

# **INSTRUCTION MANUAL**

# DTM - HART SERIES 9000 and 9000-SAN











For optimal use read the recommendations and warnings in this manual, these instructions should be studied carefully.

Manufactured by:



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# **1. INTRODUCTION**

This instruction manual is a guide for installing and using the intelligent pressure and level transmitter Series 9000 and 9000-SAN HART. This DTM is developed to make configuration changes of the Series 4000 transmitters easy. This DTM can be used with almost every FDT-container.

# 2. INSTALLATION

To install the Klay DTM Series 9000 on your system, you have to download the installation file. This file can be downloaded from the Klay Instruments website: www.klay-instruments.com under section downloads.

# To start the installation always extract *Klay Series 9000 HART\_1.0.1.zip*.

Select Klay Series 9000 HART.exe \* (You must have administrator rights, do not use the .msi file)

\*Minimal software requirements: Windows 7 (32 or 64 bit) or higher, for older versions please contact Klay Instruments.



#### 2.1 . Framework 3.5

The Klay DTM requires .NET Framework 3.5 from Microsoft. If the framework is already installed the setup will continue.

When the framework is not installed the following message appear:

Windows 7 users can download the .NET Framework package from the following location: https://www.microsoft.com/nl-nl/download/details.aspx?id=21

Klay Series 9000 HART Installer Information X

Windows 10 and 8 users can enable the .NET Framework by selecting the start menu and type *p* windows features in the search box. The following window appears and the .NET Framework 3.5 can be enabled.



### 3. DTM

The following pages describes the DTM configuration.

#### 3.1 BASIC SETUP

In this menu basic data of the transmitter can configured. Information like Tag Number, Descriptor and others can be entered in the text fields. In this menu it is possible to change the span (LRV and URV) of the transmitter without test pressure with the option **Manual Re-Range**, follow the displayed instructions. With the option **Applied Re-Range** the span can be changed with a test pressure, follow the displayed instructions. Damping can be adjusted between 0 and 25 seconds. With the option **Local Write Protect**, protection against local adjustment on the transmitter can be set. With the option **Write Protect**, protection against adjustment by HART<sup>®</sup> can be set. The engineering unit of the pressure and temperature can be changed in this menu.

Online Parametarize	Basic Setup		
Derrice Configuration     Outries Study     Datable Step     Sensors     Signal Condition     Output Condition     Haman Interface     HART Steings     Dart Messages     Identification     Output:     Darts Messages     Denses Variables	Tag Descriptor Manage Date 1-1-2013 Long Tag	Local Web Protect gen gen gen tue fend Durgin 0.0 seconds	
	Manual Re-Range	Applied Re-Range	

#### 3.2 DETAILED SETUP

This menu contains data like the actual pressure, sensor and ambient temperature, these values are refreshed every 10 seconds. The engineering unit of the pressure and temperature can be changed.



#### 3.3 SIGNAL CONDITION

This menu contains data like the actual pressure, sensor and ambient temperature. These values are refreshed every 10 seconds. The engineering unit of the pressure and temperature can be changed. In this menu it is also possible to change the span (LRV and URV) of the transmitter without test pressure with the option **Manual Re-Range**, follow the displayed instructions. With the option **Applied Re-Range** the span can be changed with a test pressure, follow the displayed instructions. The mounting position effect of the transmitter can be neutralized with the option **Set Mounting Correction** or reset to factory default with the option **Reset Mounting Correction**. Damping can be adjusted between 0 and 25 seconds.

Klay Series 9000 HART # Parat Klay Series 9000 1 Pressure and level Version:1.0.1	meterize HART transmitter	•••		
-Online Parametarize	Signal Condition			
Drive Configuration     Drate Steep     Detailed Steep     Detailed Steep     Organ Constitute     -Organ Constitute     -Organ Constitute     -HART Stemps     -HART Stemps     -Bart Message     -Mentification     Dag Service     Process Variables	Pressure         -0.335 mber           PV % Bange         -0.021 %           Process Temperature         22.26 %C           Ambient Temperature         23.02 %C	Unit mber • Trappenture Unit (*C • Damping 0.0 seconds	Re-Range Manual Re-Range Applied Re-Range -Mounting Correction Set Mounting Correction Reset Mounting Correction	

#### 3.4 OUTPUT CONDITION

This menu contains the actual loop current of the transmitter. The output of the transmitter can be configured into **4-20 mA** or **20-4 mA**. With the option **Loop Simulation** a current can be simulated. Three options are available: **4 mA**, **20 mA** and **Other**. With **Other** a manual value between 4 and 20 can be chosen. To end the simulation choose **End** after selecting Loop Simulation. When necessary the output can be trimmed with D/A Trim.

Klay Series 9000 HART # Para	umeterize	0
Klay Series 9000 Pressure and leve Version: 1.0.1	ILART f transmitter	E KLAY-INSTRUMENT
B-Online Parametarize	Output Condition	
-Device Configuration	Loop Current	
-Basic Setup	2 3.997 mA	
E Detailed Setup	Alarm Output	
-Sensors	Low +	
- Output Condition	Reverse Output	
-Human Interface	4-20 mA •	
HART Settings Burst Messages	Loop Simulation	
-Diag/Service Process Variables	D A Trim	

#### 3.5 HUMAN INTERFACE

In the menu Human Interface a Readout option can be configured. **Readout:** Current, Unit, Percentage, and Process Temperature.

😤 Klay Series 9000 HART # Para	meterize	4 F X
Klay Series 9000 Pressure and leve Version: 1.0.1	FART Feasinter	III KLAY-INSTRUMENTS
B-Online Parametarize	Human Interface	
Device Configuration     Basic Setup     Detailed Setup     -Sensors     -Signal Condition     -Output Condition     -Output Condition     -Element Setup     -Bart Messages     -Identification     -Dag Service     -Process Variables	Digity Resolut Comme Com	

#### **3.6 HART SETTINGS**

In this menu several HART<sup>®</sup> options can be configured. When using HART<sup>®</sup> devices in a multi-drop configuration where more than one device is in the loop, each device must be set to a different polling address. The polling address for identification to the Host device can be filled in. With the option Set Clock Time the real time clock can be set in the Field device.

Klay Series 9000 HART # Parameterize		4.63		
Klay Series 9000 Pressure and leve Version:1.0.1	HART	IN KLAV-INSTRUMENT		
- Online Parametarize	HART Settings			
-Device Configuration	Polling Address			
-Basic Setup	0			
E-Detailed Setup	Num Request Preambles			
-Simal Condition	5			
Output Condition	Num Response Preambles			
-Human Interface	5			
HART Settings	Set Clock Time			
	00:00:00			
-Diag/Service Process Variables				

#### **3.7 BURST MESSAGES**

In this menu the transmitter can be configured for Burst mode. This will enable continuously broadcasting standard HART<sup>®</sup> reply messages. 3 (different) types of Burst messages can be configured. For a detailed explanation of the burst command, variables and message modes, details can be found in the instruction manual of the Series 9000. Depending on the Master one message will continuously be broadcasted to the Master device (when enabled).

Ray series 9000 HART * Para	and the second se			
Klay Series 9000 Pressure and leve Version:1.0.1	HARI el transmitter			KLAY-INSTRUMENTS
- Online Parametarize	Burst Messages			
Porcia Canfiguation     Paucia Sing     Paucia Sing     Paucia Sing     Paucia Sing     Paucia Sing     Paucia Sing     Paucia Condition     Paucia Con	- Monage 1 Borer Mode Duntide Burer Command Cons 1: PY Burer Message Trager Mode Continuou Burer Message Trager Mode Continuou Burer Trager Level Burer State Revel 0	Manage 2 Burst Mide ( Daubted •) Barst Command ( Cond 1: FV •) Barst Derics Vanablen ( Pressure •) Barst Manage Tagger Mode ( Continuous •) Barst Tagger Level • Values Parted •	Managa 3 Bort Mode Doubled • Burt Command Cond 1: P' • Provue • Burt Menage Trigger Mode Continoon • Burt Menage Trigger Mode Continoon • Burt Trigger Level 0	
	0.000 seconds Max Update Period	0.000 seconds Max Update Period	0.000 seconds Max Update Period	
	0.000 seconds	0.000 seconds	0.000 seconds	

#### 3.8 IDENTIFICATION

This menu shows data about the transmitter. This data is read-only and cannot be changed. The data contains information about: The manufacturer, type of transmitter, serial number, revision and others.

Klay Series 9000 HART # Para	meterize HART I transmitter							4 ME KLAY-INSTRUMENT
-Online Parametarize	Identification							
Device Configuration	Manufacturer	1	Device Revision		Sensor Type			
B-Detailed Setup	Klay Instruments	-		1	Serie 9000 Range 20	-		
Sensors	Device Type	5	Software Revision		Sensor Serial Number			
-Signal Condition	Klay 9000 Pressure Level	-		90		0		
Output Condition	HART Device ID	1	Hardware Revision		Klay Device Type			
-Human Interface		0		1		237		
Prost Manage	Distributor	1	Diaphragm		Final Assembly No.			
- Dutst Adessages	Klay Instruments	- 3	SI6 SST			0		
Diag/Service	Universal Revision		0 Ring Matl					
Process Variables		7 2	None					

#### 3.9 DIAGNOSTICS AND SERVICE

Diagnostic and service contains several status bits. These flags and status bits are used by the master device. **Cfg Chng Count** displays the number configured changes. With button **Device Reset**, the transmitter will restart. With butto n **Perform Self-Test**, the transmitter performs a hardware self-test, follow the displayed instructions.

Klay Series 9000 HART # Para	meterize			
Klay Series 9000 Pressure and leve Version: 1.0.1	HART I transmitter			KLAY-INSTRUME
Online Parametarize	Diag/Service			
-Device Configuration Basic Setup	Configuration Change Cfg Chng Count			
Detailed Setup	0 3			
Sensors Signal Condition Output Condition	Reset Conf. Changed Flag	Device Reset	Perform Self Test	
Human Interface	- Status Groups -			
-Burst Messages	Status Group 0	Device Diagnostic Status 1	Status Group 18	
	0 15	0	0	
Process Variables	Status Group 1	Analog Channel Saturated	Status Group 19	
	0	0	0	
	Status Group 2	Device Diagnostic Status 2	Status Group 20	
	Q 50	0	0	
	Status Group 3	Device Diagnostic Status 3	Status Group 21	
	0	0	0	
	Status Group 4	Analog Channel Fixed	Status Group 22	
	0	0	0	
	Status Group 5	Status Group 14	Status Group 23	
	0	0	0	
	Ext Dev Status	Status Group 15	Status Group 24	
	0	0	0	
	Device Operating Mode	Status Group 16		
	0	0		
	Device Diagnostic Status 0	Status Group 17		
	0	0		

#### 3.10 PROCESS VARIABLES

In this menu the actual readings of the transmitter are displayed. The actual readings are refreshed every 10 seconds. The engineering unit of the pressure and temperature can be changed in this menu.

