

**Tri-Sen - Controle de Surge de Compressores TS160**

# TS160

Compressor Anti-Surge &  
Performance Controller



[www.tri-sen.com](http://www.tri-sen.com)



# TS160

## Compressor Anti-Surge & Performance Controller

### Description

The TS160 is a multi-loop microprocessor based controller designed to control compressor surge and performance.

### Applications

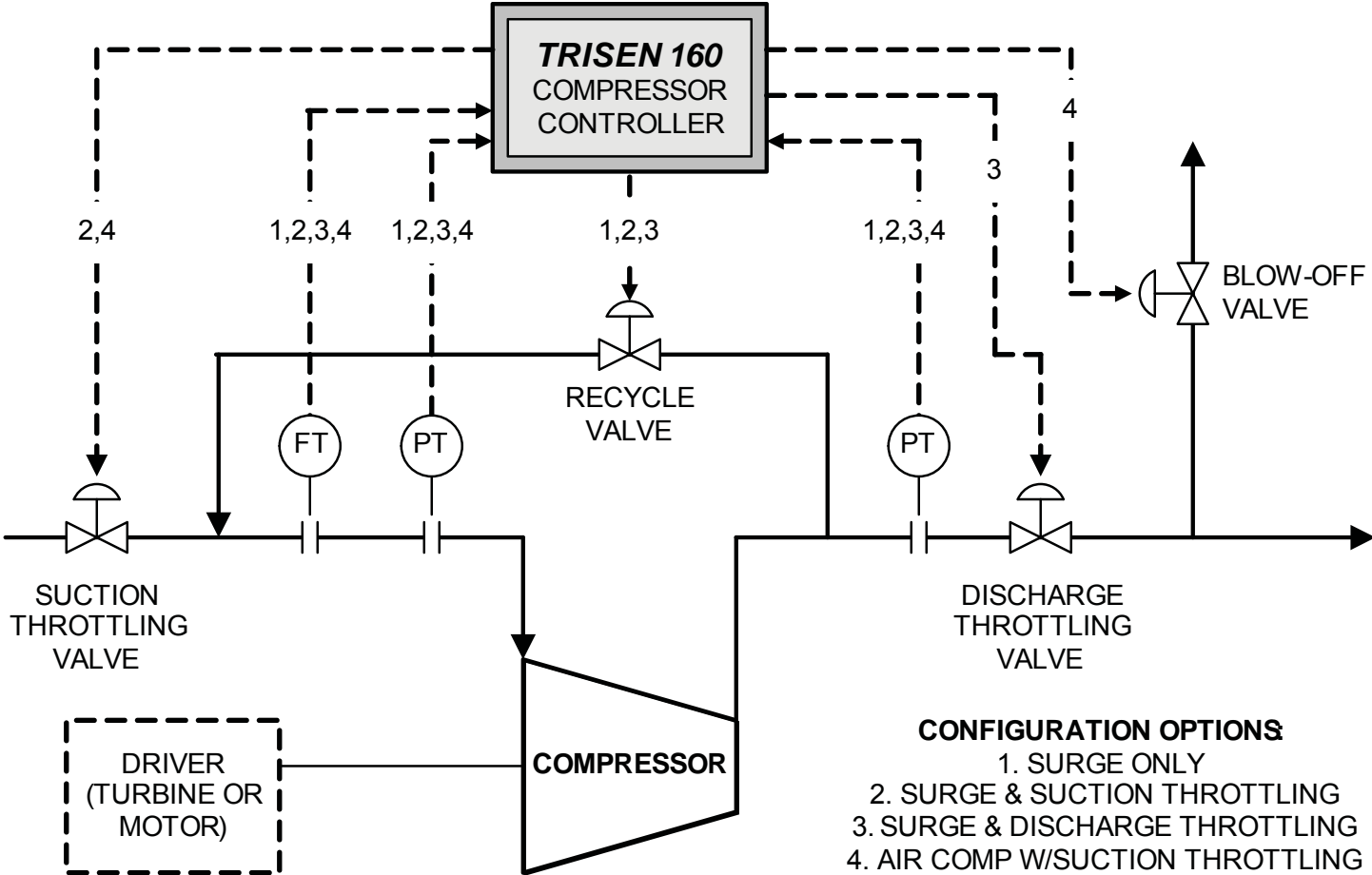
The TS160 is designed for motor or turbine-driven centrifugal and axial compressors in process applications, including refineries, petrochemicals, paper manufacturing, gas transmission pipelines, and many others. The *TS160* is ideally suited for surge prevention because of its fast processing speed (10ms input/output scan time and 50 ms loop cycle time), and its ability to efficiently perform the complex algorithms required.



### Features

- Small size and built-in termination assembly allow the controller to be mounted virtually anywhere.
- Integrated operator interface provides a comprehensive window on compressor operation in a readily identifiable format that minimizes the time required for operator training.
- Easily read front-mounted displays and pushbuttons simplify operations, while standard communications features allow a detailed view of the compressor operating parameters on a personal computer (PC).
- Proven anti-surge algorithms
- Minimum flow fallback
- Multiple load sharing solutions
- On-line logic changes
- Windows-based configuration tools, 95/98/NT/2000/ME
- Universal surge curve approach
- Setpoint hover
- Adaptive gain
- Surge override function
- Automatic safety margin adjustment
- Fast data acquisition
- Integrated event recorder with X-Y plotting
- MODBUS communications
- Remote monitoring software
- Peer-to-peer communications
- Simple replacement
- Fast data acquisition and XY plotting identify operating problems
- On-line logic download changes eliminate shutdowns
- Load sharing option allows parallel compressors to operate cooperatively
- Real-time operating data views

### Typical Configuration



# TS160

## Compressor Anti-Surge & Performance Controller

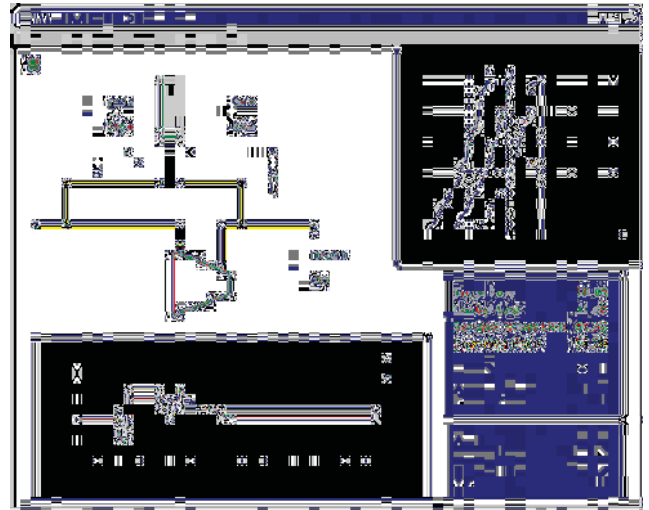
### Specifications

#### Inputs

- 4 Analog Inputs, 0-5, 0.25-1.25, 1-5 VDC; 0-20, 4-20, or 10-50 mA
- 4 Digital Inputs, 4 On/Off or 2 On/Off & 2 Pulse (27.5 VDC internally supplied, or DC power supply voltage option)

#### Outputs

- 2 Analog Outputs, 4-20 or 0-20 mA DC current source
- 2 Digital Outputs, On/Off logic, 125 mA DC at 50 VDC max



#### Communications

Three (3) serial ports:

- Vertical Communications Port To/from operator interface PC. RS485/232 at 9600, 19200 or 38400 baud. 1200 or 2400 baud are available and can be used when peer-to-peer communication is not used.
- Peer-to-Peer Communications Port To/from other *TRI-SEN 160s*. RS485 at 286 kbaud.
- Auxiliary Communications Port Modbus Protocol Communications Port. Selectable 1200 or 2400 baud for Modbus operations

#### Input Power Supply

- Line Voltage 90 to 130 VAC, or 180 to 260 VAC, 45 to 400 Hz  
Optional 24 VDC (nominal) power supply (23-28 VDC)
- Power Requirements 35 watts max, 20 watts avg (depending on configuration)

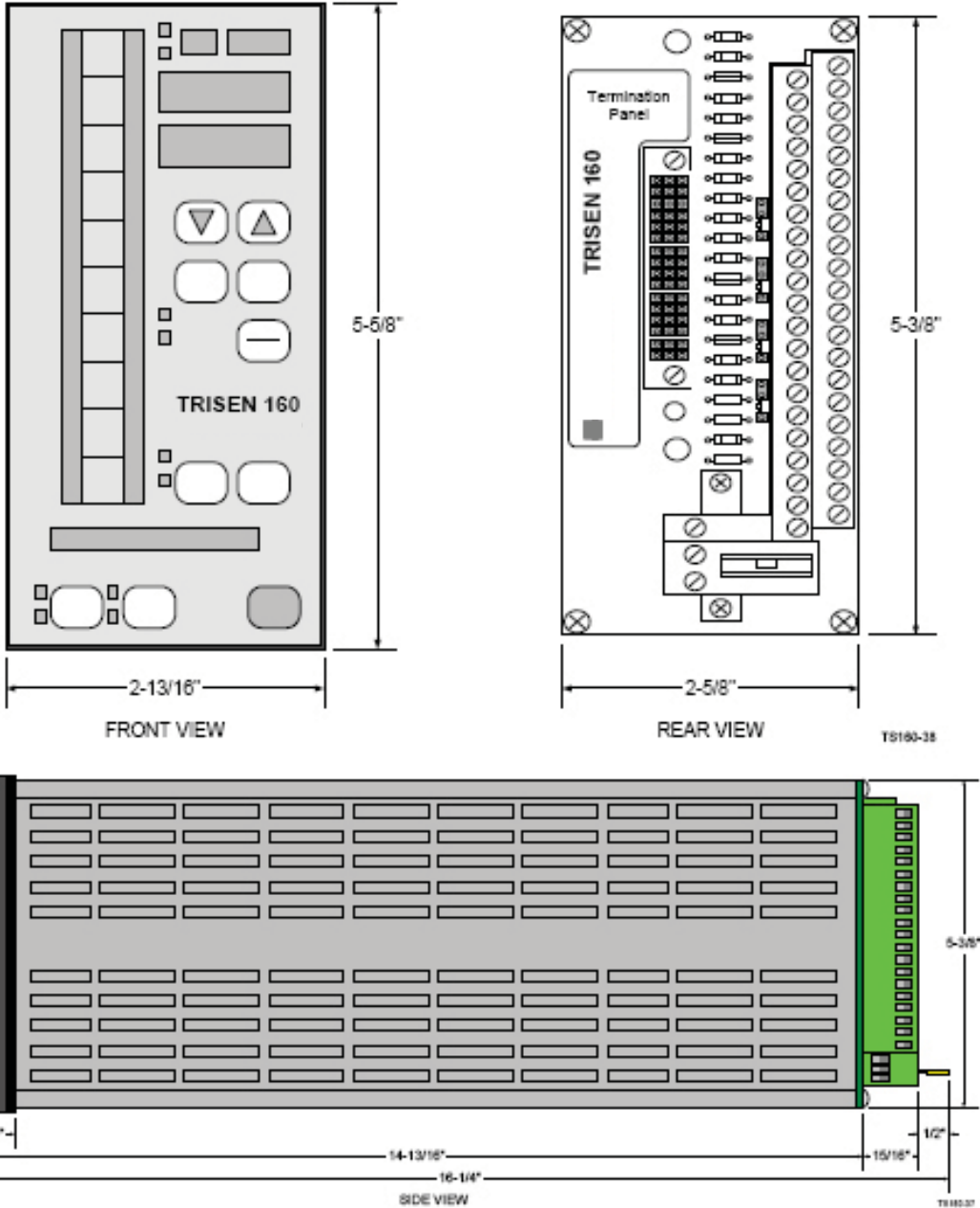
#### Environmental Specifications

- 32 to 130°F (0 to 55°C)
- 5 to 96% relative humidity
- Vibration 5 – 60 Hz at 0.030 inch total excursion along X, Y, and Z axes
- Chemical Corrosion Resistance Conformal coating is applied to boards for protection against H<sub>2</sub>S, SO<sub>2</sub>, and traces of sand, salt, and dust.

## Compressor Anti-Surge & Performance Controller

### Dimensions

- 24"W x 20"H x 8"D



### Ordering Information

Model Number

Description

#### Controls

1600037-100	TS160 Configurable Surge Control System 110/220 VAC, RS-232
1600037-200	TS160 Configurable Surge Control System 110/220 VAC, RS-485
1600037-300	TS160 Configurable Surge Control System, 24 VDC RS-232
1600037-400	TS160 Configurable Surge Control System, 24 VDC RS-485

#### Software

20-6910	TS160 Remote Data Logging Software –(No documentation included. Refer to Operations Guide included in the TS160 Users Documentation)
20-6911	TS160 Playback Software (No documentation included. Refer to Operations Guide included in the TS160 Users Documentation)
20-6869	TS160 Surge PC Configuration Software License and Users Documentation (one set is included with each TS160 system ordered)
20-6870	TS160 PC Programming Software (for use only by qualified turbomachinery controls engineers to make custom programming changes to the TS160)

#### Documentation

99-6808	TS160 Users Documentation (Includes Operations Guide, Configuration Guide, Hardware & Installation Guide)
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#### Configuration Services

4901000	TS160 Basic Surge Application Configuration (Please contact Tri-Sen directly regarding configuration and project schedule)
4901001	TS160 Performance Control Configuration (To purchase this option, the Basic Application Configuration must also be purchased. Please contact Tri-Sen directly regarding configuration and project schedule)

#### TS160 Notes:

##### Software

- Each TS160 controller includes one PC Configuration Software and License and one copy of the Users Documentation (all included with part number 20-6869).
- The Basic TS160 anti-surge configuration options are as follows:
  - ✓ Surge only
  - ✓ Surge with suction throttling
  - ✓ Surge with discharge throttling
  - ✓ Air compressor with suction throttling