type 2: 2 slots					
Ras function		WDT: 512/128/2ms selectable, Temperature of MPU, Voltage check (DC Power supply,Battery)										

(C2PU65 and C2PU75 are under development. Please check availability when quoting.)

Specifications

model 3000 Direct I/O module

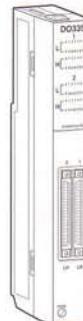
Digital input modules



DI335

Item	Type	Voltage Category	Rated Current	Number of Inputs	Signal Delay (max.)	Operating Voltage	Backplane Current
DI334	dc	12/24	10 mA	32	on = 10ms off = 15ms	on = 9.6V off = 3.5V	100 mA
DI334H	dc	12/24	10 mA	32	on = 1ms off = 1.5ms	on = 9.6V off = 3.5V	100 mA
DI335	dc	24	5 mA	64	on = 10ms off = 15ms	on = 16V off = 5V	170 mA
DI335H	dc	24	5 mA	64	on = 1ms off = 1.5ms	on = 16V off = 5V	170 mA
DI344	dc	48	4.8mA	32	on = 10ms off = 15ms	on = 29V off = 10V	100mA
IN354	ac	120	10 mA	32	on = 15ms off = 15ms	on = 70V off = 25V	120 mA
IN364	ac	220	10 mA	32	on = 15ms off = 15ms	on = 140V off = 50V	120 mA

Digital output modules



DO335

Item	Type	Voltage Category	Current per Output	Current per Common	Number of Outputs	Signal Delay (max.)	Backplane Current
DO333	dc	12/24	2 A	5 A	16	on = 1 ms off = 1 ms	320 mA
DO334	dc	12/24	0.5 A	5 A	32	on = 1 ms off = 1 ms	210 mA
DO335	dc	12/24	0.1 A	0.8 A	64	on = 1 ms off = 1 m	400 mA
DO344	dc	48	0.5A	5A	32	on = 1ms off = 1ms	210mA
AC363	ac	120/240	2 A	5 A	16	on = 1 ms off = 0.5 cycle	530 mA
AC364	ac	120/240	0.5 A	3.2 A	32	on = 1 ms off = 0.5 cycle	800 mA
RO363S	dc ac	30 250	2 A	2 A	16 isolated outputs	on = 10 ms off = 10 ms	100 mA
RO364	dc ac	30 250	2 A	5 A	32	on = 10 ms off = 10 ms	170 mA

Analog input modules



AD368

Item	Number of Input	Voltage Range	Current Range	Data Format	Input Impedance	Channel Update	Backplane Current
AD368	8 single-ended inputs	0-5 Vdc 0-10 Vdc ± 5 Vdc ± 10 Vdc	4-20 mA 0-20 mA	Binary 0-4000 or ± 2000	Voltage: 1 k Ω Current: 250 Ω	2.5 ms/ch.	450 mA
AD318	8 isolated inputs	0-5 Vdc	N/A	Binary 0-4000	500 k Ω	0.31 ms/ch.	600 mA
AD328	8 isolated inputs	N/A	0-20 mA	Binary 0-4000	250 Ω	0.31 ms/ch.	600 mA
AD338	8 isolated inputs	± 10 Vdc	N/A	Binary ± 2000	500 k Ω	0.31 ms/ch.	600 mA

Specifications

model 3000 Direct I/O module

Analog output modules



DA364

Item	Number of Outputs	Voltage Range	Current Range	Data Format	Max . Load	Channel Update	Backplane Current
DA364	4 single-ended outputs	0-5 Vdc 0-10 Vdc ±5 Vdc ±10 Vdc	N/A	Binary 0-4000 or ±2000	20 mA	2.5 ms/ch.	180 mA
DA374	4 single-ended outputs	N/A	4-20 mA 0-20 mA	Binary 0-4000	550 Ω	2.5 ms/ch.	180 mA

Change detect module

Item	Type	Voltage Category	Rated Current	Number of Inputs	Signal Delay (max.)	Operating Voltage	Backplane Current
CD332	dc	12/24	10 mA	8	on = 3/30 ms off = 3.5/35 ms	on = 9.6 V off = 3.5 V	300 mA

Pulse input module

Function

- Up/down counter, Speed counter
- Auto reset universal counter



PI312

Item	PI312
Number of counters	2
Maximum Input pulse rate	50 kpps
Pulse input rating	5/12 Vdc
Maximum count	16,777,215
Comparator output	24 Vdc/100 mA
Backplane current	800 mA

Position control module

MC352 lets you program accelerations, decelerations, constant velocity positions in single moves or moves to suit a variety of motion applications. Programmable up to 500 maximum.

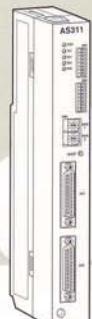


Item	MC352
Control axis	2
Pulse output	±8,388,607 (unit)
Pulse, mm, inch, degree	200 kpps max.
Backplane current	5-24 Vdc 100 mA
	900 mA



MC352

Communication module



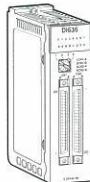
AS311

Item	AS311
Interface	RS-232C, RS-485; 2 ports
Communication rates	300, 600, 1200, 2400, 4800, 9600, or 19200 bps
Communication code	ASCII
Framing	Start bit Data bit Parity
	1 bit 7 or 8 bits Odd, even, none
Message length	896 bytes maximum
Backplane current	1000 mA

Specifications

model 2000 Direct I/O module

Digital input modules

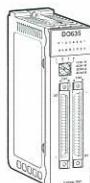


DI635

Item	Type	Voltage Category	Rated Current		Signal Delay(max.)	Operating Voltage	Backplane Current
DI633	dc	12/24	8 mA		on = 10 ms off = 10 ms	on = 9.6 V off = 3.5 V	15 mA
DI634	dc	24	5 mA		on = 10 ms off = 10 ms	on = 18 V off = 6 V	80 mA
DI635	dc	24	4 mA		on = 10 ms off = 15 ms	on = 16 V off = 5 V	100 mA
(DI635H)	dc	24	4 mA		on = 1 ms off = 1.5 ms	on = 16 V off = 5 V	100 mA
IN653	ac	120	7 mA		on = 20 ms off = 15 ms	on = 80 V off = 30 V	15 mA
IN663	ac	220	6 mA		on = 20 ms off = 15 ms	on = 160 V off = 80 V	15 mA

(DI635H is under development. Please check availability when quoting.)

Digital output modules



DO635



RO663

Item	Type	Voltage Category	Current per Output		Number of Outputs	Signal Delay(max.)	Backplane Current
DO633	dc	12/24	1 A		16	on = 1m s off = 1m s	60 mA
DO633P	dc	12/24	1 A		16	on = 1m s off = 1m s	60 mA
DO634	dc	12/24	0.1 A		32	on = 1m s off = 2m s	250 mA
DO635	dc	12/24	0.1 A		64	on = 1m s off = 1m s	250 mA
AC663	ac	120/240	0.5 A		12	on = 1m s off = 0.5 cycle	140 mA
RO662S	dc	12/24	2 A		8	on = 10 ms off = 15 ms	40 mA
RO663	dc	240	2 A		16	on = 10 ms off = 15 ms	90 mA

Analog input modules



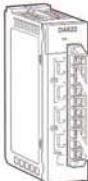
AD624

Item	Number of Inputs	Voltage Range	Current Range		Input Impedance	Channel Update	Backplane Current
AD624L	4 single-ended inputs	1-5 Vdc	4-20 mA		Voltage: 500 kΩ Current: 250 Ω	4 ms/4 ch.	50 mA
AD634L	4 single-ended inputs	0-10 Vdc	N/A		500 kΩ	4 ms/4 ch.	50 mA
AD624	4 single-ended inputs	1-5 Vdc	4-20 mA		Voltage: 1 MΩ Current: 250 Ω	9.6 ms/4 ch.	50 mA
AD674	4 single-ended inputs	±10 Vdc	N/A		1 MΩ	9.6 ms/4 ch.	50 mA

Specifications

model 2000 Direct I/O module

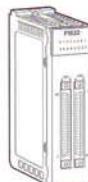
Analog output modules



DA622

Item	Number of Outputs	Voltage Range	Current Range	Data Format	Max. Load	Channel Update	Backplane Current
DA622L	2 single-ended outputs	0-5 Vdc 1-5 Vdc 0-10 Vdc	4-20 mA	Binary 0-250	V: 5 kΩ I: 600 Ω	1 ms/chann.	70 mA
DA622	2 single-ended outputs	1-5 Vdc	4-20 mA	Binary 0-4000	V: 5 kΩ I: 600 Ω	1 ms/chann.	170 mA
DA672	2 single-ended outputs	±10 Vdc	NA	±2000	5 kΩ	1ms/chann.	170 mA

Pulse input modules



PI632

Item	Number of Counters	Maximum Input Pulse Rate	Pulse Input Rating	Maximum Count	Comparator Output	Backplane Current
PI631	1	100 kpps	5/12 Vdc	16,777,215	None	80 mA
PI632	2	50 kpps: encoder mode 100 kpps: counter mode	5/12/24 Vdc	16,777,215	24 Vdc 30 mA	500 mA
PI672	2	50 kpps: encoder mode 100 kpps: counter mode	RS422	16,777,215	24 Vdc 30 mA	650 mA

Position control modules

Item	MC611	MC612
Control axis	1	2
Control type	Pulse output	Pulse output
Position range	±999,999(unit)	±9,999,999 (unit)
Position unit	Pulse, mm, inch, degree	Pulse, mm, inch, degree
Pulse output rate	200kpps maximum	200 kpps maximum
Output rating	5-24 Vdc, 50 mA	5-24 Vdc 50 mA, RS485
Backplane current	200 mA	700 mA

Communication module

Item	CF611
Interface	RS-232C, 1 port
Communication rates	300, 600, 1200, 2400, 4800, 9600, or 19200 bps
Communication code	ASCII
Framing	Start bit
	1 bit
	Data bit
	7 or 8 bit
	Parity
	Odd, even, none
Message length	320 bytes maximum
Backplane current	550 mA

Specifications

model 1000/2000/3000 Process I/O module

Analog input modules

Item	Number of Inputs	Voltage Range	Current Range	Input Impedance	Accuracy	System Power	External Power
SAI01	8 single-ended inputs	±10 mV, ±20 mV, ±50 mV ±100 mV, 1-5 Vdc, ±1 Vdc, ±5 Vdc	4-20 mA (*)	Voltage: 1 MΩ Current: 250 Ω	0.1%	24V dc 50mA	—
SAI02	4 isolated inputs	1-5 Vdc	4-20 mA (*)	Voltage: 1 MΩ Current: 250 Ω	0.1%	24V dc 60mA	—
SAI03	4 isolated inputs	1-5 Vdc	4-20 mA (*)	Voltage: 1 MΩ Current: 250 Ω	0.1%	24V dc 300mA	—
SAI06 (**)	8 single-ended inputs	±10 mV, ±20 mV, ±50 mV ±100 mV, 1-5 Vdc, ±1 Vdc, ±5 Vdc,	4-20 mA (*)	Voltage: 1 MΩ Current: 250 Ω	0.1%	24V dc 50mA	—

(*) with external 250 ohm load or option card of Type 1 terminal block

(**) High comm.rate and duplex-ready type. Apply SBIF2 comm module

Analog output modules

Item	Number of Outputs	Current Range	Max. Load	Accuracy	System Power	External Power
SAO01	8 single-ended outputs	4-20 mA	750 Ω	0.2%	24V dc, 300 mA	—
SAO02	4 isolated outputs	4-20 mA	750 Ω	0.2%	24V dc, 200 mA	—
SAO06 (**)	4 single-ended outputs	4-20 mA	750 Ω	0.2%	24V dc, 200 mA	—

(**) High comm.rate and duplex-ready type. Apply SBIF2 comm module

RTD input module

Item	Number of Inputs	Input	Range	Accuracy	System Power	External Power
SRT01	4 RTD isolated inputs (three-wire)	Pt100 (Pt385 Pt3916)	0 to 150°C, 0 to 300°C 0 to 500°C, -50 to 100°C, -150 to 50°C	0.1%	24V dc 70mA	—

Thermocouple input module

Item	Number of Inputs	Input Type	Accuracy	System Power	External Power
STC01	8 TC isolated inputs	J, K, T, E, R, S, B with cold-junction compensation	0.2%	24V dc 70mA	—

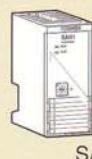
Pulse input modules

Item	Number of Inputs	Maximum Input Frequency	Counter	System Power	External Power
SPI01	4 single-ended inputs	Dry contact input: 50Hz Voltage input: 10kHz	16-bit up counter	24V dc 150mA	24V dc 50mA
SPI06 (**)	4 single-ended inputs	Dry contact input: 50Hz Voltage input: 10kHz	16-bit up counter	24V dc 70mA	24V dc 70mA

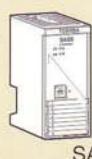
(**) High comm.rate and duplex-ready type. Apply SBIF2 comm module

Pulse output module

Item	Number of Outputs	Maximum output Frequency	Load	Output Pulse Width	System Power	External Power
SPO01	4 single-ended outputs	28Hz / 111Hz selectable	24V dc 100mA	72ms / 9ms selectable	24V dc 100mA	24V dc 10mA



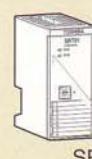
SAI01



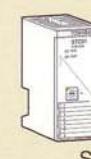
SAI06



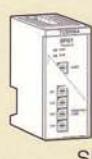
SAO01



SRT01



STC01



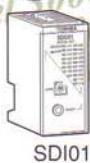
SPO01

Specifications

model 1000/2000/3000 Process I/O module

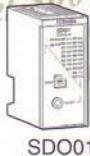
model 1000/2000/3000 Terminal Block for Process I/O module

Digital input module



Item	Voltage Category	Rated Current	Number of Inputs	Input Type	Signal Delay (max.)	Update period	System Power	External Power
SDI01	24V dc	5mA	32	Dry contact	on = 10ms off = 10ms	10ms	24V dc 35mA	24V dc 280mA

Digital output module



Item	Voltage Category	Load Current	Number of Outputs	Output Type	Update period	System Power	External Power
SDO01	24V dc	100mA max.	32	Source (sink load)	10ms	24V dc 50mA	24V dc 25mA

Distributor module

Item	Voltage Category	Load Current	Number of Outputs	Function	Alarm Output	System Power	External Power
SDA01	24V dc	35mA max.	8 for sensor	Current limiting	24V dc 100mA	24V dc 50mA	24V dc 25mA + Load current

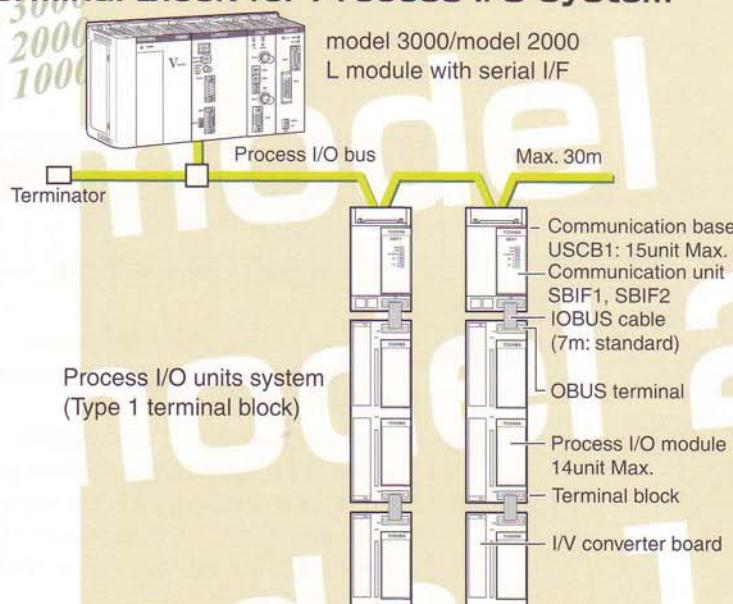
Loop input/output modules (for model 1000 only)



Item	LP01	LP02
MV output type	Current output (4-20mA) Load maximum (600 Ω)	Pulse output (30V dc, 0.1A) Pulse width minimum 9 ms
Analog input	4 channels, 1-5V dc	
Digital input	3 points (Dry contact, 24V dc, 5mA)	
Analog output	2channels , 1-5V dc	
Digital output	3 points (Source, 24V dc, 100mA)	
Isolation	Single-ended input and output	

Loop input/output modules are used for model 1000

Terminal Block for Process I/O system



Integrated Controller V series has following four types of terminal blocks for Process I/O system:

- Type 1: Vertical & Screw type
- Type 2: Horizontal & Flat type
- Type 3: Horizontal & European type
- Type 4: Horizontal & Screw type

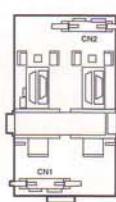
Loop control modules for model 3000, model 2000 and model 1000 supports Process I/O system. For model 3000/model 2000 application, apply USCB1 base for type 1 terminal block, USCB2 base for type 2, 3 and 4. IOBUS with USCB2 is extendable up to 1km, and needs to be terminated with one of the type 2 terminal block including UITU5.

Model 1000 supports type 2, 3 and 4 terminal blocks only.

Specifications

Terminal Block for Process I/O module

Terminal block	Description	S A I 0 1 2 3	S A I 0 1 2 3	S T C 0 1 1	S R O 0 1 2	S A O 0 1 2	S P I 0 1 1	S P O 0 1 1	S D I 0 1 1	S D O 0 1 1	S S A I 0 1 6	S S A P I 0 0	S S I F 1 1	L P 0 1	L P 0 2	U S C B 1	U S C B 2	U S C B 3	T B 5 *
TYPE 1	UTBA1	For 8ch analog I/O and 4ch pulse I/O, two modules mounted	●	●	●	●	●	●	●	●	●	●	●			●			
	UTBA2	For 4ch analog I/O, two modules mounted	●	●	●	●	●	●								●			
	UTBA3	For 8ch analog input and distributor unit, one module mounted	●													●			
	UTBA6	For dupe analog I/O, one pair of modules mounted														●			
	UTBA61	For dupe analog I/O pulse input, one pair of modules mounted														●			
	UTBD1	For digital I/O, one module mounted														●			
	UTRC1	For digital I/O connecting relay terminal, two modules mounted														●			
TYPE 2	UABU1	For 8ch analog I/O and 4ch pulse I/O, two modules mounted	●													●			
	UABU3	For dupe analog I/O pulse input, one pair of modules mounted														●			
	UDBU1	For digital I/O connecting relay terminal, two modules mounted														●			
	UITU5	For IOBUS extension & termination.														●			
TYPE 3	EC352AI0151	8 channel analog input, voltage input, cable connect	●													●			
	EC352AI0171	8 channel analog input, Current/voltage input, cable connect	●													●			
	EC352AI0251	4 channel analog input, voltage input, cable connect	●													●			
	EC352AI0271	4 channel analog input, Current/voltage input, cable connect	●													●			
	EC352AI0351	4 channel analog input, voltage input, cable connect	●													●			
	EC352AI0371	4 channel analog input, Current/voltage input, cable connect	●													●			
	EC352TC0151	8 channel Thermo couple input, cable connect														●			
	EC352RT0151	4 channel RTD input, cable connect														●			
	EC352AO0151	8 channel analog output, cable connect														●			
	EC352AO0251	4 channel analog output, cable connect														●			
	EC352PI0151	4 channel pulse input, cable connect														●			
	EC352DI0151	32 points digital input, cable connect														●			
TYPE 4	EC352DO0151	32 points digital output, cable connect														●			
	EC352DO0161	32 points digital output, connector connect														●			
	UITU5	For IOBUS extension & termination (model 2000/3000).														●			
	3Y8A12156G001	For IOBUS extension, (model 1000)														●			
	UT5L12	One Loop module input & output (model 1000 only)														●	●		
	EC352AI02C1	4 channel analog input, voltage input, Terminal block										●					●		
	EC352AI02D1	4 channel analog input, Current/voltage input, Terminal block										●					●		
TYPE 4	EC352AO02C1	4 channel analog output, Terminal block														●			
	UITU5	For IOBUS extension & termination (model 2000/3000).														●			
Comm module	3Y8A1467G001	For IOBUS extension, (model 1000)														●			
	SBIF1	Comm module	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	SBIF2	Comm module (High-speed type)														●	●	●	●
	SSIF1	Comm module (for PLC)														●	●	●	●
	L1PU11/12	Model 1000	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●



UABU 1
(Type 2)

EC352AI 0151
(Type 3)

UT5L12 + LP01
(Type 4)

For type 1 terminal blocks, IOBUS terminator

FSTM1 is attached to every comm base
USCB1.

For type 2 terminal block, IOBUS termination

switch is on each terminal block and UITU5.

For type 3 and 4, terminating switch on each terminal

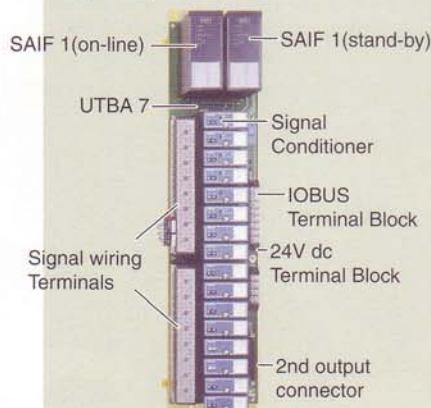
block and 3Y8A**** is for model 1000 only.

Use UITU5 for use with model2000/model

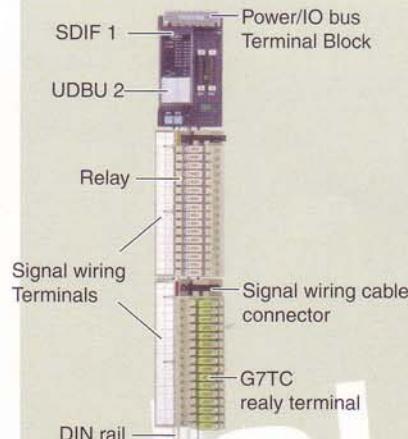
3000 application.

F series Process I/O system realizes faster I/O update rate, offering wide variety of signal conditioning options with channel to channel isolation. Depending on application requirement, F-series Process I/O can be fully applied, or mixed with conventional Process I/O on the same Process I/O bus realizing flexible I/O configuration.

Analog I/O system



Digital I/O system



Comparison between conventional series and F-series

	Process I/O	F-series Process I/O
Pulse I/O module	Available	Not available
Output for monitoring	Not available	Available
Comm Rate	19.2kbps or 375kbps	1Mbps
Maximum I/O points (in theory)	1,680 all analogs or 6720 all digitals	960 all analogs or 3840 all digitals
Analog I/O redundancy	Option	Option

I/O modules

Name	Type	Specification
Analog input comm module	SAIF1	16 points ready for duplex
Analog output comm module	SAOF1	16 points ready for duplex
Digital input comm module	SDIF1	32 points
Digital output comm module	SDOF1	32 points

Terminal units

Name	Type	Specification
AI terminal block	UTBA7	For SAIF1
AO terminal block	UTBA8	For SAOF1
Digital base unit	UDBU2	For SDIF1/SDOF1 OMRON G7TC-ID16-5 &G7TC-OC16 applicable

Isolators

Name	Type	Specification
mV input isolator	CISO5	0-10mV, 0-20mV, 0-50mV, 0-100mV, 0-200mV
Current input isolator	CISO6	4-20mA
Voltage input isolator	CISO7	1-5V
Distributor isolator	CDIS7	4-20mA, 24Vdc distributor for transmitter
TC input isolator	CTC**	Types K, T, R, S, B, J, E
RTD input isolator	CRTD*	PT385(Pt100) and Pt3916(JPt100)
CT input isolator		
Current output isolator	CCIT1	0-1Aac, 0-5Aac
	CISO8	4-20mA, line cut detection

Transceiver

Name	Type	Specification
Line transceiver module	SLTR 5	For extension of serial bus by 30m
Transceiver base unit	USCB 5	For SLTR 5

Human Interface Station

Integration with
Human Interface Station

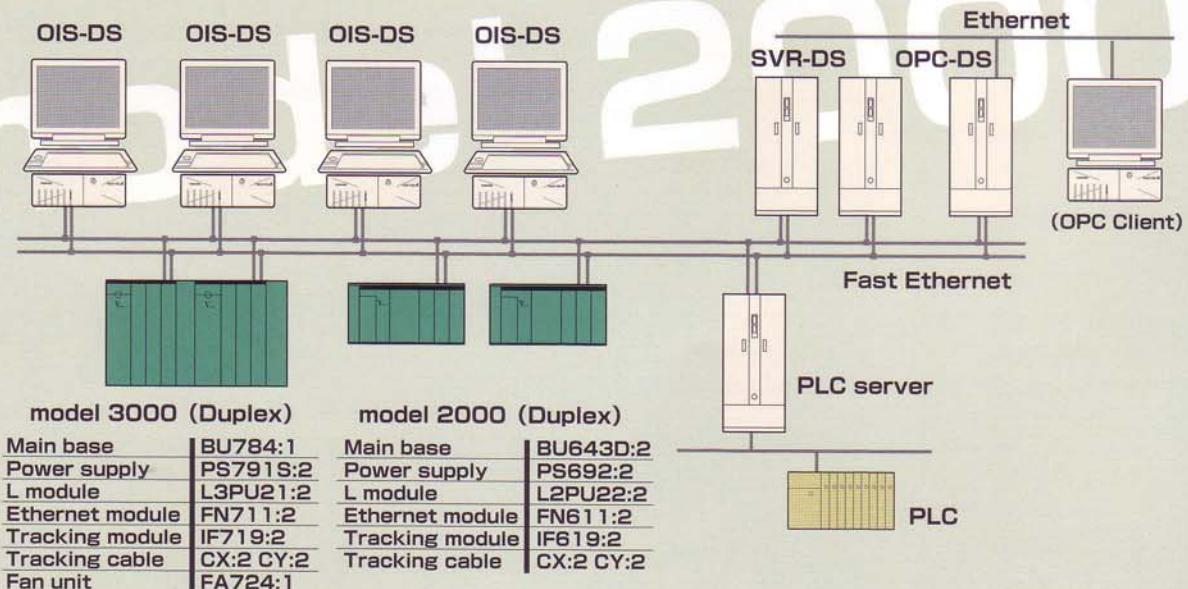
Integrated Control System TOSDIC-CIE DS

Integrated Controller V series is ready for conventional DCS applications. Toshiba's integrated control systems TOSDIC-CIE DS and TOSDIC-CIE1200 supports control stations of V series.

TOSDIC-CIE DS is for large or medium system application with tag points up to 20,000, with the system configuration of 22 human interface stations and 32 control stations. Equipped with pre-configured user menu, faceplates and real-DCS tag database, the package offer top-down, easy-to-navigate screen operations with touch-screen, mouse and dedicated operator's keyboard suitable for multi-loop operation. For medium size application up to 8,000 tag points or 8 human interface stations, economical package embedding SVR-DS functionality into OIS-DS is also available.

System name	TOSDIC-CIE DS		TOSDIC-CIE 1200
OIS(HMI) type	OIS-DS52 plus SVR-DS	OIS-DS52 plus OIS-DS62	OIS1200
System tag points	20,000	8,000	4,096
Max monitoring tag points per HMI	20,000	8,000	2,048
No. of OIS(HMI)	22	8	4
No. of Control stations	32		8
Applicable control modules	L3PU21 L2PU22		L3PU11 L2PU11 / 12 L1PU11
Historical trend points	5,000 /system, 5sec-1day cycle	2,500 /system, 1min-1day cycle	1,024 /system, 1min-30min cycle
Realtime trend points	1,024/system	1,024 /system	256 /system
Control LAN (Ethernet module)	Fast Ethernet (FN***)		Ethernet (EN***)

Note: PC/workstation hardware platform for OIS series is based on standard business models available in the market. Please consult with local representative or distributor for applicable model.



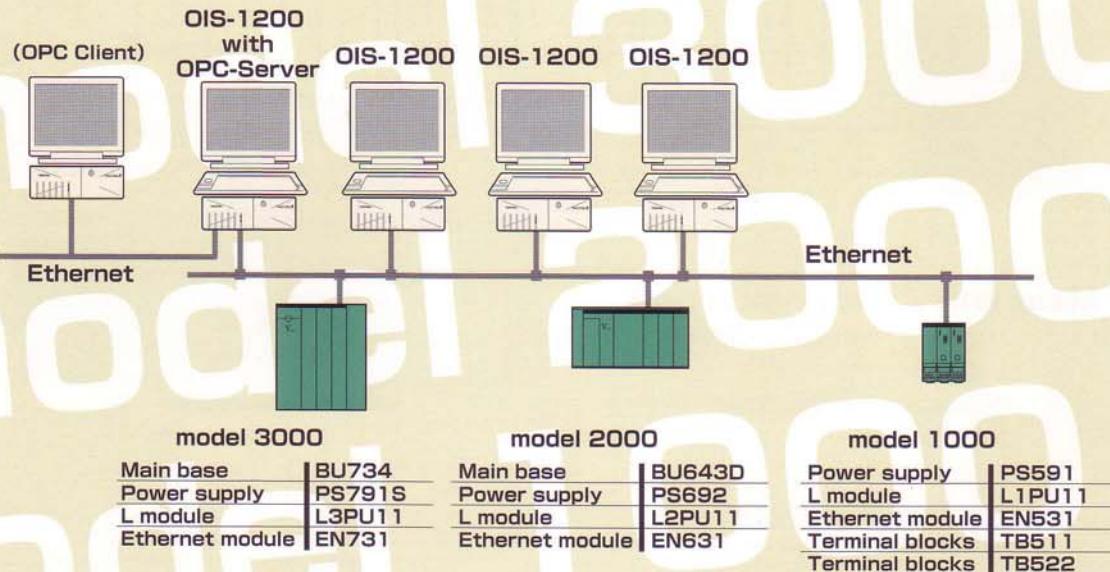
TOSDIC-CIE DS system configuration example

Human Interface Station

Integration with Human Interface Station and OPC

Integrated Control System TOSDIC-CIE 1200

TOSDIC-CIE1200, is for medium or small size application with up to 4,096 tag points, 4 human interface stations and 8 control stations. Based on Intellution's FIX MMI, configuration and operation of human interface is user-friendly and easy. Customized database dynamo realizes integrated operation on this open SCADA platform, which includes pre-configured menu, faceplates and real-DCS tag database.



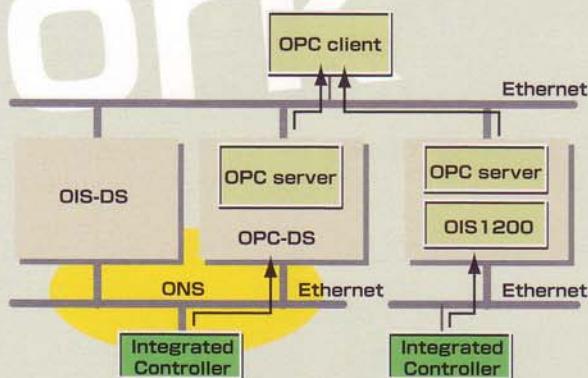
TOSDIC-CIE1200 system configuration example

In addition, Integrated Controller V series is ready to communicate with open SCADA packages, which includes CITECT from CI Technology. Please consult Toshiba's local representatives or distributors for details.

OPC support

OPC(OLE for Process Control) is a de-facto standard of data access protocol for process automation systems. Both TOSDIC-CIE DS and 1200 support OPC so that process data managed in the controllers can be shared or utilized in corporation systems via OPC client software.

In addition, V series model 3000/model2000 stations themselves are capable of having OPC server with computer module talking to other control modules so that OPC-based data integrity in controller-level is realized.

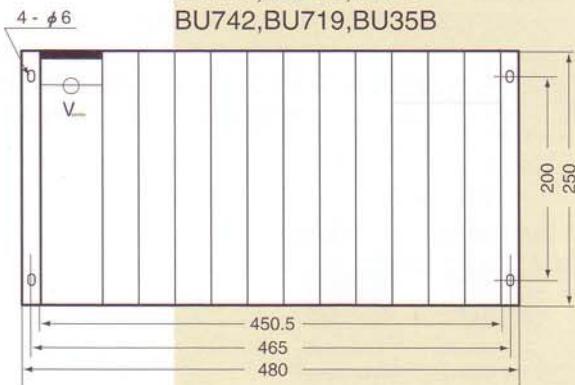


Dimensions

model 3000/2000/1000

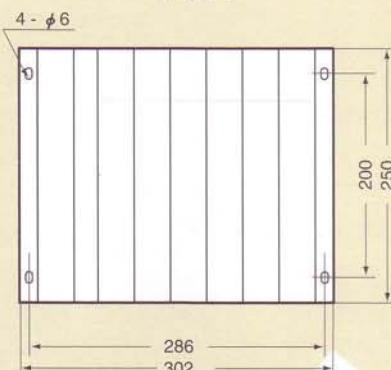
Main unit / Expansion unit

BU748, BU746, BU744
BU742, BU719, BU35B



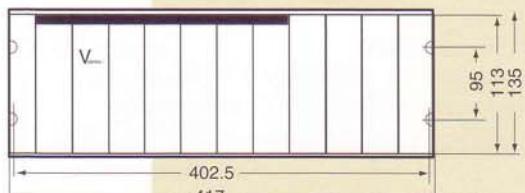
Expansion unit

BU356



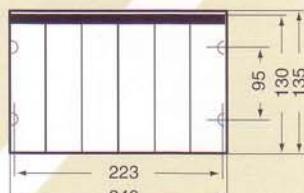
Main unit / Expansion unit

BU648E, BU668



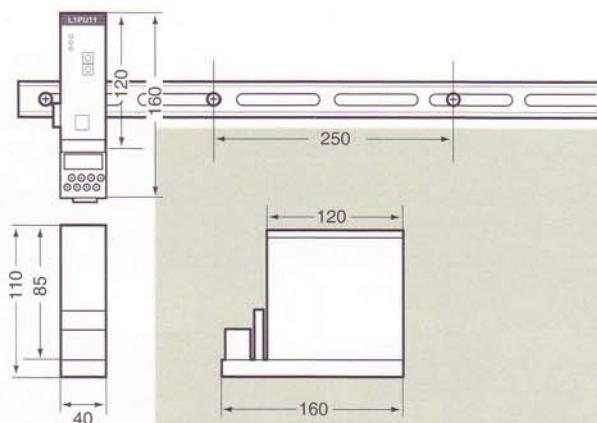
Expansion unit

BU643D

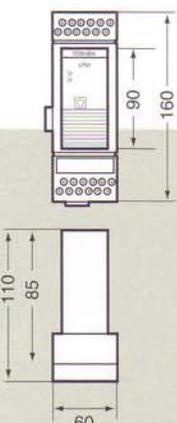


CPU unit

L1PU11, L1PU12

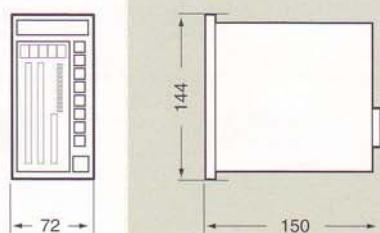


I/O unit



Loop Display unit

LD511



(Unit:mm)

L1 S2 L2 C2 S3 L3 C3

 Safety Precaution

This product is intended to be used for the control of Industrial machines and processes.
Misuse of this product can result in property damage or human injury.
Read related manuals carefully before using this product.

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In Touch with Tomorrow

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