Perception Remote Control

Specifications

PERCEPTION REMOTE CONTROL

Overview

For those users who want to communicate with Perception, or to control connected hardware from within their own application, HBM offers a convenient remote control package that includes two different communication interfaces: RPC and COM.

RPC is a communication technology that enables data exchange and invocation of functionality residing in a different process on the same computer, on the local area network, or across the Internet.

COM is a technology that enables software components to communicate directly with each other. COM is supported by any major programming environment like .NET, Visual Basic, LabView, Matlab, C/C++ etc.

RPC

Remote Procedure Call (RPC) defines a powerful technology for creating distributed client/server programs. RPC can be used in all client/server applications based on Windows operating systems. It can also be used to create client and server programs for heterogeneous network environments that include operating systems like Unix, Linux and Apple.

RPC is a preferred way of communication when heavy communication traffic is involved. The provided RPC interface is designed to be used by C/C++ programmers. The supplied documentation contains a command overview, command reference and examples. RPC includes direct control of hardware settings like timebase, acquisition modes, amplifier, trigger modes, etc.

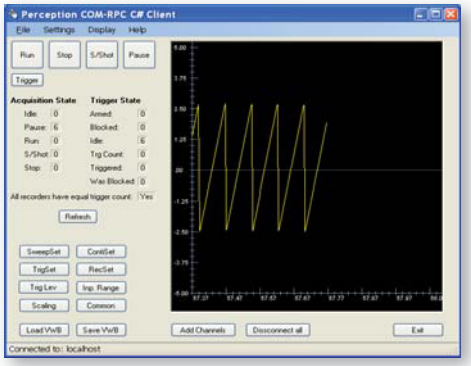
COM

The Perception Remote Control package includes a COM wrapper with the RPC client program that makes it easy to create remote control programs. You can use the common COM interface to work with a variety of programming languages, including C#, VB (.NET), C/C++, MATLAB, Agilent-VEE and LabView.

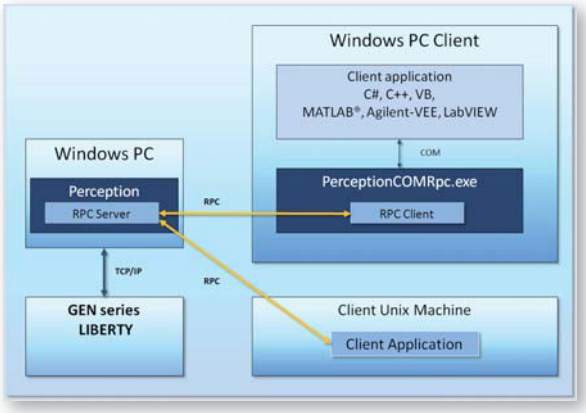
In addition to a detailed user manual, a help file reference provides additional examples.

COM is most likely the easiest and most popular way to interface. The high-level Microsoft Component Object Model provides full functionality and does not require knowledge of RPC.

```
public bool Connect(string cAddress, out string Result)
{
    Result = "";

    // Connect to RPC Server (Perception)
    try
    {
        m_RPC.SetServerAddress(cAddress);
        m_RPC.ConnectToServer();

        m_bConnected = true;
        RetrieveHardwareNames();
        UpdateAcqAndTriggerState();
        timer1.Enabled = true;
        toolStripStatusLabel1.Text = "Connected to: " + cAddress;
    }
    catch (Exception)
    {
        // RPC connection could not be setup.
        Result = "Could not connect to Perception RPC Server";
        m_bConnected = false;
        toolStripStatusLabel1.Text = "Not connected";
        return false;
    }
    return true;
}

private void MainForm_FormClosed(object sender, FormClosedEventArgs e)
{
    if (m_RPC == null) return;
    if (!m_bConnected) return;
    m_RPC.DisconnectFromServer();
    toolStripStatusLabel1.Text = "Not connected";
}

private void btnRun_Click(object sender, EventArgs e)
{
    if (!PerceptionReady()) return;
    m_RPC.Start();
    UpdateAcqAndTriggerState();
}
```



You can utilize RPC to control GEN DAQ hardware from a client application. A COM wrapper helps you to use this functionality within any well-known development environment, without requiring detailed knowledge of RPC.



Examples of source code are included to give programmers a head start.

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Command summary

File operations

- **GetFilenames** retrieve filenames from a specified directory
- **LoadVwb** load a specified workbench
- **SaveVwb** save workbench with a specific name
- **LoadSetting** load hardware settings from a selected file
- **SaveSettings** save hardware settings with a specific name

Acquisition control

- **Start** start an acquisition
- **Stop** stop the active acquisition
- **OneShot** start a single-shot sweep
- **Pause** pauses the active acquisition
- **Trigger** generate a (software) trigger

Status

- **GetAcquisitionState** retrieve the current acquisition state of all recorders
- **GetTriggerState** retrieve the current trigger state of all recorders

Live data is supplied as a reduced data stream of min/max pairs as used by *Perception* for display purposes.

Data retrieval (live data)

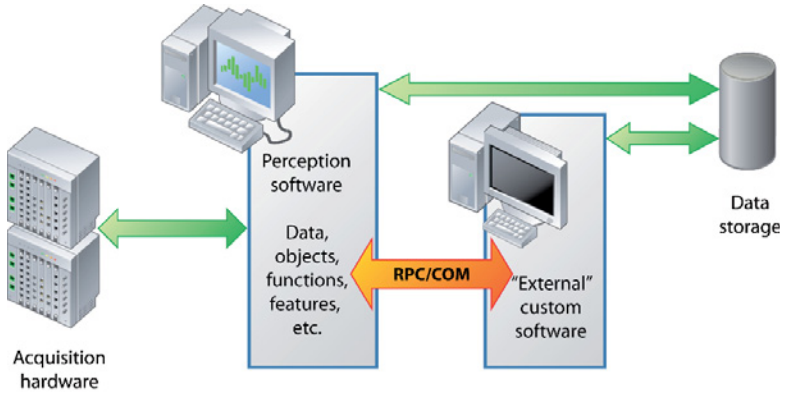
- **GetAvailableWaveforms** get a list
- **SubscribeLiveWaveform** connect
- **UnsubscribeLiveWaveform** disconnect
- **IsSubcribed** verify waveform connection
- **GetData** fetch data
- **GetMultiData** get multiple data

Settings (RPC only)

- **[set][get]ChannelEnable**
- **[set][get]TriggerSettings**
- **[set][get]TimebaseSettings**
- **[set][get]StorageSetting**
- **[set][get]SweepSetting**
- **[set][get]ContinuousSettings**
- **[set][get]SCCouplingSettings**
- **[set][get]SCUserScalingSettings**
- **[set][get]SCInputRangesSettings**
- **[set][get]SCFilterSettings**
- **[set][get]SCExcitationSettings**
- **[set][get]SCBridgeSetupSettings**
- **[set][get]SCBridgeCalibrationSettings**
- **[set][get]SCBridgeBalancingSettings**
- **[get]CalibrationInfo**
- **[set][get]TriggerLevelSettings**
- **[set][get]TriggerRepeatTimerSettings**
- **[set][get]TriggerPulseDetectorSettings**
- **[set][get]AlarmLevelsSettings**
- **[get]InfoSettings**

- **StartAutoBalance**
- **[set][get]ShuntResistorActive**
- **[set][get]PowerControlSettings**
- **ChannelsScType**
- **[set][get]CalibrationSettings**
- **[set][get]RecSweepSettings**
- **[set][get]RecCommonSettings**
- **[set][get]RecTimebaseSettings**
- **[set][get]RecTriggerBusSettings**
- **[get]RecInfoSettings**
- **[set][get]RecStorageSettings**
- **[set][get]RecDefaultSettings**

- **[set][get]CommonSettings**
- **[set][get]NetworkSettings**
- **[set][get]MasterTimebaseSettings**
- **[set][get]TriggerIOSettings**
- **[set][get]DiskSettings**
- **[get]MainframeInfoSettings**
- **Configuration**
- **MainframeSetDefaultSettings**
- **IsCommunicationActive**
- **GetCommunicationAddress**
- **StorageActive**
- **GetDiskMemoryUsage**



The *Perception* remote control interfaces enable communication with external, custom software, to access data, settings and information.

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HBM Genesis HighSpeed products were previously sold under the Nicolet brand. The **Nicolet** brand is owned by Thermo Fisher Scientific Inc. Corporation.

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