

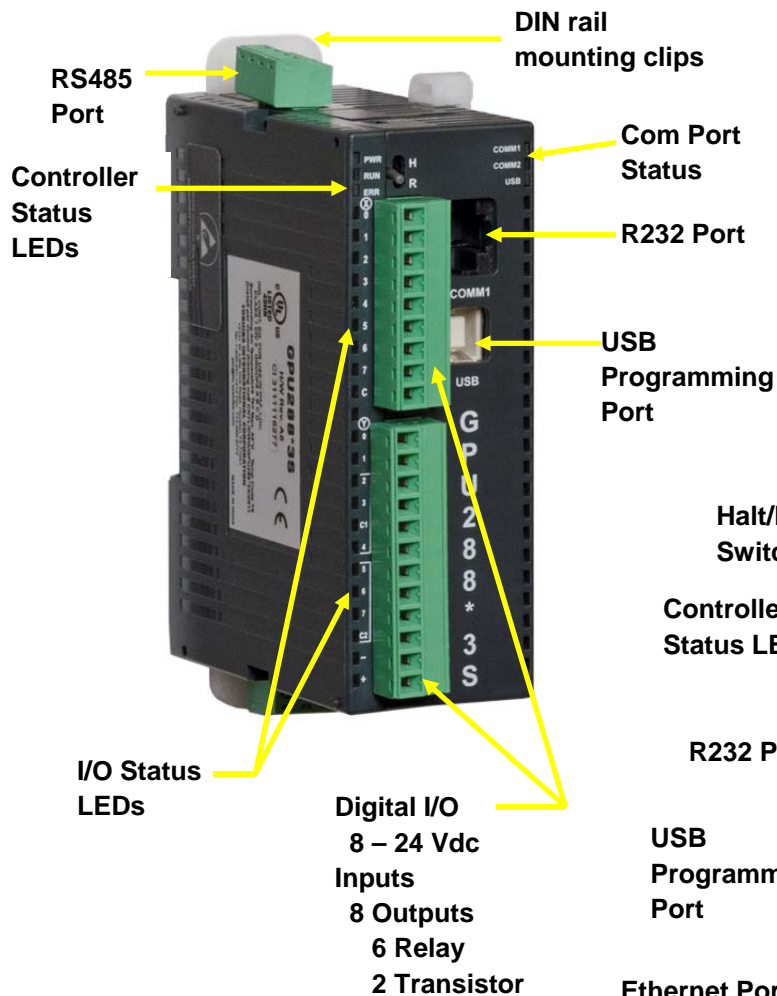
**Leading Innovation >>>**

# MICRO PROGRAMMABLE LOGIC CONTROLLER

# CPU Modules

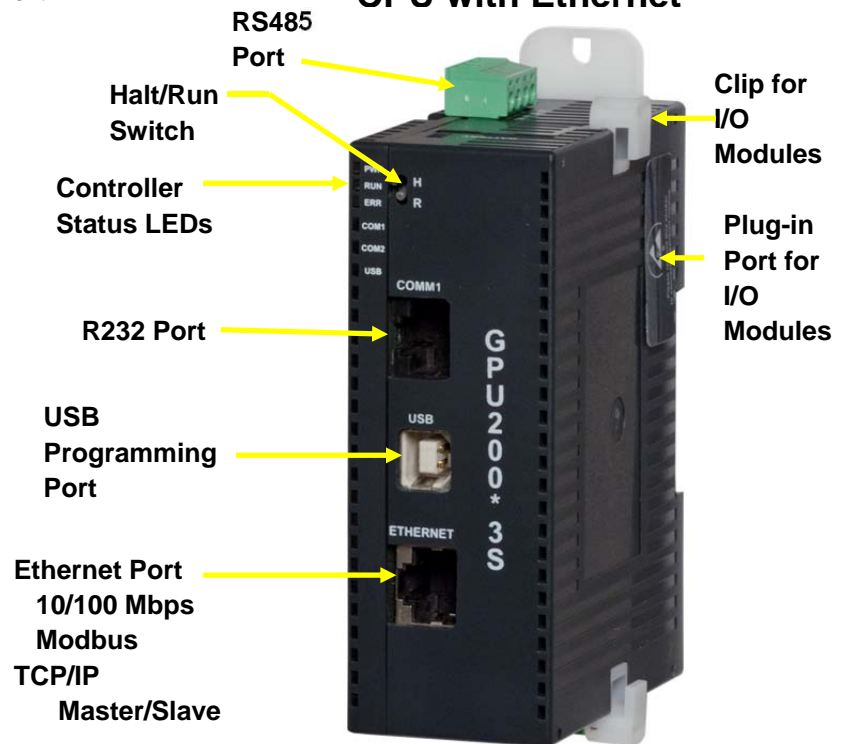
The V200 PLC's large memory (program and data register) make them ideally suited for applications previously requiring larger more expensive programmable controllers. The V200 PLC's high-speed performance makes them especially adept at sophisticated machine control applications. They also handle complex process applications requiring multiple recipes and reporting requirements.

## CPU with I/O



Toshiba's V200 Series PLCs are small modular type controllers suitable for both relay replacement and complex control applications.

## CPU with Ethernet

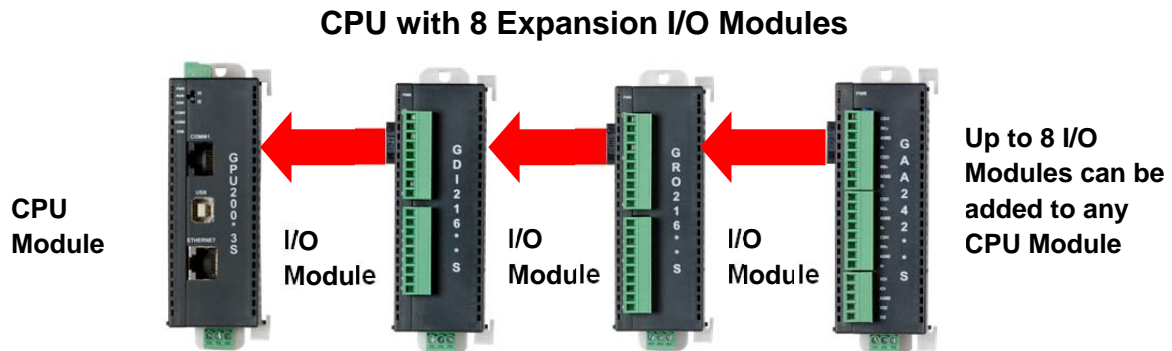


## Advanced Features:

|                            |                       |                       |
|----------------------------|-----------------------|-----------------------|
| ◆ Enhanced Instruction Set | ◆ Interrupt I/O       | ◆ Floating Point Math |
| ◆ Windows Prgm Sftw        | ◆ Clock/Calendar      | ◆ Log/Antilog         |
| ◆ Toshiba ASD Protocol     | ◆ Indirect Addressing | ◆ High Speed I/O      |

# I/O Expansion

A complete complement of I/O modules are available for the V200 Series. These include 16 pt DC Input, 16 pt DC Output, 16 pt Relay Output, Analog, Thermocouple, & RTD Inputs, and Analog Output modules. Up to 8 I/O modules can be connected to each CPU module.

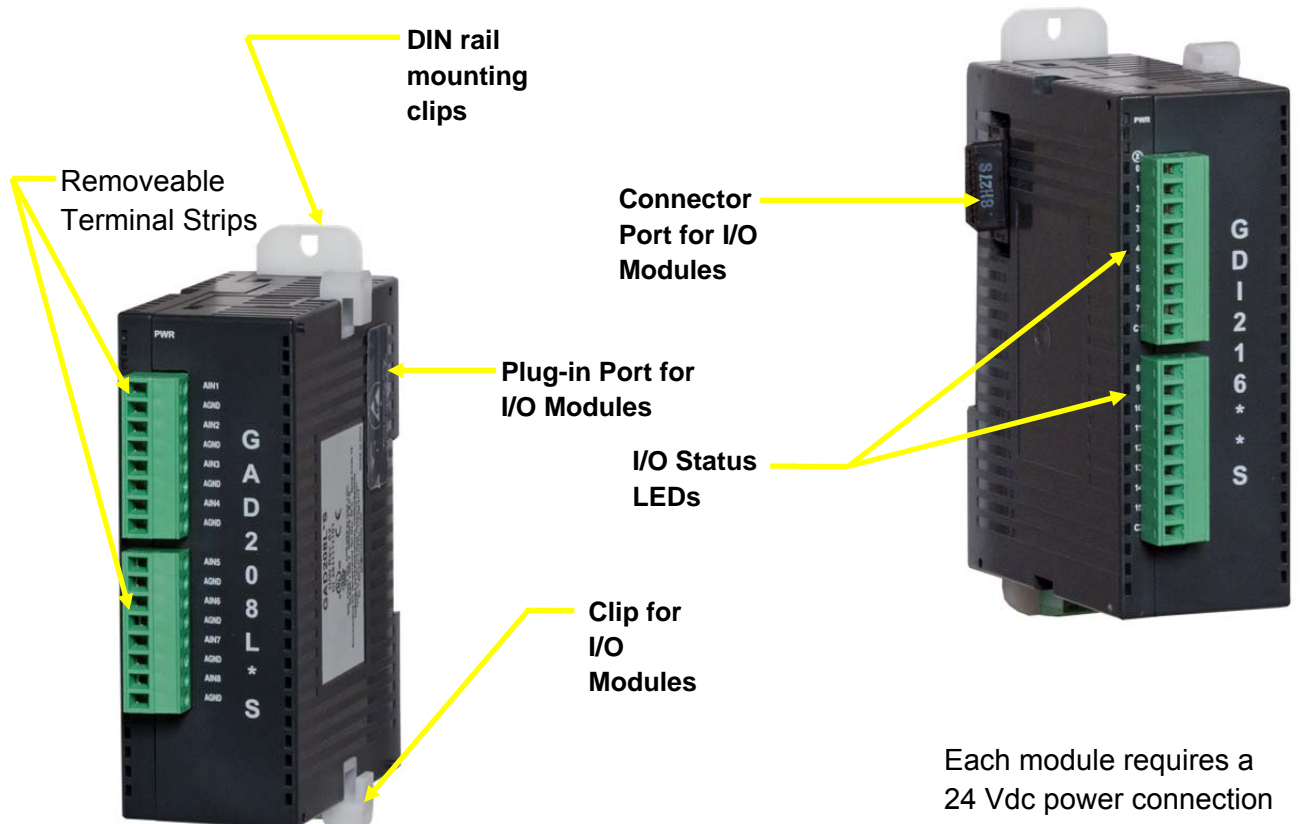


I/O Modules can be connected to the CPU module in any order and any mix of discrete and analog.

Max Discrete I/O = 144 points (128 points if using Ethernet CPU)

Max Analog I/O ≈ 56 channels (2 to 1 mix of AI and AO)

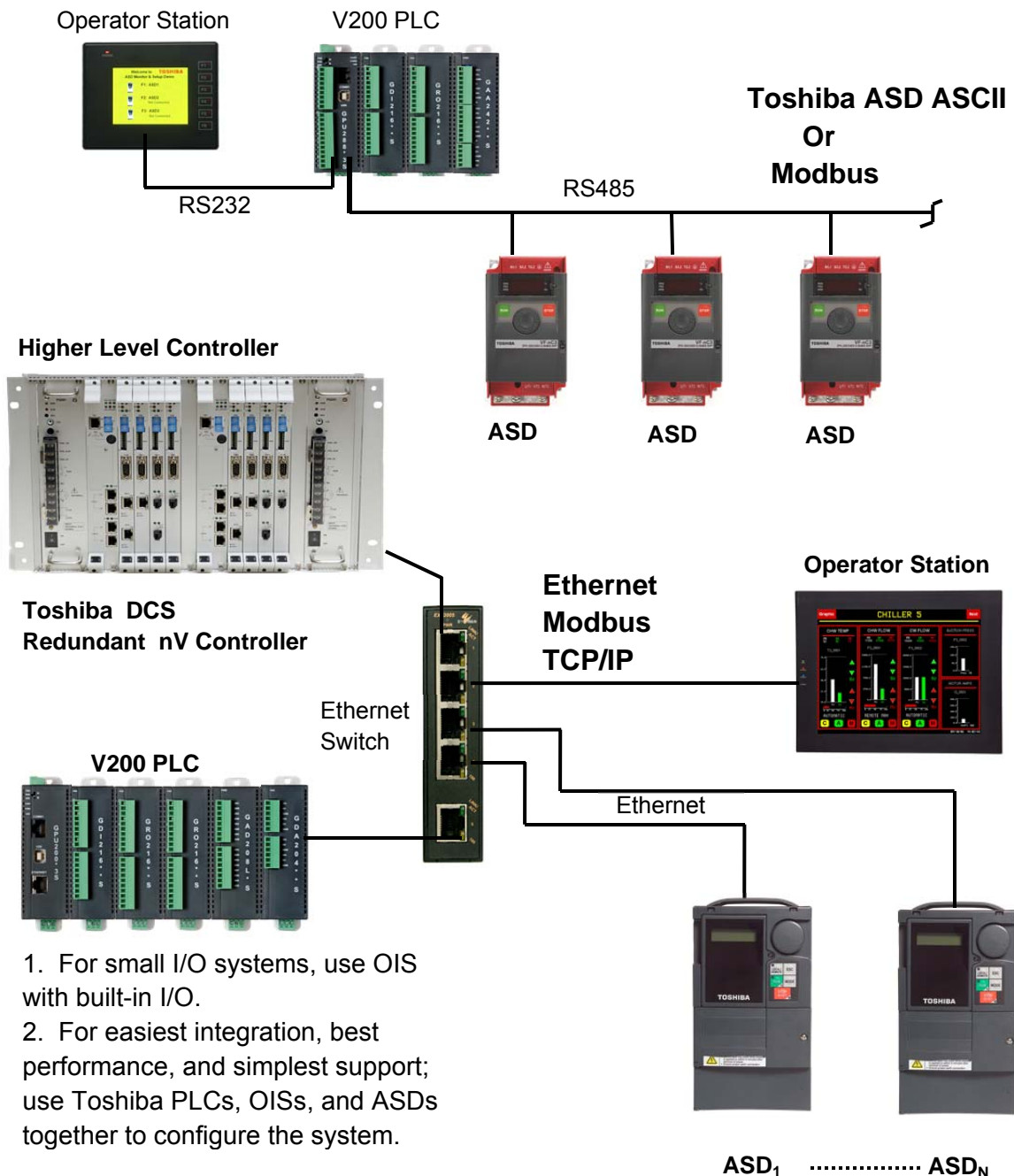
Max I/O Expansion Modules = 8



# Networking

PLCs do not work alone. They must collect data and status from all the equipment they control and they must be able to pass this information on to higher level controllers. The V200 can do this as well as pass information back from the high level controllers to the equipment the V200 controls. The following protocols are built-into the V200 CPUs:

- Toshiba PLC ASCII
- Toshiba ASD ASCII
- Modbus, Master/Slave
- Ethernet Modbus TCP/IP



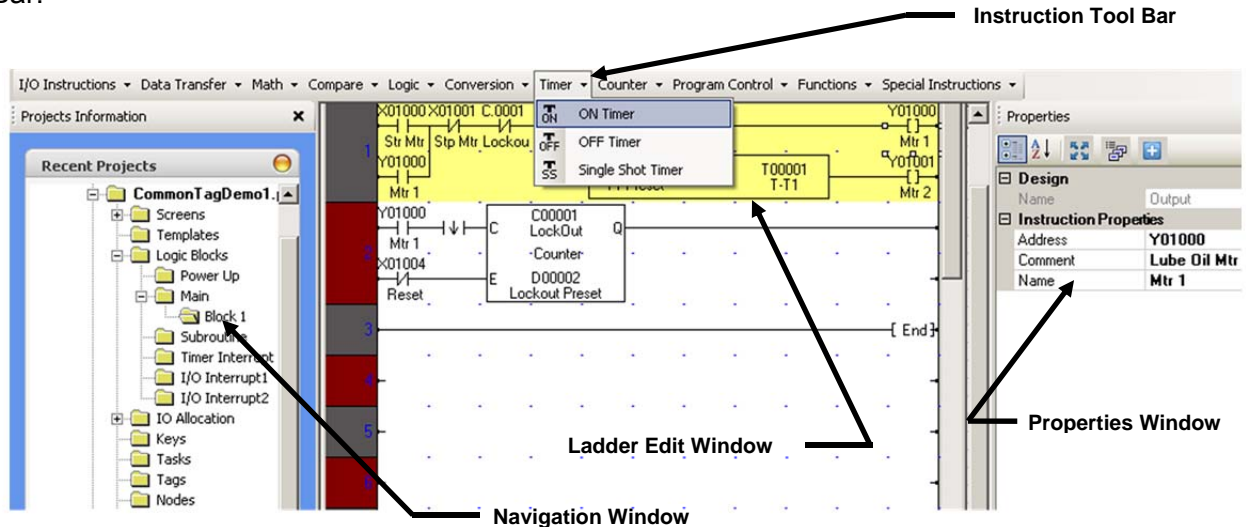
1. For small I/O systems, use OIS with built-in I/O.
2. For easiest integration, best performance, and simplest support; use Toshiba PLCs, OISs, and ASDs together to configure the system.

# Programming Software

The V200 Series PLC is programmed with the OIL-DS software, the same software used by the OIS (Operator Interface Stations). Thus a common tag database can be used by both the PLC and the OIS

## Main Window

When the software is started the main window opens. The main window consists of a Navigation Window, a Ladder Edit Window, and a Properties Window. On top is the Instruction Tool Bar.



User's of the T-PDS programming software will find that the instructions (counters, comparisons, move, etc) work just the same as they do in the T1 Series PLCs. The OIL-DS software has:

- ▶ A Full-Featured Program Editor, including Cut, Paste, Search, Replace, Insert, & Delete.
- ▶ Common Tag Data Base for Operator Display and internal PLC Ladder
- ▶ Group Programming with Block Merge.
- ▶ Program Documentation w/Tags & Comments.
- ▶ I/O Force ON/OFF from Computer Keyboard.
- ▶ On-line Power Flow Monitor
- ▶ Print Map Options (usage, x-ref, etc).



## Instruction Set

Along with reliable hardware, solid software, and good peripherals; a comprehensive instruction set is also necessary. Toshiba's many years of experience in machine control, process control, and motion control has resulted in a full featured instruction set for the V200 Series PLCs (the same as T1 Series). Instructions include:

### Standard Ladder Instructions:

- NO, NC, & Transitional Contacts
- Coils, Timers, & Counters

### Data Transfer Instructions

- MOV, Table Initialize, Table MOV
- Data Exchange, Multiplexer, Demultiplexer

Logical Instructions: AND, OR, Exclusive OR, Bit Test

### Shift Instructions:

- 1 Bit Shift (right/left), n Bits Shift (right/left)
- Shift Register, Bi-directional Shift Register

### Math Instructions:

- Single & Double Register Add, Subtract, Divide, & Multiply
- Increment, Decrement, Log & Antilog

### Data Compare Instructions:

- Greater Than, Greater Than or Equal, Equal
- Less Than, Less Than or Equal, Not Equal

### Data Conversion Instructions:

- Integer to Float, Float to Integer, Double Length to Float, Float to Double Length Integer, HEX to ASCII, ASCII to HEX, 2's Complement
- Double Length 2's Complement, 7-Segment Decode
- Conversion to ASCII/Binary/BCD

### Program Control Instructions:

- Subroutine Call/Return, FOR/NEXT, Interrupt Enable/Disable, Interrupt Return
- Step Sequence Initialize/Input/Output, Master Control Set/Reset
- Jump Control Set/Reset

### Special Process Instructions:

- Moving Average, Digital Filter, PID, Limit Upper/Lower,
- Max/Min/Avg Value, Function Generator, Special Module Read/Write

Note: For a complete list of all instructions and explanation of operation, please see help menu in the OIS-DS software.

## Other Features

| Address | Value  | Binary Value     | Data Type | Data Size |
|---------|--------|------------------|-----------|-----------|
| Xw0000  | 000000 | 0000000000000000 | Signed    | 2 bytes   |
| Y00000  | 000000 | 0000000000000000 | .         | .         |
| D00000  | 000000 | 0000000000000000 | Unsigned  | 2 bytes   |
| D00001  | 000000 | 0000000000000000 | Unsigned  | 2 bytes   |
| C.0000  | 000000 | 0000000000000000 | .         | .         |

**Data Monitor Window** allows different register types to be grouped together: Register values, bit status, data type, and data size are viewable.

## Simple Computer Connection

Connect to any computer no matter what its age.



The computer must have the following minimum capabilities:

| Item              | Specification                                  |
|-------------------|------------------------------------------------|
| Computer:         | Toshiba Notebook or PC Compatible.             |
| Operating System: | Windows 2000 w/SP4 or higher.                  |
| CPU:              | 800 Mhz Pentium or Equivalent.                 |
| RAM:              | 256 Mb or more.                                |
| Hard Disk:        | 1 Gb                                           |
| Display:          | 800 x 600 pixels with 256 Colors.              |
| Com Ports:        | USB or Serial Port (for prgm download/upload). |
| Pointing Device:  | Mouse or Equivalent                            |
| Input Devices:    | Keypad                                         |
|                   | CD-ROM or DVD Drive (for prgm installation).   |

# Peripherals

## OIS12

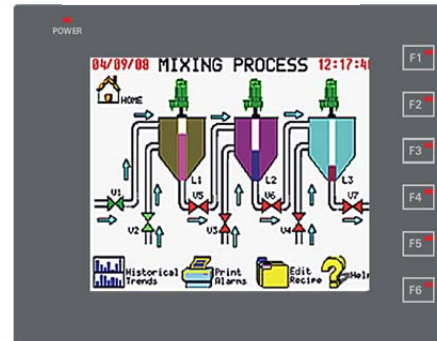
Keypad Display



Inexpensive 2 line x 16 character display with keypad for simple data entry

## OIS55 PLUS

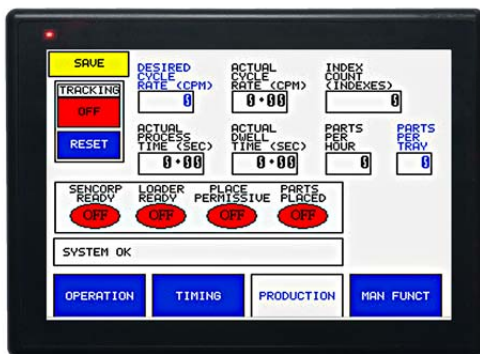
Color Touchscreen



Inexpensive 3 1/2 inch color touchscreen with 6 function keys and 6 alarm/indicator LEDs.

## OIS70E PLUS

Keypad Display



7 inch color touchscreen with Ethernet

All OIS PLUS displays use the same OIL-DS programming software as the V200 PLCs.



Do not use these peripherals with the V200 Series PLC.

RM102 EEPROM Module



OIS10 & OIS15 Displays

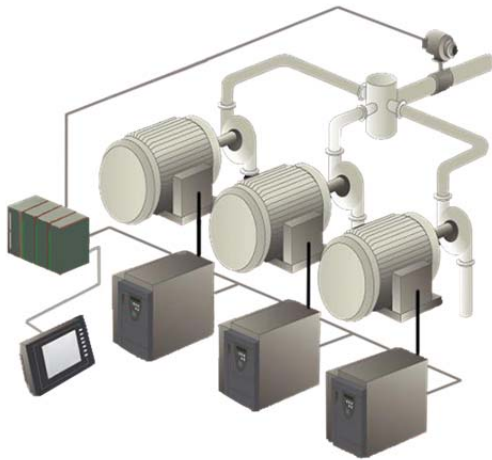
HP911 Dedicated Programmer





# Typical Applications

## Multiple Pump Control



**Application:** Multiple pumps feeding a common header.

**Requirement:** Configure most energy efficient system possible. Use Toshiba ASDs (adjustable speed drives) and motors so that all pumps make equal contribution to the header (no wasted energy from one pump competing against another).

**Toshiba Equipment:**

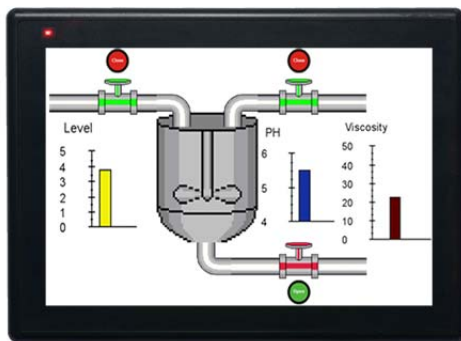
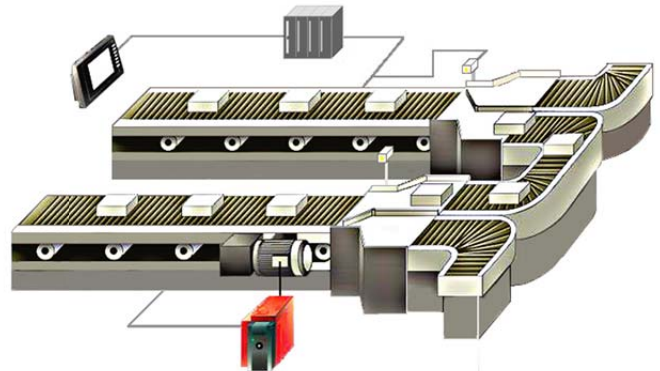
- ◆ PLC--V200 Series
- ◆ ASD-- S11/AS1
- ◆ Display--OIS60 PLUS
- ◆ Motor--World Energy 21 Series
- ◆ Magnetic Flow Meter--LF470

**Application:** High speed conveyor control.

**Requirement:** Configure high speed conveyor control system. Use Toshiba ASDs (adjustable speed drives) and motors so each package is inspected and routed to correct destination.

**Toshiba Equipment:**

- ◆ PLC--V200 Series
- ◆ ASD-- S11/AS1
- ◆ Display--OIS60 PLUS
- ◆ Motor--World Energy 21 Series

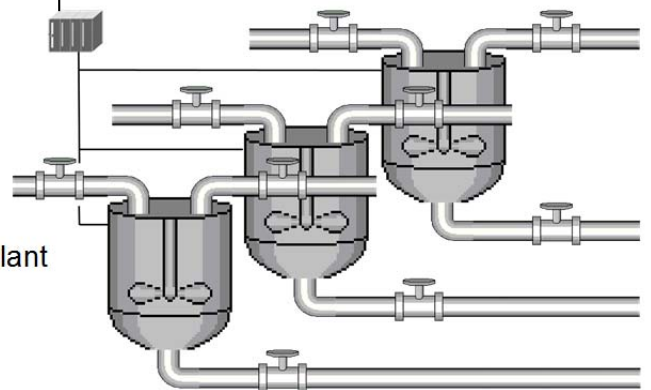


**Application:** Mixing tank control.

**Requirement:** Control individual mixers in chemical plant

**Toshiba Equipment:**

- ◆ PLC--V200 Series
- ◆ ASD--G9 ASD
- ◆ Display--OIS70 PLUS



# SPECIFICATIONS

## General Specifications

| Item                    | Specification                                            |
|-------------------------|----------------------------------------------------------|
| Operation Temperature   | 0 to 55°C                                                |
| Storage Temperature     | -20 to 85°C                                              |
| Humidity                | 10 to 90%RH (no condensation)                            |
| Dust                    | 10 mg/m <sup>3</sup> or less                             |
| Atmosphere              | UL Class 1 Div 2                                         |
| Vibration Immunity      | IEC61131-2 (10 to 150 Hz, 9.8m/s <sup>2</sup> )          |
| Shock Immunity          | IEC61131-2 (150m/s <sup>2</sup> )                        |
| Noise Immunity          | Power impulse: 600 Vp-p 1μs<br>ESD: 8kV<br>EMC directive |
| Insulation Resistance   | 5 MΩ or more (between external and internal circuits)    |
| Withstand voltage       | 600 Vac for 1 minute                                     |
| Fast Transient Burst    | IEC61000-4-4                                             |
| Electrostatic Discharge | IEC61000-4-2 Level 3                                     |
| Electromagnetic Field   | IEC61000-4-3                                             |
| RF Immunity             | IEC61000-4-6                                             |
| Dumped Oscillatory Wave | IEC61000-4-12                                            |
| Surge Immunity          | IEC61000-4-5 Level 2                                     |
| Radiated Emission       | EN50081-2: EN55011:1998 + A1: 1999<br>+ A2: 2009:2010    |
| Grounding               | 100Ω or less (type D grounding)                          |
| Cooling                 | Natural air cooling                                      |
| Certifications          | UL, cUL, CE                                              |

## Functional Specifications

| Item                     |               | Specification                                                                                                                          |
|--------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------|
| Control Method           |               | Stored program, cyclic scan system                                                                                                     |
| Scan System              |               | Floating scan                                                                                                                          |
| I/O Update               |               | Batch I/O refresh (direct I/O instruction available)                                                                                   |
| Program Memory           |               | Stored in flash memory (ROM)                                                                                                           |
| Program Capacity         |               | 8 K steps                                                                                                                              |
| Programming Language     |               | Ladder diagram with function block.                                                                                                    |
| Instructions             |               | Basic: 20 Function: 96                                                                                                                 |
| Execution Speed          |               | 1.4 $\mu$ s/contact, 2.3 $\mu$ s/coil, 4.2 $\mu$ s/16-bit transfer, 6.5 $\mu$ s/16-bit addition                                        |
| Program Types            |               | 1 Main program                                                                                                                         |
|                          |               | 1 Sub-program (initial program)                                                                                                        |
|                          |               | 1 Timer interrupt (interval: 5 to 1000ms, 5ms units)                                                                                   |
|                          |               | 2 I/O interrupt (high-speed counter and interrupt input)                                                                               |
|                          |               | 256 Subroutines                                                                                                                        |
| User Data                | I/O           | 6400 Points/400 registers (X/XW, Y/YW) max                                                                                             |
|                          | Auxiliary     | 4096 Points/256 registers (B/BW)                                                                                                       |
|                          | Special       | 4096 Points/256 words (S/SW)                                                                                                           |
|                          | Timer         | 256 Registers (T./T), 64 @ 0.01s & 192 @ 0.1s                                                                                          |
|                          | Counter       | 256 Registers (C./C)                                                                                                                   |
|                          | Data          | 4096 Registers (D)                                                                                                                     |
|                          | Retentive     | 1400 Registers (RW)                                                                                                                    |
|                          | Configuration | 25600 Points/1600 Registers (M/MW)                                                                                                     |
| Index Register           |               | 3 Words (I, J, K)                                                                                                                      |
| Real-Time Clock/Calendar |               | Year, month, day, day of the week, hours, minutes, seconds                                                                             |
| Special I/O Functions    |               | High speed counter (2 single or 1 quadrature) or Interrupt input (2 points),<br>Pulse output (CW+CCW or Pulse+Direction) or PWM output |
| Debug Support Functions  |               | On-line monitor                                                                                                                        |

## CPU Specifications

| Specification                        |            |                        | GPU200                                                           | GPU288                                 |
|--------------------------------------|------------|------------------------|------------------------------------------------------------------|----------------------------------------|
| Power Supply                         |            |                        | 24 Vdc, (+10%, -15%)                                             | 24 Vdc, (+10%, -15%)                   |
| Power Consumption                    |            |                        | 3.6 VA or less, no exp. I/O                                      | 8 VA or less, no exp. I/O              |
| Memory                               |            |                        | 8 k Steps                                                        | 8 k Steps                              |
| Communication Ports                  |            |                        | Programming USB<br>Serial RS232, RS485<br>Ethernet (10/100 Mbps) | Programming USB<br>Serial RS232, RS485 |
| Local I/O                            |            |                        | None                                                             | 8 Inputs, 8 Outputs                    |
| Inputs                               | DC Input   | Input Points           |                                                                  | 8 points (8 points/common)             |
|                                      |            | Rated Input Voltage    |                                                                  | 24Vdc, +10/-15 %                       |
|                                      |            | Rated Input Current    |                                                                  | 5mA . 20 mA for HS Iputs               |
|                                      |            | Min. ON Voltage        |                                                                  | 9.6 Vdc                                |
|                                      |            | Max. OFF Voltage       |                                                                  | 3.6 Vdc                                |
|                                      |            | ON/OFF Delay           |                                                                  | 10 ms                                  |
| Outputs                              | Rly Output | Output Points          |                                                                  | 6 Relay,                               |
|                                      |            | Rated Load Voltage     |                                                                  | 240Vac.2A 24 Vdc/0.5A                  |
|                                      |            | Max. Load Current      |                                                                  | 2A/point (resistive), 6A/common        |
|                                      |            | Leak Current at OFF    |                                                                  | None                                   |
|                                      |            | ON/OFF Delay           |                                                                  | 10 ms 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    |                                                                  | 0.1 mA or less                         |
|                                      |            | ON/OFF Time            |                                                                  | 1ms or less                            |
| Special I/O HS Counter<br>PWM Output |            |                        | 2 1ø (50 Khz), 1 Quad (5 Khz)<br>CW/CCW or PLS/Dir               |                                        |
| Max Expansion                        |            | 8 I/O Modules          | 8 I/O Modules                                                    |                                        |
| External Connection                  |            |                        | Removable Terminal Blocks                                        |                                        |
| Cooling                              |            | Natural air cooling    | Natural air cooling                                              |                                        |
| Mechanical Dimensions                |            | 100 mm x 35 mm x 70 mm | 100 mm x 35 mm x 70 mm                                           |                                        |
| Weight                               |            | 125 gm                 | 180 gm                                                           |                                        |

- Notes: 1. GPU200 has no I/O on the CPU Module.  
2. I/O modules require additional 24 Vdc power.

## Digital I/O Specifications

| Specification        |                     | GDI216                   | GDO216N         | GDO216P         | GRO216           |
|----------------------|---------------------|--------------------------|-----------------|-----------------|------------------|
| Inputs               | Input Type          | DC input,                |                 |                 | -                |
|                      | Input Points        | 16 points, bidirectional |                 |                 |                  |
|                      | Rated Input Voltage | 24Vdc, +10/-15%          |                 |                 |                  |
|                      | Rated Input Current | 5mA                      |                 |                 |                  |
|                      | Min. ON Voltage     | 9.6 Vdc                  |                 |                 |                  |
|                      | Max. OFF Voltage    | 3.6 Vdc                  |                 |                 |                  |
|                      | ON/OFF Delay Time   | 10ms or less             |                 |                 |                  |
|                      | Isolation           | Optical                  |                 |                 |                  |
| Outputs              | Output Type         |                          | DC Output       | DC Output       | Relay Output     |
|                      | Output Points       |                          | 16p, NPN        | 16p, PNP        | 16p              |
|                      | Outputs/Common      |                          | 4 points/com    | 4 points/com    | 4 points/com     |
|                      | Rated Load Voltage  |                          | 24Vdc, +10/-15% | 24Vdc, +10/-15% | 30 Vdc – 240 Vac |
|                      | Max. Input Current  |                          | 0.5A/point      | 0.5A/point      | 2 A/point        |
|                      | 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  |                     | Removeable TB            | Removeable TB   | Removeable TB   | Removeable TB    |
| Max Current @ 24 Vdc |                     | 80 mA                    | 80 mA           | 80 mA           | 260 mA           |
| Weight               |                     | 125 gm                   | 120 gm          | 120 gm          | 180 gm           |

| Specification        |                     | GDR288                  | GDD288N                 | GDD288P                 |   |
|----------------------|---------------------|-------------------------|-------------------------|-------------------------|---|
| Inputs               | Input Type          | DC input,               | DC Input                | DC Input                | - |
|                      | Input Points        | 8 points, bidirectional | 8 points, bidirectional | 8 points, bidirectional |   |
|                      | Rated Input Voltage | 24Vdc, +10/-15%         | 24Vdc, +10/-15%         | 24Vdc, +10/-15%         |   |
|                      | Rated Input Current | 5mA                     | 5mA                     | 5mA                     |   |
|                      | Min. ON Voltage     | 9.6 Vdc                 | 9.6 Vdc                 | 9.6 Vdc                 |   |
|                      | Max. OFF Voltage    | 3.6 Vdc                 | 3.6 Vdc                 | 3.6 Vdc                 |   |
|                      | ON/OFF Delay Time   | 1 ms or less            | 1 ms or less            | 1 ms or less            |   |
|                      | Isolation           | Optical                 | Optical                 | Optical                 |   |
| Outputs              | Output Type         | Relay Output            | Transistor Output       | Transistor Output       |   |
|                      | Output Points       | 8                       | 8 points, NPN           | 8 points, PNP           |   |
|                      | Outputs /Common     | 4 points/com            | 4 points/com            | 4 points/com            |   |
|                      | Rated Load Voltage  | 5 Vdc – 240 Vac         | 30 Vdc                  | 30 Vdc                  |   |
|                      | Max. Load Current   | 2 A/point               | 0.5 A/point             | 0.5 A/point             |   |
|                      | Leak Current at OFF | None                    | 100 $\mu$ A or less     | 100 $\mu$ A or less     |   |
|                      | ON/OFF Delay Time   | 10 ms or less           | 1 ms or less            | 1 ms or less            |   |
|                      |                     |                         |                         |                         |   |
| External Connection  |                     | Removeable TB           | Removeable TB           | Removeable TB           |   |
| Max Current @ 24 Vdc |                     | 200 mA                  | 50 mA                   | 50 mA                   |   |
| Weight               |                     | 160 gm                  | 120 gm                  | 120 gm                  |   |

## Analog I/O Specifications

| Specification        |                  | GAD208L                                                              | GAA242                                                                                                               | GDA204                            |
|----------------------|------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|-----------------------------------|
| Outputs              | Input Type       | Analog                                                               | Universal Analog                                                                                                     |                                   |
|                      | Input Points     | 8 Channels,                                                          | 4 Channels, Universal                                                                                                |                                   |
|                      | Input Signal     | 0-10 Vdc, (1 k $\Omega$ min load)<br>4-20 mA (500 $\Omega$ max load) | 0-10 Vdc, 0-20 mA, 4-20 ma,<br>RTD PT 100 ( $\alpha$ 1 & $\alpha$ 2),<br>TC (B,R,S,E,J,K,N,T),<br>0-100 mV, 0-50 mV. |                                   |
|                      | Resolution       | 16 Bit                                                               | 16 Bit                                                                                                               |                                   |
|                      | Accuracy         | 0.2% at Full Scale                                                   | 0.2% at Full Scale                                                                                                   |                                   |
|                      | Temp Drift       | 60 ppm                                                               |                                                                                                                      |                                   |
|                      | Conversion Cycle |                                                                      |                                                                                                                      |                                   |
|                      | Isolation        | Only Between<br>Modules/Backplane                                    | Only Between<br>Modules/Backplane                                                                                    |                                   |
|                      |                  |                                                                      |                                                                                                                      |                                   |
|                      | Output Type      |                                                                      | Analog                                                                                                               | Analog                            |
|                      | Output Points    |                                                                      | 2 Channels                                                                                                           | 4 Channels                        |
|                      | Output Voltage   |                                                                      | 0-10 Vdc (1 k $\Omega$ min load)                                                                                     | 0-10 Vdc, (1 k $\Omega$ min load) |
|                      | Output Current   |                                                                      | 4-20 mA (500 $\Omega$ (max load)                                                                                     | 4-20 mA (500 $\Omega$ max load)   |
|                      | Resolution       |                                                                      | 16 Bit                                                                                                               | 16 bit                            |
|                      | Accuracy         |                                                                      | 0.2% Full Scale                                                                                                      | 0.2% Full Scale                   |
|                      | Conversion Cycle |                                                                      |                                                                                                                      |                                   |
| External Connection  |                  | Removeable TB                                                        | Removeable TB                                                                                                        |                                   |
| Max Current @ 24 Vdc |                  | 150 mA                                                               | 200 mA                                                                                                               | 160 mA                            |
| Weight               |                  | 155 gm                                                               | 155 gm                                                                                                               | 155 gm                            |

## Special I/O (under development)

| Specification        |                      |  |
|----------------------|----------------------|--|
| Inputs               | Input Type           |  |
|                      | Input Points         |  |
|                      | Rated Input Voltage  |  |
|                      | Rated Input Current  |  |
|                      | Min. ON Voltage      |  |
|                      | Max. OFF Voltage     |  |
|                      | ON/OFF Delay Time    |  |
|                      | ON/OFF Delay Time HS |  |
|                      | Isolation            |  |
| Outputs              | Output Type          |  |
|                      | Output Points        |  |
|                      | Rated Load Voltage   |  |
|                      | Rated Load Voltage   |  |
|                      | Max. Load Current    |  |
|                      | Leak Current at OFF  |  |
|                      | ON/OFF Delay Time    |  |
|                      |                      |  |
| External Connection  |                      |  |
| Max Current @ 24 Vdc |                      |  |
| Weight               |                      |  |



# ORDER NUMBERS

| TIC_NO             | DESCRIPTION                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------|
| <b>CPUs</b>        |                                                                                                             |
| GPU288*3S          | V200 CPU, 8 Inputs 24 Vdc, 2 Outputs 24 Vdc Transistor, 6 Outputs Relay, Requires 24 Vdc PS.                |
| GPU200*3S          | V200 CPU, Ethernet & USB Port, Requires 24 Vdc PS.                                                          |
| <b>I/O Modules</b> |                                                                                                             |
| GDI216**S          | 16 Inputs, 24 Vdc, 8p/com, sink/source                                                                      |
| GDR288**S          | 8 Inputs, 24 Vdc. 4p/com, 8 Outputs Relay, 4p/com                                                           |
| GDD288P*S          | 8 Inputs, 24 Vdc. 4p/com, 8 Outputs PNP, 4p/com                                                             |
| GDD288*S           | 8 Inputs, 24 Vdc. 4p/com, 8 Outputs NPN, 4p/com                                                             |
| GRO216**S          | 16 Outputs Relay, 8p/com                                                                                    |
| GDO216P*S          | 16 Outputs, 24 Vdc Transistor, 8p/com, PNP                                                                  |
| GDO216*S           | 16 Outputs, 24 Vdc Transistor, 8p/com, NPN                                                                  |
| GAD208L*S          | 8 Analog Inputs, 4-20 mA, 0-10 Vdc (12 bit)                                                                 |
| 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.                                                                        |

Notes: 1. More analog and communications modules under development.  
 2. See OIS PLUS brochure for OIS PLUS part numbers.

**TOSHIBA INDUSTRIAL PRODUCTS:**

- Adjustable Speed Drives
- Motors
- Motor Controls
- Instrumentation & PLCs
- Uninterruptible Power Systems

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