

PROGRAMMABLE CONTROLLER

PROSEC T1-16S



Advanced Features

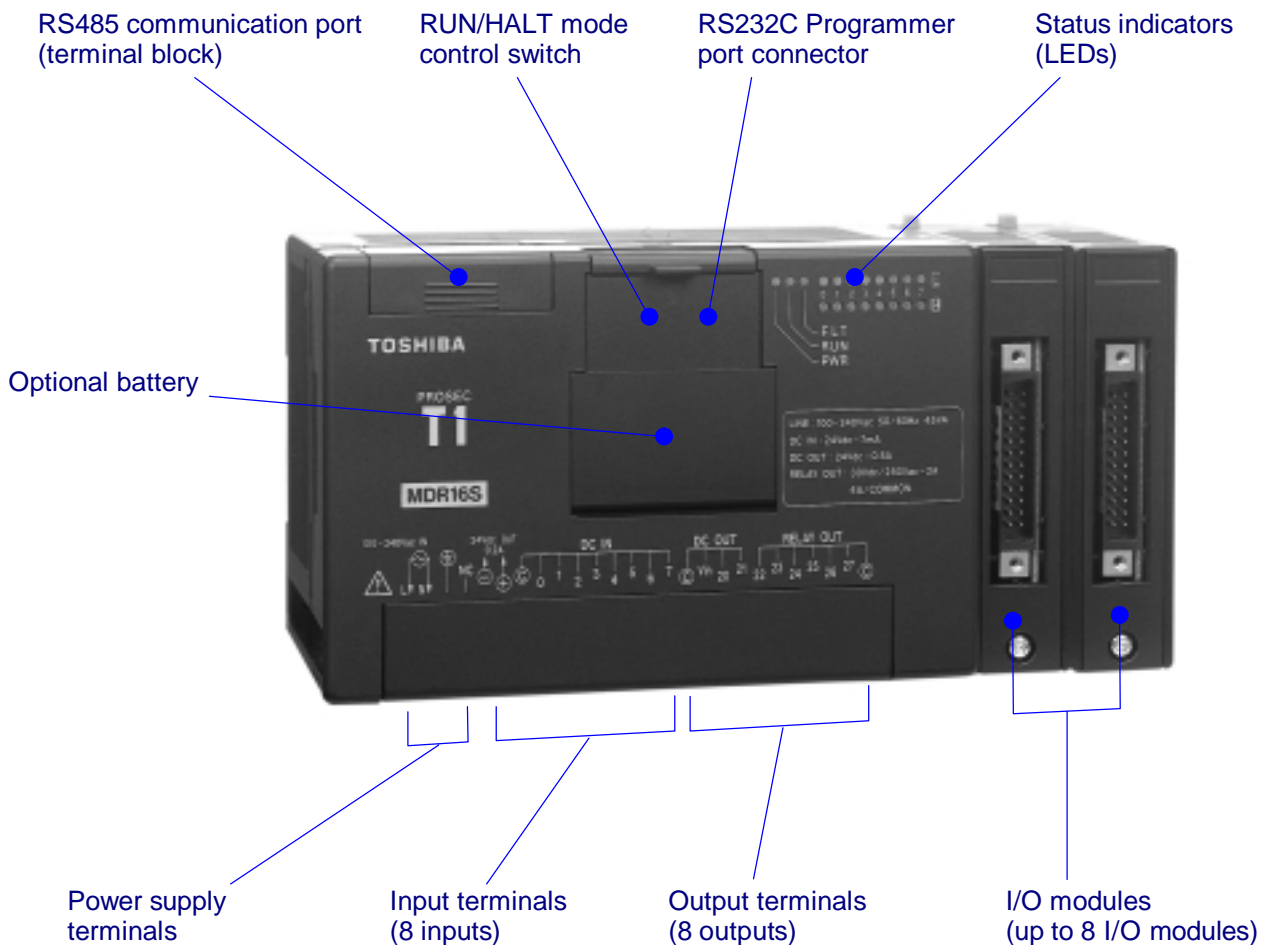
- ◆ Compact Modular Style
- ◆ 8K Steps Program Memory
- ◆ Clock/calendar Function
- ◆ Online Program Changes
- ◆ Built-in EEPROM
- ◆ Special Data Transfer Function with Toshiba Inverters (VF-A7/G7/S9)
- ◆ High-Speed Processing
- ◆ RS485 Communication Port
- ◆ High-speed Counter Function
- ◆ Interrupt Input Function
- ◆ Pulse Output Function

PROSEC T1-16S

Expandable Micro Programmable Controller

T1-16S is a micro programmable controller with optional add-on expansion I/O modules.

Its communications capability, advanced instruction set, and large memory (program & data register) make it ideally suited for applications previously requiring larger more expensive programmable controllers. The T1-16S's high-speed performance makes it especially adapt at sophisticated machine control applications.



Memory & Expansion Capacity

The T1-16S is a micro PLC. But it has a large program and data memory.

- ◆ 8192 Steps of Program Memory
- ◆ 4096 Words of Data Registers, 256 Timers, & 256 Counters
- ◆ Discrete I/O 144 Points max

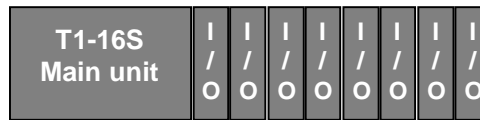
< Basic configuration >



Main Unit

(Discrete = 8 inputs & 8 outputs)

< Expansion configuration >



Main Unit + 8 I/O Modules

(Max Discrete I/O = 16 points + 8 x 16 points = 144 points)

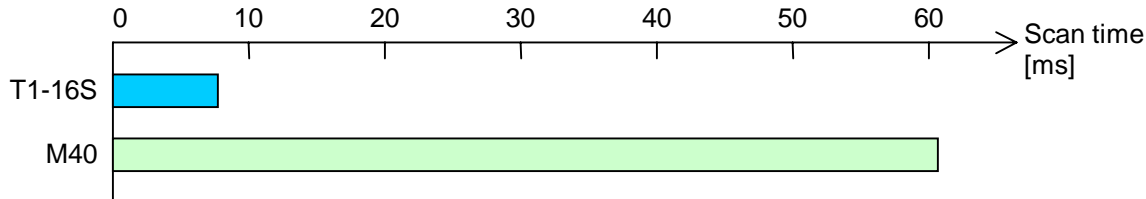
(Max Analog I/O = 8 channels)

Any mix of discrete & analog modules maybe used.

Execution Speed

Sophisticated machine control applications require high-speed data manipulation. The T1-16S is designed to meet these requirements. The T1-16S is 8 times faster than Toshiba's earlier M20/M40 PLCs.

< Scan time comparison between T1-16S and Toshiba's M40 >



- Notes:
1. Actual results of the scan time for a 4K step test program (Including overhead).
The test program consists of:
 - 50% of Sequence (Boolean and Timer) Instructions
 - 30% of Data Transfer Instructions
 - 20% of Arithmetic (Addition, Subtraction and Compare) Instructions
 2. The more data transfer & arithmetic instructions used, the faster the T1-16S becomes when compared to other PLCs.

Performance

The T1-16S offers 21 basic ladder instructions and 97 insert able function instructions. Subroutines, Interrupt functions, Indirect addressing, For/Next loops, Increment/Decrement, Pre-derivative PID, etc. are standard on the T1-16S. These functions allow the T1-16S to be applied to the most complex and demanding control applications.

- ◆ Scan Setting:
 - Floating Scan ... Program scans as fast as possible
 - Constant Scan ... Program executes at a fixed interval (setting: 10 to 200ms)
- ◆ Program Types (Multitasking):
 - 1 Main program, 1 initial program, & 256 Subroutines
 - 1 Timer interrupt program (setting: 5 to 1000ms)
 - 4 I/O interrupt programs (High-speed counter & Interrupt inputs)

Configuration

T1-16S Main Unit

There are four types of T1-16S controllers depending on the built-in functions and the power supply voltage.



| Type | Description |
|-----------|--|
| TDR116S6C | Standard version, 100-240Vac power |
| TDR116S6S | Enhanced version, 100-240Vac power (with Real-time clock and RS485 port) |
| TDR116S3C | Standard version, 24Vdc power |
| TDR116S3S | Enhanced version, 24Vdc power (with Real-time clock and RS485 port) |

I/O Modules

The following types of I/O modules are available. A maximum 8 I/O modules can be connected to each T1-16S controller.



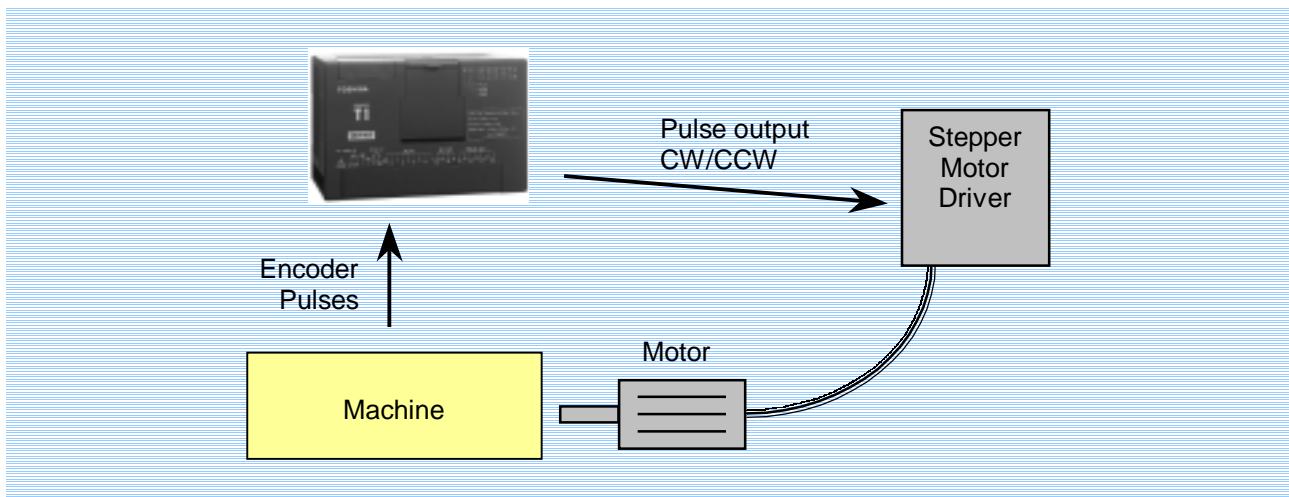
| Type | Description |
|-----------|--|
| TDI116M*S | 16 points 24Vdc input, 5mA (Note) |
| TDD116M*S | 8 points 24Vdc input, 5mA 8 points 24Vdc output, 100mA (Note) |
| TDO116M*S | 16 points 24Vdc output, 100mA (Note) |
| TRO108M*S | 8 points relay output, 240Vac/24Vdc, 1A |
| TAD121M*S | 1 channel analog input, 0 to 5V/0 to 20mA, 12-bit resolution, internal-external isolation |
| TAD131M*S | 1 channel analog input, -10 to 10V, 12-bit resolution, internal-external isolation |
| TDA121M*S | 1 channel analog output, 0 to 20mA, 12-bit resolution, internal-external isolation |
| TDA131M*S | 1 channel analog output, -10 to 10V, 12-bit resolution, internal-external isolation |
| TTC111M*S | 1 channel thermocouple input, type E, J, K, 12-bit resolution, internal-external isolation |
| TFR112M*S | TOSLINE-F10 remote station, 250K/750Kbps, 1 word input + 1 word output |

Note: Cable side connector is not included with the DI, DO, or DD type module. Order connectors separately. (PT15S or PT15F)

Advanced Applications

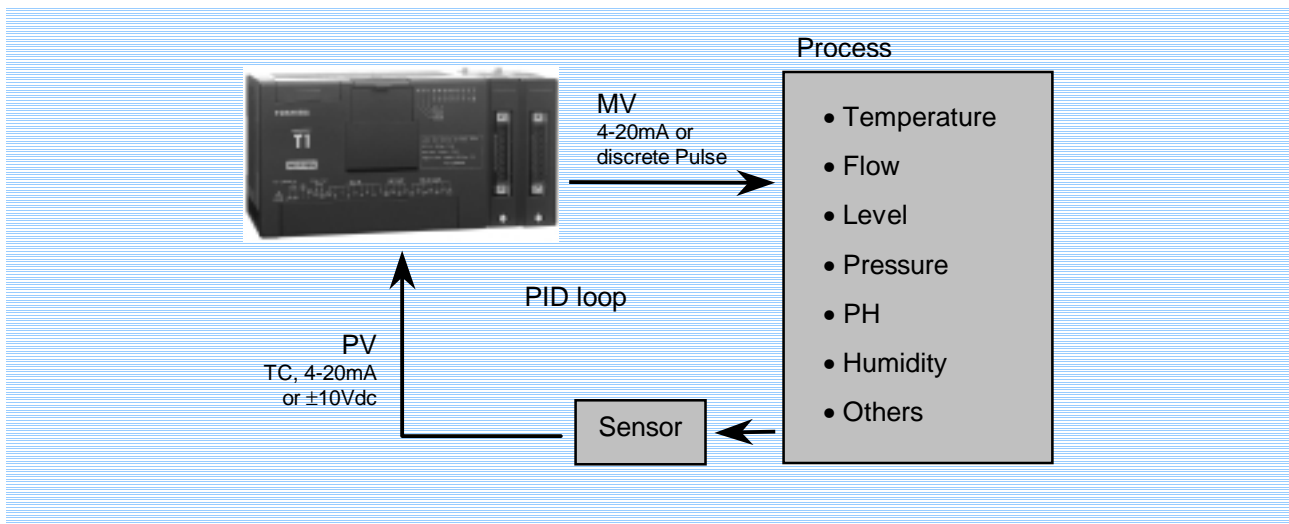
Motion Control

The T1-16S has two high-speed counter inputs. These 5k pps (pulse per second) counters can be used independently (of each other and of the CPU scan) for discrete parts count in applications requiring high-speed compare, reset, and strobe. The counters can also be used together as a quadrature counter to count a 2-phase pulse encoder signal. In the quadrature counter mode, the counting speed is max 20k cps (counts per second). The T1-16S also has a pulse output function (5k pps max). It can generate variable frequency pulse trains CW and CCW. This output can be used to drive a stepper motor. By using these functions together, an inexpensive motion control system can be implemented with the T1-16S.



Process Control

The T1-16S has an advanced PID (Proportional, Integral, and Derivative) control function. This PID function and the analog I/O modules enable the T1-16S to be applied to many process control applications. Multiple PID loops can be used, limited only by the max allowable I/O.

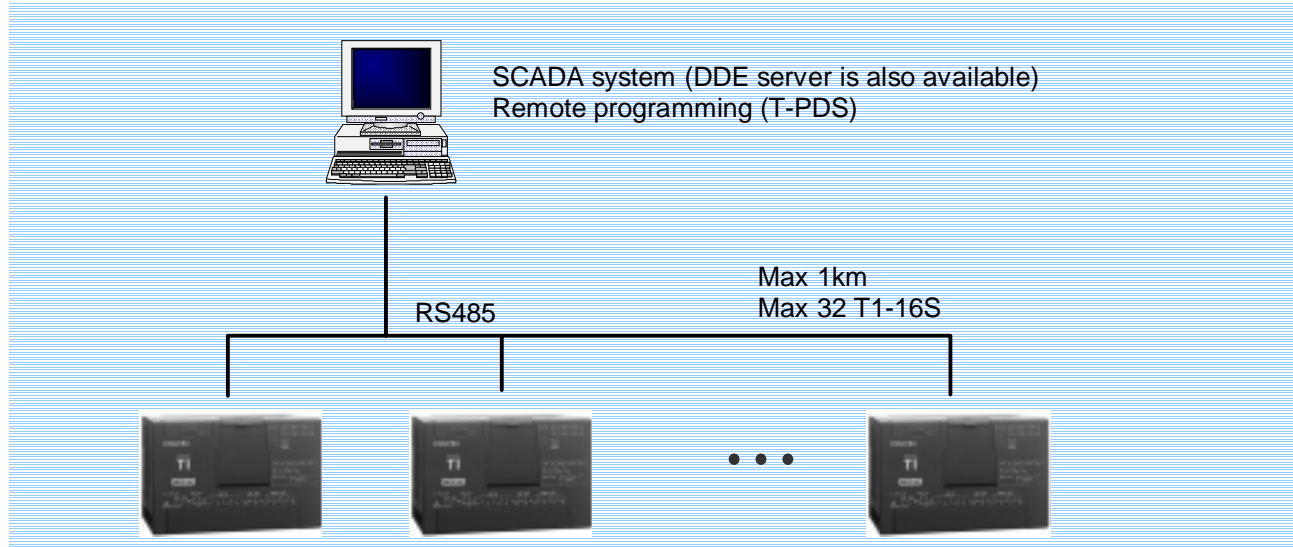


Communication Features

SCADA System / Remote Programming

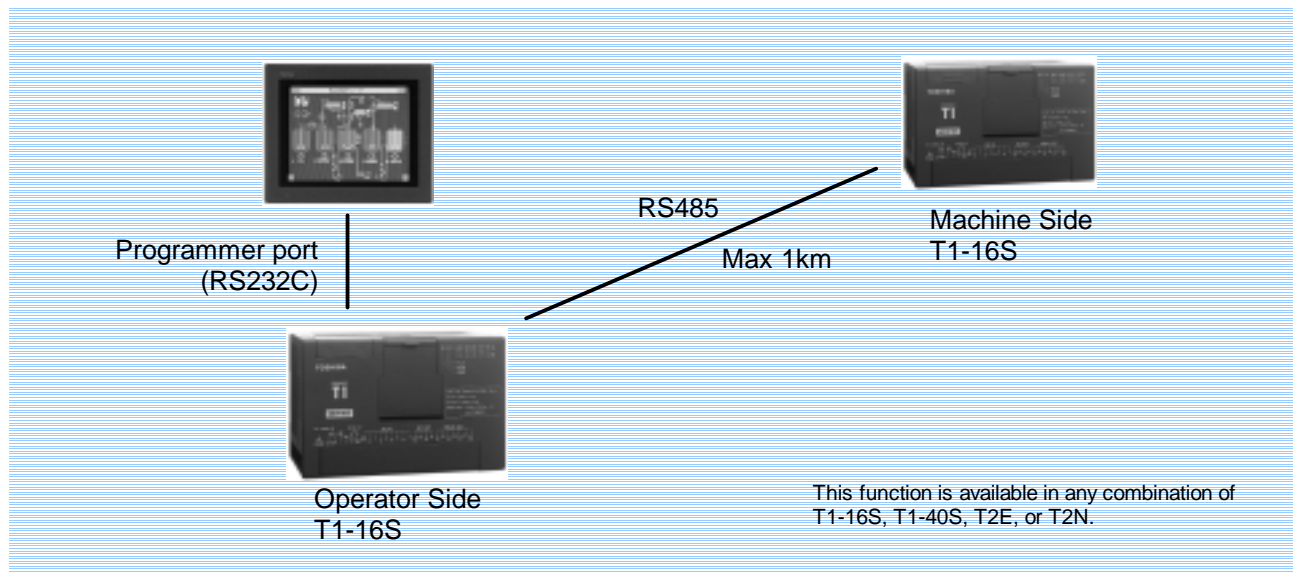
The T1-16S enhanced version has a built-in RS485 communication port. By using this communication port, up to 32 T1-16Ss can communicate with a computer or other higher-level controller. Most major SCADA software supports T-series PLC communication protocol. A DDE server software (T-PSV) is also available.

When using the T-series programming tool (T-PDS) in this configuration, each station can be programmed remotely. A multi-drop adapter (CU111) allows an enhanced T1-16S to have two RS485 ports or for a standard T1-16S to have remote capability added after installation.



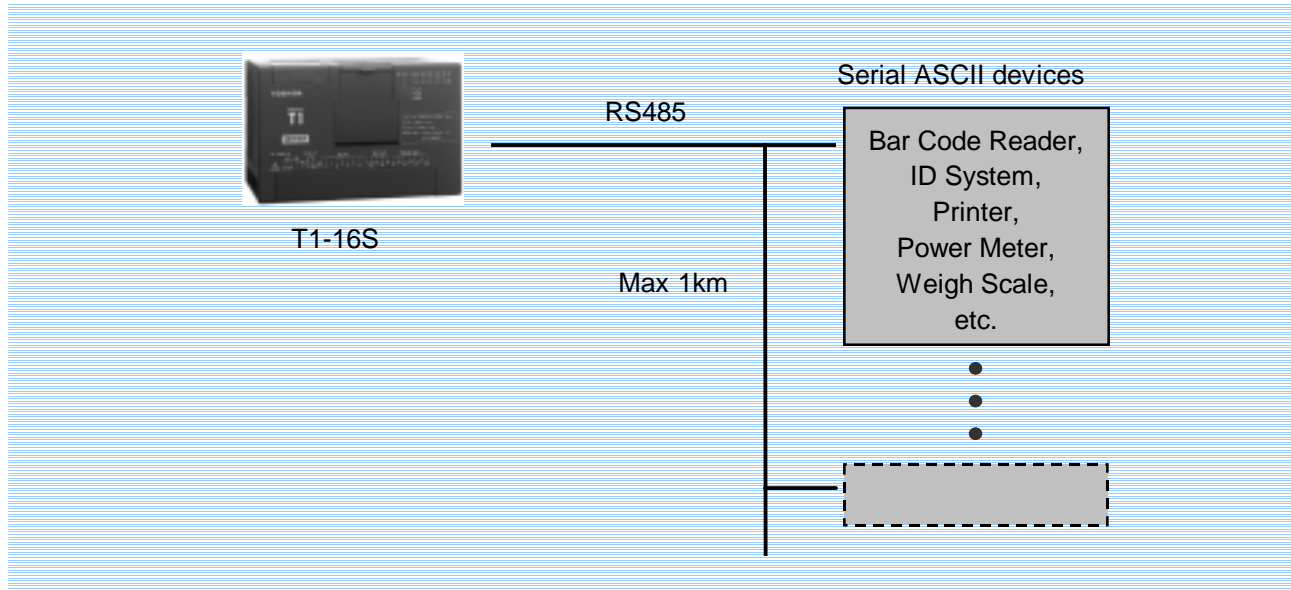
Easy Data Linkage between Two T1-16Ss

The T1-16S enhanced version's RS485 port supports the data link mode. Using the data link mode, two T1-16Ss can exchange data each other (16 words input and 16 words output). The update cycle for the total 32 words is approx. 50ms. No user program required for this data linkage.



Flexible Communication Interface

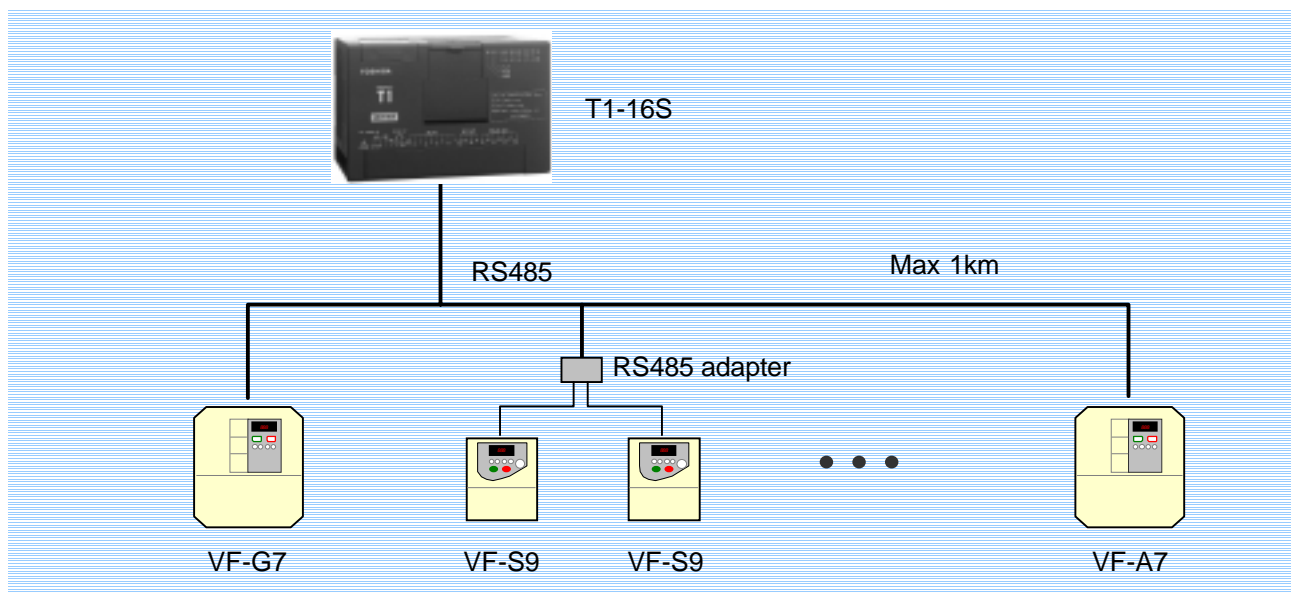
The RS485 port on the T1-16S enhanced version supports a flexible communication function called the Free ASCII mode. This Free ASCII mode lets the T1-16S act as a master to communicate with other field devices that have a serial ASCII communication function. The field devices must support ASCII text communication with fixed trailing code.



Easy Connection Inverters (Adjustable Speed Drives)

The RS485 port on the T1-16S enhanced version also supports a special mode to exchange data with Toshiba's Inverters (ASDs), VF-A7/G7/S9. Using this mode, the following data can be sent between the T1-16S and the Inverters without any special communication program.

- ◆ Monitoring – Operation frequency and Terminal status
- ◆ Control – Run/Stop/Jog, Forward/Reverse, Frequency command



Programming Tools

T-series Program Development System (T-PDS)

The T-series Program Development System (T-PDS) is a software program that runs on any Toshiba Notebook computer or other IBM-PC compatible personal computer. The T-PDS software supports on-line/off-line programming, debugging, and program documentation for all T-series programmable controllers; T1/T1S, T2/T2E/T2N, T3/T3H and S2T.

The T-PDS software has:

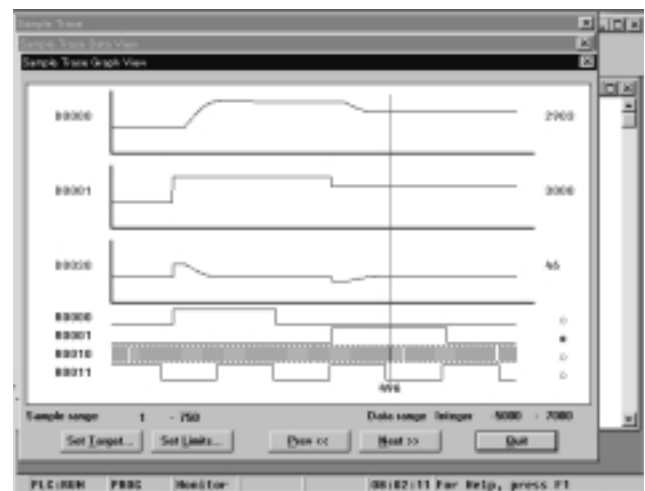
- ◆ A full-feature program editor that includes cut & paste, search & replace, insert, delete, etc.
- ◆ Program merge, merge blocks from other programs into current program.
- ◆ Load, save and compare of programs between disk file and CPU.
- ◆ Monitor power-flow status of on-line ladder program and display of register values.
- ◆ Sampling trace screen for checking event time relationships.
- ◆ Device force and device set/reset from keyboard.
- ◆ Document programs with tags and commentary.
- ◆ Print map options such as register values, register/device usage, full cross-reference, etc.
- ◆ Built-in Modem Initialize and Dial-up for remote maintenance.



Requires Windows 95 or higher



Program edit screen



Sampling trace screen

Note)

For the T1-16S, the following T-PDS versions are required.

- T-PDS (Windows) ... Ver 1.2 or later
- T-PDS (MS-DOS) ... Ver 2.1 or later

Handy Programmer (HP911A)



Note:
Some T1-16S functions are limited with using the HP911A.

The HP911A is a hand-held graphic programmer. Its portability makes it ideal for maintenance use at remote locations. The HP911A has all the features of a full size programming terminal. (2 m cable for T1-16S is included)

- ◆ Ladder logic programming of T-series programmable controllers T1/T1S, T2/T2E/T2N and T3. (other than T3H and S2T)
- ◆ Built-in EEPROM allows program copy between T-series controllers.
- ◆ Two display modes,
 - Normal: 5 lines and 12 columns
 - Zoom: Full device description
- ◆ Data monitor for I/O and internal registers.
- ◆ On-line data set & I/O force.
- ◆ Backlit LCD display for better operation in dim light.

Program Storage Module (RM102)



The RM102 is an external memory device, which can store T-series ladder logic programs for T1/T1S, T2/T2E/T2N, T3/T3H and S2T controllers.

By using the RM102, program transfer from a master T1-16S can be easily done without the need for a computer or hand held programmer. Two-button operation makes program load/save accessible for anyone. However, if a password is used in the T1-16S, the password in the RM102 must match before a program load can be executed.

Multi-drop Adapter (CU111)



The CU111 is an RS232C/RS485 converter, which enables the T1/T1S programmer port to be linked with a master computer. By using the CU111, up to 32 T1/T1Ss can be connected to a master computer or higher level controller. The T1-16S standard version (without built-in RS485 port) can be linked via RS485 using the CU111. The master computer can run a SCADA, HMI or DDE Server software. The T-PDS programming software can also be used through the RS485 link to program or monitor each individual T1/T1S. (see diagram on page 6)

Instruction Set

Basic Instructions

| Symbol | Name |
|---------|--------------------------------------|
| - - | NO contact |
| - / - | NC contact |
| - ↑ - | Transitional contact (rising edge) |
| - ↓ - | Transitional contact (falling edge) |
| -()- | Coil |
| * ()- | Forced coil (debugging purpose only) |
| - - | Inverter |
| -(I)- | Invert coil |
| - P - | Positive pulse contact |
| - N - | Negative pulse contact |
| -(P)- | Positive pulse coil |
| -(N)- | Negative pulse coil |
| MCS | Master control set |
| MCR | Master control reset |
| JCS | Jump control set |
| JCR | Jump control reset |
| TON | ON delay timer |
| TOF | OFF delay timer |
| SS | Single-shot timer |
| CNT | Counter |
| END | End |

Function Instructions

| FUN No. | Symbol | Name |
|---------|--------|---------------------------------|
| 18 | MOV | Data transfer |
| 19 | DMOV | Double-word data transfer |
| 20 | NOT | Invert transfer |
| 22 | XCHG | Exchange |
| 24 | TINZ | Table initialize |
| 25 | TMOV | Table block transfer |
| 26 | TNOT | Table invert transfer |
| 27 | + | Addition |
| 28 | - | Subtraction |
| 29 | * | Multiplication |
| 30 | / | Division |
| 31 | D+ | Double-word addition |
| 32 | D- | Double-word subtraction |
| 35 | +C | Addition with carry |
| 36 | -C | Subtraction with carry |
| 39 | U* | Unsigned multiplication |
| 40 | U/ | Unsigned division |
| 41 | DIV | Unsigned double/single division |
| 43 | +1 | Increment |
| 45 | -1 | Decrement |
| 48 | AND | AND |
| 50 | OR | OR |
| 52 | EOR | Exclusive OR |
| 56 | MAVE | Moving average |
| 61 | DFL | Digital filter |
| 62 | HTOA | HEX to ASCII conversion |
| 63 | ATOH | ASCII to HEX conversion |
| 64 | TEST | Bit test |
| 68 | SHR1 | 1 bit shift right |
| 69 | SHL1 | 1 bit shift left |
| 70 | SHRn | n bits shift right |
| 71 | SHLn | n bits shift left |
| 74 | SR | Shift register |
| 75 | DSR | Bi-directional shift register |

Function Instructions

| FUN No. | Symbol | Name |
|---------|--------|-----------------------------------|
| 78 | RTR1 | 1 bit rotate right |
| 79 | RTL1 | 1 bit rotate left |
| 80 | RTRn | n bits rotate right |
| 81 | RTLn | n bits rotate left |
| 90 | MPX | Multiplexer |
| 91 | DPX | Demultiplexer |
| 96 | > | Greater than |
| 97 | >= | Greater than or equal |
| 98 | = | Equal |
| 99 | <> | Not equal |
| 100 | < | Less than |
| 101 | <= | Less than or equal |
| 102 | D> | Double-word greater than |
| 103 | D>= | Double-word greater than or equal |
| 104 | D= | Double-word equal |
| 105 | D<> | Double-word not equal |
| 106 | D< | Double-word less than |
| 107 | D<= | Double-word less than or equal |
| 108 | U> | Unsigned greater than |
| 109 | U>= | Unsigned greater than or equal |
| 110 | U= | Unsigned equal |
| 111 | U<> | Unsigned not equal |
| 112 | U< | Unsigned less than |
| 113 | U<= | Unsigned less than or equal |
| 114 | SET | Device / register set |
| 115 | RST | Device / register reset |
| 118 | SETC | Set carry |
| 119 | RSTC | Reset carry |
| 120 | ENC | Encode |
| 121 | DEC | Decode |
| 122 | BC | Bit count |

| FUN No. | Symbol | Name |
|---------|--------|------------------------------|
| 128 | CALL | Subroutine call |
| 129 | RET | Subroutine return |
| 132 | FOR | FOR-NEXT loop (FOR) |
| 133 | NEXT | FOR-NEXT loop (NEXT) |
| 137 | SUBR | Subroutine entry |
| 140 | EI | Enable interrupt |
| 141 | DI | Disable interrupt |
| 142 | IRET | Interrupt return |
| 143 | WDT | Watchdog timer reset |
| 144 | STIZ | Step sequence initialization |
| 145 | STIN | Step sequence input |
| 146 | STOT | Step sequence output |
| 147 | F/F | Flip flop |
| 149 | U/D | Up / down counter |
| 154 | CLND | Calendar set |
| 155 | CLDS | Calendar operation |
| 156 | PID3 | Pre-derivative real PID |
| 160 | UL | Upper limit |
| 161 | LL | Lower limit |
| 162 | MAX | Maximum value |
| 163 | MIN | Minimum value |
| 164 | AVE | Average value |
| 165 | FG | Function generator |
| 180 | ABS | Absolute value |
| 182 | NEG | Two's complement |
| 183 | DNEG | Double-word two's complement |
| 185 | 7SEG | 7-segment decode |
| 186 | ASC | ASCII conversion |
| 188 | BIN | Binary conversion |
| 190 | BCD | BCD conversion |
| 235 | I/O | Direct input / output |
| 236 | XFER | Expanded data transfer |

Specifications

Functional specifications

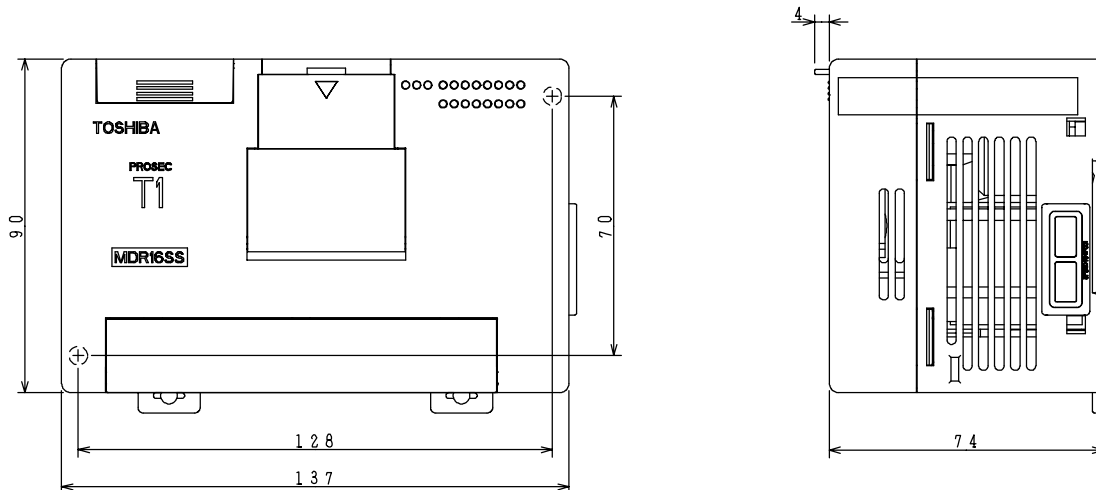
| Model | T1-16S Standard version | T1-16S Enhanced version |
|--------------------------|--|--|
| Control method | Stored program, cyclic scan system | |
| Scan system | Floating scan or constant scan (10 to 200ms, 10ms units) | |
| I/O update | Batch I/O refresh (direct I/O instruction available) | |
| Program memory | RAM (capacitor back-up) and EEPROM (no back-up battery required) | |
| RAM memory buck-up | 1 hour at 25°C by built-in capacitor, 2 years at 25°C by optional battery | |
| Program capacity | 8K steps (4K or 8K mode) | |
| Programming language | Ladder diagram with function block | |
| Instructions | Basic: 21, Function: 97 | |
| Execution speed | 1.4µs/contact, 2.3µs/coil, 4.2µs/16-bit transfer, 6.5µs/16-bit addition | |
| Program types | 1 main program 1 sub-program (initial program) 1 timer interrupt (interval: 5 to 1000ms, 5ms units) 4 I/O interrupt (high-speed counter and interrupt input) 256 subroutines (up to 3 levels of nesting) | |
| I/O capacity | Main unit: 16 points (8 inputs/8 outputs) Expansion I/O: Up to 8 I/O modules (expandable up to 144 points) | |
| User data | I/O register | 512 points/32 words (X/XW, Y/YW) |
| | Auxiliary relay | 4096 points/256 words (R/RW) |
| | Special relay | 1024 points/64 words (S/SW) |
| | Timer | 256 points (T./T), 64 @ 0.01s & 192 @ 0.1s |
| | Counter | 256 points (C./C) |
| | Data register | 4096 words (D) |
| | Index register | 3 words (I, J, K) |
| Real-time-clock/calendar | No | Yes, (±60s/month) |
| Special I/O functions | High speed counter (2 single or 1 quadrature) or Interrupt input (2 points), Adjustable analog register (2 points), Pulse output (CW+CCW or pulse+direction) or PWM output | |
| Communications interface | 1 port of RS232C (programmer port) ... Programmer or Computer link protocol | |
| | - | 1 port of RS485 - Computer link mode (Programmer or Computer), - Data link mode, - Free ASCII mode, - Inverter (VF-A7/S9) connection mode |
| Debug support function | TOSLINE-F10 remote (by using TOSLINE-F10 module) | |
| | Sampling trace (8 devices and 3 register - 256 times) | |
| | On-line programming (at 4K mode) | |
| | On-line EEPROM write | |

General specifications

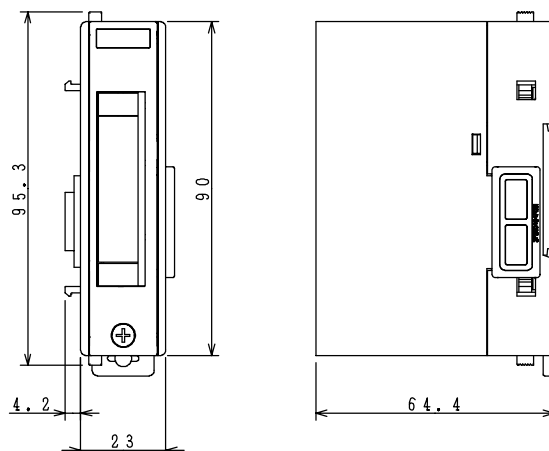
| Model | T1-16S AC power type | T1-16S DC power type |
|------------------------------|---|----------------------|
| Power supply voltage | 100 to 240Vac (+10%, -15%), 50/60 Hz | 24Vdc (+20%, -15%) |
| Power consumption | 45 VA or less | 18 W or less |
| Retentive power interruption | 10 ms or less | |
| Internal 5Vdc power output | Max. 1.5A for I/O modules (when 24Vdc service power is not used) | |
| 24Vdc service power output | Max. 0.2A | None |
| Withstand voltage | 1500Vac for 1 minute (between power terminals and ground terminal) | |
| Ambient temperature | 0 to 55°C (operation), -20 to 75°C (storage) | |
| Ambient humidity | 5 to 95% RH, no condensation | |
| Noise immunity | 1000V p-p/1μs, 89/336/EEC (EMC directive) | |
| Vibration immunity | 9.8m/s ² (1g), (for 30 minutes per axis, on 3 mutually perpendicular axis) | |
| Shock immunity | 98m/s ² (10g), (3 shocks per axis, on 3 mutually perpendicular axis) | |
| Standard | UL/c-UL, CE | |

External Dimensions

◆ T1-16S main unit



◆ I/O module



[mm]

Input/Output specifications

T1-16S main unit

| Model | | T1-16S main unit | |
|--------|---------------------|--|----------------------------------|
| Input | Input points | 8 points (8 points/common) | |
| | Rated input voltage | 24Vdc, +10/-15 % | |
| | Rated input current | 7mA (at 24Vdc) | |
| | Min. ON voltage | 15Vdc | |
| | Max. OFF voltage | 5Vdc | |
| | ON/OFF delay time | 0 to 15ms (user selectable, default setting is 10ms) | |
| Output | Relay output | Output points | 6 points (6 points/common) |
| | | Rated load voltage | 240Vac/24Vdc (max.) |
| | | Max. load current | 2A/point (resistive), 4A/common |
| | | Leak current at OFF | None |
| | | Minimum load | 5Vdc - 10mA (50mW) |
| | | ON/OFF delay time | 10ms or less |
| | DC output | Output points | 2 points (2 points/common) |
| | | Rated load voltage | 24Vdc |
| | | Max. load current | 0.5A/point (resistive) |
| | | Leak current at OFF | 0.1mA or less |
| | | ON/OFF delay time | 0.1ms or less |
| | | External connection | Terminal block (fixed), M3 screw |

I/O modules

| Discrete I/O | | TDI116M*S | TDD116M*S | TDO116M*S | TRO108M*S |
|----------------------------|---------------------|-------------------------------|---------------------------------|--------------------|----------------------|
| Input | Input type | DC input, current sink/source | | - | - |
| | Input points | 16 points (8p/com) | 8 points (8p/com) | | |
| | Rated input voltage | 24Vdc, +10/-15% | 24Vdc, +10/-15% | | |
| | Rated input current | 5mA | 5mA | | |
| | Min. ON voltage | 18Vdc | 18Vdc | | |
| | Max. OFF voltage | 6Vdc | 6Vdc | | |
| | ON/OFF delay time | 10ms or less | 10ms or less | | |
| Output | Output type | - | Transistor output, current sink | - | Relay output |
| | Output points | - | 8 points (8p/com) | 16 points (8p/com) | 8 points (8p/com) |
| | Rated load voltage | - | 5-24Vdc, +10/-15% | 5-24Vdc, +10/-15% | 240Vac/24Vdc |
| | Max. load current | - | 0.1A/point | 0.1A/point | 1A/point (resistive) |
| | Leak current at OFF | - | 0.1mA or less | 0.1mA or less | None |
| | ON/OFF delay time | - | 1ms/2ms or less | 1ms/2ms or less | 10ms or less |
| External connection | 24-pin connector | 24-pin connector | 24-pin connector | Terminal block | |
| Current consumption (5Vdc) | 50mA | 50mA | 50mA | 260mA | |

| Analog I/O | | TADI21M*S | TAD131M*S | TDA121M*S | TDA131M*S | TTC111M*S |
|----------------------------|------------------|-----------------|-----------------|-----------------|-----------------|------------------------|
| Input | Input type | Analog input | Analog input | - | - | Thermocouple input |
| | Input points | 1 channel | 1 channel | | | 1 channel |
| | Input signal | 0-5V/0-20mA | ±10V | | | Type K, J, or E, ±50mV |
| | Resolution | 12-bit (1/4000) | 12-bit (1/4000) | | | 12-bit |
| | Accuracy | ±0.5% at 25°C | ±0.5% at 25°C | | | ±1% ±1°C |
| | Conversion cycle | 2ms | 2ms | | | 20ms |
| Output | Output type | - | - | Analog output | Analog output | - |
| | Output points | - | - | 1 channel | 1 channel | |
| | Output signal | - | - | 0-20mA | ±10V | |
| | Resolution | - | - | 12-bit (1/4000) | 12-bit (1/4000) | |
| | Accuracy | - | - | ±0.5% at 25°C | ±0.5% at 25°C | |
| | Conversion cycle | - | - | 2ms | 2ms | |
| External connection | Terminal block | Terminal block | Terminal block | Terminal block | Terminal block | |
| Current consumption (5Vdc) | 260mA | 260mA | 350mA | 240mA | 400mA | |

Ordering Information

| Item | Description | Type code | Part number | Remarks |
|---------------------|--|--------------------|--------------------------|-----------|
| T1-16S main unit | AC power supply, Standard version | T1-MDR16SC | TDR116S6C | |
| | AC power supply, Enhanced version | T1-MDR16SS | TDR116S6S | |
| | DC power supply, Standard version | T1-MDR16SCD | TDR116S3C | |
| | DC power supply, Enhanced version | T1-MDR16SSD | TDR116S3S | |
| I/O module | 16 points DC input | DI116M | TDI116M*S | |
| | 8 points input & 8 points output combo | DD116M | TDD116M*S | |
| | 16 points DC output | DO116M | TDO116M*S | |
| | 8 points relay output | RO108M | TRO108M*S | |
| | 1 channel analog input, 0-5V/0-20mA | AD121M | TAD121M*S | |
| | 1 channel analog input, ±10V | AD131M | TAD131M*S | |
| | 1 channel analog output, 0-20mA | DA121M | TDA121M*S | |
| | 1 channel analog output, ±10V | DA131M | TDA131M*S | |
| | 1 channel thermocouple input, type K, J, E | TC111M | TTC111M*S | |
| | Data link module | TOSLINE-F10 remote | FR112M | TFR112M*S |
| DeviceNet slave | | | | UD |
| Peripheral | Programming tool T-PDS (for MS-DOS) | T-PDS DOS | TMM331SS | |
| | Programming tool T-PDS (for Windows) | T-PDS32 for Win | TMW33E2SS | |
| | Handy programmer (w/ 2m cable) | HP911A | THP911A*S | |
| | Program storage module | RM102 | TRM102**S | |
| | Multi-drop adapter | CU111 | TCU111**S | |
| | DDE server software | T-PSV | TPV33E2SS | |
| Cable and others | Programming tool T-PDS cable (5m) | CJ105 | TCJ105*CS | |
| | Battery | CR2032 | (Commercially available) | |
| | I/O connector, soldering type (for DI116M, DD116M, DO116M) | PT15S | TPT15S*AS | |
| | I/O connector, flat cable type (for DI116M, DD116M, DO116M) | PT15F | TPT15F*AS | |
| | Programmer port connector for computer link (w/ 2m cable) | PT16S | TPT16S*AS | |

UD stands for Under development.



Toshiba Corporation's quality management system in design, development and manufacturing of programmable controllers is approved to satisfy the quality management standard ISO9001.



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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For further information, please contact your nearest Toshiba Representative or International Operations-Producer Goods.

The data given in this brochure are subject to change without notice.

In Touch with Tomorrow

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