

# LabView driver for the SRS PTC10

Stanford Research Systems

Programmable Temperature Controller model #10

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## Initialize



## Global



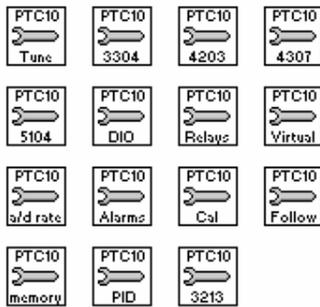
## Application



## Close



## Configuration



## Action



## Status



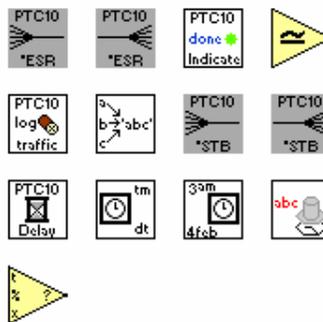
## Data



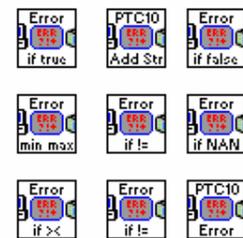
## Communication



## Utility



## Error



## Application VIs (example applications)

**SrsPtcAppGraph.vi:** This application monitors and graphs one data channel on an SRS PTC10 Programmable Temperature Controller

**SrsPtcAppInteractive.vi:** The PTC10 Interactive Terminal sends commands & queries and receives replies from an SRS PTC10 Programmable Temperature Controller.

**SrsPtcAppMonitor.vi:** Monitors up to four data channels on an SRS PTC10 Programmable Temperature Controller. This stand-alone application should not be called from another program.

**SrsPtcAppSaveDataLog.vi:** This application saves one SRS PTC10 data log channel to the local disk. The LabView VISA / SRS PTC10 comm traffic log is NOT the same as the SRS PTC10 data log.

### **Instrument / LabView control VIs**

**SrsPtcInstInitialize.vi:** Initializes LabView VISA communication with an SRS PTC10 Programmable Temperature Controller

**SrsPtcInstClose.vi:** Closes communication with an SRS PTC10 Programmable Temperature Controller

**SrsPtcInstGlobal.vi:** Contains the global variables for this device driver

### **Action VIs**

**SrsPtcActionOutputEnable.vi:** PTC10 Output Enable turns all outputs on or off

**SrsPtcActionReset.vi:** PTC10 Reset executes one of the PTC10 reset functions

**SrsPtcActionSelftest.vi:** Executes an IEEE-488 \*TST? query to a PTC10. An error is added to the error cluster if the selftest fails.

### **Data VIs**

**SrsPtcDataInfo.vi:** Queries information about the PTC10 Programmable Temperature Controller

**SrsPtcDataRead.vi:** Reads data from one channel of an SRS PTC10 Programmable Temperature Controller

**SrsPtcDataWaitTillStable.vi:** Reads data from one channel of an SRS PTC10 Programmable Temperature Controller until the data becomes stable near the expected value. Generates an error if it doesn't.

### **Status VIs**

**SrsPtcStatus.vi:** Do PTC10 status

- Read \*STB? (IEEE-488 Status Byte)
- If the Event Summary Bit is set, read \*ESR? (IEEE-488 Event Status Register)
- If the Alarm Status Bit is set, read \*ASR? (PTC10 Alarm Status Register)

**See also:**

SrsPtcUtilEsrBitsIn  
SrsPtcUtilEsrBitsOut  
SrsPtcUtilStbBitsIn  
SrsPtcUtilStbBitsOut

### **Configuration VIs**

**SrsPtcConfigAdRate.vi:** Configure the A/D rate of the SRS PTC10 Programmable Temperature Controller

**SrsPtcConfig3213.vi:** Configure a PTC3213 RTD reader input channel

**SrsPtcConfig3304.vi:** Configure a PTC3304 thermocouple reader input channel

**SrsPtcConfig4203.vi:** Configure a PTC4203 AC heater driver output channel  
**SrsPtcConfig4307.vi:** Configure a PTC4307 DC heater driver output channel  
**SrsPtcConfig5104.vi:** Configure a PTC5104 analog I/O channel  
**SrsPtcConfig5203Dio.vi:** Configure a PTC5203 digital I/O channel  
**SrsPtcConfig5203Relay.vi:** Configure a PTC5203 relay output channel  
**SrsPtcConfig5203Virtual.vi:** Configure a PTC5203 virtual I/O channel  
**SrsPtcConfigAlarm.vi:** Configure a PTC10 input channel alarm  
**SrsPtcConfigCal.vi:** Configure the calibration parameters of a PTC10 input channel  
**SrsPtcConfigPid.vi:** Configure the PID parameters of a PTC10 output channel  
**SrsPtcConfigMemory.vi:** Configure one PID memory parameter set for a PTC10 output channel  
**SrsPtcConfigTune.vi:** Configure the PID tuning parameters of a PTC10 output channel  
**SrsPtcConfigFollow.vi:** Configure the "follow mode" parameters of a PTC10 output channel

### **Low Level Communication VIs**

**SrsPtcCommSet.vi:** Sends a VISA set command to a PTC10.  
**SrsPtcCommSetFloat.vi:** Sends a VISA set command and a floating point data value to a PTC10  
**SrsPtcCommSetInteger.vi:** Sends a VISA set command and an integer data value to a PTC10  
**SrsPtcCommSetString.vi:** Sends a VISA set command and an arbitrary string data value to a PTC10  
**SrsPtcCommQuery.vi:** Sends a VISA query to a PTC10 & gets the (single line) reply  
**SrsPtcCommQueryTx.vi:** VISA Query is broken into two parts: Transmit the query string (TX) and receive the reply (RX). This is the "transmit the query string" part. It is similar to SrsPtcCommSet.vi.  
**SrsPtcCommQueryRx.vi:** VISA Query is broken into two parts: Transmit the query string (TX) and receive the reply (RX). This is the "receive the reply" part.  
**SrsPtcCommQueryPara.vi:** Sends a command over a VISA interface and receives a multi-line paragraph back  
**SrsPtcCommQueryParaRx.vi:** VISA Query Para is broken into two parts: Transmit the query string (TX) and receive the multi-line reply (RX). This is the "receive the reply" part. It reads until there are no more reply lines and RX times out.

### **Error VIs**

**SrsPtcErr.vi:** Inserts an error, message, and the error location into the LabView "error out" cluster. All conditional SRS PTC10 error VIs use this.  
**SrsPtcErrAddString.vi:** Adds extra information to a LabView error cluster  
**SrsPtcErrIfFalse.vi:** Generates an error if the condition is false  
**SrsPtcErrIfTrue.vi:** Generates an error if the condition is true

- SrsPtcErrIfMinMax.vi:** Generates an error if the data is below the minimum or above the maximum
- SrsPtcErrIfOutOfRange.vi:** Generates an error if the data is not close enough to the target value
- SrsPtcErrIfNotEqual.vi:** Generates an error if the data (integer) is not equal to the expected value
- SrsPtcErrIfNotNumber.vi:** Generates an error if the data (string) does not start with a number
- SrsPtcErrIfStringMismatch.vi:** Generates an error if the string does not match the expected value. Control inputs specify the type of matching.

### Utility VIs

- SrsPtcUtilEsrBitsIn.vi:** Convert a cluster of \*ESR & \*ESE register bits into a byte value
- SrsPtcUtilEsrBitsOut.vi:** Convert a byte value into a cluster of \*ESR & \*ESE register bits
- SrsPtcUtilIndicator.vi:** Sends a string to the output and sets the "done" indicator when called
- SrsPtcUtilsClose.vi:** Determines if two numbers are "close" to each other
- SrsPtcUtilLog.vi:** Sends a string and a floating point number to the LabView VISA / SRS PTC10 comm traffic log file. The LabView VISA / SRS PTC10 comm traffic log is NOT the same as the SRS PTC10 data log.
- SrsPtcUtilQuoteString.vi:** The SRS PTC10 Programmable Temperature Controller requires that commands with spaces be quoted and parameters with spaces be quoted. You can concatenate and then quote up to 3 sub-strings to build your PTC10 commands.
- SrsPtcUtilStbBitsIn.vi:** Convert a cluster of \*STB & \*SRE register bits into a byte value
- SrsPtcUtilStbBitsOut.vi:** Convert a byte value into a cluster of \*STB & \*SRE register bits
- SrsPtcUtilTimeDelay.vi:** Holds the program for a time delay and logs it to the LabView VISA / SRS PTC10 comm traffic log
- SrsPtcUtilTimeRecToString.vi:** Converts a LabView time/date record into two strings describing the time and date. The time & date strings are readable by both humans and the PTC10.
- SrsPtcUtilTimeStringToRec.vi:** Converts a PTC10 text time string and a text date string into a LabView date/time record.
- SrsPtcUtilTimeStringToStamp.vi:** Converts a PTC10 text time string and a text date string into a LabView timestamp.
- SrsPtcUtilValueInRange.vi:** Determines if a value is close enough to the target