Remote Operation
Instructions
HART Communicator 275
Asset Management Solutions (AMS)

IFC090
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1 General Information

The IFC090 is a two-wire transmitter with 4...20mA current output and HART® capability. Dependent on device implementation it is available with active current output (‘Standard + HART’, ‘Modis-3’) or passive current output (‘Standard + HART’, ‘Modis-1’, ‘Modis-2’).

General Characteristics of the IFC090 HART® interface:
- Multidrop Mode is supported
- Burst Mode is not supported

Electrical connection: Refer to sections 2.1, 2.2, 2.6 of the “Installation and Operating Instructions Electromagnetic flowmeters IFC 090 K/F” (KROHNE) – for ‘Standard + HART’ device implementation, and to sections 4-6 of the “Information about IFC 090i (Modis-devices)” (KROHNE) – for ‘Modis’ instrument implementations.

There are two ways of using the HART® communication:

a) As a point-to-point connection between the IFC090 and the HART® master equipment. The instrument may be equipped with either active or passive current output (‘Modis’) or be configured with desired current output (‘Standard + HART’).

Point-to-Point Analog/Digital Mode

![Diagram of point-to-point connection]

b) As a multipoint connection (multidrop) with up to 15 devices (IFC090 or other HART® equipment) in parallel. The instruments must be equipped (or configured) with passive current output.
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: 244 (0xF4)
Device Revision: 2
DD Revision: 1
HART Universal Revision: 5
HC 275 OS Revision: ≥ 4.9
AMS Version: ≥ 5.0

For information about Transmitter Revisions and related Device Descriptions refer to the KROHNE HART Device List.

3  Implementation Peculiarities

Variables and functions/processes of the Service Menu are not maintained by the instrument HART® application layer. Still a subset of service parameters is transferred via bus (only reading is possible): it applies to variables that control the limits, availability, etc. of maintenance data.

4  HART Communicator 275 (HC275)

4.1  Installation

The HC275 has to be programmed with the IFC090 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 IFC090 Menu Tree HC275 (Attachment A).

The IFC090 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”.
Parameter protection via password (Entry Code) is the same as on local display. Please refer to the online help for valid symbols according to device’s keypad.
While saving configuration to HC275 from connected instrument, some crucial service variables (refer to section 2) are also stored. Hence in the offline mode their values cannot be changed (and will not be sent to device), but are shown to HC275 user and control assignments for maintenance data.
As soon as service functionality is not available via HART transmitter, 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”).

5 Asset Management Solutions (AMS)

5.1 Installation

If the IFC090 Device Description is not already installed on the AMS System a so called Installation Kit IFC090 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 IFC090 Menu Tree AMS (Attachment B).
Due to AMS requirements and conventions the IFC090 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”.
Parameter protection via password (Entry Code) is the same as on local display. Please refer to the online help for valid symbols according to device’s keypad.
Remote Operation Instructions IFC090 HART

Attachment A

IFC090 Menu Tree HC275

1 Process
Variables

1 Raw Flow
2 Smoothed Flow
3 Positive Totalizer
4 Negative Totalizer
5 Totalizers’ Sum

2 Outputs/
Inputs

1 Full Scale
2 Damping Control
3 Time Constant
4 Cutoff Control
5 5 Cutoff ‘On’ value
6 6 Cutoff ‘Off’ value

7 Display

8 Current Output I
9* Pulse B1

9* Control/Status B1
10* Control/Status B2
11’ Auto/Extern. Range
12’ Trip.Point 1, Low
13’ Trip.Point 1, High
14’ Trip.Point 2, Low
15’ Trip.Point 2, High

3 Operation

1 Test Range (M)
2 Hardware Info (M)
3 Sensor Limits

4 Test

1 Display Flow
2 Display Counters
3 Display Value P

1 Function I
2 Rev.Range Control
3 Rev.Range Scale
4 4 I 0%
5 I 100%
6 I Max
7 I Error

5 Installation

1 Language
2 Flowmeter
3 Zero trim (M)
4 User Unit
5 Application
6 Hardware

6 Quit/Reset

1 Current Output Value
2 PV %Range
3” Pulse Output Value
4” Control/Status B1
5” Control/Status B2

7 Set/Reset
Password (M)

8 HART
Variables

1 Upper Sensor Limit
2 Sensor Min Span

Designations:

opt – Optional item, depends on device implementation: availability of Binary Terminals B1/B2 and their assignment, etc.;
N* – Availability of the item depends on the assignment made for some previous item(s): say, cutoff values become visible/editable only if ‘Cutoff Control’ parameter is set to “Yes”;
loc – Local HC275 variable, that is not read/written to instrument;
(M) – Method is invoked to retrieve/change data.

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Attachment B

IFC090 Menu Tree AMS

Process Variables
- Status
  - Scan Device

Diagnostics and Test
- Calibrate
  - Reset totalizers
  - Stop/resume totalizers
  - Set/reset password

Audit Trail
- Drawing Notes ...
- Help ...

Configuration Properties
- 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

Fatal errors
- Analog Digital Converter fatal error
- Device Block fatal error
- Display module fatal error
- I/O module fatal error
  - Fatal error of Current Output
  - Fatal error of Pulse Output
  - Fatal error of Control Input 1
  - Fatal error of Control Input 2
  - Fatal error of Status Output 1
  - Fatal error of Status Output 2

Data Errors
- Checksum error in Parameter EEPROM
- Checksum error in General Block
- Checksum error in Current Block
- Checksum error in Pulse/Frequency Block
- Checksum error in Control/Indication Block
- Checksum error in Display Block
- Checksum error in Communication Block
- Current output overranged
- Pulse output overranged
- Counter overflow
- Power fail detected
- Error in IMoCom configuration
- Analog/digital converter overranged
- Empty pipe

Warnings
- Checksum error in Parameter EEPROM
- Checksum error in General Block
- Checksum error in Current Block
- Checksum error in Pulse/Frequency Block
- Checksum error in Control/Indication Block
- Checksum error in Display Block
- Checksum error in Communication Block

Designations:

- Optional variable, depends on device implementation: availability of Binary Terminals B1/B2 and their assignment, etc.;
- refer to the next page.

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**Attachment B**
(continued from the previous page)

**IFC090 Menu Tree AMS**

**Designations:**
- \( ^{op} \) - Optional variable, depends on device implementation:
  - availability of Binary Terminals B1/B2 and their assignment, etc.;
- \( ^{rd} \) - 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
  - Reset totalizers
  - Stop/resume totalizers
  - Set/reset password
- Audit Trail
- Drawing Notes ...
- Help ...
- Clear Offline Configuration
- Compare Configurations
- Configuration Properties

**Basic Setup**
- Hardware
  - Tag
  - Upper Sensor Limit
  - Sensor Minimum Span
  - Time Constant
  - Flow Units
  - Full Scale Value
  - Flow Min
  - Damping Control
- Terminal B1
  - Terminal B2

**Sensor**
- PV Sensor serial num
  - Diameter
  - GK Value
  - Flow Direction
  - Upper Sensor Limit
  - Sensor Minimum Span
  - Application
  - Field Frequency
  - Line Frequency
  - ADC firmware Id
  - I/O firmware Id
  - Display firmware Id

**Analog Output**
- Function I
  - Rev.Range Control
  - Rev.Range Scale
  - I 0%
  - I 100%
  - I Max
  - I Error
  - AO Alarm type
  - Function B
  - Pulse Type
  - Pulse Control
  - Pulse Width
  - Pulse Value
  - Cutoff Control
  - Cutoff ‘On’ value
  - Cutoff ‘Off’ value

**Binary I/O**
- Terminal B1 Function
- Terminal B2 Function
- Trip.Point 1, Low
- Trip.Point 1, High
- Trip.Point 2, Low
- Trip.Point 2, High
- Auto/External Range

**HART**
- Tag
  - Device Id
  - Final assembly num
  - Date
  - Descriptor
  - Message
  - Universal revision
  - Num request preams
  - Num response preams
  - Polling address

**Device**
- Model
  - Manufacturer
  - Field device revision
  - Hardware revision
  - Software revision
  - Write protect
  - Empty Pipe
  - Terminal B1
  - Terminal B2

**Process Input**
- Flow Units
  - Totalizer Units
  - Pulse Value Units
  - Time Constant
  - Flow format
  - Totalizers’ format
  - Pulse Value format

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