Remote Operation Instructions
HART Communicator 275
Asset Management Solutions (AMS)
Process Device Manager (PDM)
Device Type Manager (DTM)

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1 **General Information**

The M10 is a two-wire transmitter with 4...20mA current output and HART® capability.

General Characteristics of the M10 HART® interface:
- Multidrop Mode is supported
- Burst Mode is not supported


2 **IDs and Revision numbers**

The HART Device Descriptions described in this document have the following IDs and revision numbers:

- Manufacturer ID: 69 (0x45)
- Device Type: 234 (0xEA)
- HART module :
  - Device Revision: 2
  - DD Revision: 1
  - HART Universal Revision: 5
  - HC 275 OS Revision: ≥ 4.9
  - AMS Version: ≥ 5.0
  - PDM Version: ≥ 5.1+SP2
  - PACTware 2.1

3 **Implementation Peculiarities**

**Transmitter**
- All parameters and dynamic data are involved in HART transactions, i.e. can be handled from remote hosts. For details refer to the “Transmitter-Specific Command Specification”.

4 **HART Communicator 275 (HC275)**

4.1 **Installation**

The HC275 has to be programmed with the M10 HART Device Description. Otherwise the HC275 user will work with the instrument as a generic one thus loosing opportunity for entire instrument control.

4.2 **Operating**

Refer to the M10 Menu Tree HC275 (Attachment A).

The M10 operation via HC275 is made quite close to the manual instrument control via keypad.

The online help of each parameter contains its function number as a reference to the device’s local display and the “Installation and Operating Instructions”.

While storing data in HC275 from connected instrument, the difference between “standard configuration” of HC275 and its “full configuration” consists in some read-only parameters (sensor limits, device modules’ IDs, etc.) that are either transferred to AMS (“full configuration”) or are shown on AMS tabs as empty fields (“standard configuration”). Clear the latter corresponds to situation when HC275 ⇒ AMS configurations’ transfer is undertaken.
5 **Asset Management Solutions (AMS)**

### 5.1 Installation

If the M10 Device Description is not already installed on the AMS System a so called *Installation Kit M10 HART AMS* is needed (available on floppy disk from KROHNE or as download from KROHNE Internet page).

For installing the DD with the Installation Kit refer to the “AMS User's Guide” section 3: “Managing HART Devices” / “Adding new Device Types to AMS” / “Install Device Types Manually”.

### 5.2 Operating

Refer to the M10 Menu Tree AMS (Attachment B).

Due to AMS requirements and conventions the M10 operation differs a little from operation with HC275 and via local keypad.

The online help of each parameter contains its function number as a reference to the device's local display and the “Installation and Operating Instructions”.

Due to implementation peculiarities (refer to section 3, DDL) after the “Configuration Properties...” view is open, its ‘Process Input’ tab has empty fields for format specifiers (also local DDL variables). That is normal: AMS does not initialize the local variables, their default values are used after downloading.

6 **Process Device Management (PDM)**

### 6.1 Installation

If the M10 Device Description is not already installed on the PDM System a so called *Device Install* is needed (available on floppy disk from KROHNE or as download from KROHNE Internet page).

Before installing the DD with the Installation Kit, please read the “readme.txt”, which is also contained in the Device Install.

### 6.2 Operating

Refer to the M10 Menu Tree PDM (Attachment C-E).

Due to PDM requirements and conventions the M10 operation differs a little from operation with HC275 and via local keypad.

The online help of each parameter contains its function number as a reference to the device's local display and the “Installation and Operating Instructions”.
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7 PACTware

7.1 Installation
If the M10 DTM is not already installed on the PACTware System a so called Setup is needed (available on CD-rom from KROHNE or as download from KROHNE Internet page).
Before installing the DTM with the Installation Kit, please read the “readme.txt”, which is also contained in the Device Install.

7.2 Operating
Refer to the M10 Menu Tree PDM (Attachment C-E).
Due to DTM requirements and conventions the M10 operation differs a little from operation with HC275 and via local keypad.
The online help of each parameter contains its function number as a reference to the device's local display and the “Installation and Operating Instructions”.
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Attachment A

M10 Menu Tree HC275

1 Process Variables
- 1 Flow
- 2 positive Totalizer

2 Analog Output
- 1 Current Output Value
- 2 PV %Range

3 Test
- 1 Loop Test
- 2 Sensor Limits
- 3 Type of Instruments
- 4 Connection of Instruments
- 5 Firmware version
- 6 Time Constant
- 7 Output B1
- 8 Output B2

4 Installation
- 1 Contact B1
- 2 Contact B2
- 3 Contact B3
- 4 Lower Range Value
- 5 Full Scale
- 6 D/A Trim
- 7 L.F.Cutoff
- 8 Write-protected
- 9 10 Flow units
- 11 Totalizer units
- 12 Linearization
- 13 Application Info

5 Quit/Reset
- 1 Master reset
- 2 Totalizer

6 HART Variables
- 1 Manufacturer
- 2 Model
- 3 Device Id
- 4 Tag
- 5 Descriptor
- 6 Message
- 7 Date
- 8 Final asmbly num
- 9 PV Sensor serial num
- 10 Request Preambles
- 11 Response Preambles
- 12 Revisions
- 11 Polling address

Designations:
loc – Local HC275 variable, that is not read/written to instrument;
(M) – Method is invoked to retrieve/change data.
Remote Operation Instructions M10 HART

Attachment B

M10 Menu Tree AMS

- Flow
- Flow, scaled by URV/LRV
- Flow, scaled by USL/LSL
- Positive Totalizer
- Current Output
- Flow, Percent Range

Process Variables
Status
Scan Device
-----------------------------------
Diagnostics and Test
Calibrate
-----------------------------------
Error reset
Counter reset
Master reset
Assign
Unassign
Rename
-----------------------------------
Audit Trail
Record Manual Event
Drawing Notes ...
Help ...
-----------------------------------
Clear Offline Configuration
Compare Configurations
Configuration Properties

Overview
- Primary variable out of limits
- Non-primary variable out of limits
- Primary variable analog output saturated
- Primary variable analog output fixed
- Cold start
- Configuration changed
- Field device malfunction

Errors
- Output has no TK Correction
- Output is not Linear
- Counter is stopped
- Not Table is valid
- New Table bad, use old Table
- Table under Configuration
- Conflict between unit system and unit code
- Too few linearization points
- Linearization values in table not monotonic increasing
- X-Values for first table index is not 0%
- X-Values for last table index is not 100%

Warnings
- B1 is inactive
- B1 is set to flow
- Flow > Flowlimit
- Flow < Flowlimit
- B1 is set to counter
- Counter value bigger than switchpoint
- B2 is used as pulse output
- B3 is inactive
- B2 is inactive
- B2 is set to flow
- Flow > Flowlimit
- Flow < Flowlimit
- B2 is set to counter
- Counter value bigger than switchpoint

Designations:

△ refer to the next page.
Remote Operation Instructions M10 HART

Attachment B

M10 Menu Tree AMS

**Designations:**
- **RD**: Read-only variable;
- **Loc**: Local AMS variable, affects only AMS faceplates and configuration tabs and is not read/written from/to instrument.

---

**Process Variables**
- Status
  - Scan Device
  - Diagnostics and Test
  - Calibrate
- Master Reset
- Totalizer
- Assign
- Unassign
- Rename

---

**Basic Setup**
- Flow Units
- Totalizer Units
- Unit System
- Time Constant
- Low Flow Cutoff control
  - Cutoff ‘On’ value
  - Cutoff ‘Off’ value
- Contact B1
- Contact B2
- Contact B3

---

**Sensor**
- Sensor Limits
  - Upper Sensor limit
  - Lower Sensor limit
- Identification
- Manufacturer
- Model
- Device ID
- Universal Revision
- Field Device Revision
- Software Revision
- Hardware Revision
- Tag
- Descriptor
- Message
- Date
- Final assembly number
- Sensor serial number
- Production number
- Type of instrument
- Application
- Firmware Version

---

**Output**
- Contact B1
  - Function B1
  - Contact B1
  - Flow Value
  - Count Value
  - Hysteresis Value
- Contact B2
  - Function B2
  - Contact B2
  - Flow Value
  - Count Value
  - Hysteresis Value
- Contact B3
  - Function B3

---

**HART**
- Polling Address
- Tag
- Device ID
- Num. of request preams
- Num. of response preams

---

**Process Input**
- Flow Units
- Totalizer Units
- Full Scale
- Flow Min
- Time Constant
- Low Flow Cutoff control
  - Cutoff ‘On’ value
  - Cutoff ‘Off’ value

---

**Application info**
- Fluid
- Temperature
- Pressure
- Density
- Viscosity

---

**Linearization**
- Lin Table
- Config Status
- Last Table index
- Unit System
- Full Scale
- Flow Unit

---

**Linearization Table**
- X0..X12
- Y0..Y12

---

KROHNE IFC040 45e90101
IFC040 Menu Device

- Communication Way
- Set Address
- Load to Device
- Load to PG/PC
- Test
- Reset / Quit
- Sensor calibration
- Hart Communication

- Loop Test
- Counter Option
- Counter stop (M)
- Counter reset
- Master reset
- Counter resume (M)
- D/A Trim
- Reset Configuration changed flag
- Request Preambles
- Response Preambles
Remote Operation Instructions M10 HART

Attachment E

M10 Menu View

Display

Yt – Diagramm

Device Status

Toolbar

Statusbar

Update

Measured Value
- Flow
- Flow, scaled by URV/LRV
- Positive Totalizer
- Device Status

Output
- Current Output
- Flow, Percent Range

Device
- Manufacturer ID
- Devicetype
- Device ID
- Universal revision
- Transmitter revision
- Software revision
- Hardware revision
- Write protection
- Final assembly number
- Sensor serial number
- Production number
- Type of instrument
- Connection of instrument
- Firmware version

Device Diagnosis
- Device Status
- Status Group 1
- ...
- Status Group 5
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M10 Menu Tree PactWare

<table>
<thead>
<tr>
<th>Connect</th>
<th>Offline parameterisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Disconnect</td>
<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>Load from device</td>
<td>Online parameterisation</td>
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<tr>
<td>Store to device</td>
<td></td>
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<td></td>
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<tr>
<td>Parameter</td>
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<td>Measured value</td>
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<td>Simulation</td>
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<td>Diagnosis</td>
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<tr>
<td>Additional functions</td>
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<tr>
<td>Add device</td>
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<td></td>
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<tr>
<td>Properties &lt;0,IFC090&gt;ICF090</td>
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<tr>
<td>Offline parameterisation</td>
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<td>Online parameterisation</td>
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<tr>
<td>Compare offline</td>
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<tr>
<td>Compare online</td>
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<tr>
<td>Adjust set value</td>
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<tr>
<td>Default Data Sets</td>
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<tr>
<td>Output Characteristic</td>
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<tr>
<td>Measurement Data Archiving</td>
<td></td>
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<tr>
<td>Print</td>
<td></td>
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<tr>
<td>Write device data to file</td>
<td></td>
</tr>
</tbody>
</table>
Identification

Operation Unit
- Polling Address
- TAG
- Descriptor
- Message

Device
- Manufacturer
- Date
- Model
- Device ID
- Universal Rev.
- Field Device Rev.
- Software Rev.
- Hardware Rev.
- Request preamble
- Response preamble
- Type of Instrument
- Application
- Production number
- Firmware version
- Final Assembly Number
- Upper sensor limit
- Lower sensor limit
- Sensor Serial Number

Process Input

Damping
- Damping value

Process value scale
- Full Scale
- PV_LRV

Low Flow Cutoff
- L.F.Cutoff
- Cutoff ON
- Cutoff OFF

Units
- Flow units
- Totalizer units

Application information
- Fluid
- Temperature
- Pressure
- Density
- Viscosity

In- / Outputs

General

Output B1
- Function B1
- Contact B1
- Flow switch point
- Flow Hysteresis
- Counter switch point

Output B2
- Function B2
- Contact B2
- Flow switch point
- Flow Hysteresis
- Counter switch point
- Pulse width
- Pulse per unit

Input B3
- Function B3

Linearization

Settings
- Linearization table
- Table configuration status
- Unit System
- Last valid table index
- Full Scale

Table
- Index 0..12
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Reset / Quit
- Totalizer
- Stop
- Resume
- Reset
- Reset Configuration Changed Flag
- Master Reset
- Reset To Default

HART Communication
- Address
- Polling address
- Device ID
- TAG

Calibration
- Zero Set

Connect
- Disconnect

Load from device
Store to device

Parameter
- Measured value
- Simulation
- Diagnosis
- Additional functions
- Add device
- Properties <0.IFC090> IFC090

Measured Value
- Full Scale
- Flow
- Flow Min
- Upper Sensor limit
- Lower Sensor limit

In / Outputs
- Current Output
  - Flow, I
  - Range

Diagram
- Trendviewer

Overview
- Device

Fatal Errors
- Linearization table
  - Output B1
  - Output B2

Warnings
- General
- Linearization table
  - Output B1
  - Output B2
  - Input B3

About
- Field Device Rev.
- DTM Software Info
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- Possibility to store measuring data in