TOSHIBA
Leading Innovation ≫≫

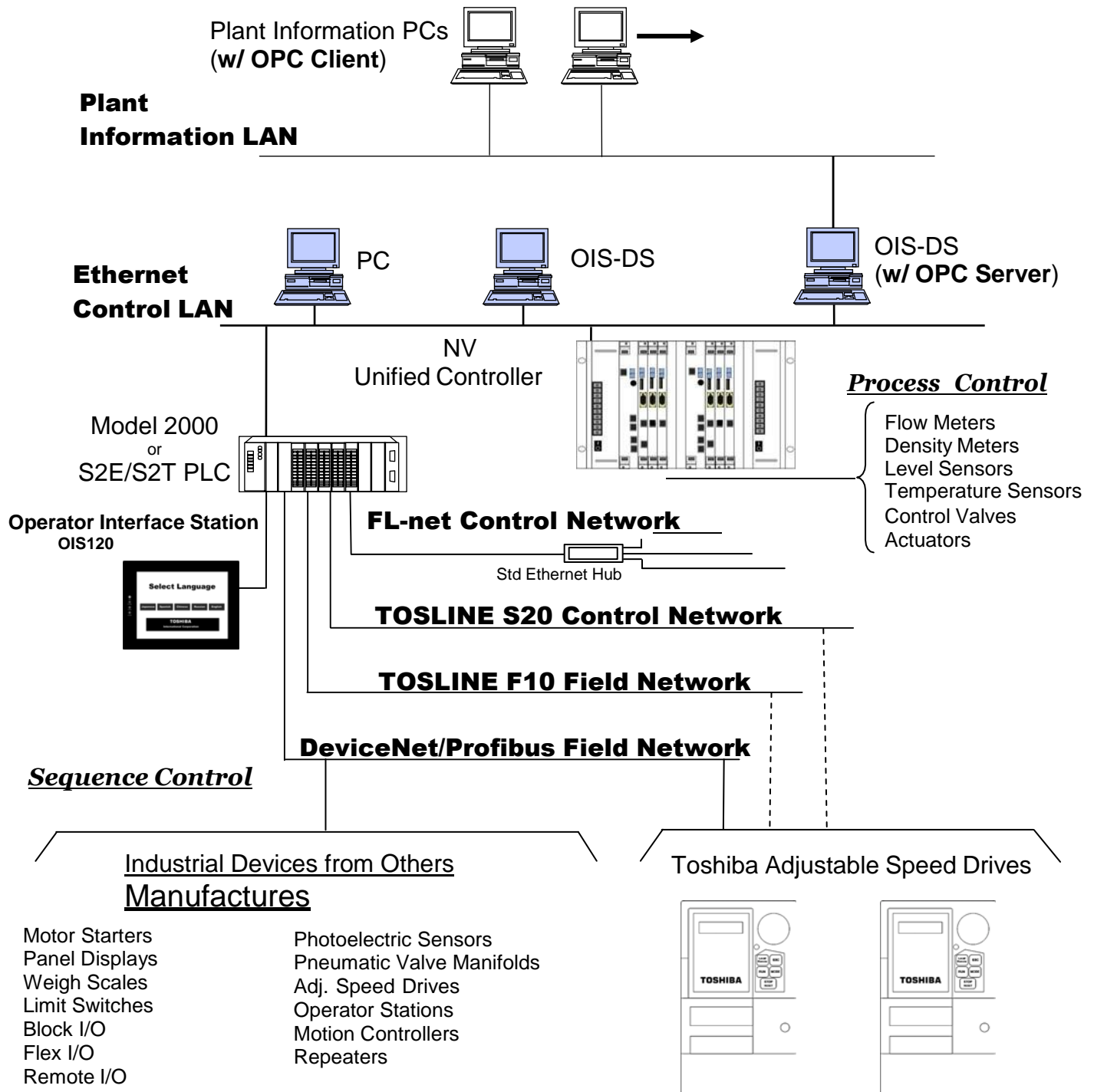# Programmable Controllers

Effective 10-09-1

PLC Models: T1, V200, T3, V2000
Operator Interface Stations,
& Special Items

Toshiba System Solution

DCS   SCADA   MMI/HMI

Plant Information PCs
(**w/ OPC Client**)

**Plant
Information LAN**

PC   OIS-DS   OIS-DS
(**w/ OPC Server**)

**Ethernet
Control LAN**

NV
Unified Controller

Process Control

Flow Meters
Density Meters
Level Sensors
Temperature Sensors
Control Valves
Actuators

Model 2000
or
S2E/S2T PLC

**Operator Interface Station
OIS120**

FL-net Control Network

Std Ethernet Hub

Select Language

TOSHIBA
Educational Corporation

TOSLINE S20 Control Network

TOSLINE F10 Field Network

DeviceNet/Profibus Field Network

Sequence Control

Industrial Devices from Others
Manufactures

Motor Starters
Panel Displays
Weigh Scales
Limit Switches
Block I/O
Flex I/O
Remote I/O

Photoelectric Sensors
Pneumatic Valve Manifolds
Adj. Speed Drives
Operator Stations
Motion Controllers
Repeaters

Toshiba Adjustable Speed Drives

TOSHIBA   TOSHIBA

Note: Please see current ODVA Catalog/WebSite for
complete listing of industrial devices from other
manufacturers
Ph. 954-340-5412, Internet http://www.odva.org
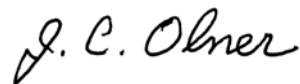
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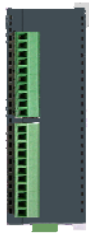Originated By:
J. C. Olner 10-6-30

Approved By:
G. Orchard 10-7-04

V200 Series

Stand Alone PLC
With 8 in & 8 out

Expandable PLC
with Ethernet Port

PART NO.	DESCRIPTION

CPU Modules

GPU200*3S	V200 CPU, Ethernet & USB Port, Requires 24 Vdc PS.
GPU288*3S	V200 CPU, 8 Inputs 24 Vdc, 2 Outputs 24 Vdc Transistor, 6 Outputs Relay, Requires 24 Vdc PS.
GPU232*3S	V200 CPU, 16 Inputs, 24 Vdc, 16 Outputs, 24 Vdc Transistor (PNP), Requires 24 Vdc PS.

Digital I/O Modules

GDI216**S	16 Inputs, 24 Vdc, 8p/com, sink/source
GDD288N*S	8 Inputs, 24 Vdc. 4p/com, 8 Outputs NPN, 4p/com
GDD288P*S	8 Inputs, 24 Vdc. 4p/com, 8 Outputs PNP, 4p/com
GDR288**S	8 Inputs, 24 Vdc. 4p/com, 8 Outputs Relay, 4p/com
GDO216N*S	16 Outputs, 24 Vdc Transistor, 8p/com, NPN
GDO216P*S	16 Outputs, 24 Vdc Transistor, 8p/com, PNP
GRO216**S	16 Outputs Relay, 8p/com

Analog I/O Modules

GAD208L*S	8 Analog Inputs, 4-20 mA, 0-10 Vdc (12 bit)
GRT208**S	8 Analog RTD Inputs, PT100/PT100.
GAA242**S	4 Analog Selectable Inputs, 4-20 ma, 0-10 Vdc, 0-50/100 mV, RTD, TC -- 2 Analog Outputs, 4-20 mA, 0-10 Vdc.
GDA204**S	4 Analog Outputs, 4-20 ma, 0-10 Vdc.

Communication Modules

GSM213**S	SMS Message Module--Under Development
GDN212**S	DeviceNet Slave Module--Under Development.
GPF212**S	Profibus DP Slave Module--Under Development
GEN250**S	Ethernet IP Module--Under Development

Cables

RC-P-009H-00	Connects GWY/OIS Plus to V200 Series PLC, RS232, 2 m.
RC-P-009I-00	Connects GWY/OIS Plus to V200 Series PLC, RS485, 2 m.
RC-P-046B-00	Connects OIS55/55E/V200 PLC to Toshiba G9/AS1 ASDs, RS485, 2 meters.
IBM-H-005-00	Programming Cable, For Download from Computer Serial Port to all OIS55/55E & V200 CPUs. Alternate, use USB printer cable.

Notes: 1. Requires Special Setup Software.
        2. Check for availability on new items.
        3. Standard USB printer cable can be used as programming cable.

T1 Series

T1-40S
Expansion
I/O Cards

PART NO.	DESCRIPTION

T1 Controllers

PART NO.	DESCRIPTION
TAR116-6S	T1-16, 8 Inputs 120 Vac, 6 Outputs Relay, 2 Outputs Triac, 120/240 Vac PS.
TDR128-3S	T1-28, 14 Inputs 24 Vdc, 12 Outputs Relay, 2 Outputs Transistor, 24 Vdc PS.
TDR140-3S	T1-40, 24 Inputs 24 Vdc, 14 Outputs Relay, 2 Outputs Transistor, 24 Vdc PS.
TDR116S3S	Super T1-16, RTC, RS485, 8 Inputs 24 Vdc, 6 Outputs Relay, 2 Outputs Transistor, 24 Vdc PS.
TDR116S6S	Super T1-16, RTC, RS485, 8 Inputs 24 Vdc, 6 Outputs Relay, 2 Outputs Transistor, 120/240 Vac PS.
TDR140S3S	Super T1-40, 24 Inputs 24 Vdc, 14 Outputs Relay, 2 Outputs Transistor, 24 Vdc PS, 8/4k RAM, RTC, Built-in Active RS485 Port.
TDR140S6S	Super T1-40, 24 Inputs 24 Vdc, 14 Outputs Relay, 2 Outputs Transistor, 120/240 Vac PS, 8/4k RAM, RTC, Built-in Active RS485 Port.
TAR140S6S	Super T1-40, 24 Inputs 120 Vac, 14 Outputs Relay, 2 Outputs Triac, 120/240 Vac PS., 8/4k RAM, RTC, Built-in Active RS485 Port.

T1-16S I/O Expansion

PART NO.	DESCRIPTION
TBU101--S	1 Slot Expansion Card Holder for T1-16S, Holds T1-40 I/O Expansion Card.
TBU104--S	4 Slot Expansion Card Holder for T1-16S, Holds T1-40 I/O Expansion Card.
TDD116M-S	8 Inputs 24 Vdc, 8 Outputs Transistor, Mounts on side of T1-16S, order connector separately (EX10-KIO20).
TDI116M-S	16 Inputs 24 Vdc, Mounts on side of T1-16S, order connector separately (EX10-KIO20).
TRO108M-S	8 Outputs Relay, Mounts on side of T1-16S.
TAD121M-S	1 Analog Input, 0 - 20 ma/1 - 5 Vdc, 12 bit, Mounts on side of T1-16S.
TAD131M-S	1 Analog Input, ±10 Vdc, 12 bit, Mounts on side of T1-16S.
TDA121M-S	1 Analog Output, 0 - 20 ma/1 - 5 Vdc, 12 bit, Mounts on side of T1-16S.
TDA131M-S	1 Analog Output, ±10 Vdc, 12 bit, Mounts on side of T1-16S.
TTC111M-S	1 Thermocouple Input, Type E, J, K or Millivolt, Mounts on side of T1-16S.

PART NO.	DESCRIPTION

| TDN111M-S | DeviceNet Slave Module, Mounts on side of T1-16S. |
| TFR112M-S | Tosline F10 Remote Station, Mounts on side of T1-16S. |

T1-40 I/O Expansion Cards

TDD116-BS	8 Inputs 24 Vdc, 8 Outputs Transistor, Fits inside T1-40, order connector separately (EX10-KIO20 or TPT15S-AS).
TDI116-BS	16 Inputs 24 Vdc, Fits inside T1-40, order connector separately (EX10-KIO20 or TPT15S-AS).
TDO116-BS	16 Outputs Transistor, Fits inside T1-40, order connector separately (EX10-KIO20 or TPT15S-AS).
TFR112-BS	Tosline F10 Remote Station, Fits inside T1-40.
TTC111-BS	1 Thermocouple Input, Type E, J, K or Millivolt, , Fits inside T1-40.
TAD121-BS	1 Analog Input, 0 - 20 ma/1 - 5 Vdc, 12 bit, Fits inside T1-40.
TAD131-BS	1 Analog Input, ±10 Vdc, 12 bit, Fits inside T1-40.
TDA121-BS	1 Analog Output, 0 - 20 ma/1 - 5 Vdc, 12 bit, Fits inside T1-40.
TDA131-BS	1 Analog Output, ±10 Vdc, 12 bit, Fits inside T1-40.
TPT15S-AS	Connector, Same as EX10-ANC32

T1-40 Digital Expansion Units

| TAR132E-S | 16 Inputs 120 Vac, 16 Outputs Relay, w/cable, 1 per T1-40. |
| TDR132E-S | 16 Inputs 24 Vdc, 16 Outputs Relay, w/cable, 1 per T1-40. |

Parts & Peripherals

| TPT1T4-AS | T1-40/Super T1-40 Removable Terminal Strip, 31 point. |
| TPT15F-AS | Connector, Flat ribbon cable. |

Cables

TCS1R2-CS	Replacement expansion cable for connecting TBU152/154 to T1-40.
EX10-KIO20	Cable for T1 Discrete I/O Modules or T2 Hi Density (32 Pt) I/O Modules, 2m, One end I/O connector other end pigtail.
TCJ105-CS	Programming Cable, Connects T1 Programming Port to HP911/Computer RS232 Port. 5m.
TKRS232T1	Programming Cable, Connects T1 Programming Port to Computer RS232 Port, 2m.

Programming

T-PDS	T Series Computer Programming Software, CD with all uers's manuals.includes info on older PLCs, MINIMUM COMPUTER = MS Windows XP or later.
TRM102--S	Program Storage Module (EEPROM), Load/Save/Compare programs without a computer or THP911 handy programmer.
THP911A-S	Handy Programmer THP911, Hand Held, For programming all T- Series Controllers, Includes built-in EEPROM for program storage, Includes cable for T1 controller. Requires adapter TCS7688-T2 for connection to T2 CPUs.

Notes: 1. Limited quantities, check for availability.

PART NO.   **DESCRIPTION**

T-Series Manuals

PART NO.	DESCRIPTION
UM-TS01-E001	T1 Basic Hardware and Functions.
UM-TS01-E031	T1-16S Basic Hardware and Functions.
UM-TS03-E025	THP911 Handy Programmer Operation Manual.
UM-TS01-E002	T1 Option I/O Cards and I/O Modules.
UM-TS01-E034	T1-16S I/O Modules.
UM-TS01-E003	T1 Computer Link Function (Memory Map and Protocol).
UM-TS01-E033	T1-16S Computer Link Function (Memory Map and Protocol).
UM-TS03-E045	T-PDS Windows Software Basic Operation Manual, Ver. 2
PRIMER-T Series	The T-Series PLC Primer, T1, T2, & V2000 PLC Basics. Includes information on T-PDS programming software.

Notes: 1. Limited quantities, check for availability.

V2000 Series

PART NO.	DESCRIPTION

T-Series Controller Modules

GPU612E*S	Sequence Control Module (S2E), User program capacity 32 kSteps, T-series Instruction Set, Uses T-PDS Programming Software.
GPU662T*S	Sequence Control Module (S2T), User program capacity 32 kSteps, T-series Instruction Set, Uses T-PDS Programming Software
GPU672T*S	Sequence Control Module (S2T), User program capacity 64 kSteps, T-series Instruction Set, Uses T-PDS Programming Software

Main/Expansion Racks

GBU643D*S	Base Rack for S2T/S2, 4 Station Bus Slots, no I/O slots. Not for S2E.
GBU648E*S	Base Rack for S2T/S2, 8 Slots (Up to 5 station bus slots). Not for S2E.
GBU664**S	Base Rack for S2E, 3 I/O Slots/ Expansion Rack for S2T/S2, 4 I/O Slots.
GBU666**S	Base Rack for S2E, 5 I/O Slots/ Expansion Rack for S2T/S2, 6 I/O Slots.
GBU668**S	Base Rack for S2E, 7 I/O Slots/ Expansion Rack for S2T/S2, 8 I/O Slots.
GIF661**S	Interface Module for Connecting Expansion Racks

Power Supplies

GPS632**S	24 Vdc power supply, For Main/Expansion Racks
GPS652**S	100 - 110 Vdc power supply, For Main/Expansion Rack
GPS693**S	120/240 Vac power supply, For Main/Expansion Racks, 24Vdc Service PS
GPS691**S	120/240 Vac power supply, For Main Rack, w/UPS Interface Connection.

Direct I/O Modules-Discrete

GIN653**S	AC Input Module, 16 points, 100 to 120 Vac
GIN663**S	AC Input Module, 16 points, 200 to 240 Vac
GDI632D*S	DC Input Module, 8 points, 12 to 24 Vdc, isolated between channels
GDI633**S	DC Input Module, 16 points, 12 to 24 Vdc

Notes: 1. Please check with Houston for stock of special modules.
2. Manuals can be downloaded from the website at no cost.

PART NO.	DESCRIPTION
GDI634**S	DC Input Module, 32 points, 24 Vdc
GDI635**S	DC Input Module, 64 points, 24 Vdc
GDI635H*S	DC Input Module, High Speed, 64 points, 24 Vdc.
GDI653**S	DC Input Module, 16 points, 100 to 110 Vdc, 0.1 A/point, Sink
GCD633**S	DC Input Module, Change Detect, 16 points, 12 to 24 Vdc.
GDO633**S	DC Output Module, 16 points, 5 to 24 Vdc, 1 A/point, Sink (source load)
GDO633P*S	DC Output Module, 16 points, 5 to 24 Vdc, 1 A/point, Source
GDO634**S	DC Output Module, 32 points, 5 to 24 Vdc, 0.1 A/point, Sink
GDO635**S	DC Output Module, 64 points, 5 to 24 Vdc, 0.1 A/point, Sink
GAC663A*S	AC Output Module, 12 points, 100 to 240 Vac, 1 A/point
GRO662S*S	Relay Output Module, 8 points (isolated), 240 Vac/24Vdc (max.), 2 A/point
GRO663**S	Relay Output Module, 16 points, 240 Vac/24 Vdc (max.), 2 A/point

Direct I/O Modules-Analog

GAD624**S	Analog Input Module, 4 channels, 1-5 Vdc / 4-20 mA, 12-bit.
GAD624L*S	Analog Input Module, 4 channels, 1-5 Vdc / 4-20 mA, 8-bit
GAD628S*S	Analog Input Module, 8 channels isolated, 0-5 V, 0-20 mA, 12 bit.
GAD634L*S	Analog Input Module, 4 channels, 0-10 V input, 8-bit
GAD638S*S	Analog Input Module, 8 channels (isolated), ± 10 Vdc input, 12-bit.
GAD668**S	Analog Input Module, 8 channels, 0-5 V, 0-20 mA, ± 10 V, 16-bit
GAD674**S	Analog Input Module, 4 channels, ± 10 V input, 12-bit
GRT614**S	RTD Input Module, 4 channels, Pt100 input, 12-bit
GTC618**S	Thermocouple Input Module, 8 channels, E, J, K, 16-bit
GDA622**S	Analog Output Module, 2 channels, 1-5V, 4-20 mA output, 12-bit
GDA622L*S	Analog Output Module, 2 channels, 1-5 Vdc / 4-20 mA, 8-bit
GDA624S*S	Analog Output Module, 4 channels (isolated), 0-20 mA, 16-bit, Output Hold Option.
GDA664**S	Analog Output Module, 4 channels, 0-5 V, 0-20 mA, ± 10 V, 16-bit
GDA672**S	Analog Output Module, 2 channels, ±10V output, 12-bit

Cables

GCS6R3*CS	Expansion Cable, 0.3 m length.
GCS6R5*CS	Expansion Cable, 0.5 m length.
GCS6R7*CS	Expansion Cable, 0.7 m length.
GCS6*1*CS	Expansion Cable, 1.2 m length.

Notes: 1. Please check with Houston for stock of special modules.
         2. Manuals can be downloaded from the website at no cost.

PART NO.	DESCRIPTION

TKS20-OPTIC   Tosline S-20 Fiber Optic Cable, 2m. For test and demo.

TKIO20   Cable for Hi Density PLC I/O Modules, 24 Vdc. One end I/O connector other end pigtail. 1/32 pt module, 2/64 pt module, 2m length.

Intelligent I/O Modules

GCF611**S   Communications Module, 1 ch, RS232C, ASCII.

GCF612**S   Communications Module, 2 ch RS232/RS485, ASCII/binary, S2T only.

GPI632**S   Pulse Input Module, 2 channels, up to 50 kpps, 5/12/24 V input, 24-bit counter

GPI672**S   Pulse Input Module, 2 channels, up to 50 kpps, RS422 input, 24-bit counter

Network Modules

GDN611A*S   DeviceNet Scanner Module

GPF611**S   Profibus DP Master Module

GPF612**S   Profibus DP Slave Module

GUN611**S   TOSLINE-F10, Single bus, twisted paired-cable, Master station

GUN612**S   TOSLINE-F10, Single bus, twisted paired-cable, Slave station

GFL612**S   FL-Net Master, Ver. 2.00.

GFL654**S   FL-Net Remote I/O Station, Ver.2. CPU Module not Required.

GEN651A*S   Ethernet Module, Single bus, 100 Base-TX.

GSN621**S   TOSLINE-S20, Single bus, coaxial cable, S2E/S2 systems only.

GSN622**S   TOSLINE-S20, Single bus, optical cable, S2E/S2 systems only.

GSN625**S   TOSLINE-S20, Single bus coaxial cable, S2T only.

GSN626**S   TOSLINE-S20, Single bus optical cable, S2T only.

GSN627**S   TOSLINE-S20LP, Double loop optical cable, S2T/S2 only.

Network Peripherals

FDI633-K   Tosline F10 Block Input, Dry Contact (for NPN outputs),16 Pts.

FDO633-K   Tosline F10 Block Output, Transistor 16 Pts.

FRO663-K   Tosline F10 Block Output, Relay, 16 Pts. 4 pts/common.

FRP611AK   Tosline F10 Repeater, Extends the length of a Tosline F10 system, 2 per system max, 24 Vdc PS.

FRP613AK   Tosline F10 Repeater, Extends the length of a Tosline F10 system, Fiber Optic Link between Repeaters, 2 per F10 Network, 24 Vdc PS.

Notes: 1. Please check with Houston for stock of special modules.
         2. Manuals can be downloaded from the website at no cost.

PART NO.	DESCRIPTION
SSASC22-US	Tosline S20 Fiber Optic Active Star Coupler, Connects 10 S20 Stations (PLCs, ASDs, etc.) in a Star Configuration.
SSIF21-US	Tosline S20 SIF Station, R232 & Coax, Provides a Tosline S20 station for a host computer.
SSIF22-US	SIF Station, RS232 & Fiber optic connector.
SASC25-US	Tosline S20 Fiber Optic Active Star Coupler, Connects 2 F01 & 8 F07 S20 Stations in a Star Configuration.

Programming

T-PDS	T Series Computer Programming Software, CD with all uers's manuals.includes info on older PLCs, MINIMUM COMPUTER = MS Windows XP or later.
S-LS	Tosline S20 S-LS Windows Programming Software, Incls 3.5" Disks, User's Manual. Used to set up Tosline S20 modules and SIF stations
T-DNW	T Series DeviceNet Wizard Software, MS Windows 95/98/NT. Requires DeviceNet Interface, (AB 1770-KFD RS232 module or SST DeviceNet PCMCIA card)
TCJ905-CS	Programming Cable, Connects T2/T3 Programming Port to HP911 Handy Programmer/Computer RS232 Port, 5 m.
TKRS232	Programming Cable, Connects T2/T3 Programming Port to Computer RS232 Port, 2 m. All T-Series, S2E & S2T Processors.

Parts & Peripherals

GPT9R2*AS	Spare Thermister for TTC218/GTC618 Thermocouple Input Card
GSP600*AS	Module, Blank
GSP691**S	Module, Blank with cover for Custom I/O Card.
GBT611*AS	Battery, Spare, for S2/L2 CPU Modules.

T-Series Manuals

UM-TS03-E004	T Series Instruction Set, Includes Ladder, Function Blocks & SFC.
UM-TS03-E045	T-PDS Windows Software Basic Operation Manual, Ver. 2.
UM-TS03-E008	T-Series Computer Link, Protocol & Memory Map.
6F8C0926	S2T User's Manual; Basic Hardware, Specifications, I/O Modules & Troubleshooting, for CPU662T*S/CPU672T*S.
6F8C0928	S2T User's Manual; Basic Programming, Internal Operation & Program Debugging.

Notes: 1. Please check with Houston for stock of special modules.
    2. Manuals can be downloaded from the website at no cost.

PART NO.	DESCRIPTION
6F8C1094	S2E User's Manual; Basic Hardware, Specifications, I/O Modules & Troubleshooting, for CPU612E*S.
6F8C1132	S2E User's Manual; Basic Programming, Internal Operation & Program Debugging, for CPU612E*S.
6F8C1147	Profibus Module User's Manual for S2E/S2T.

V-Series Manuals

6F8C0841	I/O Manual, Pulse Input Module. Same as UM-TS02-E021 for S2E/S2T.
6F8C0843	I/O Manual, ASCII Communications Module. Same as UM-TS02-E013 for S2E/S2T.
6F8C0860	I/O Manual, Intelligent Analog Modules. Same as UM-TS02-E026 for S2E/S2T.
6F8C0979	Network Manual, Ethernet Module for S2/S2T.
6F3B0356	Network Manual, TOSLINE S20LP for S2T.
6F3B0357	Network Manual, TOSLINE S20 S-LS Software User's manual for S2E/S2T.
6F8C0840	Network Manual, TOSLINE S20 for S2/S2E/S2T.
6F3B0364	Network Manual, DeviceNet Instruction Manual for S2E/S2T. Same as UM-TS02-E016.
6F8C0845	Network Manual, DeviceNet Instruction Manual for S2.
6F8C0890	Network Manual, TOSLINE S20 User's Manual for S2E/S2T.
DeviceNetWizard1	Network Manual, DeviceNet Wizard Cofiguration Manual for S2/S2E/S2T.
DeviceNetWizard2	Network Manual, DeviceNet Wizard User's Manual for S2/S2E/S2T.
6F8C1068	Network Manual, FL-net User's manual for S2E/S2T.
PRIMER-T Series	The T-Series PLC Primer for T1, T2, & V2000 PLC. Basic information on T-PDS programming software, application examples, advanced information.

Notes: 1. Please check with Houston for stock of special modules.
2. Manuals can be downloaded from the website at no cost.

T3 Series

PART NO.   **DESCRIPTION**

T3 CPUs
TPU325H-S   High Speed CPU, 32K RAM, EEPROM
TPU326H-S   High Speed CPU, 64K RAM, EEPROM

T3 Power Supplies
TPS332--S   24 Vdc PS
TPS361--S   120/240 Vac PS, 50/60 Hz.

T3 Racks
TBU315--S   5 Slot Base
TBU31A--S   10 Slot Base
TBU356--S   6 Slot Exp.
TBU35B--S   11 Slot Exp.

T3 Expansion Interface
TIF311--S   For Base Unit (Standard)
TIF321--S   For Base Unit, T3H, 2 Channel.
TIF351--S   For Expansion Unit (Standard)
TIF312--S   For Base Unit, T3/T3H, 1 Channel, Long distance expansion.
TIF352--S   For Expansion Unit, Long distance expansion, middle unit.
TIF353--S   For Expansion Unit, Long distance expansion, end unit.

T3 Cables
TCS3R5-CS   Exp Cable, Standard, 0.5m, 50 pin connectors.
TCS301-CS   Exp Cable, Standard, 1.0m, 50 pin connectors.
TCS302-CS   Exp Cable, Standard, 2.0m, 50 pin connectors.
TCL3R5-CS   Exp Cable, Long Distance, 0.5m, 68 pin connectors.
TCL301-CS   Exp Cable, Long Distance, 1.0m, 68 pin connectors.
TCL305-CS   Exp Cable, Long Distance, 5.0m, 68 pin connectors.
TCL310-CS   Exp Cable, Long Distance, 10.0m, 68 pin connectors.

Notes: 1. The T3 is a large system PLC. They are not stock items in Houston.
        2. T3s are available on a project/replacement basis, please consult Toshiba.

PART NO.	DESCRIPTION
TCL320-CS	Exp Cable, Long Distance, 20.0m, 68 pin connectors.
TCL340-CS	Exp Cable, Long Distance, 40.0m, 68 pin connectors.

T3 I/O Modules

TDI334--S	Input, 12-24 Vdc, 32 Points
TDI334H-S	Input, 12-24 Vdc, 32 Points, High Speed
TIN354-S	Input, 120 Vac, 32 Points
TIN364--S	Input, 240 Vac, 32 Points
TCD332--S	Input, Status change detect, 8 Points
TDI335H-S	Input, 24 Vdc, 64 Points, High Speed
TDI335--S	Input, 24 Vdc, 64 Points
TDI344--S	Input, 48 Vdc, 32 Points
TPI312--S	High Speed Pulse Input, 5-12 Vdc, 50 Khz, 2 Ch.
TRO363S-S	Output, Relay, 250 Vac/30 Vdc, 16 Points Isolated, 2A/Point.
TRO364--S	Output, Relay, 250 Vac/30 Vdc, 32 Points, 2A/Point
TAC363--S	Output, Triac, 120 Vac, 16 Points, 2A/Point
TAC364--S	Output, Triac, 120 Vac, 32 Points, 0.5A/Point
TDO333--S	Output, Transistor, 24 Vdc, 16 Points, 2A/Point
TDO334--S	Output, Transistor, 24 Vdc, 32 Points, 0.5A/Point
TDO335--S	Output, Transistor, 24 Vdc, 64 Points, 0.15A/Point
TDO344--S	Output, Transistor, 48 Vdc, 32 Points, 2A/Point (Current Sink)
GSP700*AS	Blank Slot Filler
TDA364--S	Analog Output, Voltage, (+/-) 5 Vdc, (+/-) 10 Vdc, 0-5 Vdc, 0-10 Vdc, 4 Ch.
TDA374--S	Analog Output, Current, 0-20 ma, 4-20 ma, 4 Ch.
TAD368--S	Analog Input, (+/-) 5 Vdc, (+/-) 10 Vdc, 0-20 ma, 4-20 ma, 0-5 Vdc, 1-5 Vdc, 8 Ch.
TAD318--S	Analog Input, 0-5 Vdc, 12 bit, 8 Ch. Isolated.
TAD328--S	Analog Input, 0-20 ma, 12 bit, 8 Ch. Isolated.
TAD338--S	Analog Input, +/- 10 Vdc, 12 bit, 8 Ch. Isolated.
TAS311--S	ASCII Interface

T3 Data Link Modules

TDN311--S	DeviceNet Scanner Module, Mounts in any I/O slot, 128 words, Message strobe & poll, Connects to 63 slave devices.
FMS311-M	Tosline F-10 Data Link Module, Master Station, Wire, 750/250 Kbps, 0.5 /1 Km Max, 32 Stations Max.

Notes: 1. The T3 is a large system PLC. They are not stock items in Houston.
2. T3s are available on a project/replacement basis, please consult Toshiba.

PART NO.	DESCRIPTION
FRS311-M	Tosline F-10 Data Link Module, Remote Station, Wire, 750/250 Kbps, 0.5 /1 Km Max, 32 Stations Max.
TPF311**S	Profibus Data Link Module, Master Module
TPF312**S	Profibus DP Data Link Module, Slave Module
SSN321-MS	Tosline S-20 Data Link Module, Coax, 2 Mbps.
SSN322-MS	Tosline S-20 Data Link Module, Fiber Optic, 2 Mbps.
SSN323-MS	Tosline S-20 Data Link Module, Coax/Fiber Optic, 2 Mbps.
SSN325-MS	Tosline S-20 Data Link Module, Optical Loop, 2 Mbps, T3H only.
TEN311--S	Ethernet Module, 10 Mbps, 10Base5/10Base2, 4 max/T3H CPU.

Network Peripherals

FDI633-K	Tosline F10 Block Input, Dry Contact (for NPN outputs),16 Pts.
FDO633-K	Tosline F10 Block Output, Transistor 16 Pts.
FRO663-K	Tosline F10 Block Output, Relay, 16 Pts. 4 pts/common.
FRP611AK	Tosline F10 Repeater, Extends the length of a Tosline F10 system, 2 per system max, 24 Vdc PS.
FRP613AK	Tosline F10 Repeater, Extends the length of a Tosline F10 system, Fiber Optic Link between Repeaters, 2 per F10 Network, 24 Vdc PS.
SSASC22-US	Tosline S20 Fiber Optic Active Star Coupler, Connects 10 S20 Stations (PLCs, ASDs, etc.) in a Star Configuration.
SSIF21-US	Tosline S20 SIF Station, R232 & Coax, Provides a Tosline S20 station for a host computer.
SSIF22-US	SIF Station, RS232 & Fiber optic connector.
SASC25-US	Tosline S20 Fiber Optic Active Star Coupler, Connects 2 F01 & 8 F07 S20 Stations in a Star Configuration.

T3 Special I/O Modules

TMC352--S	Motion Control Module

Parts & Peripherals

EX25SER6	Battery, Optional for T2/T3 CPUs, 3.6V, 2,000 mAH, Includes connector
TME914-ASH	T2/T3 Memory Card 256K SRAM, Includes TBT921-ASH Battery

Programming

T-PDS	T Series Computer Programming Software, CD with all user manuals,includes info on older PLCs, MINIMUM COMPUTER = MS Windows XP or later.
S-LS	Tosline S20 S-LS Windows Programming Software, Incls 3.5" Disks, User's Manual. Used to set up Tosline S20 modules and SIF stations
T-DNW	T Series DeviceNet Wizard Software, MS Windows 95/98/NT. Requires DeviceNet Interface, (AB 1770-KFD RS232 module or SST DeviceNet PCMCIA card)

Notes: 1. The T3 is a large system PLC. They are not stock items in Houston.
2. T3s are available on a project/replacement basis, please consult Toshiba.

PART NO.	DESCRIPTION
TCJ905-CS	Programming Cable, Connects T2/T3 Programming Port to HP911 Handy Programmer/Computer RS232 Port, 5 m.
TKRS232	Programming Cable, Connects T2/T3 Programming Port to Computer RS232 Port, 2 m. All T-Series, S2E & S2T Processors.
TKRS485	Computer Link Cable, Connects T2/T3 RS485 Port to 2 m Pigtail.

T-Series Manuals

UM-TS03-E025	THP911 Handy Programmer Operation Manual.
UM-TS03-E004	T Series Instruction Set, Includes Ladder, Function Blocks & SFC.
UM-TS03-E045	T-PDS Windows Software Basic Operation Manual, Ver. 2
UM-TS03-E008	T-Series Computer Link, Protocol & Memory Map.
UM-TLF10-E001	Tosline F10 Data Highway Manual.
UM-TLS20-E001	Tosline S20 Data Highway manual, SIF Station manual, Active star coupler, & S-LS setup software manual.
UM-TS03-E002	T3 Users Manual, Hardware
UM-TS03-E003	T3 Users Manual, Features & Setup for Programming
UM-TS03-E016	T3 Analog Input Module, AD368
UM-TS03-E017	T3 Analog Output Module, DA364
UM-TS03-E018	T3 Pulse Input Module, PI312
UM-TS03-E020	T3 ASCII Interface Module, AS311
PRIMER-T Series	The T-Series PLC Primer for T1, T2, & V2000 PLC. Basic information on T-PDS programming software, application examples, advanced information.

Notes: 1. The T3 is a large system PLC. They are not stock items in Houston.
2. T3s are available on a project/replacement basis, please consult Toshiba.

Operator Interface Stations

OIS60 Plus

OIS Plus
Clip-on I/O
Modules

OIS10 Plus
with Fixed
I/O

PART NO.	DESCRIPTION

Operator Interface Stations

OIS10	16 x 2 Character backlit LCD, 6 Operator Keys, 2 LEDs. NO PROGRAMMING- Messages & Functions are stored in PLC, Power from PLC. Comes with cable for T1.
OIS15	16 x 4 Character backlit LCD, 8 Operator Keys 4 LEDs, NO PROGRAMMING- Messages & Functions are stored in PLC, Power from PLC. Comes with cable for T1.
OIS40	20 x 4 Character backlit LCD. 8 Function keys, 8 LEDs, & 0 - 9 Number keys Connects to PLC programming port, power from PLC. Order all connection cables separately. Requires OISetup32 software.
OIS40R	20 x 4 Character backlit LCD. 8 Function keys, 8 LEDs, & 0 - 9 Number keys Connects to RS485 port, requires separate 24 Vdc PS. Order all connection cables separately. Requires OISetup32 Software.
OIS120	12.1" TFT Color Touchscreen, For Display of System Status, Alarms, Recipes, & Trending. Order cable for T1 or T2/T3/S2E/S2T separately. Requires OISetup32 software.

Operator Interface Stations, New

OIS10 Plus	16 x 2 Text with Multicolor Backlit LCD, numeric Keypad, 6 Function Keys w/built-in LEDs, Has built-in 8 -24 Vdc inputs, 6 Relay outputs, 2 - 24 Vdc NPN transistor outputs, requires OIS Plus setup software.
OIS12	16 x 2 Text with Multicolor Backlit LCD, Same as OIS10 Plus but no I/O, used for T/C access, message display, data value change for all Toshiba PLCs, Integrated Controllers and ASDs.
OIS20 Plus	3.1" Multicolor Backlit LCD, Numeric Keypad, 6 Function Keys, Has built-in 12 - 24 Vdc inputs, 6 Relay outputs, 2 - 24 Vdc NPN transistor outputs, requires OIS Plus setup software.
OIS55 Plus	3.5" TFT Color Touchscreen, Accepts 3 clip-on I/O modules, 24 Vdc PS, Requires OIS Plus setup software.
OIS60 Plus	6" TFT Color Touchscreen, Accepts 5 clip-on I/O modules, 24 Vdc PS, Requires OIS Plus setup software.
OIS60E Plus	6" TFT Color Touchscreen, Accepts 5 clip-on I/O modules, Ethernet Port, 24 Vdc PS, Requires OIS Plus setup software.

Notes: 1. Check for availability on new items, new dispays are replacing old displays.
2. Be sure to select proper connection cable.
3. New OIS can use standard USB printer cable for programming.

PART NO. DESCRIPTION

Clip-on I/O--Digital

TRPDIX1600	16 Inputs, 24 Vdc (sink/source).
TRPDIO0808N	8 Inputs, 24 Vdc (sink/source), 8 Outputs, Transistor, 24 Vdc, NPN.
TRPDIO0808P	8 Inputs, 24 Vdc (sink/source), 8 Outputs, Transistor, 24 Vdc, PNP.
TRPDOX0016N	16 Outputs Transistor, 24 Vdc, 0.5 A/each, NPN.
TRPDOX0016P	16 Outputs Transistor, 24 Vdc, 0.5 A/each, PNP.
TRPRO0012R	12 Outputs Relay, 24 Vdc - 240 Vac, 2 A each, 5 A/common .

Clip-on I/O--Analog

TRPAIO0202L	2 - 12 Bit inputs, 0-10 V, 4-20 mA, 2 - 12 Bit outputs, 0-10 V, 4-20 mA.
TRPAIO0400L	4 Inputs, 4-20 ma/0-10 Vdc, 12 bit.

Ciip-on Modules--Communications

TRPCOMCAN	CAN Module--Under Development
TRPCOMETH	Ethernet IP Module--Under Development
TRPCOMPRO	Profibus Slave Module--Under Development
TRPCOMSMS	SMS Modem Module--Under Development

Cables

EC-I-019A-00	Connects OIS40 to T1 Programming Port, 2 m
EC-I-019B-00	Connects OIS40 to T2E/T2N/T3/S2E/S2T Programming Port, 2 m.
EC-P-009J-00	Connects GWY to OIS Plus, RS232, 2 m (Profibus, CAN Open, DeviceNet).
EC-P-009K-00	Connects GWY to OIS Plus, RS485, 2 m (Profibus, CAN Open, DeviceNet).
EC-P-019A-00	Connects OIS40R/OIS55 Plus/60 Plus/OIS80/OIS120/GWY to T1 Programming Port, 2 m
EC-P-019B-00	Connects OIS40R/OIS55 Plus/60 Plus/OIS80/OIS120/GWY to T2/T3/S2E/S2T Programming Port, 2 m.
EC-P-046A-00	Connects OIS40R/OIS55 Plus/OIS60 Plus/OIS80/OIS120/GWY to T1/T2E/T3/S2E/S2T RS485 Port, Pigtail on PLC End, 2 m.
EC-P-046B-00	Connects OIS40R/OIS60 Plus/OIS80/OIS120/GWY to T2N/T3 RS485 Port (DB15 Connector), 2 m.
EC-P-050-00	Connects OIS40R/OIS60/OIS80/OIS120/GWY to S9/S11/VF-nC1/VF-nC3 TTL Port, 2 m.
EC-P-046C-00	Connects OIS Plus to Toshiba G9/AS1 ASDs, RS485, 2 m, .
RC-P-009H-00	Connects GWY/OIS Plus to V200 Series PLC, RS232, 2 m.
RC-P-009I-00	Connects GWY/OIS Plus to V200 Series PLC, RS485, 2 m.
RC-P-019A-00	Connects OIS55/55E to T1 Programming Port, 2 m
RC-P-019B-00	Connects OIS55/55E to T2E/T3/S2E/S2T programming port, 2 m.
RC-P-046A-00	Connects OIS55/55E to T1/T2E/S2E/S2T RS485 computer link port, 2 m

Notes: 1. Check for availability on new items, new dispays are replacing old displays.
        2. Be sure to select proper connection cable.
        3. New OIS can use standard USB printer cable for programming.

Special Items

GWY-610B
Modbus Ethernet
Gateway

RS485 to CMOS
Converter

PART NO.	DESCRIPTION
	Converters
TCNV485-232C	RS422/485 (2 wire/4 wire) to RS232/TTL, Requires 24 Vdc external PS.
TCNV485-CMOS	RS422/485 (2 wire/4 wire) to CMOS converter, RJ45 connector for Toshiba ASDs.
	Communications Interface
GWY-00	Gateway Protocol Converter, Modbus/Toshiba, Requires 24 Vdc external PS, Order cables separately.
GWY-300	Gateway Protocol Converter, CAN (J1939)/Toshiba, Requires 24 Vdc external PS. Order cables separately.
GWY-610-B	Gateway Protocol Converter,Modbus Ethernet TCP/IP to Toshiba PLC/ASD , Requires 24 Vdc external PS,. Order cables separately.
GWY-751	Gateway GSM Modem Module, Send Text Messages from PLC, Requires 24 Vdc external PS & phone company SIM CARD.
	Cables
EC-P-009J-00	Connects GWY to OIS Plus, RS232, 2 m (Profibus, CAN Open, DeviceNet).
EC-P-009K-00	Connects GWY to OIS Plus, RS485, 2 m (Profibus, CAN Open, DeviceNet).
EC-P-019A-00	Connects OIS40R/OIS55 Plus/60 Plus/OIS80/OIS120/GWY to T1 Programming Port, 2 m.
EC-P-019B-00	Connects OIS40R/OIS55 Plus/60 Plus/OIS80/OIS120/GWY to T2/T3/S2E/S2T Programming Port, 2 m.
EC-P-046A-00	Connects OIS40R/OIS55 Plus/OIS60 Plus/OIS80/OIS120/GWY to T1/T2E/T3/S2E/S2T RS485 Port, Pigtail on PLC end, 2 m.
EC-P-050-00	Connects OIS40R/OIS60/OIS80/OIS120/GWY to S9/S11/VF-nC1/VF-nC3 TTL Port, 2 m.
RC-P-009H-00	Connects GWY/OIS Plus to V200 Series PLC, RS232, 2 m.
RC-P-009I-00	Connects GWY/OIS Plus to V200 Series PLC, RS485, 2 m.

Notes: 1. Check for availability on new items.

TERMS & CONDITIONS

TOSHIBA INTERNATIONAL CORPORATION

13131 West Little York Road
Houston, Texas 77041 Fax: 713-466-8773   Revision Date: April 27, 1999.

STANDARD TERMS AND CONDITIONS OF SALE (dated April 27, 1999)

EXCEPT AS OTHERWISE AGREED TO IN WRITING BY TOSHIBA INTERNATIONAL CORPORATION, THE FOLLOWING TERMS AND CONDITIONS SHALL APPLY TO THE OFFER OF SALE OF THE EQUIPMENT, PARTS, SOFTWARE, AND SERVICES DESCRIBED HEREIN. PURCHASER'S WRITTEN ORDER ACCEPTING THIS OFFER FOR SALE FOR ANY SUCH EQUIPMENT, PARTS, SOFTWARE OR SERVICES OR WRITTEN DIRECTION TO TOSHIBA INTERNATIONAL CORPORATION TO PROCEED WITH ENGINEERING, PROCUREMENT, FURNISHING, MANUFACTURING OR SHIPMENT OF SUCH EQUIPMENT, PARTS, SOFTWARE OR SERVICES, SHALL CONSTITUTE CONSENT TO ONLY THESE TERMS AND CONDITIONS AND A REPRESENTATION THAT PURCHASER IS SOLVENT. THIS OFFER OF SALE EXPRESSLY LIMITS ANY ACCEPTANCE TO THE TERMS OF THIS OFFER ONLY. ANY ADDITIONAL OR CONTRARY TERMS IN A PURCHASER'S WRITTEN PURCHASE ORDER, ACKNOWLEDGMENT AND OTHER WRITTEN DIRECTION WILL CONSTITUTE A MATERIAL ALTERATION WHICH TOSHIBA INTERNATIONAL CORPORATION OBJECTS TO AND REJECTS. TRADE CUSTOM AND/OR USAGE ARE SUPERSEDED BY THE TERMS OF THIS OFFER OF SALE AND SHALL NOT BE APPLICABLE TO BROADEN OR NARROW THE EXPRESS TERMS OF THIS OFFER OR USED OTHERWISE IN ITS INTERPRETATION. THE TERM "COMPANY" AS HEREAFTER USED MEANS TOSHIBA INTERNATIONAL CORPORATION, EXCEPT THAT FOR PURPOSES OF ARTICLES III ENTITLED "EQUIPMENT AND SOFTWARE MODIFICATION AND INSTALLATION," IV ENTITLED "FORCE MAJEURE," VIII ENTITLED "LIABILITY," IX ENTITLED "NUCLEAR USE," XI ENTITLED "PATENTS," AND XII ENTITLED "WARRANTY," IT SHALL MEAN TOSHIBA INTERNATIONAL CORPORATION AND TOSHIBA CORPORATION AND THEIR RESPECTIVE SUBSIDIARIES AND SUPPLIERS.

I.   **PRICES:** Unless otherwise specified herein, the prices described herein are in United States of America currency and include the cost of the manufacturer's usual factory tests, inspection and packing in accordance with the standards of the manufacturer and delivery F.O.B. carrier at the Company's plant in Houston, Texas, or F.O.B. place of shipment of Company's supplier. Unless otherwise specified herein, such prices do not include any other costs applicable to the equipment, parts and software described herein following their delivery in accordance with Article II, below, including, without limitation, unloading, handling, storage, transportation, installation, and insurance charges. All such costs shall be paid by Purchaser in addition to the purchase price upon receipt of Company's invoices. Unless otherwise specified herein, the prices applicable to the equipment, parts, software and services described herein are those in effect at the time of shipment or at the time of performance of the services. Upon any published increase or reduction in the price of such items by the Company, the new price will become effective immediately on the unshipped or unperformed portion. In no event will a reduction in price be retroactive to items shipped or services performed prior to the date of the price change. Purchaser's payment of Company invoices containing pricing errors will not relieve Purchaser's obligation to make full payment of the prices in effect at the time of shipment applicable to the equipment, parts, software and services. All clerical errors are subject to correction.

II.   **DELIVERY:** Delivery dates are approximate and are dependent upon (1) prompt receipt by the Company from the Purchaser of all information necessary to permit the Company to proceed with the work immediately and without interruption, (2) Purchaser's compliance with all of the payment terms specified herein, and (3) Purchaser's compliance with any terms, obligations, covenant or condition of this Agreement, the continuing validity of any representation furnished to Company by Purchaser, Purchaser's continuing solvency and, the non-occurrence of any event which Company deems, in its exclusive discretion, to endanger Purchaser's full performance of its acceptance of an offer of sale. Unless otherwise specified herein, the Company shall deliver the equipment, parts and software described herein F.O.B. carrier at the Company's plant in Houston, Texas, or F.O.B. place of shipment of Company's supplier. Partial deliveries shall be permitted. Unless otherwise specified herein, upon such delivery, title and all risk of loss or damage to such equipment, parts and software shall pass to Purchaser. In the event the Purchaser requests an extension of the delivery date and the Company, in its sole discretion, agrees to extend such date, or if any of the equipment, parts or software cannot be delivered when ready due to any cause referred to in Article IV hereof, the Company may place such equipment, parts or software in storage either at Company's plant in Houston, Texas, or at a location other than Company's plant in Houston, Texas ("off-site location"). In such events, (1) if storage is at an off-site location, all costs incurred by the Company in connection with such storage, including, without limitation, costs of preparing such equipment, parts and software for storage, placement into storage, handling, storage/demurrage, inspection, preservation and insurance (or if storage shall be at Company's plant in Houston, Texas, then up to five percent (5%) of the total price of the equipment, parts and software being stored for each month of storage), shall be due and payable by Purchaser upon receipt by Purchaser of the Company's invoices therefore, and (2) the Company's delivery obligations shall be deemed fulfilled and title and all risk of loss or damage to such equipment, parts and software shall thereupon pass to Purchaser, if it has not already passed, and (3) when conditions permit and upon payment of all amounts due hereunder, the Company shall arrange, on behalf of Purchaser, and at the cost of Purchaser, for shipment to a destination mutually acceptable to the Company and Purchaser.

III.   **EQUIPMENT AND SOFTWARE MODIFICATION AND INSTALLATION:** The Company shall have the right to modify the design and/or method of manufacture of the equipment or software described herein without advance notice to Purchaser if, in the judgment of the Company, such modification does not materially and adversely affect the performance of the equipment or software. Purchaser agrees to cooperate in good faith with Company to resolve all technical questions and problems associated with any equipment or software described herein. If requested in writing by Purchaser, the Company agrees to supervise the installation of the equipment and software described herein. The Purchaser shall pay Company's per diem charges for all such supervisory services plus all travel and subsistence expenses incurred by Company personnel in connection therewith. All necessary labor and materials required for installation and the preparation of the site for such installation shall be supplied by Purchaser, at its expense, prior to installation and connection of the equipment and software. Purchaser shall, at its expense, arrange for or provide access by Company's personnel to the installation site during business hours and if requested by Company, space for safe storage of Company's tools, test equipment, and other materials used in connection with such installation. Purchaser shall, at its expense, obtain all permits, licenses, authorizations and approvals and prepare and file with the appropriate government agencies all reports and information which may be required under all applicable federal, state, and local laws, regulations, and ordinances now or hereafter in effect to permit the purchase, installation, operation and use of the equipment and software. Notwithstanding any installation dates stated herein, in the event the installation of any part of the equipment or software is delayed or interrupted due to any cause described in Article IV, below, Purchaser agrees, at its expense, to exercise its best effort to arrange for the timely completion of such installation and Purchaser shall reimburse Company for all expenses incurred by Company as a result of any such delay. Purchaser shall pay all other amounts when due to the Company hereunder, notwithstanding any such delay in installation.

IV.   **FORCE MAJEURE:** In no event shall the Company be liable for non-delivery or delays in delivery of the equipment, parts and software described herein or for failure or delay in the performance of any other obligations contained herein arising directly or indirectly from acts of God, unforeseeable circumstances, acts (including delays or failure to act) of any governmental authority (de jure or de facto), war (declared or undeclared), riot, revolution, priorities, fires, floods, weather, strikes, labor disputes, sabotage, epidemics, factory shutdowns or alterations, embargoes, delays or shortages in transportation, delay or inability to obtain or procure labor, manufacturing facilities, or materials, inability due to causes beyond the Company's reasonable control to obtain timely instructions or information from the Purchaser or causes of any other kind beyond the Company's control. The foregoing provision shall apply even though such causes may occur after the Company's performance of its obligations has been delayed for other causes.

V.   **TERMS OF PAYMENT:**   Unless otherwise specified herein, the purchase price for the equipment, parts and software described herein shall be paid in full, in United States of America currency, within thirty (30) days after the date of the Company's invoice for such price and all such invoices shall be mailed to the Purchaser at its address shown herein, upon delivery of the equipment, parts and software described herein in accordance with Article II, above. In the event Purchaser fails to make payment by the date provided in these terms of sale, the Company may deduct such amounts due it from all amounts, whether matured or unmatured, it may owe Purchaser arising from this or any other transaction. If such equipment, parts or software are ready for shipment from the manufacturing plant or for delivery to the Purchaser and the Company cannot make delivery thereof as scheduled herein due to any cause described in Article IV, above, any amounts otherwise due and payable to the Company following delivery shall be due and payable within thirty (30) days after the Company mails an invoice for such amount, together with a certification by the Company as to such cause, to the Purchaser at its address shown on this offer of sale. Upon the mailing of such invoice and certification, the equipment, parts and software shall be deemed to be in storage in accordance with Article II, above. Purchaser agrees that the purchase price and/or any unpaid portion thereof shall bear interest at the rate of 12% per annum from and after the date due and owing, if not paid in strict accordance with the terms of this Agreement. Notwithstanding any other provision of an accepted offer of sale, the Company does not intend to and shall not charge, collect or contract for interest which exceeds the maximum rate permitted by law. Any such excess interest shall be applied first to reduce any unpaid portion of the purchase price and all other outstanding charges owed, until such time as each is paid in full, at which time any remaining excess shall be refunded to Purchaser.

VI.   **SALES AND OTHER TAXES:** Unless otherwise stated herein, the prices specified herein do not include any federal, state, municipal, or local property, license, privilege, business, occupation, stamp, documentary, sales, use, excise, gross receipts, duties, or custom charges, value added or other similar taxes which may now or hereafter be applicable to, measured by, or imposed by any governmental authority or with respect to (1) the transaction described herein or any contract of sale resulting therefrom, or (2) the equipment, parts or software described herein or their sale, value, or use, or (3) the performance of any services described herein. If the transaction is exempt from tax, Purchaser shall provide the Company with a tax exemption certificate or other documentation acceptable to the taxing authorities involved. Otherwise, Purchaser agrees to pay or reimburse to the Company within thirty (30) days of Company's written notice to Purchaser any such taxes and all penalties and interest in connection therewith which the Company or the Company's subcontractors or suppliers are required to pay. Under no circumstances shall Company be responsible for any income and/or payroll taxes attributable to Purchaser and/or Purchaser's subcontractors. Purchaser hereby agrees to indemnify Company for any liability arising out of income and/or payroll taxes attributable to Purchaser and/or its subcontractors.

VII.   **TERMINATION:** The Purchaser may terminate its acceptance of this offer of sale only upon written notice to the Company and upon payment to the Company of the reasonable and proper termination charges which may be assessed by Company in its sole discretion.

VIII.	**LIABILITY:** The total liability of the Company (including its subcontractors) for any loss, damage, or claim, whether in contract, tort (including negligence and liability without fault), or otherwise, arising out of, connected with, or resulting from this offer of sale or the performance or breach of any contract based upon this offer of sale, or from the design, manufacture, sale, delivery, resale, installation, technical direction or supervision of installation, inspection, testing, repair, replacement, operation, maintenance, or use of any equipment, part, software or any service furnished pursuant to any contract based upon this offer of sale shall not in any event exceed the price allocable to the equipment, part, software or service which gives rise to the claim, loss or damage (except as further limited under Article XI and XII, below). In no event, whether as a result of breach of contract, warranty, alleged negligence, or liability without fault and regardless of whether the Company has been previously advised of the possibilities of such damages, shall the Company be liable for any indirect, incidental, special or consequential damages, including, without limitation, personal injury, death, property damage, loss of profits or revenue, loss of business, loss of information or data, loss of use of the equipment or software described herein or any associated equipment or software, cost of capital, cost of substitute equipment, parts, software, facilities or services, down time costs, labor costs, or claims of customers of the Purchaser for such damages, even if Company has been advised of the possibility of such damages. In further limitation, the Purchaser's sole remedy for any defect or breach of warranty in connection with any software product described herein shall be, at the Company's exclusive discretion, repair, replacement, software update or refund of the purchase price associated with the software.

IX.	**NUCLEAR USE:** No equipment or any part thereof or any software described herein shall be use in conjunction with, or as a part of, any activity or process involving nuclear fission or fusion or any use or handling of any material defined in Chapter 2 of the U.S. Atomic Energy Act of 1954, as amended. If such use is contemplated by Purchaser or others, Purchaser shall prior to such use, at its expense, arrange for insurance and governmental indemnity satisfactory to the Company protecting the Company against liability of any kind, whether in contract, tort (including negligence) or otherwise.

X.	**GENERAL:** This offer of sale may only be accepted in Harris County, Texas and any contract of sale resulting from it shall be performable, in whole or in part, in Harris County, Texas. This offer of sale and any contract of sale resulting from it shall in all respects be governed, construed, and enforced in accordance with the laws of the State of Texas, U.S.A. Unless otherwise agreed to by Company in a writing signed by a Company officer, venue for all proceedings arising out of this offer of sale or any contract of sale resulting from it shall be in Harris County, Texas (or in the Southern District of Texas if such proceeding is in a United States District Court). The United Nations Convention for the International Sale of Goods is disclaimed and excluded from any contract of sale arising from this offer of sale and any contracts the Company may have with its suppliers. The terms and conditions of sale contained herein shall be the only terms and conditions applicable to the sale of the equipment, parts, software and services described herein and shall supersede any prior agreements or writings. No term or condition of this offer of sale may be waived or modified unless done in writing and signed by an authorized representative of the Company. All proposals of the Company contained herein are subject to change by the Company at anytime prior to actual receipt by the Company of written acceptance of this offer of sale by the Purchaser and shall expire thirty (30) days from the date hereof. For purposes of the terms and conditions of sale specified herein, the term "offer of sale" shall mean all written quotations to which such terms and conditions are attached and, unless waived or modified in a signed writing by the Company, all contracts of sale resulting therefrom. Any waiver by the Company of a breach of any term or condition of sale shall not constitute a waiver or prejudice the Company's right to otherwise subsequently demand strict compliance with that or any other term or condition of this offer of sale. The election of the Company to pursue any remedy provided in an accepted offer of sale as provided by law shall not exclude pursuit of any other remedy otherwise available to the Company or limit its right to declare Purchaser in default. The standard terms and conditions of sale herein are subject to change by Company at any time, and all products and services sold by Company are subject to Company's latest published standard terms and conditions of sale.

XI.   **PATENTS:**   The Company shall defend any suit or proceeding brought against the Purchaser to the extent it is based upon a claim that any equipment, software or any part thereof furnished pursuant to this offer of sale constitutes an infringement of any patent of the country in which the equipment, parts and software described herein are delivered to the Purchaser in accordance with Article II entitled "DELIVERY," above, if notified promptly in writing and given authority, information and assistance at the Company's expense for the defense of such suit or proceeding, and the Company shall pay all damages and costs awarded therein against the Purchaser. In the event such equipment, software or any part thereof is finally determined in such suit to infringe any such patents and the use of such equipment, software or any part thereof is permanently enjoined, the Company shall, at its expense, and at its option, either procure for the Purchaser the right to continue using said equipment, software or part; or replace the same with non-infringing equipment, parts or software; or modify it so that it becomes non-infringing or remove said equipment, software or part and refund the purchase price thereof, less a reasonable charge for depreciation. The foregoing states the entire liability of the Company for patent infringement by said equipment, software and any part thereof. The foregoing provisions shall not apply to any equipment, software or any part thereof manufactured to Purchaser's design. As to such equipment, software or part, the Company assumes no liability whatsoever for patent infringement and the Purchaser shall indemnify, defend, and hold the Company harmless from and against all claims, damages, obligations, liabilities and suits (and all associated costs and expenses, including, without limitation, attorneys' fees and costs of litigation) arising as a result of the alleged infringement of patent rights caused by the manufacture or sale by the Company of any equipment, parts or software manufactured to Purchaser's design. Notwithstanding the foregoing, the Company shall have no obligation to defend any suit or proceeding brought against the Purchaser to the extent it is based, in whole or in part, upon a claim that any application, method and process in which any equipment or any part thereof furnished by the Company is used constitutes an infringement of any patent. The Company shall have no liability or obligation to the Purchaser of any kind with respect to any such claim or with respect to any damages or costs awarded or any determination of infringement made on the basis of any such claim.

XII.   **WARRANTY:** Unless a different warranty is stated herein or is affixed to the equipment, parts or software described herein by the manufacturer thereof or the Company or is specified in writing in any maintenance or operating instructions pertaining to such equipment, the Company warrants that all equipment, parts and software described herein and sold by the Company to the Purchaser will be free from defects in materials and workmanship. THIS WARRANTY SHALL EXPIRE EIGHTEEN (18) MONTHS AFTER THE DATE ON WHICH SUCH EQUIPMENT AND PARTS (EXCLUDING REPAIRED   OR REPLACEMENT EQUIPMENT AND PARTS FURNISHED PURSUANT TO THIS WARRANTY) ARE SHIPPED BY THE COMPANY TO THE INITIAL PURCHASER OR TWELVE (12) MONTHS AFTER SUCH EQUIPMENT AND PARTS (EXCLUDING REPAIRED OR REPLACEMENT EQUIPMENT AND PARTS FURNISHED PURSUANT TO THIS WARRANTY) ARE FIRST PLACED IN OPERATION, WHICHEVER PERIOD SHALL FIRST EXPIRE.   THE WARRANTY PERIOD APPLICABLE TO SOFTWARE SHALL EXPIRE NINETY (90) DAYS AFTER THE DATE THE EQUIPMENT IN WHICH IT IS INSTALLED IS FIRST PLACED INTO OPERATION OR UPON THE EXPIRATION OF THE ORIGINAL WARRANTY PERIOD APPLICABLE TO THE EQUIPMENT, WHICHEVER SHALL FIRST EXPIRE. **THERE ARE NO OTHER WARRANTIES WHETHER EXPRESS, IMPLIED, STATUTORY OR OTHERWISE WHICH EXTEND BEYOND THE ABOVE DESCRIPTION HEREOF, INCLUDING WITHOUT LIMITATION, IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. ADDITIONALLY, PURCHASER ACKNOWLEDGES THAT THE COMPANY'S GENERAL LITERATURE AND PRODUCT INFORMATION DOES NOT CONSTITUTE WARRANTIES OF PERFORMANCE OR QUALITY AND THAT BEFORE ENTERING INTO A CONTRACT OF SALE, PURCHASER HAS EXAMINED OR REFUSED TO EXAMINE THE EQUIPMENT, PARTS AND SOFTWARE DESCRIBED HEREIN OR SAMPLES OR MODELS OF EACH AS FULLY AS DESIRED AND THAT THERE IS NO IMPLIED WARRANTY WITH REGARD TO ANY CONDITION OR DEFECT WHICH AN EXAMINATION OUGHT TO REVEAL**. The Company shall, at its sole discretion, repair, replace or update, free of charge, or refund the purchase price paid for any such equipment, part or, software which is defective under the terms of the foregoing warranty provided the Purchaser (1) promptly notifies the Company in writing of such defect, and (2) furnishes the Company satisfactory proof thereof, and (3) establishes that the equipment, part or software has been properly stored, assembled, installed, serviced, maintained, operated, and used within the limits of rated capacity and normal usage, and in accordance with current operating and maintenance instructions furnished by the Company, and (4) has not been altered or modified in any manner without the written consent of the Company, and (5) if requested by the Company, returns the defective equipment, part or

software to the Company and pays all expenses incurred in connection with such return. The repaired, replacement or updated equipment, part or software shall be delivered, free of charge, to the Purchaser, F.O.B. the Company's warehouse or at Company option, F.O.B. a Company authorized service shop, not loaded on truck or other carrier. The Purchaser shall pay all cost applicable to the equipment, part or software following such delivery, including, without limitation, all handling, transportation, assembly, installation, insurance, testing, and inspection charges. THE FOREGOING OBLIGATION TO REPAIR, REPLACE, UPDATE OR REFUND THE PURCHASE PRICE PAID FOR THE EQUIPMENT, PARTS AND SOFTWARE SHALL BE THE SOLE AND EXCLUSIVE REMEDY OF THE PURCHASER, ITS CUSTOMERS AND USERS OF THE EQUIPMENT, PARTS OR SOFTWARE FOR THE BREACH OF THE FOREGOING WARRANTY. THE COMPANY SHALL HAVE NO OBLIGATION TO DISASSEMBLE ANY EQUIPMENT OR PART WHICH IS DEFECTIVE WITHIN THE TERMS OF THE ABOVE WARRANTY OR TO INSTALL ANY REPAIRED OR REPLACEMENT PART, EQUIPMENT OR SOFTWARE OR TO PAY ANY COSTS INCURRED IN CONNECTION WITH SUCH DISASSEMBLY OR INSTALLATION. THE COMPANY HEREBY EXPRESSLY DISCLAIMS ALL OTHER EXPRESS, STATUTORY AND IMPLIED WARRANTIES, INCLUDING, WITHOUT LIMITATION, ALL EXPRESS, STATUTORY AND IMPLIED WARRANTIES SUCH AS MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE APPLICABLE TO REPAIRED OR REPLACED EQUIPMENT, PARTS AND SOFTWARE FURNISHED PURSUANT TO THE FOREGOING WARRANTY.

XIII.   **WARNING:** THE EXPORTATION FROM THE UNITED STATES OF PRODUCTS, COMMODITIES OR TECHNICAL DATA SOLD, FURNISHED OR DELIVERED TO PURCHASER BY COMPANY AND THE REEXPORTATION OF SUCH ITEMS FROM ANY OTHER COUNTRY MAY BE PROHIBITED OR RESTRICTED UNDER U.S. FEDERAL LAWS AND REGULATIONS. ACCORDINGLY, NO EXPORTATION OF SUCH PRODUCTS, COMMODITIES OR TECHNICAL DATA FROM THE UNITED STATES AND NO REEXPORTATION THEREOF FROM ANY OTHER COUNTRY SHALL BE PERMITTED, EXCEPT IN ACCORDANCE WITH U.S. LAW. This provision constitutes an independent covenant and continuing obligation of Purchaser which will survive the termination of this Agreement. Additionally, no contract of sale based on this offer of sale will constitute a waiver of any provision in Purchaser's distribution or reseller agreement, if any, with Company.

End

Notes:

TOSHIBA

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