Supplementary Installation and Operating Instructions

HART
HART/Field Communicator 275/375
Asset Management Solutions (AMS)
Process Device Manager (PDM)

M8E
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1 General Information

The M8E is a two-wire transmitter with 4...20mA current output and HART® capability.

General Characteristics of the M8E HART® interface:
- Multidrop Mode is supported
- Burst Mode is not supported

There are two ways of using the HART® communication:

1.1 Point-to-Point Analog/Digital Mode
a) As a point-to-point connection between the M8E and the HART® master equipment.

1.2
Multidrop Mode

b) As a multipoint connection (multidrop) with up to 15 devices (M8E or other HART® equipment) in parallel.
1.3 Multidrop Mode (‘three-wire’)

In case devices with current output shall work continuously active a ‘third wire’ is needed to properly connect it together with two-wire loop powered devices in the same network.

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: 230 (0xE6)
- HART module: 
- Device Revision: 1
- DD Revision: 1
- HART Universal Revision: 5
- HC 275 OS Revision: ≥ 4.9
- FC 375 System SW Rev.: ≥ 1.8
- AMS Version: ≥ 6.0
- PDM Version: ≥ 5.2+SP1
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/Field Communicator 275/375 (HC275/FC375)

4.1 Installation
The HC275/FC375 has to be programmed with the M8E HART Device Description. Otherwise the HC275/FC375 user will work with the instrument as a generic one thus loosing opportunity for entire instrument control.

4.2 Operating
Refer to the M8E Menu Tree HC275/FC375 (Attachment A).
The M8E operation via HC275/FC375 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 M8E Device Description is not already installed on the AMS System a so called Installation Kit M8E 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 M8E Menu Tree AMS (Attachment B). Due to AMS requirements and conventions the M8E operation differs a little from operation with HC275/FC375 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 M8E 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 M8E Menu Tree PDM (Attachment C-E). Due to PDM requirements and conventions the M8E operation differs a little from operation with HC275/FC375 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”.

M8E Menu Tree HC275/FC375

1 Process Variables
   1 Flow
   2 positive Totalizer

2 Analog Output
   1 Current Output Value
   2 PV %Range

3 Test/Info
   1Selftest
   2 Loop Test (M)
   3 Sensor Limits
   4 Type of Instruments
   5 Type of meter
   6 Type of cone
   7 Type of float
   8 Material float
   9 Production Number
  10 Time Constant

4 Installation
   1 Output B1
   2 Output B2
   4 Flow Min
   5 Full Scale
   6 D/A Trim (M)
   7 L.F.Cutoff
   8 Write protect
   9 Change writeprotect(M)
  10 Change Password(M)
  11 Counter unit

12 Linearization
13 Applicatio Info

5 Quit/Reset
   1 Master reset (M)
   2 Reset Status (M)
   3 Set Default Value (M)
   3 Totalizer

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

1 Limitswitch control
   - Count Limit B1
   - Flow Limit B1
   - Flow Hysteresis B1

1 Inactive
2 Limit for flow
3 Limit for counter

1 Limitswitch control
   - Count Limit B2
   - Flow Limit B2
   - Flow Hysteresis B2

1 Inactive
2 Limit for flow
3 Limit for counter

1 Cutoff Control
2 Cutoff ON Value
3 Cutoff OFF Value

1 Last Table Index
2 Unit System
3 Full Scale
4 Flow Unit
5 Phase fluid
6 Phase ref.
7 Pressure reference

1 Counter Option
   2 Counter reset (M)

1 Stop
2 Resume

1 Universal Revision
2 Device Revision
3 Software Revision
4 Firmware Version
5 Hardware Revision
M8E 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
- Master reset
- Reset configuration flag
- Error reset

Totalizer
- Set to default value
- Change Writeprotect
- Change Password

Audit Trail
- Record Manual Event
- Drawing Notes ...
- Help ...

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
- no temperature compensation
- no output linearization
- totalizer error
- FRAM error
- ROM error
- ReStart OF Device
- no table is valid
- new table bad, use old table
- table under configuration
- conflict between unit system and unit code
- too few number of xy values
- X-Value for first table index is not 0%
- X-Value for last table index is not 100%

Warnings
- no zero calibration of analog output
- no full scale calibration of analog output
- B1 is inactive
- B1 Flow >= Flowlimit
- B1 Flow < Flowlimit
- B1 Counter >= counter limit
- B2 is inactive
- B2 Flow >= Flowlimit
- B2 Flow < Flowlimit
- B2 Counter >= counter limit

Designations:
- refer to the next page.
Designations:

- \textit{Ro} — Read-only variable;
- \textit{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
- Reset configuration flag
- Error reset

Totalizer
Set to default value
Change Writeprotect
Change Password

Audit Trail
Record Manual Event
Drawing Notes ...
Help ...

- Clear Offline Configuration
- Compare Configurations
- Configuration Properties

Output
Contact B1
- Limit switch control
- Flow Value
- Count Value
- Hysteresis Value

Contact B2
- Limit switch control
- Flow Value
- Count Value
- Hysteresis Value

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

Sensor Limits
- Upper Sensor limit
- Lower Sensor limit

Device
Identification
- Manufacturer
- Model
- Device ID
- Universal Revision
- Field Device Revision
- Software Revision
- Hardware Revision
- Firmware Version
- Tag
- Normal meter size
- Type of cone
- Discriptor
- Message
- Date
- Final assembly number
- Sensor serial number
- Production number
- Type of instrument
- Type of meter
- Type of indicator
- Type of float
- Material float

Linearization
- Last Table index

- Unit System
- Full Scale
- Flow Unit
- Phase fluid
- Phase rel. fluid
- Pressure reference
- Reference density
- Volume Flow ref.

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

Process Input
- Flow Units
- Counter Units
- Full Scale
- Flow Min
- Time Constant

- Low Flow Cutoffcontrol
- Cutoff ‘On’ value
- Cutoff ‘Off’ value

Application info
- Fluid
- Temperature
- Pressure
- Density
- Viscosity
- compr. factor

Loop test
D/A trim
Calibration Management

Totalizer options
Counter Reset

Basic Setup
- Flow Units
- Totalizer Units
- Unit System
- Time Constant

- Low Flow Cutoffcontrol
- Cutoff ‘On’ value
- Cutoff ‘Off’ value

- Contact B1
- Contact B2
M8E Menu Device

Communication Way
- Set Address

Load to Device
- Load to PG/PC

Test
- Loop Test
- Self-Test
- Counter stop
- Counter resume
- Reset counter

Reset / Quit
- Master reset
- Reset Configuration changed flag
- Reset Status
- Set Default Value
- Change Writeprotect
- Change Password
- Counter Option
- D/A Trim
- Request Preambles
- Response Preambles

Sensor calibration

Hart Communication
Attachment E

M8E 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