



Configuration Tools



Product Management and Marketing • Positioners and Valve Accessories
July 2014

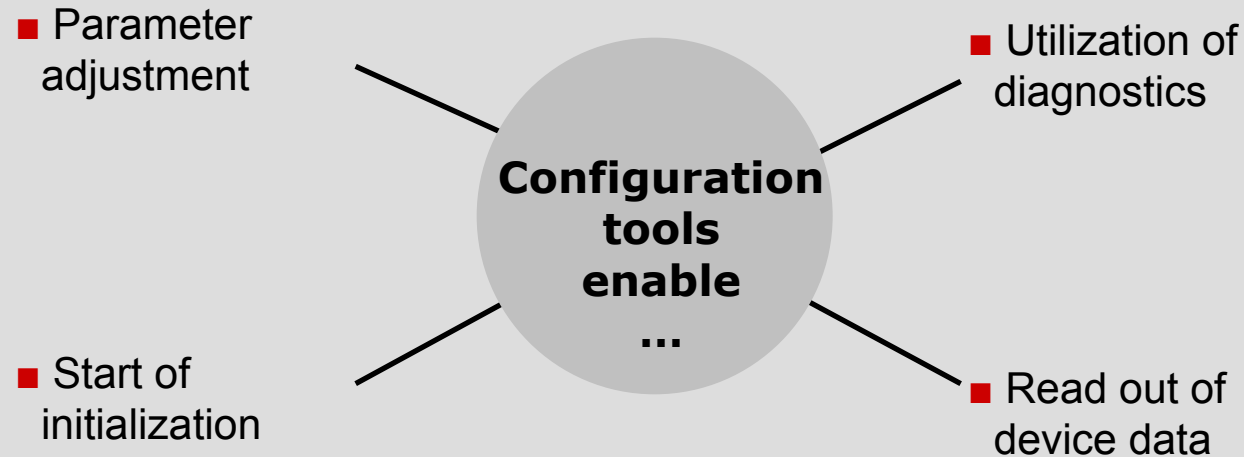
Agenda



- Why Configuration Tools?
- User Interfaces
- Local Configuration Possibilities
 - On-site Configuration
 - TROVIS-VIEW
 - Definition DTM/FDT
 - Stand alone Applications
 - Handhelds
 - Overview Positioners and Relevant Hard- and Software
- Configuration Tools for Communication Protocols



Why Configuration Tools?



- Configuration Tools are the interface between positioner and user
- Different configuration tools can be used, depending on the technical equipment of the customer and the device

Overview – Access Interfaces



On-site configuration

SSP port

HART / Foundation Fieldbus / Profibus

Interface adapter cable & PC

DD / EDD / DTM

**- Handheld or PC
- Cable / Modem**

DCS

TROVIS-VIEW

**Stand alone frame application
(e.g. FDT...)**

Engineering tools (e.g. AMS, PRM...)

Local configuration



Local Configuration – On-site Configuration

- Standard operation of digital positioners directly at the device to navigate through the menu and to adjust the parameter codes
- Turn/push button for 3730 series



- Capacitive keys for type 3725



Local Configuration – TROVIS-VIEW



- More complex visualization possible
- Standardized operating interface for more than 25 different SAMSON devices

The screenshot displays the SAMSON TROVIS-VIEW 4 software interface. The main window is titled "VIEW4_3730_3_0_2012-Dec-18 - SAMSON TROVIS-VIEW 4". The interface is divided into several sections:

- Top Bar:** Includes menu options (Datei, Bearbeiten, Ansicht, Gerät, Optionen), a search bar, and a "Spezialist" dropdown.
- Tree View (Baum):** Shows a hierarchical structure of functions:
 - Inbetriebnahme
 - Initialisierung
 - Ersatzabgleich
 - Diagnose
 - Statusmeldungen
 - Beobachterfunktionen
 - Auf/Zu
 - Datenlogger
 - Histogramm Ventilstellung
 - Histogramm Regeldifferenz
 - Kurzzeitbetrachtung
 - Histogramm Zyklenzähler
 - Diagramm Stellsignal y

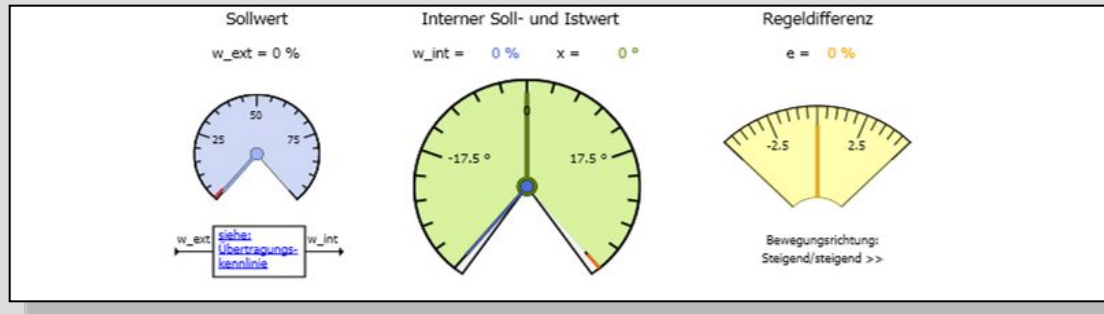
- Configuration Table:** A table with columns "Name", "Wert", "Einheit", and "Kommentar".

Name	Wert	Einheit	Kommentar
Inbetriebnahme - Initialisierung			
Gewünschte Hand Führungsgröße w	0.0	%	Code 1
Gerät ist initialisiert		---	
Diagnosereferenzlauf Information		---	
Ermittelter Nennbereich		---	Code 5
Minimale Laufzeit auf		s	Code 40
Minimale Laufzeit zu		s	Code 41
Start Initialisierung			
Sicherheitsstellung		---	
Initialisierung		---	
Status Initialisierung		---	
Abbruch Initialisierung		---	
Gewünschte Betriebsart	Automatik		Code 0
Aktuelle Betriebsart		---	
Initialisierungsfehler			
x > Bereich		---	Code 50
Delta x < Bereich		---	Code 51
- Trend-Viewer:** Shows a graph with "Prozessdaten" and "Diagramm". The graph plots values over time (t [d.hh:mm:ss]). A legend indicates:
- Führungsgröße [w] (green line with 'x' markers)
- Regelgröße [x] (blue line with 'x' markers)



Local Configuration – TROVIS-VIEW

- Graphics (histograms, trends, ...)



- TROVIS-VIEW on the Internet – information / download / driver software

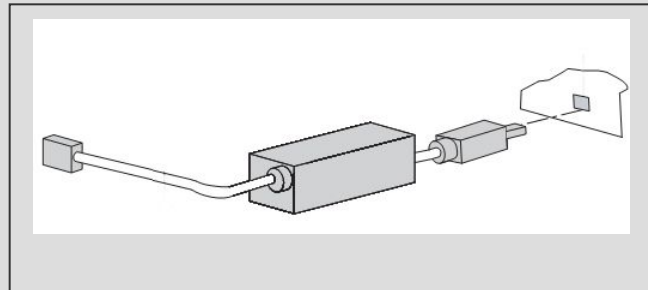
<http://www.samson.de/page.php?sp=de&lh=14&ll=199&ti=TROVIS-VIEW&bo=service/de-trovis-view.php>

Download TROVIS-VIEW with device-specific modules	
Product	TROVIS-VIEW
Heating and District Heating Controller TROVIS 5431	V 3.6
Electropneumatic Positioner with HART [®] communication 3730-3	V 3.6 V 4.0
Electropneumatic Positioner with PROFIBUS-PA communication 3730-4	V 3.6 V 4.0
Electropneumatic Positioner with FOUNDATION™ fieldbus communication 3730-5	V 3.6 V 4.0



Local Configuration – TROVIS-VIEW

- Connection to PC via SSP interface
 - Isolated USB Interface Adapter necessary

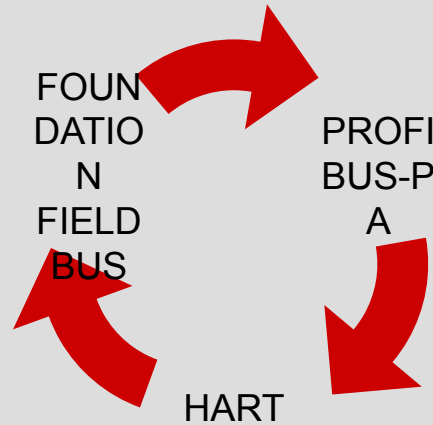


- TROVIS-VIEW 4 is interoperable with:
 - Windows® XP
 - Windows® Vista
 - Windows® 7
- Versions ≥ 3.60 are free



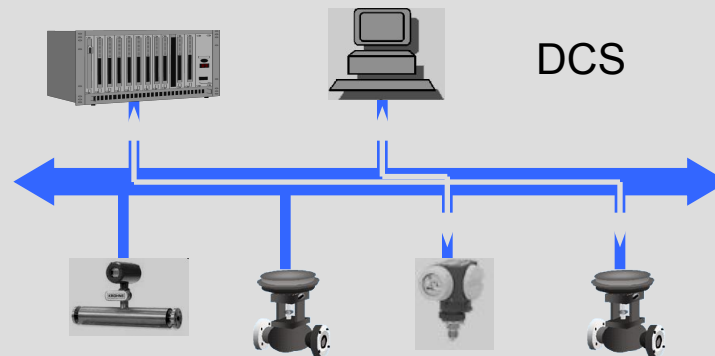
Configuration Tools for Communication Protocols

- Communication Protocols



- Fieldbuses

- Connect field devices to



- HART

- Uses input signal 4 – 20 mA

Integration Software for Field Devices



Software „driver“ for field device description in specific description languages, summarize the performance characteristics of the field devices and serve as drivers for the device integration

- DD – Device Description
- eEDD – enhanced Electronic Device Description / Enhancements enable visualization of graphics, histograms, trends ...
- GSD – Device data base file / PROFIBUS
- DTM – Device Type Manager / Includes an own operation tool



What is FDT/DTM ?



FDT – Field Device Tool

- Standardized (software) interface; specifies the data transmission between the system level (FDT frame application) and the field devices (e.g. positioners)

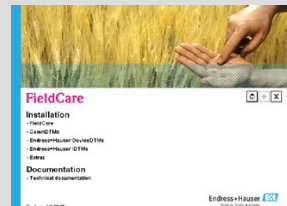
DTM – Device Type Manager

- Every field device (e. g. positioner) has its own – manufacturer specific – driver including a configuration tool, comparable to a printer. This driver is called Device Type Manager (DTM) and contains all data and functions of the field device.
- SAMSON DTM can be downloaded:
<http://www.samson.de/page.php?sp=de&lh=14&ll=199&ti=Integration%20in%20Engineering%20Tools%20und%20Systeme&bo=service/de-dtm.php>
- SAMSON device DTM enable as device drivers the integration in FDT-based frame applications such as:
 - Engineering tools via DCS
 - FDT-based „stand-alone“ configuration software, e.g. PACTware or Fieldcare

Local Configuration Possibilities – FDT/DTM as „Stand-Alone Application“



- Connection to the 4 – 20 mA signal outside of an explosion protected area
- „Stand-alone“ FDT frame applications such as PACTware or Fieldcare enable the use of the SAMSON positioner DTM for the local configuration
- PACTware is a manufacturer-, fieldbus- and device-independent FDT frame application to process DTM via a computer
- **HART positioner (373x-3 & 3730-6)**
 - ✓ HART modem with USB interface
 - ✓ Positioner DTM
 - ✓ Modem driver
- Fieldbus positioners (3730-4 & 373x-5) need a high-priced Fieldbus card



SAMSON Positioner DTM



PACTware

File Edit View Project Device Extras Window Help

Project: Device tag: HOST PC, HART COM7, -/-

Expert+ Device name: SAMSON 373X-3 (Rev6) R1.51-1.59
 Description: 373X-3 (Rev6) / DTM (v.1.4.0)
 Condensed state: No message

SAMSON MESS- UND REGELTECHNIK

Positioner Type 3730-3

- Settings
 - Identification
 - Operation unit
 - Positioner
- Start-up
 - Initialization
 - Substitution
- Diagnosis
 - Status messages
 - Logger
 - Extended
 - Reset
 - HART Device stati
 - Simulation
- Statistical information
- Tests
 - Leakage detection
- Operation
 - Process data
 - Operating mode
 - Reset
 - Maintenance

Parameter	Status	Value	Value I	Unit
Diagnosis - Status messages - Extended				
Air supply	OK		<input type="checkbox"/>	
Shifting working range	OK		<input type="checkbox"/>	
Leakage pneumatics	OK		<input type="checkbox"/>	
Limit working range	OK		<input type="checkbox"/>	
Observing end position	OK		<input type="checkbox"/>	
Connection positioner - valve	OK		<input type="checkbox"/>	
Working range	OK		<input type="checkbox"/>	
Friction	OK		<input type="checkbox"/>	
Actuator springs	OK		<input type="checkbox"/>	
Inner leakage	OK		<input type="checkbox"/>	
External leakage	OK		<input type="checkbox"/>	
PST/FST	OK		<input type="checkbox"/>	
Open/Close	OK		<input type="checkbox"/>	

OK Cancel Apply

Disconnected Device Administrator

<NONAME> Administrator

SAMSON Positioner DTM



Expert+

Device name: SAMSON 373X-3 (Rev6) R1.51-1.59

Description: 373X-3 (Rev6) / DTM (v.1.4.0)

Condensed state No message

SAMSON
MESS- UND REGELTECHNIK

Positioner Type 3730-3

- Settings
 - Identification
 - Operation unit
 - Positioner
- Start-up
 - Initialization
 - Substitution
- Diagnosis
 - Status messages
 - Statistical information
 - Tests
 - Drive signal diagre
 - Drive signal diagre
 - Static characterist
 - Partial Stroke Test
 - Analysis of me
 - Full Stroke Test
 - Leakage detection
- Operation
 - Process data
 - Operating mode
 - Reset
 - Maintenance

Parameter	Status	Value	Value Unit
Positioner tolerance band control		<input type="text" value="1.0"/>	
PST Tolerance band		<input type="text" value="5.0"/>	%

Display

Progress flag	<input type="text" value="0"/>	%
---------------	--------------------------------	---

Partial Stroke Test

— Valve position x

— Reference variable w

— Setpoint deviation e

— Drive signal y

Disconnected
Device
Administrator

Administrator
OK
Cancel
Apply

SAMSON Positioner DTM



Expert+

Device name: SAMSON 373X-3 (Rev6) R1.51-1.59

Description: 373X-3 (Rev6) / DTM (v.1.4.0)

Condensed state No message

SAMSON
MESS- UND REGELTECHNIK

- Positioner Type 3730-3
 - Settings
 - Identification
 - Operation unit
 - Positioner
 - Start-up
 - Initialization
 - Substitution
 - Diagnosis
 - Status messages
 - Statistical information
 - Open/Close
 - Data logger
 - Travel histogram >
 - Setpoint deviation
 - Cycle counter hist
 - Drive signal diagn
 - Trend of travel en
 - Tests
 - Leakage detection
 - Operation
 - Process data
 - Operating mode
 - Reset
 - Maintenance

Parameter	Status	Value	Value I	Unit
Diagnosis - Statistical information - Setpoint deviation histogram				
Average values e long		No data read		%
Number of cycles		0		
Observation period		00:00:00		d.h.min:sec
Absolute value of max. setpoint deviation		0.0		%

Setpoint deviation histogram e

Disconnected

Device

Administrator

OK

Cancel

Apply

DTM & TROVIS-VIEW



DTM

Parameter	Status	Value
Diagnosis - Status messages - Extended		
Air supply	OK	
Shifting working range	OK	
Leakage pneumatics	OK	
Link working range	OK	
Observing end position	OK	
Connection positioner - valve	OK	
Working range	OK	
Fiction	OK	
Actuator springs	OK	
Inner leakage	OK	
External leakage	OK	
PST/FST	OK	
Reset	OK	
Open/Close	OK	

TROVIS-VIEW

VIEW4_3730_3_0_2012-Dec-18 - SAMSON TROVIS-VIEW 4

Stellungsregler Typ 3730-3, Version 1.51-1.54 EXPERTplus

Sammlerstatus: Keine Meldung

Benutzerdefinierter Baum

- Initialisierung
- Histogramm Zyklenzähler
- Kurzzeitbetrachtung

Name	Wert	Einheit	Kommentar
Inbetriebnahme - Initialisierung			
! Gewünschte Hand Führungsgröße w	0.0	%	Code 1
! Gerät ist initialisiert			
! Diagnoserferenzlauf Information			
! Ermittelter Nennbereich			Code 5
! Minimale Laufzeit auf		s	Code 40
! Minimale Laufzeit zu		s	Code 41
Start Initialisierung			
! Sicherheitsstellung			
! Initialisierung			
! Status Initialisierung			
! Abbruch Initialisierung			
Gewünschte Betriebsart			
! Gewünschte Betriebsart	Automatik		Code 0
! Aktuelle Betriebsart			
Initialisierungsfehler			
! x > Bereich			Code 50
! Delta x < Bereich			Code 51

Trend-Viewer

Prozessdaten

Diagramm

Werteachse: [%]

Zeitachse: t [d.h:mm:ss]

Name	Wert	Einheit
x - Führungsgröße [w]		%
y - Regelgröße [x]		°

Local Configuration Possibilities – Stand-Alone Solutions for Fieldbus Applications



- Local Stand-alone solutions also for fieldbus available

- Special fieldbus cards are necessary

- Very expensive solution (several thousand Euro) fieldbus cards

- Only few applications



because of the





Local Configuration Possibilities – Solutions for Fieldbus Applications

- Gateways with connection via TCP/IP
- Communication parallel to DCS
- Required software and hardware:
 - Gateway
 - Computer with FDT frame application (e. g. PACTware)
 - DTM
 - Ethernet network or crossover cable (between computer and gateway)
- Gateways:
 - FG PROFIBUS by Softing for PROFIBUS
 - FG-110 FF by Softing for FOUNDATION Fieldbus



**FG-110 FF
(Softing)**



**FG PROFIBUS
(Softing)**



Local Configuration Possibilities – Handhelds

- Emerson Field Communicator 375/475
 - Read-out of device data
 - Configuration of the field device
 - For HART and FOUNDATION FIELDBUS

- Connection
 - Direct connection to field device
 - Parallel connection to computer possible, for more comfortable configuration and for the use of a bigger display
 - Hardware included in delivery

- Handhelds by E+H
 - Field Xpert SFX100
 - With HART-Bluetooth-modem for the connection



Overview – Local Configuration Tools for Different Positioners



	TROVIS-VIEW	FDT/DTM*	Handhelds	Stand-alone solutions for fieldbuses
3730-0	-	-	-	-
3730-1	-	-	-	-
3730-2	X	-	-	-
373x-3	X	X	X	-
3730-4	X	X	-	X
373x-5	X	X	X	X
3730-6	X	X	X	-

*** Also as device driver for FDT-based engineering tools via DCS**

Overview – Required Hardware and Software for Local Configuration Tools



	TROVIS-VIEW	FDT/DTM*	Handhelds	Stand-alone solutions for fieldbuses
Software required	TROVIS-VIEW + driver for Isolated USB Interface Adapter	PACTware or FieldCare, positioner DTM, communication DTM (driver)	(E)DD, manufacturers' software, if connection to PC required	NI fieldbus configurator (for FF) or PACTware (for devices with DTM)
Hardware required	Isolated USB Interface Adapter	HART modem with USB access (e.g. VIATOR USB HART IF by MACTeK Corporation)	Handheld and manufacturer specific hardware	Fieldbus card

* Also as device driver for FDT-based engineering tools via DCS

Configuration Tools for Communication Protocols



	Emerson Delta V/ AMS	Yokogawa Centum/ PRM	Siemens PDM / only DD	Honeywell Experion
HART 373x-3/-6	X	X	X	X
Foundation Fieldbus 373x-5	X	X	X	X
Profibus 3730-4			X	

Status: January 2013 // ABB 800XA (FF + Profibus / only DTM)

- Suitable device integration software (DD, DTM...) as well as further integration:
<http://www.samson.de/page.php?sp=de&lh=14&ll=12>

Example – Emerson Delta V/AMS



■ Positioner type 3730-5 / Rev. 1 – Integration via DD

Status of T0012RF [Positioner 373X-5 Rev. 1]

Blocks: RESOURCE, TRANSDUCER524, TRANSDUCER544, TRANSDUCER564

Alarms | Process | **Operation / limit / failure** | Data / hw failure | Enhanced diagnostic

Diag Level: Expert+

Expert: Temperature range: No message

Expert+:

- Air supply: Perhaps not enough
- Actuator spring: No message
- Shifting working range: No message
- Friction: No message
- Leakage pneumatic: Perhaps existing
- Limit working range: Down
- Inner leakage: No message
- External leakage: No message
- Observing end position: No message
- Connection positioner - valve: No message
- Working range: No message
- Partial Stroke Test: Successful

SAMSON AG MESS- UND REGELTECHNIK

Print Close Help

Configuration of T0011RF [Positioner 373X-5 Rev. 1]

Classification enh. diagnostic 1-2 | Classification enh. diagnostic 2-3 | Classification enh. diagnostic 4-5 | Options / reset | Basic diagnostic Identification | Report | Operating mode | Start-up | Process data | Characteristic | Status | Status extended | Classification standard diagnostic Data logger / hysteresetest | Enhanced diagnostic / histogram z | **Enhanced diagnostic / histogram x** | Event logging 1 | Event logging 2 | PST

Blocks: RESOURCE, TRANSDUCER524, TRANSDUCER544, TRANSDUCER564

Histogram X:

X <= 0	0 %	80 < X <= 85	0 %
0 < X <= 5	1 %	85 < X <= 90	0 %
5 < X <= 10	8 %	90 < X <= 95	0 %
10 < X <= 15	0 %	95 < X <= 100	19 %
15 < X <= 20	0 %	X > 100	0 %
20 < X <= 25	0 %	Average value	55 < X <= 60
25 < X <= 30	0 %	Number of meas. points	3380835
30 < X <= 35	0 %		
35 < X <= 40	0 %		
40 < X <= 45	20 %		
45 < X <= 50	12 %		
50 < X <= 55	12 %		
55 < X <= 60	19 %		
60 < X <= 65	6 %		
65 < X <= 70	0 %		
70 < X <= 75	0 %		
75 < X <= 80	0 %		

SAMSON AG MESS- UND REGELTECHNIK

Time: Current

OK Cancel Apply Help

Example – Emerson Delta V/AMS



- Positioner type 3730-5 / Rev. 2 – Integration via enhanced EDD

The screenshot displays the Emerson Delta V/AMS software interface, showing several key components:

- Device Diagnostics:** A window titled "Positioner 3730-5 Rev. 2" showing a tree view of device components. The "Advanced Positioner Valve View" is selected, displaying various diagnostic parameters such as "Air supply", "Friction", "Stalling working range", "Leakage pneumatic", "Limit working range", "Observing end position", "Connection positioner - valve", and "Working range".
- Process Variables:** A window titled "3730_5REV2_C [Positioner 3730-5 Rev. 2]" showing a tree view of process variables. The "Graph Process data x,w" and "Graph SP deviation e" are visible. The "Graph Process data x,w" shows a bar chart with a value of 49.40. The "Graph SP deviation e" shows a bar chart with a value of -0.60.
- Drive signal diagram:** A window titled "Drive signal diagram" showing a graph of "Graph Steady" data. The graph plots "y (10)" on the vertical axis (ranging from 0 to 8000) against "x (%)" on the horizontal axis (ranging from 0 to 100). The graph shows a steady-state signal that slightly decreases over time.

Example – Siemens PDM



■ Positioner type 3730-4 – Integration via enhanced EDD

The screenshot displays the Siemens PDM diagnostic interface for a positioner. It consists of several overlapping windows:

- Diagnose - 373X-4 DD Rev2 (PA-Profil 3.01) (Online):** The main diagnostic window. It shows various status indicators and parameters:
 - Sammelstatus: Wartungsbedarf
 - Betriebsstundenzähler: 77,13 h
 - Gerät in Regelung: 54,91 h
 - Gerät eingeschaltet seit Initialisierung: 5,31 h
 - Gerät seit Initialisierung in Regelung: 2,62 h
 - Anzahl Nullpunktabgleiche: 0
 - Anzahl Initialisierungen: 28
 - Nullpunktgrenze: 5,0 %
 - Min. Temperatur: 9,0 °C
 - Max. Temperatur: 26,9 °C
 - Min. Temperatur (Zeit): 34,51 h
 - Max. Temperatur (Zeit): 11,88 h
 - Verweildauer (t < -40°C): 0,00 h
 - Verweildauer (t > +80°C): 0,00 h
- Histogramm Ventilstellung x (Langzeit) - 3730-4_DD_Rev2 (Online):** A histogram showing the frequency distribution of valve positions over a long period. The x-axis is labeled 'x [%]' and ranges from 0 to 100. The y-axis is labeled 'Häufigkeit [%]' and ranges from 0 to 100. The distribution is centered around 50%.
- Diagramm Stellsignal y - 373X-4 DD Rev2 (PA-Profil 3.01) (Online):** A graph showing the setpoint signal (Stellsignal y) over time. The x-axis is labeled 'x [%]' and ranges from 0 to 100. The y-axis is labeled 'Stationär-Lz y [1/s]' and ranges from 0 to 8000. The signal shows a step change from approximately 1000 to 8000 1/s.

Example – Yokogawa PRM



■ Positioner type 3730-3 – Integration via DTM

The screenshot shows the configuration interface for a SAMSON 3730-3 positioner. The left sidebar displays a tree view of the plant hierarchy, including Foundation Fieldbus, HART, and PROFIBUS devices. The main window is titled "DTM Works - [Undefined] SAMSON 3730-3 (Rev4) - [Parameter]". It features a "Parameter" table with various settings for the positioner, such as "Time until the next automatic PST test takes" (00:00:00) and "Test information" (Test not active). Below the table is a "Partial Stroke Test" graph showing valve position (x) and drive signals over time (t). The graph has two y-axes: the left axis for valve position (x) ranging from -10 to 10, and the right axis for drive signals (A) ranging from -10000 to 10000. The x-axis represents time in seconds from 0 to 10. The graph shows a step change in valve position from approximately 8 to 2, with corresponding drive signals for the valve positioner (x) and the drive signal (A).

The screenshot shows the "Diagnosis - Statistical Information - Travel histogram" window. It displays a "Travel histogram x" graph showing the frequency distribution of valve position (x) over time. The y-axis is "Frequency [%]" ranging from 0 to 100. The x-axis is "x [%]" ranging from -10 to 100. The histogram shows a sharp peak at approximately 0% valve position, indicating that the valve is mostly closed. The graph also shows a small peak at approximately 98% valve position. The window includes a "Parameter" table and a "Diagnosis" tree view on the left.