HART® Field Device Specification:

EUROMAG, MC608A

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1. INTRODUCTION

1.1 Scope

The EUROMAG EMF, complies with HART Protocol Revision 7.4. This document specifies all the device specific features and documents HART Protocol implementation details (e.g., the Engineering Unit Codes supported).

1.2 Purpose

This specification is designed to complement the MC608 Installation Manual by providing a complete, unambiguous description of this Field Device from a HART Communication perspective

1.3 Who should use this document?

The specification is designed to be a technical reference for HART End Users. This document assumes the reader is familiar with HART Protocol requirements and terminology.

1.4 Abbreviations and definitions

EMF	Electromagnetic Flow Meter
ADC	Analog to Digital Converter
CPU	Central Processing Unit (of microprocessor)
DAC	Digital to Analog Converter
EEPROM	Electrically-Erasable Read-Only Memory
ROM	Read-Only Memory

1.5 References

HART Smart Communications Protocol Specification. HCF_SPEC-12. Available from the HCF.

Euromag MC608, Installation Manual

2. DEVICE IDENTIFICATION

Manufacturer Name:	Euromag International S.r.l.	**Model Name(s):**	MC608
Manufacture ID Code:	24710 (0x6086)	**Device Type Code:**	58011 (0xE29B)
HART Protocol Revision	7.4	**Device Revision:**	1
Number of Device Variables	12		
Physical Layers Supported	FSK		
Physical Device Category	Electromagnetic flow meter		

3. PRODUCT OVERVIEW

The EUROMAG, **MC608 A** is a converter that has been designed with the purpose of meeting all the requirements of modern water management systems.

4. PRODUCT INTERFACES

4.1 Process Interface

4.1.1 Sensor Input

The sensor input is a Mag flow sensor.

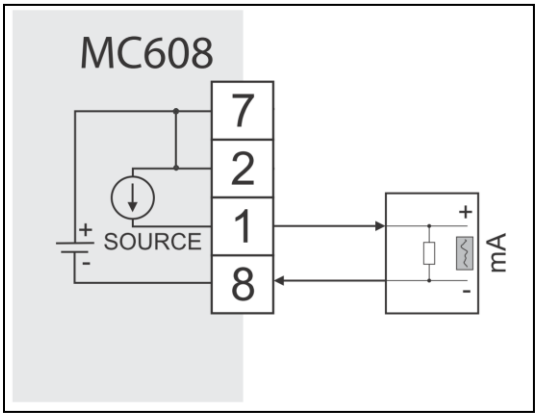
4.2 Host interface

4.2.1 Analog Output 1: 4-20mA

The HART Communication is supported on active two-wire 4-to-20mA current loop .

	Values (percent of range)	Values (mA or V)
Maximum current	100%	20.0 mA
Minimum current	0.00%	4 mA
Multi-Drop current draw		4.0 mA
Lift-off voltage		9 VDC (@250Ohm)
Loop resistance range		230 - 800 Ohm

Figure 1 – Electrical connections



5. DEVICE VARIABLES

Table 2 - Device Variables

Num	Name	Unit Codes: default
0	Volume flow	m^3/s
1	Flow velocity	m/s
2	Mass flow	kg/s
3	Totalized positive volume	m^3
4	Totalized negative volume	m^3
5	Partial positive volume	m^3
6	Partial negative volume	m^3
7	pressure	Bar (Fixed)
8	temperature	DegC
244	% of range	
245	Loop Current	mA (39)
246	PV	
247	SV	
248	TV	
249	FV	

6. DYNAMIC VARIABLES

Four Dynamic Variables are supported.

The assignment to Dynamic Variables is mappable except for PV:

Table 3 - Dynamic Variables

Num	Name
PV	Volume flow m3/s
SV	Any dynamic variable (0-8)
TV	Any dynamic variable (0-8)
FV	Any dynamic variable (0-8)

6.1 Burst Mode
The MC608 does not support Burst Mode.

6.2 Catch Device Variable
The MC608 does not support Catch Device Variable.

6.3 Busy and Delayed Response
Busy response is not used.

Delayed-response is not used.

6.4 Long Messages
Not supported.

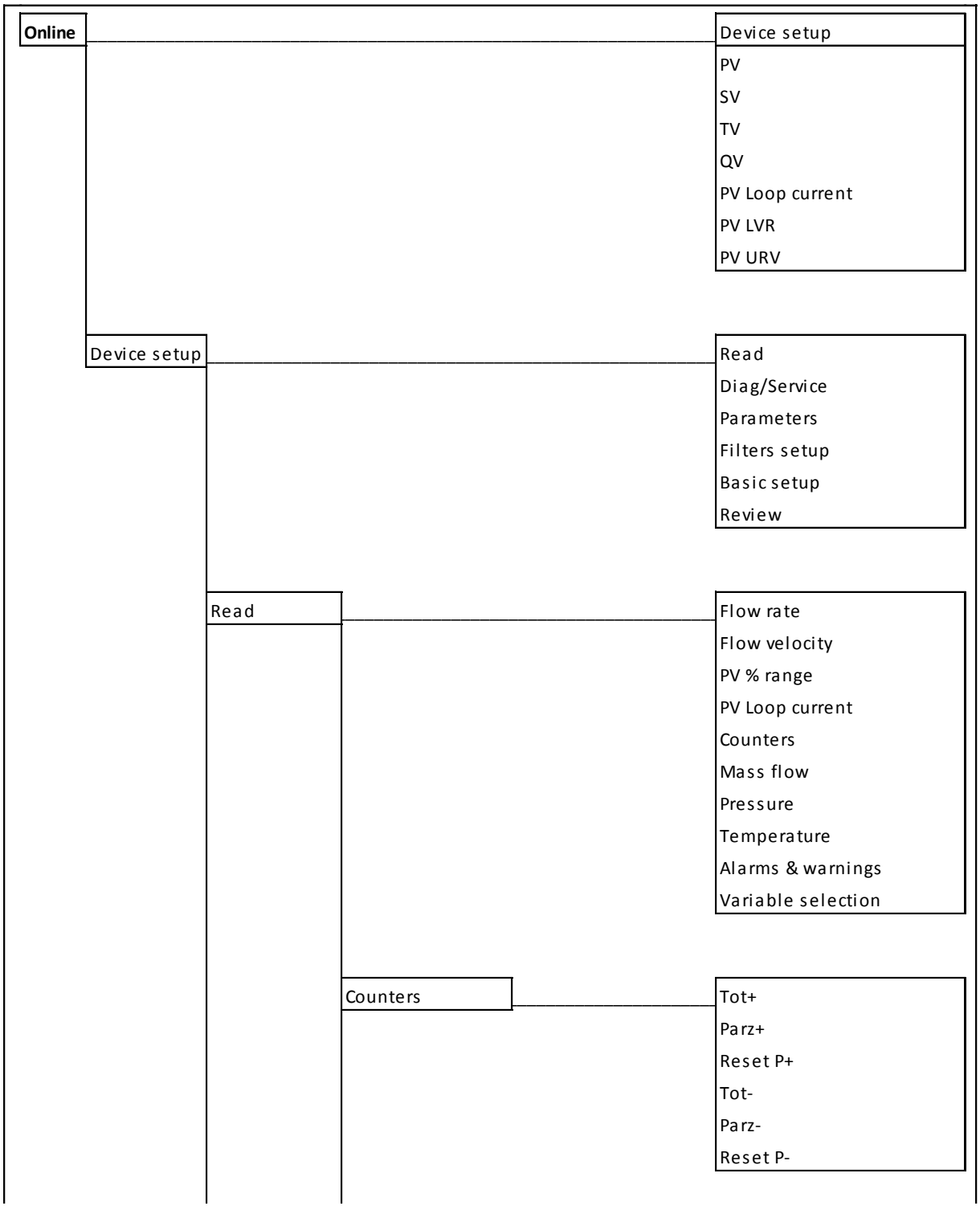
6.5 Non-Volatile Memory
EEPROM is used to hold the device's configuration parameters. New data is written to this memory immediately on execution of a write command.

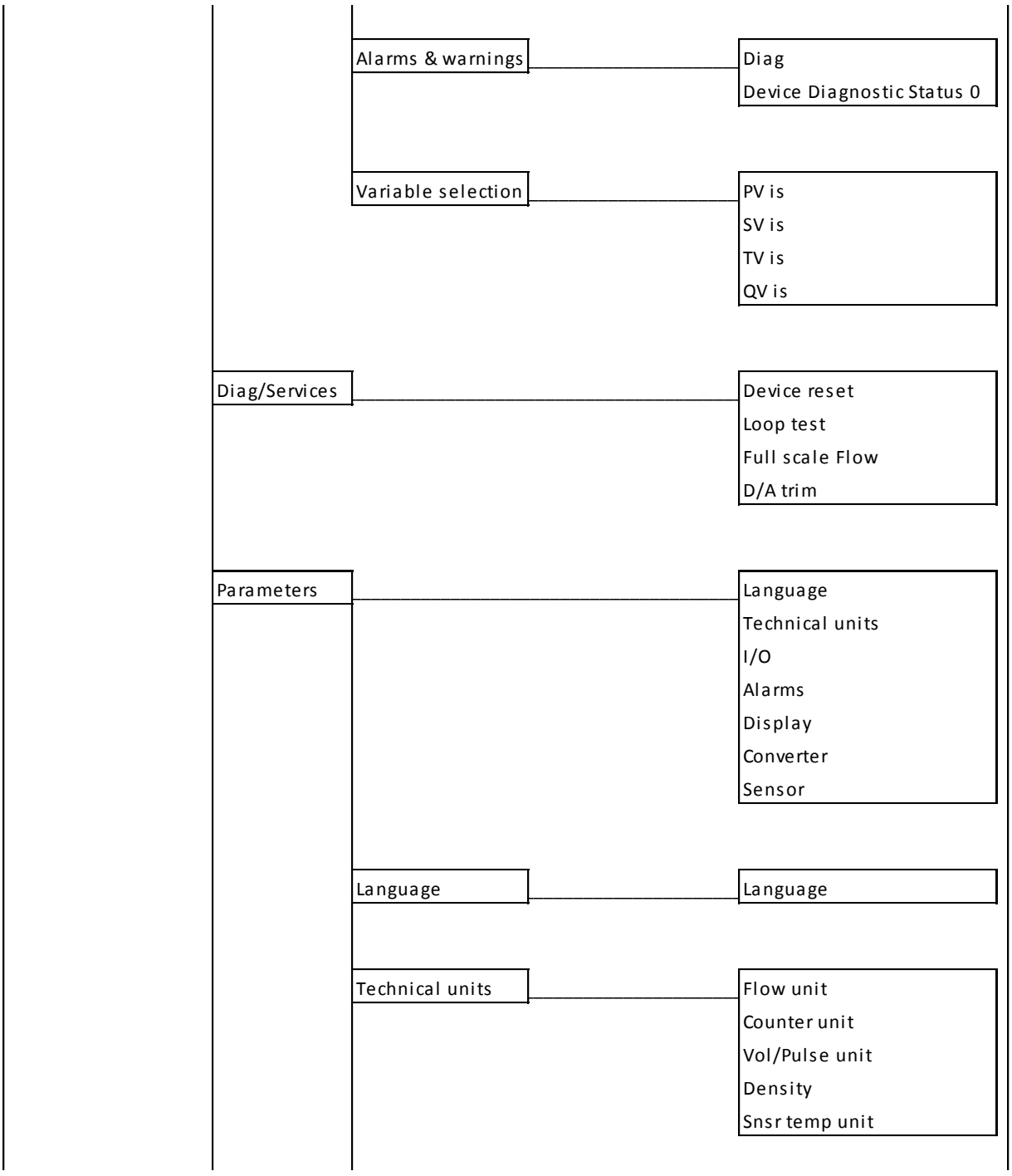
6.6 Modes
Fixed current mode is supported.

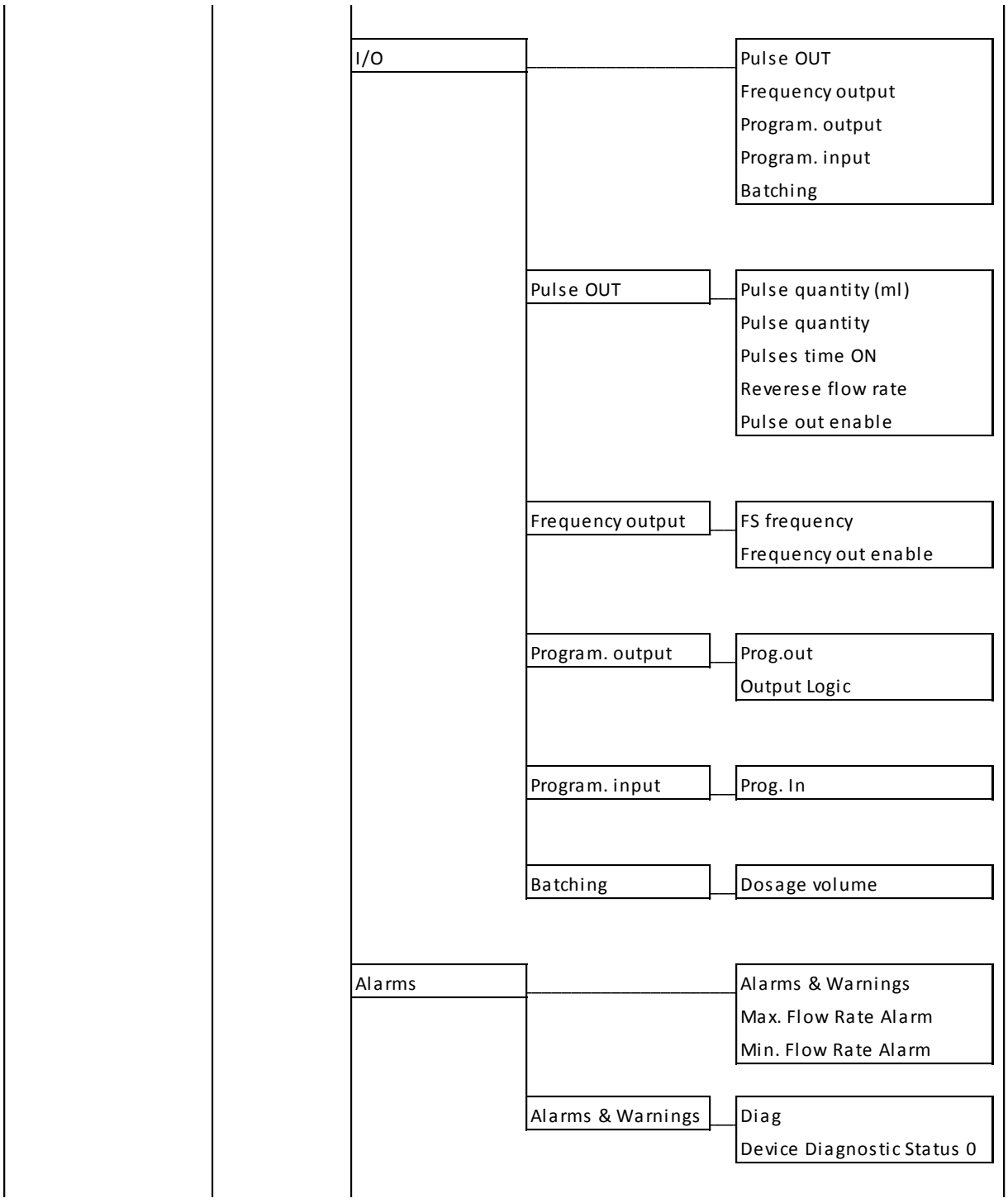
6.7 Write Protection
Write protection is not supported.

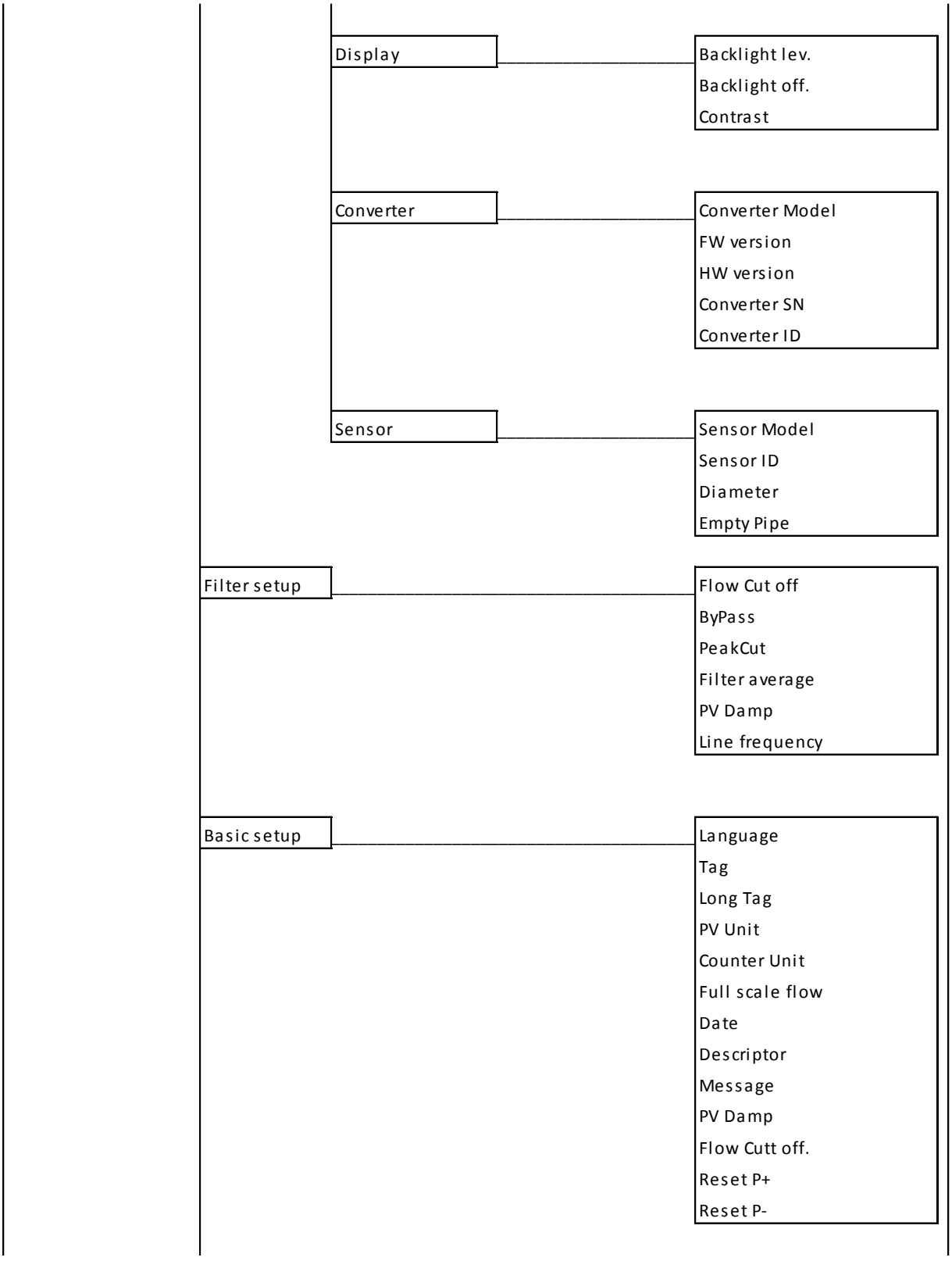
6.8 Damping
Damping is standard, affecting only the PV and the loop current signal. Damping is adjustable from 0 to 60 seconds.

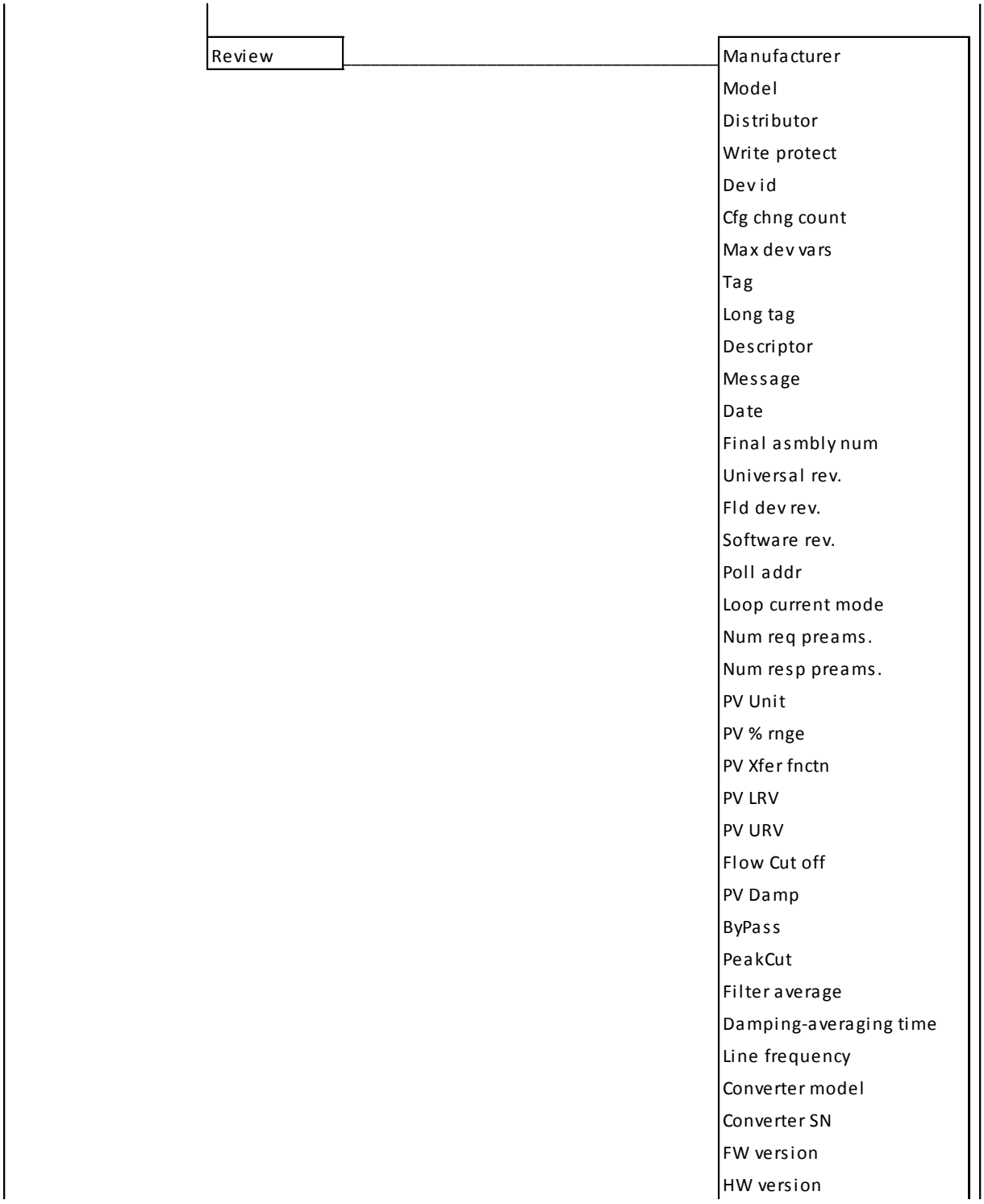
6.9 Device Description Structure




Alarms & warnings
Diag
Device Diagnostic Status 0
Variable selection
PV is
SV is
TV is
QV is
Diag/Services
Device reset
Loop test
Full scale Flow
D/A trim
Parameters
Language
Technical units
I/O
Alarms
Display
Converter
Sensor
Language
Language
Technical units
Flow unit
Counter unit
Vol/Pulse unit
Density
Snsr temp unit


I/O
Pulse OUT
Frequency output
Program. output
Program. input
Batching
Pulse OUT
Pulse quantity (ml)
Pulse quantity
Pulses time ON
Reverese flow rate
Pulse out enable
Frequency output
FS frequency
Frequency out enable
Program. output
Prog.out
Output Logic
Program. input
Prog. In
Batching
Dosage volume
Alarms
Alarms & Warnings
Max. Flow Rate Alarm
Min. Flow Rate Alarm
Alarms & Warnings
Diag
Device Diagnostic Status 0


Display
Backlight lev.
Backlight off.
Contrast
Converter
Converter Model
FW version
HW version
Converter SN
Converter ID
Sensor
Sensor Model
Sensor ID
Diameter
Empty Pipe
Filter setup
Flow Cut off
ByPass
PeakCut
Filter average
PV Damp
Line frequency
Basic setup
Language
Tag
Long Tag
PV Unit
Counter Unit
Full scale flow
Date
Descriptor
Message
PV Damp
Flow Cutt off.
Reset P+
Reset P-


Review
Manufacturer
Model
Distributor
Write protect
Dev id
Cfg chng count
Max dev vars
Tag
Long tag
Descriptor
Message
Date
Final asmbly num
Universal rev.
Fld dev rev.
Software rev.
Poll addr
Loop current mode
Num req preams.
Num resp preams.
PV Unit
PV % rnge
PV Xfer fnctn
PV LRV
PV URV
Flow Cut off
PV Damp
ByPass
PeakCut
Filter average
Damping-averaging time
Line frequency
Converter model
Converter SN
FW version
HW version

Sensor model
Sensor ID
Diameter
Empty Pipe
Language
Max.Flow Rate Alarm
Min. Flow Rate Alarm
Pulses quantity
Pulses time ON
Reverse flow rate
Pulses out enable
FS frequency
Prog.out
Prog.in
Dosage volume
Backlight lev.
Backlight off.
Contrast

ANNEX A. CAPABILITY CHECKLIST

Manufacturer, model and revision	EUROMAG, MC608
Device type	Electromagnetic flow meter
HART revision	7.4
Device Description available	Yes
Number and type of sensors	1
Number and type of actuators	0
Number and type of host side signals	1: 4-20 mA analog/HART
Number of Device Variables	12
Number of Dynamic Variables	4
Mappable Dynamic Variables	YES
Alternative operating modes	NO
Burst mode	NO
Fixed current mode	YES
Write-protection	NO

ANNEX B. DEFAULT CONFIGURATION

Parameter	Default value
Write protect	off
Transfer function	Linear
Number of response preambles	5