

NORSOK STANDARD  
SYSTEM REQUIREMENTS

# FISCAL METERING SYSTEM FOR GAS

I-SR-104

Rev. 1, January 1995

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Please note that whilst every effort has been made to ensure the accuracy of the NORSOK standards neither OLF nor TBL or any of their members will assume liability for any use thereof.

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## 1 FOREWORD

This standard has been developed by the NORSOK standardisation work group and agreed by the Norwegian industry for the widest possible national and international application.

## 2 SCOPE

This standard describes the functional requirements for fiscal gas metering systems.

## 3 NORMATIVE REFERENCES

CEN/TC 234 -WG5 N40 Draft	"Functional requirements for gas metering systems for natural gas"
ISO 6978:	"Calculation of heating value and reference density".
NORSOK standards	In particular
I-CR-100	"Fiscal measurement systems"

## 4 DEFINITIONS AND ABBREVIATIONS

### 4.1 Definitions

None

### 4.2 Abbreviations

UAS	Safety and Automation System
CEN/TC	The European Committee for Standardization/ Technical Committee

## 5 FUNCTIONAL REQUIREMENTS

### 5.1 General

The metering system shall measure flowrate and total quantity and have access to gas quality parameters. The metering system shall be in accordance with CEN/TC 234 WG5 N40 Draft and requires approval by the national authorities.

Optionally the metering system shall also control an automatic gas sampler system, i.e.

- provide a flow proportional pacing signal (and a fall back signal).
- monitor the sample volume collected and status of the sampling system.

Three uncertainty classes of metering systems are specified according to their degree of accuracy, see clause 5.9 Performance below.

### 5.2 Products / Services

Not applicable.

### 5.3 Equipment/schematic

The metering system shall consist of:

- A mechanical part, including the flow element.
- An instrument part.
- A computer part performing calculations for quantity, reporting and control functions. The computer part shall be dedicated computer(s). Optionally the computer part can be (partially or wholly) a part of SAS.

### 5.4 Performance

#### 5.4.1 Capacity

The flowrate in each meter run shall not exceed limits resulting in total uncertainty of standard volume specified below.

#### 5.4.2 Accuracy

The table below specifies max. uncertainty (95 % conf. level) in % of standard volume.

Class A	Class B	Class C
+/-1.0 %	+/-1.8 %	xx *)

\*) Any other uncertainty value than Class A, based on cost-benefit analysis, ref. Norsok Standard I-CR-100 .

### 5.4.3 Lifetime

Application specific

### 5.5 Regularity

99.9 %.

### 5.6 Process/ambient conditions

Ref. to process data sheet (application specific)

Installation                      Indoor/outdoor

### 5.7 Operational Requirements

#### 5.7.1 For all metering systems

- The metering system shall automatically perform all line/ valve control as required during normal operation . There shall also be a manual mode (performed from the computer part) for such operations.
- The metering system shall be operated from the computer part. Optionally the system shall be operable from SAS (if the system has a dedicated computer part).
- The computer part shall be dedicated computer(s). Optionally the computer part can be ( partially or wholly) a part of SAS.
- It shall be possible to operate all valves locally.
- The opening and closing of the metering system with gas flowing through, shall always be done in manual mode (from the computer part).
- It shall be possible to measure the gas flow for class A - C for different operating conditions as shown in the table below:

Operation condition	Class A	Class B	Class C
During regular calibration of the field instruments	Yes	Yes	Application specific
When a field instrument of any type fails	Yes	Application specific	Application specific

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#### 5.7.2 For metering systems with multiple meter runs

- In automatic mode the metering system shall open or close meter runs as required by the amount of gas flow being measured.
- The meter run outlet valves shall be manually operated from the control room (i.e. shall not be part of the automatic operation). Optionally these valves shall only be locally operated (project specific).

### 5.8 Maintenance Requirements

Ref. to NORSOK I-CR-100 .

## **5.9 Isolation and sectioning**

No specific requirements.

## **5.10 Layout Requirements**

Application specific.

## **5.11 Interface Requirements**

Computer part interfaces:

- If dedicated computer: SAS (The data transfer content are application specific).
- Flow proportional sampling system and/or On-line gas chromatograph.

The remaining interfaces, if any, are application specific, (e.g. Water dew point, Hydrocarbon dew point, Hydrogensulfid ( $H_2S$ )).

## **5.12 Commissioning Requirements**

No specific requirements.

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