

Software manual
Active X Controls
Signalog 6000 &
PICAS



PEEKEL INSTRUMENTS B.V
INDUSTRIEWEG 161
3044 AS ROTTERDAM
TEL: (010)-415 27 22
FAX: (010)-437 68 26
EMAIL: sales@peekel.nl

PEEKEL INSTRUMENTS GMBH
BERGMANNSTRASSE 43
44809 BOCHUM
TEL: 0234/904 1603
FAX: 0234/904 1605
EMAIL: Peekel@t-online.de

Contents:

| | | |
|----------|--|-----------|
| 1 | Introduction | 3 |
| 1.1 | Channel numbering | 3 |
| 2 | PB6000 control | 4 |
| 2.1 | Properties | 4 |
| 2.2 | Methods..... | 6 |
| 2.3 | Events..... | 7 |
| 2.4 | Setting up the control..... | 9 |
| 2.5 | Datalog configuration..... | 10 |
| 2.6 | Datalog information..... | 10 |
| 3 | CA2CF control | 12 |
| 3.1 | Properties | 14 |
| 3.2 | Dependence of properties | 17 |
| 3.3 | Methods..... | 18 |
| 3.4 | Properties and Methods..... | 19 |
| 3.5 | Events..... | 19 |
| 4 | CA4AI control | 20 |
| 4.1 | Properties | 21 |
| 4.2 | Dependence of properties | 24 |
| 4.3 | Methods..... | 24 |
| 4.4 | Properties and Methods..... | 25 |
| 4.5 | Events..... | 25 |
| 5 | Signalogserver | 26 |
| 5.1 | Using the server on a remote PC | 26 |
| 5.1.1 | DCOM configuration | 26 |
| 5.1.2 | Dcomcnfg on Windows 95/98..... | 26 |
| 5.1.3 | Windows 95/98 in a Windows NT Domain | 27 |
| 5.1.4 | Windows 95/98 outside a Windows NT Domain..... | 27 |
| 5.1.5 | Dcomcnfg on Windows NT | 27 |
| 5.1.6 | DCOM Error Codes | 28 |
| 6 | Register the Active X controls | 29 |

| | |
|----------------|----------------------------------|
| Version number | Version 1.3.3 |
| Release date | July 2004 |
| Author | J.H. Steeneveld & A.P. Cosman |

1 Introduction

The PB6000 processor card, which is used in PICAS and the Signalog 6000 system, is equipped with an RS232C communication port. Through this port, the measurement values of the input channels can be asked for. All the settings for the PB6000, CA2CF and CA4AI card(s) can be adjusted through this communication channel.

To read and/or adjust those settings in a sophisticated manner, a software package is available. This package contains the following parts:

- Signalog server
- PB6000 Active X control
- CA2CF Active X control
- CA4AI Active X control

Those 4 modules offer the user a way to read and change the settings as the user wants.

The settings are made in the Active X Controls. The Signalog server will be activated by an Active X control, and will maintain the communication, through the RS232 channel, with the connected PICAS or Signalog 6000 system.

The PICAS and the Signalog 6000 system are built on the same hardware and software components. Therefore the functionality of both the systems is the same. The only difference is that the PICAS holds 2 CA2CF cards, with a total of 4 channels, and the Signalog 6000 system can hold 13 cards, with a total of 26 channels.

In the rest of this manual, where the term Signalog system is used, the subject is valid for both the PICAS and the Signalog 6000 system. Only the differences between the systems are mentioned separately.

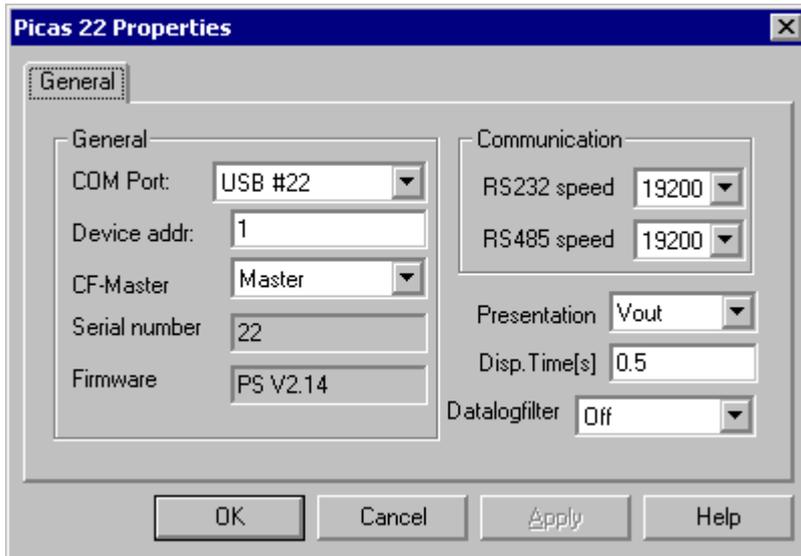
1.1 Channel numbering

One Signalog system can hold 52 channels at maximum (8 for PICAS). Each position, which can hold an amplifier card, is called a Slot. Those slots are numbered from 0 to 12 (0 to 1 for PICAS).

Each slot can address 4 input channels. In total a system can hold $4 \cdot 13 = 52$ channels (8 for PICAS). The channels are numbered from 0 to 51 (0 to 7 for PICAS), or through the slot number and slot-channel number. Channel number 6 can also be named as slot 1/channel 3.

2 PB6000 control

The PB6000 control takes care of the settings on the PB6000 processor card. Most of those settings can be accessed through the property box of the control. This property box has the following layout:



The actual functional meaning of the settings is explained in the PB6000 user manual.

2.1 Properties

The following properties are present in this control:
The type of variable is noted as done in Visual Basic.

| Name | Type | Description | Allowed values |
|--------------|---------|--|--|
| FWVersion | string | Firmware version number | Read only |
| SerialNumber | long | Serial number PB6000 | Read only |
| DeviceNumber | integer | Device number. When changing the device number, the device number of the PB6000 will change also. Watch out in network configurations. | 1 - 250 |
| CFMaster | integer | CF master/slave setting | 0 = slave 1 = master 2 = local |
| RS232Speed | integer | Speed RS232 port | 0 = 4800 baud 1 = 9600 baud 2 = 19200 baud 3 = 38400 baud |
| RS485Speed | integer | Speed RS485 port | 0 = 9600 baud 1 = 19200 baud 2 = 38400 baud |
| MaxChannel | integer | Maximum number of | Read only |

| Name | Type | Description | Allowed values |
|-------------------|---------|--|---|
| | | channels | 8 for PICAS 52 for Signalog |
| ValueUnit | integer | Determine in which unit the measurement value is displayed | 0 =Output V 1 =Signal V/V 2 =Phys. Unit |
| DisplayTime | integer | Filter time for the actual measurement value | [0.1] second |
| Language | Integer | Language of the help file and the property box(es) | 7 = German 9 = English 19 = Dutch |
| PeakValueActive | integer | Setting the peak value option | 0 = no peakvalue detection 1 = peak value detection |
| Contrast* | integer | Picas display contrast setting | Read only |
| DatalogMode* | integer | Datalog interval multiplier setting | Read only 0 = 10 milliseconds 1 = 1 second |
| DatalogStarted* | integer | Datalog status information | Read only, sum of: 1 = datalog active + 2 = starttime available + 4 = buffer contains data |
| AvailablePorts | string | Available communication ports | Read only, details below. |
| CommType | long | The communication port type for this device | Use the SelectDeviceEx method to select communication port. |
| CommNumber | long | The communication port number for this device | Use the SelectDeviceEx method to select communication port. |
| ProcessorCard | integer | The type of processor card in the device | Read only -1 = unknown 0 = PB6000 1 = PB6100 |
| DatalogFilter** | integer | The type of filtering applied to the datalog function | 0 = no filtering 1 = Logging only when digital input 1 set 2 = Logging only when digital input 2 set 3 = Logging only when the trip of the first channel of the device is active 4 = Logging only when the trip of the 2 nd channel is active 5 = ... |
| AvailableChannels | integer | Total number of available channels in the device | Read only |

*) This setting is only available for devices with version 2.07 or higher firmware. Otherwise, the value of the property is undetermined.

*) This setting is only available for devices with version 2.14 or higher firmware. Otherwise, the value of the property is undetermined.

The AvailablePorts property in detail:

This property shows the available communication ports in a comma-separated string.

Format: 'DefaultPort#, PortType1, PortNumber1, PortName1, PortType2, PortNumber2, PortName2, ...'

Example: '1,0,1,COM1,0,2,COM2'.

In this example, there are 2 ports. The first number indicates that port #1 in the list is the default port. This is actually the second port, because ports in the list are numbered from 0 upwards. The first port has type 0 (serial port), number 1 and description 'COM1'. The second port has type 0 (serial port), number 2 and description 'COM2'.

Two communication types are currently defined:

0 = serial port

1 = USB port

For serial communication, the CommType property should be set to 0, and the CommNumber property to the serial port number (eg. 2 for COM2). For USB communication, the CommType property should be set to 1, and the CommNumber property to the serial number of the Picas/Signalog device (as shown on the Picas display or PB6000 device properties).

2.2 Methods

The following methods are present in this control:

| Name | return | Parameter | Description |
|--|--------|-----------|---|
| CentralCalibrate | | | Calibrate all channels |
| CentralBalance | | | Balance all channels |
| StoreAllChannelsInFlash | | | Store all channel information in the FLASH memory |
| LoadAllChannelFromFlash | | | Load all channel information from the FLASH memory |
| CalibrateChannels | | string | Calibrate those channels. The string holds the channel numbers, separated by a comma |
| BalanceChannels | | string | Balance these channels. The string hold the channel numbers, separated by a comma |
| GetActualCardsInSlots | string | | The string contains the type number for the card in each slot. When no card is present in a slot card type 255 will be returned for that slot. Commas separate the numbers. |
| SetSlotConfiguration | | string | The string contains the desired card configuration of the system. For the slots which contain no card, the type number 255 must be used. Commas separate the type numbers. |
| GetSlotConfiguration | string | | This string contains the desired card configuration, which is present in the system. For a slot which contains no card the type number 255 is present. Commas separate the type numbers. |
| GetInfoFromDevice | | | After this command, all information will be retrieved from the system. The properties of the control are updated from those values. |
| SelectDevice <i>obsolete, use SelectDeviceEx instead!</i> | | integer | With this command, the device number of the control is changed. The device number of the connected system remains unchanged. This function must be used to "connect" the device control to a signalog system. |

| Name | return | Parameter | Description |
|-----------------------|---------|---------------------|---|
| SelectDeviceEx | | long, long, integer | Selects the device the control should connect to. Use the 'AvailablePorts' property to determine valid values for the CommType and CommNumber parameters. With this command, the device number of the control is changed. The device number of the connected system remains unchanged. This function must be used to “connect” the device control to a signalog system. |
| ConfigDatalog | integer | string | With this string the datalog configuration is sent to the system. Detailed description below. |
| StartDatalog | integer | | This command will start the datalog action. If no datalog configuration data is present, the value of “1” will be returned, and the datalog action will not be started. |
| StopDatalog | integer | | This command will stop the datalog action. |
| AllowDatalogInfo | boolean | | 0 = no datalog information is sent to the application 1 = datalog information is sent to the application. |
| ResetPeakValues | | | The peakvalues in the device are reset. |
| SynchronizeDeviceTime | | | Sets the realtime clock in the device to match the current PC time. <i>Only available for PB6100 processor cards.</i> |

The ConfigDatalog method in detail:

The string parameter holds the sample time in milliseconds for each channel. A comma separates the values for the channels.

A value of 0 means that this channel is not measured during datalog actions.

A value of 1 will measure the channel each 0.001 second = 1 millisecond.

A value of 1000 will measure the channel each second.

If the configuration is accepted the return value will be -1. Any other number indicates that the requested measurement speed can not be realized. The number indicates the first channel that exceeds the maximum speed. The message is then not accepted, and the datalogging can not be started.

Example:

'1,0,0.5'

Channel 0 will be measured once each second ('1'), channel 1 will not be measured at all ('0'), channel 2 will be measured at 2 kHz (each 0.5 millisecond), if the hardware allows this speed.

Datalog speed limitations for PB6000 processor cards:

If all specified values are dividable by 100, the device will set the interval for all channels as a multiple of 1 second, between 1 and 250 seconds. Higher intervals (eg. 300 seconds) are silently reduced to the maximum of 250 seconds.

If at least one value is not dividable by 100, the device will set the interval for all channels as a multiple of 10 milliseconds, between 0.01 and 2.5 seconds. Higher intervals (eg. 3 seconds) are silently reduced to the maximum of 2.5 seconds.

2.3 Events

This control generate the following events:

| Name | Parameter | Description |
|--------------------|------------------------------------|--|
| NewDatalogInfo | string | <i>obsolete, will not be generated by the control</i> |
| CardInSlotsChanged | string | A card configuration is received from the Signalog system, which is different than the configuration in the control. The received card configuration is present in the string. |
| NewDatalogSettings | String | New datalog settings are received. See below for details. |
| CommStatusChanges | integer | 0 = there is no communication between de Signalogserver and the device 1 = the communication between the device and the signalogserver is ok. |
| NewDatalogValues | integer, variant, variant, variant | New datalog information is received from the Signalog system This information is present in the string. No internal buffering is done, so the user must handle this message, to prevent that the datalog information is lost. Further details below. |

The NewDatalogValues event in detail:

This event has the following parameters:

nValues (integer), contains the number of measurement values returned by this event.

Channels (variant), contains an array of 'Byte's with channel numbers, from Channels(0) up to Channels(nValues-1). Channels are numbered from 0 upwards.

Values (variant), contains an array of 'Single's with measurement values, from Values(0) up to Values(nValues-1).

msecTimeStamps (variant), contains an array 'of Currency's with measurement values, from msecTimeStamps(0) up to msecTimeStamps(nValues-1).

If the start time of the datalog information is unknown, these timestamps count milliseconds since the start of the datalog operation.

Otherwise, in Visual Basic, the Currency timestamp indicates a UTC-time in milliseconds since the year 1601. To convert this value to a Visual Basic style Date (which is a double precision floating-point number in days since the year 1900), use the following conversion functions:

```
' Windows API support functions for converting time formats
Private Declare Function LocalMSecTimeToMSecTime Lib "kernel32"
    Alias "LocalFileTimeToFileTime" (lpLocalFileTime As Currency,
    lpMSecTime As Currency) As Long
Private Declare Function MSecTimeToLocalMSecTime Lib "kernel32"
    Alias "FileTimeToLocalFileTime" (lpMSecTime As Currency,
    lpLocalMSecTime As Currency) As Long
```

```
' Convert a Visual Basic style Date/Time, local time
' to a time in milliseconds since 1-1-1601, UTC
Private Function DateToMSecTime(ByVal dat As Date) As Currency
    Dim msecUTC As Currency, msecLocal As Currency
    msecLocal = CCur((CDBl(dat) + 109205) * 86400000# + 0.9)
    Call LocalMSecTimeToMSecTime(msecLocal, msecUTC)
    DateToMSecTime = msecUTC
End Function
```

```
' Convert a time in milliseconds since 1-1-1601, UTC
' to a Visual Basic style Date/Time, local time
```

```
Private Function MSecTimeToDate(ByVal msec As Currency) As Date
    Dim msecLocal As Currency
    Call MSecTimeToLocalMSecTime(msec, msecLocal)
    MSecTimeToDate = (CDBl(msecLocal) / 86400000# - 109205#)
End Function
```

In Visual C and other programming languages, the 8 byte integer timestamp corresponds to a FILETIME as returned by the Windows API function CoFileTimeNow, which is a UTC-time in 100 nanosecond intervals since the year 1601. Windows API functions like FileTimeToLocalFileTime and FileTimeToSystemTime can help to convert this number to a presentable local time.

2.4 Setting up the control

When the control is created in the main application the next sequence of action must be done, to get the control working properly:

1. Create the control
2. Perform the "SelectDeviceEx" method with the communication port and device number you want to handle with this control
3. Perform the "GetInfoFromDevice" method, to get all the setting out of the connected device
4. Wait for the "CardInSlotsChanged" event. Now all the information is present in the control, and all properties can be read.

If you set a property to a desired value, the control and the Signalog Server will take care that this value is send to the device (if there is communication between the Signalog Server and the addressed device).

Example:

When a Signalog 6000 system contains a CA2CF card in slot 0 and slot 3 the string received with the "CardInSlotsChanged" event will be:

```
"13,0,255,255,0,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255,255"
```

The SetSlotConfiguration and GetSlotConfiguration methods uses the same string layout.

2.5 Datalog configuration

The Signalog system is capable of automatic measuring inputs and storing the values in internal RAM memory. The Signalog system with PB6000 processor card will sample 1 channel every 10 milliseconds. In total the system can make 100 samples every second.

With the "ConfigDatalog" method, a string is send to the device. This string contains the sample period for each channel, separated by a 'comma' sign. The sample period is a number in 1 millisecond intervals.

Example string:

When the next configuration is wanted:

| Channel number | Sample time [seconds] |
|----------------|-----------------------|
| 0 | 0.1 |
| 1 | 0.2 |
| 4 | 0.05 |
| 5 | 0 |
| 8 | 1 |
| 9 | 2 |

The string will be: "100,200,50,0,1000,2000"

In the above string, the sample time for channel 5 is set to '0', This means that this channel will not be measured when the datalog action is started.

The sample time for the channels not mentioned in this message will be set to zero. Those channels will not be measured during datalogging.

Firmware version lower than 2.07: The PB6000 processor card will not accept sample time, which are longer then 1 second. If slower sampling is required, the main application must ask 1 second sampling from the device, and ignore the samples that are not required.

Firmware version 2.07 and higher: The PB6000 processor card can either use 0.01 seconds intervals (between 0.01 seconds and 2.5 seconds) or 1-second intervals (between 1 second and 250 seconds). The 1-second interval is only used when all specified sample times are dividable by 100. Examples:

"100,200,50,0,1000,2000" is accepted by firmware v2.07 and higher for the example above. There is no need to request a sample time of 1 second instead of 2 for the last channel.

"1000,3000" sets the sample times for channels 0 and 1 to 1 and 3 seconds, respectively. It will use the 1-second interval mode.

"100,3000" sets the sample times for channels 0 and 1 to 0.1 and 2.5 seconds, respectively. The 0.01 seconds interval mode is used, and the 3 seconds interval is silently reduced to the maximum available 2.5 seconds for this mode.

The datalog action will not be started until a "StartDatalog" method is given. The datalog will stop, when a "StopDatalog" method is given, or when the Signalog system shuts down.

2.6 Datalog information

As explained before, for the PB6000 processor card, every 10 millisecond 1 channel is measured. Because the interval time between two measurements of 1 channel is

configurable, it must be clear at what time a measurement is done. For this purpose a sample time index is stored with each measured value.

This index represents the number of 10 milliseconds intervals after the start time of the datalog action. To optimize storage, the index has a maximum value of 255. After this it gets the value 0 again.

When datalog information is received, the first field will be the start date/time of the information when the index was 0. Each value in the string has an index of measurement. The actual time of measurement must be calculated from the preceding date/time and this index. Each time the index overflows in one string, that is when the index is smaller than the preceding index, 2.56 seconds must be added to the calculated measurement time.

Firmware version 2.07 and higher: If the device uses the new 1-second interval mode, the index represents the number of 1-second intervals after the start time of the datalog action. Each time the index overflows in one string, that is when the index is smaller than the preceding index, 256 seconds must be added to the calculated measurement time.

In a string with the datalog information, all the fields are separated with a comma sign.

When datalog information is received from the device it will have the following format:

Start date and time, consist of:

Start date/time, in seconds since 1 January 1970.

This value equals 0 if the measurement was started on the device itself, because it doesn't know the actual date and time.

<comma>

Offset to start date/time in 10 milliseconds units (0...99).

This value equals 255 if the measurement uses 1-second interval mode.

<comma>

Measured value consist of:

Index

<comma>

Channel number

<comma>

Value

<comma>

3 CA2CF control

The CA2CF control takes care of the settings of the CA2CF input card. Most of these settings can be adjusted through the property box of the control. This property box has the following layout:

The screenshot shows the 'Properties of Ca2cf Channel Control' dialog box with the 'General' tab selected. The dialog has a title bar with a close button (X) and a tabbed interface with tabs for 'General', 'Strain', 'Sensor', 'Range', 'Balance', and 'Trip'. The 'General' tab contains the following controls:

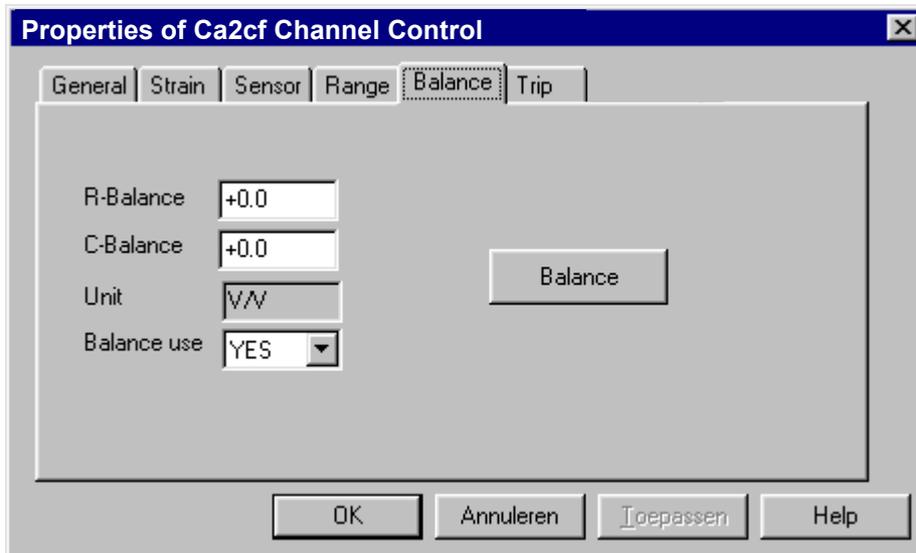
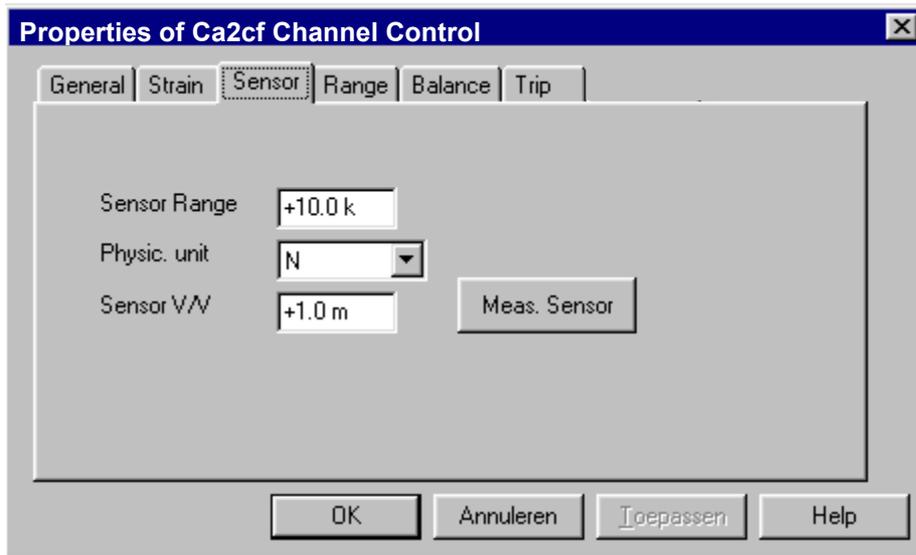
| | | | |
|--------------|--|--|-----------------------------------|
| Bridge volt | <input type="text" value="+5.0"/> | Bridge | <input type="text" value="Full"/> |
| Signal mode | <input type="text" value="Normal"/> | 1/2 Comp. | <input type="text" value="240"/> |
| Polarity | <input type="text" value="Normal"/> | 1/4 Comp. | <input type="text" value="350E"/> |
| Bridge load | <input type="text" value="+120.0"/> | <input type="button" value="Calibrate"/> | |
| Presentation | <input type="text" value="Output in V"/> | | |

At the bottom of the dialog are four buttons: 'OK', 'Annuleren', 'Toepassen', and 'Help'.

The screenshot shows the 'Properties of Ca2cf Channel Control' dialog box with the 'Strain' tab selected. The dialog has a title bar with a close button (X) and a tabbed interface with tabs for 'General', 'Strain', 'Sensor', 'Range', 'Balance', and 'Trip'. The 'Strain' tab contains the following controls:

| | |
|----------------|---------------------------------------|
| K-Factor | <input type="text" value="+2.0"/> |
| Bridge factor | <input type="text" value="+1.0"/> |
| Use E-modules | <input type="text" value="NO"/> |
| E-Modules | <input type="text" value="+200.0 k"/> |
| E-modules unit | <input type="text" value="N/mm²"/> |

At the bottom of the dialog are four buttons: 'OK', 'Annuleren', 'Toepassen', and 'Help'.





3.1 Properties

The following properties are present in this control:
 The type of variable is noted as done in Visual Basic..

| Name | type | Description | |
|---------------|---------|--|--|
| BridgeSupply | single | Bridge supply | 0.5 ⇔ 5.5V |
| Polarity | integer | Polarity of amplifier | 0 = normal 1 = inverted |
| SignalMode | integer | Signal mode of amplifier | 0 = normal 1 = capacitive |
| BridgeLoad | single | Bridge impedance | 60 Ω ⇔ 3000Ω |
| RBalanceValue | single | R Balance value in V/V | - 65 mV/V ⇔ 65 mV/V |
| CalcRBalance | single | R Balance value in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from RBalanceValue |
| CBalanceValue | single | C Balance value in V/V | -10 mV/V ⇔ 10 mV/V |
| CalcCBalance | single | C Balance value in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from CBalanceValue |
| BalanceUse | integer | Balance in use | 0 = not used 1= used |
| MaxVOut | single | Maximum output voltage | 1 ⇔ 10 V |
| Range | single | Amplifier range. This range depends on the setting of the "range of" property. | 100uV/V ⇔ 1V/V for amplifier range |
| RangeOf | integer | | 0=Amplifier 1=Sensor 2=Strain |
| RangeUnit | string | Unit of the selected range | |
| SensorUnit | integer | A selection can be made for the Unit of sensor measurement | 0=% 1= bar 2= ∅C |

| Name | type | Description | |
|----------------|---------|--|--|
| | | | 3= g 4= g/mm ² 5= G 6= Hz 7= inch 8= K 9= lbs 10= m 11= m/m 12= m/s 13= m/s ² 14= N 15= Nm 16= N/mm ² 17= Pa 18= ppm 19= psi 20= t 21= V 22= V/V |
| SensorRange | single | Range of sensor measurement | |
| SensorInput | single | Input signal from sensor | |
| EModules | single | Emodules value | |
| KFactor | single | K factor of the bridge | |
| BridgeFactor | single | Bridge factor of the bridge | |
| EModUse | integer | Use of E modules | 0 = Not used 1 = in use |
| EModUnit | | Fixed Unit of force | N/mm ² |
| CommType | long | Communication port type to which the device is connected | 0 = serial port 1 = USB port |
| CommNumber | long | Communication port number to which the device is connected | |
| DeviceNumber | integer | Number of the device to which this control belongs | 1-253 |
| SlotNumber | integer | Number of slot to which this control belongs | 0-12 |
| ChannelNumber | integer | Number of channel in the slot to which this control belongs | 0-3 |
| MessValue | single | The measurement value | |
| FullHalfBridge | integer | Setting for half bridge completion | 0 = Full bridge 1 = Half bridge |
| KW120E350E | integer | Setting for quarter bridge completion | 0 = 120 Ω 1 = 350 Ω |
| UnitofValue | string | Unit of measurement value | |
| ValueUnit | integer | Unit of value at the MessValue property When default is selected, the unit will be used as selected in the PB6000 control | 0=Default 1=Vout 2=Vin 3=Phys.Unit |
| Language | Integer | Language of the help file and the property box(es) | 7 = German 9 = English 19 = Dutch |

| Name | type | Description | |
|--------------------|-------------|---|---|
| TripValue | single | Value for trip action in [V] | |
| CalcTripValue | single | Value for trip action in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from TripValue |
| TripHysteresis | single | Hysteresis for trip action in [V] | |
| CalcTripHysteresis | single | Hysteresis value in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from TripHysteresis |
| TripControl | integer | Selection for trip action | 0= inactive 1= trip on high value 2= trip on low value |
| MaximumValue | single | This value is the maximum value of the measurement. | |
| PeakValueLow | single | Low peak value in the unit of the range | Manually initialize this property to a default value. Use PeakValueActive property and ResetPeakValues method of PB6000 control to activate peak value detection. |
| PeakValueHigh | single | High peak value in the unit of the range | |

3.2 Dependence of properties

Several properties depend on each other. This means that a property can change, when a property, from which it depends, changes.

The following dependencies exist:

| Property to be changed | changed in: | Related property | changed in: |
|------------------------|-------------|--------------------|--------------|
| FullHalfBridge | Full bridge | KW120E350E | 120 Ω |
| ValueUnit | Vout | UnitofValue | 'V' |
| ValueUnit | Vin | UnitofValue | 'V/V' |
| ValueUnit | Phys.Unit | UnitofValue | RangeUnit |
| RangeOf | Amplifier | RangeUnit | 'V/V' |
| | | Range | Amp. range |
| | | MaximumValue | New value |
| RangeOf | Sensor | RangeUnit | SensorUnit |
| | | Range | SensorRange |
| | | MaximumValue | New value |
| RangeOf | Strain | RangeUnit | Strain unit |
| | | Range | |
| | | MaximumValue | New value |
| EModUse | Not used | Strain unit | "m/m" |
| EModUse | Used | Strain unit | EModUnit |
| CalcTripValue | value | TripValue | New value |
| TripValue | value | CalcTripValue | New value |
| TripHysteresis | value | CalcTripHysteresis | New value |
| CalcTripHysteresis | value | TripHysteresis | New value |

3.3 Methods

The following methods are present in this control:

| Name | return | Parameter | Description |
|-----------------------|--------|-----------|--|
| Calibrate | | | Calibrate the bridge supply |
| AutoBalance | | | Balance the channel |
| MeasureSensor | | | Measure the sensor, and calculate the belonging range setting. |
| StoreSettingsinFLash | | | Store the channel settings in the FLASH memory |
| LoadSettingsFromFlash | | | Load the channel settings from FLASH memory |
| LoadDefaultSettings | | | Set the channel setting to default |
| GetInfoFromDevice | | | Get all the settings from the channel, and put them in the control |
| SetLocalParam | | | After this command the properties will only be changed in the control, and not passed to the device. |
| SendAllParam | | | All changed settings will be send to the device at once. |
| ViewProperties | | | Show the property pages for the control |

When a property is changed in the control, this change will also direct be send to the device, so that this change will directly be in effect. When al lot of properties must be changed, it will take some time before all the changes are transmitted to the device. To speed up this process, the methods SetLocalParam and SendAllParam are added. First activate the SetLocalParam method. Now the changes will be made only in the control. Now change all properties you want to change, and then activate the SendAllParam method. Only one message will be sent to the device, which contains all the changes.

3.4 Properties and Methods

If a method is called, it is possible that certain properties are changed. The next dependencies are present:

| Method | property | Changed in: |
|-----------------------|----------------|---|
| AutoBalance | RBalanceValue | Value measured by balance command. |
| | CBalanceValue | Value measured by balance command |
| MeasureSensor | SensorInput | Value measured by measure command |
| LoadSettingsFromFlash | All properties | Properties are set to the values, which are last stored in the FLASH memory |
| LoadDefaultSettings | All properties | Properties are set to the default value |
| GetInfoFromDevice | All properties | The properties in the control are set to the values in the device |
| | | |

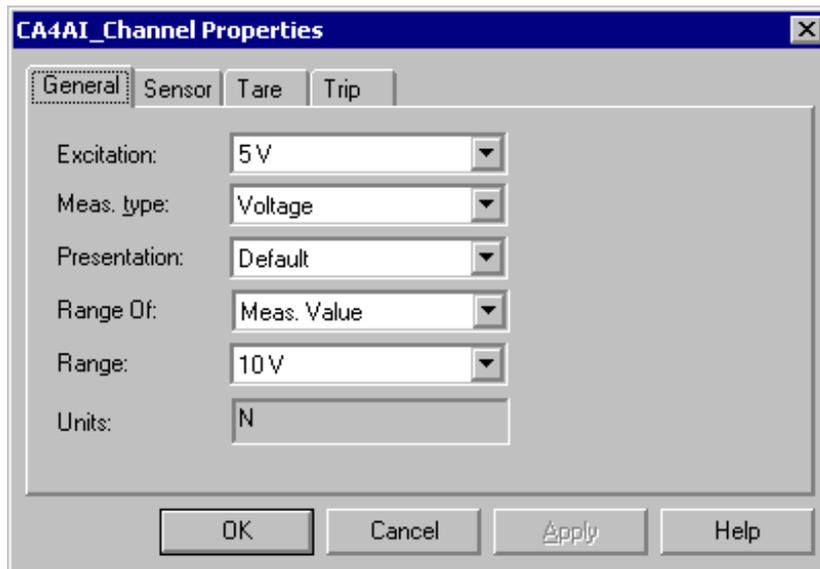
3.5 Events

The control generates the following events:

| Name | Parameter | Description |
|---------------------|-------------------|---|
| NewMessValue | single | The newest measured value |
| UnitOfValueChanged | string | The unit of the measured value is changed |
| MaximumValueChanged | single | The maximum value of the measurement is changed |
| RBalanceChanged | single | The R Balance value is changed |
| CBalanceChanged | single | The C Balance value is changed |
| NewPeakValue | single, single | A new Peak value is received |
| NewTripStatus | single | A new trip status is received |

4 CA4AI control

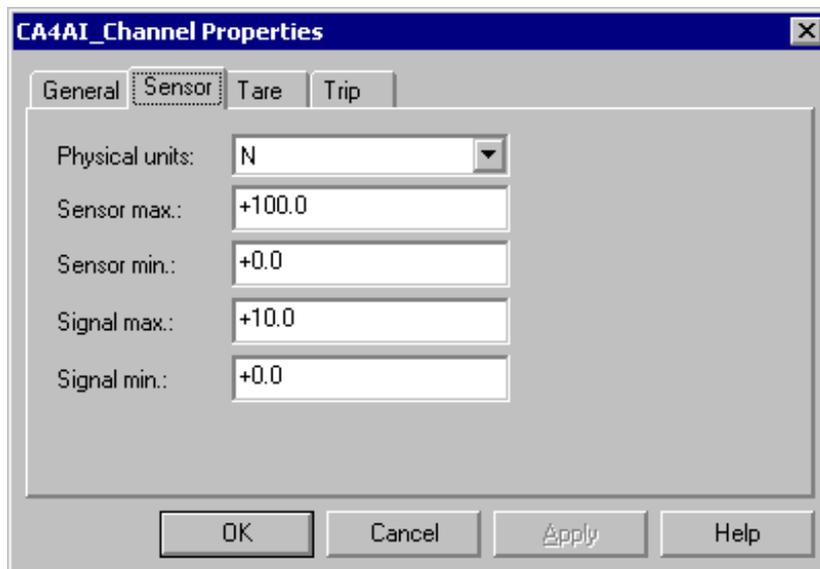
The CA4AI control takes care of the settings of the CA4AI input card. Most of these settings can be adjusted through the property box of the control. This property box has the following layout:



The screenshot shows the 'CA4AI_Channel Properties' dialog box with the 'General' tab selected. The dialog has a title bar with a close button (X) and four tabs: 'General', 'Sensor', 'Tare', and 'Trip'. The 'General' tab contains the following settings:

| | |
|---------------|-------------|
| Excitation: | 5 V |
| Meas. type: | Voltage |
| Presentation: | Default |
| Range Of: | Meas. Value |
| Range: | 10 V |
| Units: | N |

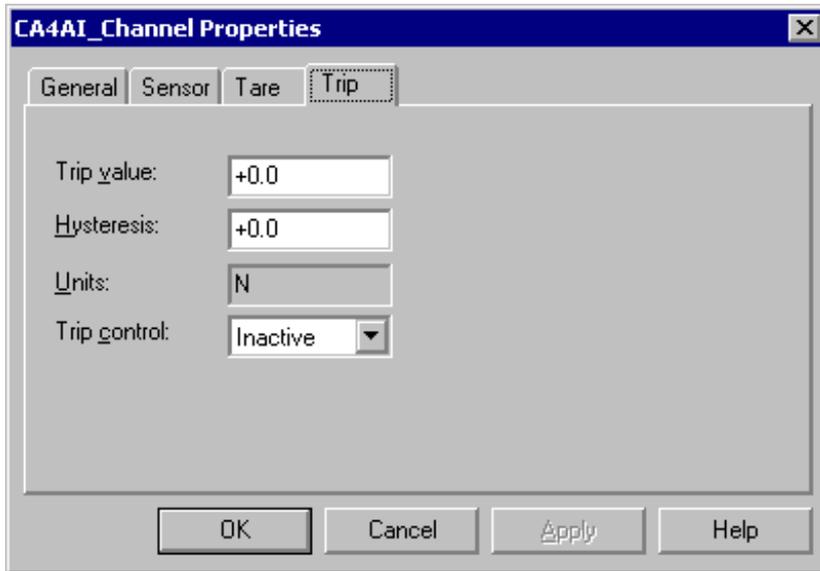
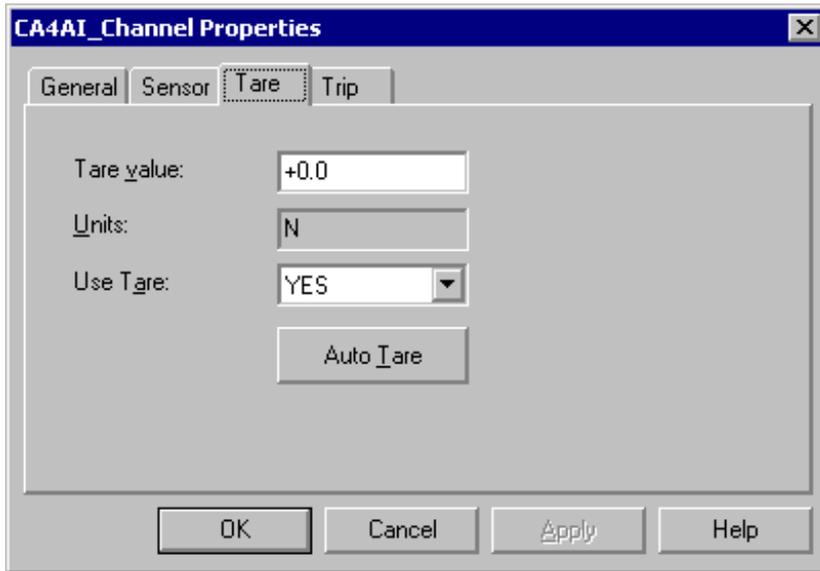
At the bottom of the dialog are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.



The screenshot shows the 'CA4AI_Channel Properties' dialog box with the 'Sensor' tab selected. The dialog has a title bar with a close button (X) and four tabs: 'General', 'Sensor', 'Tare', and 'Trip'. The 'Sensor' tab contains the following settings:

| | |
|-----------------|--------|
| Physical units: | N |
| Sensor max.: | +100.0 |
| Sensor min.: | +0.0 |
| Signal max.: | +10.0 |
| Signal min.: | +0.0 |

At the bottom of the dialog are four buttons: 'OK', 'Cancel', 'Apply', and 'Help'.



4.1 Properties

The following properties are present in this control:
 The type of variable is noted as done in Visual Basic..

| Name | type | Description | |
|---------------|---------|---|---------------------------------|
| CommType | long | Communication port type to which the device is connected | 0 = serial port 1 = USB port |
| CommNumber | long | Communication port number to which the device is connected | |
| DeviceNumber | integer | Number of the device to which this control belongs | 1-253 |
| SlotNumber | integer | Number of slot to which this control belongs | 0-12 |
| ChannelNumber | integer | Number of channel in the slot to which this control belongs | 0-3 |
| MeasValue | single | The measurement value | |
| Language | Integer | Language of the help file and | 7 = German |

| Name | type | Description | |
|--------------------|---------|--|---|
| | | the property box(es) | 9 = English 19 = Dutch |
| TareValue | single | Tare value | In units of the measured value |
| TareUse | integer | Tare in use | 0 = not used 1= used |
| CalcTare | single | Tare value in the unit of the range | The RangeUnit property contains the corresponding units. |
| TripValue | single | Value for trip action in [V] | |
| CalcTripValue | single | Value for trip action in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from TripValue |
| TripHysteresis | single | Hysteresis for trip action in [V] | |
| CalcTripHysteresis | single | Hysteresis value in the unit of the range | Set this value only if all the other properties are set. This is a calculated value from TripHysteresis |
| TripControl | integer | Selection for trip action | 0= inactive 1= trip on high value 2= trip on low value |
| InputType | integer | Type of measurement | 0 = Voltage 1 = Current 2 = Resistance 3 = Pt-100 4 = Pt-1000 5 = TC type B 6 = TC type E 7 = TC type J 8 = TC type K 9 = TC type N 10 = TC type R 11 = TC type S 12 = TC type T 13 = CJC |
| PropertyString | string | All properties of the control in a single string | |
| Range | integer | Selected range for the measurement | For InputType 0 (Voltage): 0 = 10 V 1 = 5 V 2 = 2 V 3 = 0.5 V 4 = 0.1 V 5 = 50 mV 6 = 20 mV For InputType 1 (Current): 0 = 100 mA 1 = 50 mA 2 = 10 mA 3 = 5 mA 4 = 2 mA For InputType 2 (Resistance): |

| Name | type | Description | |
|--------------|---------|--|--|
| | | | 0 = 5000 Ohms 1 = 4000 Ohms 2 = 2000 Ohms 3 = 500 Ohms 4 = 100 Ohms 5 = 50 Ohms |
| RangeOf | integer | | 0=Meas.Value 1=Sensor |
| RangeUnit | string | Unit of the selected range | |
| SensorUnit | integer | A selection can be made for the Unit of sensor measurement | 0=% 1= bar 2= °C 3= g 4= g/mm2 5= G 6= Hz 7= inch 8= K 9= lbs 10= m 11= m/m 12= m/s 13= m/s2 14= N 15= Nm 16= N/mm2 17= Pa 18= ppm 19= psi 20= t 21= V 22= V/V |
| Source_I_V | integer | Excitation selection | 0 = 5 V 1 = 1 mA |
| SensorHigh | single | Sensor max. for scaling | |
| SensorLow | single | Sensor min. for scaling | |
| InputHigh | single | Signal max. for scaling | |
| InputLow | single | Signal min. for scaling | |
| UnitofValue | string | Unit of measurement value | |
| ValueUnit | integer | Unit of value at the MessValue property When default is selected, the unit will be used as selected in the PB6000 control | 0=Default 1=Meas.Value 2=Phys.Unit |
| MaximumValue | single | This value is the maximum value of the measurement. | |
| PeakValueLow | single | Low peak value in the unit of the range | Manually initialize this property to a default value. |

| Name | type | Description | |
|---------------|--------|--|---|
| PeakValueHigh | single | High peak value in the unit of the range | Use PeakValueActive property and ResetPeakValues method of PB6000 control to activate peak value detection. |

4.2 Dependence of properties

Several properties depend on each other. This means that a property can change, when a property, from which it depends, changes.

The following dependencies exist:

- ValueUnit affects UnitofValue
- RangeOf can affect RangeUnit, Range, MaximumValue
- CalcTripValue affects TripValue and vv.
- CalcTripHysteresis affects TripHysteresis and vv.
- CalcTare affects TareValue and vv.
- InputType can affect RangeUnit, Range, MaximumValue

4.3 Methods

The following methods are present in this control:

| Name | return | Parameter | Description |
|-----------------------|--------|-----------|--|
| AutoTare | | | Tare the channel |
| StoreSettingsInFlash | | | Store the channel settings in the FLASH memory |
| LoadSettingsFromFlash | | | Load the channel settings from FLASH memory |
| LoadDefaultSettings | | | Set the channel setting to default |
| GetInfoFromDevice | | | Get all the settings from the channel, and put them in the control |
| SetLocalParam | | | After this command the properties will only be changed in the control, and not passed to the device. |
| SendAllParam | | | All changed settings will be send to the device at once. |
| ViewProperties | | | Show the property pages for the control |

When a property is changed in the control, this change will also direct be send to the device, so that this change will directly be in effect. When al lot of properties must be changed, it will take some time before all the changes are transmitted to the device. To speed up this process, the methods SetLocalParam and SendAllParam are added. First activate the SetLocalParam method. Now the changes will be made only in the control. Now change all properties you want to change, and then activate the SendAllParam method. Only one message will be sent to the device, which contains all the changes.

4.4 Properties and Methods

If a method is called, it is possible that certain properties are changed. The next dependencies are present:

| Method | property | Changed in: |
|-----------------------|---------------------|---|
| AutoTare | TareValue, CalcTare | Value measured by tare command. |
| LoadSettingsFromFlash | All properties | Properties are set to the values, which are last stored in the FLASH memory |
| LoadDefaultSettings | All properties | Properties are set to the default value |
| GetInfoFromDevice | All properties | The properties in the control are set to the values in the device |

4.5 Events

The control generates the following events:

| Name | Parameter | Description |
|---------------------|-------------------|---|
| NewMeasValue | single | The newest measured value |
| UnitOfValueChanged | string | The unit of the measured value is changed |
| MaximumValueChanged | single | The maximum value of the measurement is changed |
| TareChanged | single | The tare value is changed |
| NewPeakValue | single, single | A new Peak value is received |
| NewTripStatus | single | A new trip status is received |
| RangeUnitChanged | string | The unit of the selected range is changed |

5 Signalogserver

5.1 Using the server on a remote PC

Ordinarily, the Signasoft application, which uses the Active X Controls, runs on the same PC to which the Signalog and/or Picas devices are connected. It is possible, however, to use one PC to connect the Signalog/Picas device(s) to and another PC to run application, for example Signasoft.

For this setup to work, the PC's must be connected by a Windows network. On the 'Application' PC, you must install the Active X Controls as usual.

On the remote PC, where the devices are connected to, the Active X Controls must also be installed.

Now, you must configure the DCOM communication protocol, which is used to communicate between application and the SignalogServer on the remote PC. Below, DCOM configuration is described in general terms. Where ever the word 'server' is used, you should substitute 'SignalogServer' or 'device PC', and where the word 'client' appears, you can read it as 'Application'.

5.1.1 DCOM configuration

DCOM (Distributed Component Object Model) allows Windows applications to execute code on remote computers, using a Windows network and DCOM support software. On a default Windows PC, this type of 'remote execution' is not allowed. To enable DCOM on a PC, you must use a configuration tool called 'dcomcnfg'. Start this tool by selecting 'Run...' from the Start menu and typing 'dcomcnfg'.

If you are using Windows 95/98, it is likely that this tool is not installed. If so, Windows will indicate that 'dcomcnfg' cannot be found.

To install DCOM and dcomcnfg on Windows 95, run the following applications:

- dcom95.exe
- dcm95cfg.exe

To install DCOM and dcomcnfg on Windows 98, run the following applications:

- dcom98.exe
- dcm95cfg.exe

On Windows NT, DCOM and dcomcnfg are installed by default.

5.1.2 Dcomcnfg on Windows 95/98

To configure DCOM on Windows 95/98, you must now whether the PC is part of a Windows NT Domain. If this is the case, the PC will use a Windows NT Domain Controller in the network to verify username and password before allowing anyone access to the network. Consult your network administrator if you are unsure about this. If your PC is not part of a Windows NT Domain, you must disable the DCOM access security to be able to communicate with another PC using DCOM.

5.1.3 Windows 95/98 in a Windows NT Domain

If you are running Windows 95/98 in a Windows NT Domain, the DCOM configuration is basically the same as the Windows NT DCOM configuration as described below under 'Dcomcnfg on Windows NT'.

5.1.4 Windows 95/98 outside a Windows NT Domain

A Windows PC without access to a Windows NT Domain has no way to verify the username/password of users on other PC's. Therefore, it cannot use the builtin security of DCOM. To be able to use DCOM on this type of machine, you must disable the DCOM security.

You can do this by running 'regedit', and opening the key:

'HKEY_LOCAL_MACHINE\Software\Microsoft\Ole'

Add or replace a DWORD-value 'LegacyAuthenticationLevel' in this key and put in the value 1. You must reboot the PC for this change to take effect.

After this, DCOM access security is switched off. This means that DCOM applications on this PC can be started remotely by anyone within the Windows network!

If you make this change, it must be made on both the client and the server-PC, even if one of them is a Windows NT machine.

After making this change, select 'Run...' from the Start menu and type 'dcomcnfg' to configure DCOM. Answer any 'DCOM Configuration Warning' dialogs, if they appear, with 'Yes'. Now, click on the 'Default Properties' tab and make sure the 'Enable Distributed COM' checkbox is checked. On the 'Default Security' tab, check the 'Enable remote connection' box.

To get the client PC to run a server application on the server PC, go to the 'Applications' tab and find the server application. Select the application and click 'Properties'. Now, click on the 'Location' tab and check 'Run application on the following computer:'.

Type the name of the server PC. Depending on the type of network, you may use the 'Computer Name' which can be found on the 'Identification' tab of the 'Network' settings in the 'Control Panel', or use a TCP/IP address, or consult your network administrator.

5.1.5 Dcomcnfg on Windows NT

Select 'Run...' from the Start menu and type 'dcomcnfg' to configure DCOM. Answer any 'DCOM Configuration Warning' dialogs, if they appear, with 'Yes'. Now, click on the 'Default Properties' tab and make sure the 'Enable Distributed COM' checkbox is checked.

To get the client PC to run a server application on the server PC, go to the 'Applications' tab and find the server application. Select the application and click 'Properties'. Now, click on the 'Location' tab and check 'Run application on the following computer:'.

Type the name of the server PC. Depending on the type of network, you may use the 'Computer Name' which can be found on the 'Identification' tab of the 'Network' settings in the 'Control Panel', or use a TCP/IP address, or consult your network administrator.

On the 'Security' tab for the application, you can select 'Use custom access permissions' and click 'Edit...' to determine which users are allowed to access the server.

5.1.6 DCOM Error Codes

During the configuration it is possible that an error will occur. The possible errors, with an short explanation are mentioned here:

1722 = RPC_S_SERVER_UNAVAILABLE

Possible causes:

'Enable Distributed COM' in dcomcnfg not checked on the server.

'Enable remote connection' in dcomcnfg not checked on the server (Windows 95/98 only).

'Launch permissions' in dcomcnfg do not allow the user access (Windows NT only).

An old version of DCOM (v1.0) is used (Windows 95 only). Update by reinstalling DCOM as described above.

2148007941 = CO_E_SERVER_EXEC_FAILURE

Possible causes:

'Enable remote connection' in dcomcnfg not checked on the server (Windows 95/98 only).

'Launch permissions' in dcomcnfg do not allow the user access (Windows NT only).

2147549466 = RPC_E_NO_GOOD_SECURITY_PACKAGES

Possible causes:

An old version of DCOM (v1.0) is used (Windows 95 only). Update by reinstalling DCOM as described above.

1747 = RPC_S_UNKNOWN_AUTHN_SERVICE

Possible causes:

You are trying to access a Windows 95/98 machine from a Windows NT machine using a security level not available to Windows 95. If you are using Windows 95/98 in a Windows NT Domain, select 'Default Authentication Level' = 'Connect' on the 'Default Properties' tab of dcomcnfg on the Windows NT machine. If you are using Windows 95/98 without a domain, make sure you disable the DCOM security on both server and client PC (DWORD value

'HKEY_LOCAL_MACHINE\Software\Microsoft\Ole\LegacyAuthenticationLevel' = 1)

1723 = RPC_S_SERVER_TOO_BUSY

Possible causes:

You are trying to access a Windows 95/98 machine from a Windows NT machine using a security level not available to Windows 95. If you are using Windows 95/98 in a Windows NT Domain, select 'Default Authentication Level' = 'Connect' on the 'Default Properties' tab of dcomcnfg on the Windows NT machine.

If you are using Windows 95/98 without a domain, make sure you disable the DCOM security on both server and client PC (DWORD value

'HKEY_LOCAL_MACHINE\Software\Microsoft\Ole\LegacyAuthenticationLevel' = 1)

2147942405 = E_ACCESSDENIED

Possible causes:

The remote machine does not accept calls from the current user. Make sure the security configuration is correct.

6 Register the Active X controls

Before the active x controls can be used, they must be registered on the PC. With a normal installation of the software those registrations will be done automatically.

How the manual registration must be done, is explained in the next section

Registration Signalog server:

Before the Signalog server can be registered, the file Atl.dll must be present in the system directory and be registered on the PC.

To register the Signalog server execute it with the following command:

Signalogserver.exe /RegServer

The Signalog server will register itself.

The Active X controls must be registered with the following commands:

regsvr32 /s /c ca2cf.ocx

regsvr32 /s /c ca4ai.ocx

regsvr32 /s /c pb6000.ocx

The program **regsvr32.exe** and **Atl.dll** are present in the delivered software package.