EXAM
BBG Prüf- und Zertifizier GmbH

**Translation**

(1) # Type Examination Certificate

(2) **- Directive 94/9/EC -**
**Equipment and protective systems intended for use in potentially explosive atmospheres**

(3) **BVS 05 E 116 X**

(4) **Equipment:** **Transmitter Typ 24**S*A***L******

(5) **Manufacturer:** **Micro Motion, Inc.**

(6) **Anschrift:** **Boulder, Co. 80301, USA**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the schedule to this type examination certificate.

(8) The certification body of EXAM BBG Prüf- und Zertifizier GmbH certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design of Category 3 equipment intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in confidential test and assessment report BVS PP 05.2080 EG.

(9) The Essential Health and Safety Requirements are assured by compliance with:

EN 60079-15:2003 Type of protection 'n'
EN 50281-1-1:1998 Dust explosion protection

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This Type Examination Certificate relates only to the design, examination and tests of the specified equipment in accordance to Directive 94/9/EC.
Further requirements of the Directive apply to the manufacturing process and supply of this equipment. These are not covered by this certificate.

(12) The marking of the equipment shall include the following:

**II 3G EEx nAC II T5**
**II 3D IP66/67 T70 °C**

**EXAM BBG Prüf- und Zertifizier GmbH**
Bochum, dated 05. August 2005

Signed: Migenda
Certification body

Signed: Dr. Wittler
Special services unit



Dinnendahlstrasse 9 44809 Bochum Germany Phone +49 234/3696-105 Fax +49 234/3696-110

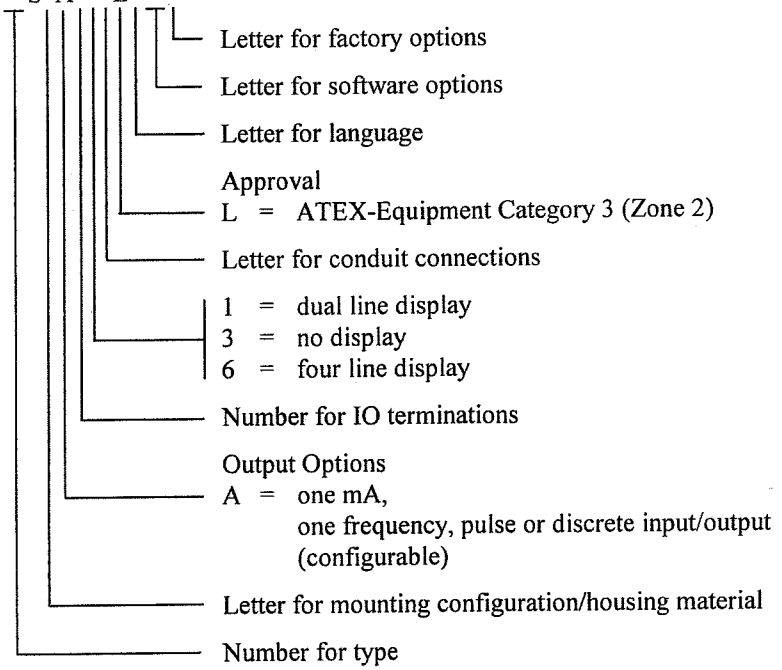
(13) Appendix to

(14) # Type Examination Certificate

## BVS 05 E 116 X

(15) 15.1 Subject and type

Transmitter Type 24**S*A***L****




15.2 Description

The transmitter type 24**S*A***L**** is a built-on unit; only the assemblage of the transmitter and a sensor guarantees the necessary degrees of protection. The metallic enclosure is designed to incorporate the electronics and is constructed to mount directly to a sensor unit. It is fixed to the sensor using a mechanical clamp.

The electronics consists of two circuits boards encapsulated into a potting shell and a user interface module attached to the encapsulated assembly by two mounting screws. The transmitter has two sets of terminals, a power terminal with two clamps and a signal terminal with four clamps. A plastic wall separates the terminals.
A 9-wire cable assembly makes the electrical connection of the sensor.

The metallic enclosure has two threaded holes for cable or conduit entries to install the power supply and signal wire.



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15.3 Parameters

| | | | | |
|---|---|---|---|---|
| 15.3.1 | Power supply | | | |
| | Rated voltage (terminals 1- 2 (J1)) | DC | 18...100 | V |
| | | AC | 85...250 | V |
| 15.3.2 | Output/input circuits | | | |
| 15.3.2.1 | mA output (active or passive), (terminals 1- 2 (J2)) | | | |
| | Voltage | DC | 30 | V |
| | Current | | 4...20 | mA |
| 15.3.2.2 | Frequency/pulse (active or passive), (terminals 1- 2 (J3)) | | | |
| | Voltage | DC | 30 | V |
| 15.3.2.3 | Discrete output (active or passive), (terminals 1- 2 (J3)) | | | |
| | Voltage | DC | 30 | V |
| | Current | max. | 500 | mA |
| 15.3.2.4 | Discrete input (active or passive), (terminals 1- 2 (J3)) | | | |
| | Voltage | DC | 30 | V |
| 15.3.3 | Sensor circuits | | | |
| 15.3.3.1 | Drive circuit (pin connection 7 - 8) | | | |
| | Voltage | DC | 12,36 | V |
| | Current | | 0,075 | A |
| 15.3.3.2 | Pick-Off coil (pin connection 3 - 4 and 5 - 6) | | | |
| | Voltage | DC | 3,3 | V |
| | Current | | 27 | µA |
| 15.3.3.3 | Temperature circuit (pin connection 1, 2 and 9) | | | |
| | Voltage | DC | 2,5 | V |
| | Current | | 370 | µA |
| 15.3.4 | Ambient temperature range | Ta | -40 °C bis +60 °C | |

(16) Test report
BVS PP 05.2080 EG, dated 05.08.2005

(17) Special conditions for safe use

17.1 The permissible ambient temperature range for the transmitter is -40 °C up to +60 °C. The use of the transmitter at an ambient temperature under - 20 °C is only admissible, if the cables and cable entries or conduit entries are suitable for that temperature and use.

17.2 The cable entries or conduit entries shall have a degree of protection of at least IP54 for use in category 3G, a degree of protection of at least IP66/67 for use in category 3D.



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We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 05.08.2005
BVS-Ehr/Mi A 20050247

EXAM BBG Prüf- und Zertifizier GmbH

Certification body

Special services unit



Dinnendahlstrasse 9 44809 Bochum Germany Phone +49 234/3696-105 Fax +49 234/3696-110

EXAM
BBG Prüf- und Zertifizier GmbH

Translation

# 1. Supplement

## to the Type Examination Certificate
## BVS 05 E 116 X

**Equipment:** **Transmitter type 24**S*A***L******

**Manufacturer:** **Micro Motion, Inc.**

**Address:** **Boulder, Co. 80301**

Description
The transmitter can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

| | |
|---|---|
| EN 60079-15:2003 | Type of protection 'n' |
| EN 50281-1-1:1998 +A1 | Dust explosion protection |

Test and assessment report
BVS PP 05.2080 EG as of 27.02.2006

**EXAM BBG Prüf- und Zertifizier GmbH**
Bochum, dated 27. February 2006

Signed: Dr. Jockers
Certification body

Signed: Dr. Eickhoff
Special services unit

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We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 27.02.2006
BVS-Ehr/Ar A 20050541

**EXAM BBG Prüf- und Zertifizier GmbH**

Certification body

Special services unit



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EXAM
BBG Prüf- und Zertifizier GmbH

**Translation**

# 2nd Supplement

(Supplement in accordance with Directive 94/9/EC Annex III number 6)

## to the Type Examination Certificate
## BVS 05 E 116 X

**Equipment:** **Transmitter type 24**S*****L******

**Manufacturer:** **Micro Motion, Inc.**

**Address:** **Boulder, Co. 80301, USA**

Description
The Transmitter type 24**S*****L****** can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report and receives the marking:

**Transmitter type 24**S*C***L**** and type 24**S*D***L******

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

| | |
|---|---|
| EN 60079-15:2005 | Type of protection 'n' |
| EN 50281-1-1:1998 +A1 | Dust explosion protection |

The marking of the equipment shall include the following:

**II 3G Ex nA II T5** Type 24**S*C***L******

**II 3G Ex nAC II T5** Type 24**S*A***L****** and type 24**S*D***L******

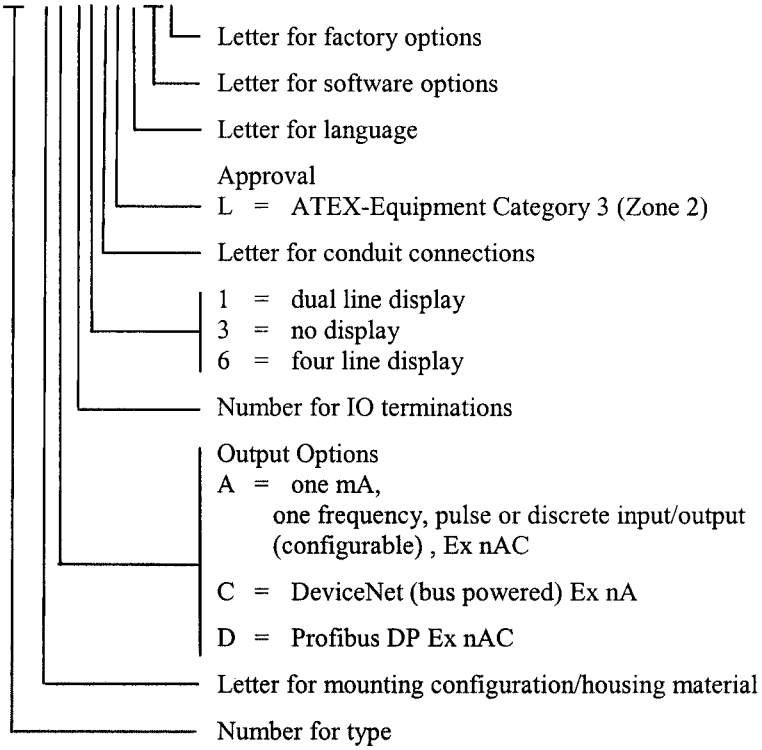
**II 3D IP66/67 T 70 °C** Type 24**S*****L******



Dinnendahlstrasse 9 44809 Bochum Germany Phone +49 234/3696-105 Fax +49 234/3696-110

**Subject and Type**

Transmitter type 24**S*****L****




**Description**

The transmitter type 24**S*****L**** can be equipped with a DeviceNet interface. Then the Power and the BFCore circuit boards are modified. The transmitter can be connected optional with a plug instead of a cable bushing. The connector must to be secured by a connector guard.

The transmitter type 24**S*****L**** can be equipped with a Profibus DP interface. Then the Power and the BFCore circuit boards are modified. The transmitter can be connected optional with a plug instead of a cable bushing. The connector must be secured by a connector guard.

The plug and the necessary type tests of the plug are not part of this test and assessment report.

**Parameters**

Type 24**S*C***L****

| | | | |
|---|---|---|---|
| Power supply | | | |
| Rated voltage (terminals 1 - 2 (J1) or Plug Socket Pin 2-3) | DC | 11...25 | V |
| DeviceNet input/output circuit | | | |
| DeviceNet Comunication voltage, (terminals 1 – 2 (J2) or Plug Socket Pin 4-5) | DC | 30 | V |



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| | | | |
|---|---|---|---|
| Sensor circuits | | | |
| Drive circuit (pin connection 7 - 8) | | | |
| Voltage | DC | 12,36 | V |
| Current | | 75 | mA |
| Pick-Off coil (pin connection 3 - 4 and 5 - 6) | | | |
| Voltage | DC | 3,3 | V |
| Current | | 27 | µA |
| Temperature circuit (pin connection 1, 2 and 9) | | | |
| Voltage | DC | 2,5 | V |
| Current | | 370 | µA |
| Ambient temperature range | Ta | -40 °C up to +60 °C | |

Typ – type 24**S*D***L****

| | | | |
|---|---|---|---|
| Power supply | | | |
| Rated voltage (terminals 1 - 2 (J1)) | DC | 18...100 | V |
| | AC | 85...250 | V |
| Profibus DP input/output circuit | | | |
| Profibus DP Communication voltage, (terminals 1 – 5 (J2) or Plug Socket Pin 1-5) | DC | 30 | V |
| Sensor circuits | | | |
| Drive circuit (pin connection 7 - 8) | | | |
| Voltage | DC | 12,36 | V |
| Current | | 75 | mA |
| Pick-Off coil (pin connection 3 - 4 and 5 - 6) | | | |
| Voltage | DC | 3,3 | V |
| Current | | 27 | µA |
| Temperature circuit (pin connection 1, 2 and 9) | | | |
| Spannung | DC | 2,5 | V |
| Current | | 370 | µA |
| Ambient temperature range | | | |
| Without Profibus DP connector | Ta | -40 °C up to +60 °C | |
| With Profibus DP connector | Ta | -30 °C up to +60 °C | |

Type 24**S*A***L****

Unchanged



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Special conditions for safe use

1 The permissible ambient temperature range for the transmitter is -40 °C up to +60 °C. The use of the transmitter at an ambient temperature under -20 °C is only admissible, if the cables and cable entries or conduit entries are suitable for that temperature and use.

2 The cable entries or conduit entries shall have a degree of protection of at least IP54 for use in category 3G, a degree of protection of at least IP66/67 for use in category 3D.

Special conditions for safe use for transmitters with plug sockets:

3 Type 24**S*C***L****
The plug must be suitable for the plug socket type Turck FSV57-*M/M20/CS or FSV57-*M/14.5/CS. The plug must fulfil the requirements of Category 3G respectably 3D dependent on the use in Zone 2 or Zone 22.

4 Type 24**S*D***L****
The plug must be suitable for the plug socket type Turck FKW 4.5-*M/M20/CS or FKW 4.5-*M/14.5/NPT/CS
The plug must fulfil the requirements of Category 3G respectably 3D dependent on the use in Zone 2 or Zone 22.

5 Type 24**S*C***L**** and Type 24**S*D***L****
The plugs must be equipped with a connecting nut which assures a safe fixing of the plug at the plug socket.

6 In the plugged and screwed status the plugs must assure the type of protection IP 67 in accordance with EN 60529 for the contacts.

7 The plug must be equipped with a securing element in accordance with EN 50281-1-1, 7.4.1 b) which can only be removed with a tool, to assure an unintentional disconnecting.

8 If the plug socket is not connected with a plug, the plug socket is to be protected against water and dust in minimum IP 67 in accordance with EN 60529. Before the plug socket will be connected to a plug it must be guaranteed that there is no dust or water in the plug and the plug socket.

9 The operator shall made provisions external to the apparatus, to provide transient protection device set at a level not exceeding 40% of the rated voltage at the plug sockets.

Test and assessment report
BVS PP 05.2080 EG as of 10.08.2006

**EXAM BBG Prüf- und Zertifizier GmbH**
Bochum, dated 10. August 2006

Signed: Dr. Eickhoff
Certification body

Signed: Dr. Wittler
Special services unit

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 10.08.2006
BVS-Kem/Mi A 20060312

**EXAM BBG Prüf- und Zertifizier GmbH**

Certification body

Special services unit



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DEKRA

Translation

# 3rd Supplement

## to the Examination Certificate

## BVS 05 E 116 X

**Equipment:** **Transmitter type 24**S*D***L******

**Manufacturer:** **Micro Motion, Inc.**

**Address:** **Boulder, Co. 80301, USA**

Description
The Transmitter type 24**S*D***L****** can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

| | |
|---|---|
| IEC 60079-15:2005 | Type of protection 'n' |
| EN 50281-1-1:1998 +A1 | Dust explosion protection |

The marking of the equipment shall include the following:

**II 3G Ex nAC II T5**
**II 3D IP66/67 T 70 °C**

Special conditions for safe use
Unchanged

Test and assessment report
BVS PP 05.2080 EG as of 09.05.2007

**EXAM BBG Prüf- und Zertifizier GmbH**
Bochum, dated 09. May 2007

Signed: Dr. Eickhoff
Certification body

Signed: Dr. Arnold
Special services unit



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DEKRA

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 09.05.2007
BVS-Kem/Mi A 20060815

**EXAM BBG Prüf- und Zertifizier GmbH**

Certification body

Special services unit



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DEKRA

Translation

# 4th Supplement
## to the Type Examination Certificate
## BVS 05 E 116 X

**Equipment:** **Transmitter type 24********L****

**Manufacturer:** **Micro Motion, Inc.**

**Address:** **Boulder, Co. 80301, USA**

Description

The Transmitter type 24********L**** can be modified according to the descriptive documents as mentioned in the pertinent test and assessment report.

The Essential Health and Safety Requirements of the modified equipment are assured by compliance with:

IEC 60079-15:2005 Type of protection 'n'
EN 61241-0:2006 General requirements
EN 61241-1:2004 Protection by enclosures

The marking of the equipment shall include the following:

| | |
|---|---|
| **II 3G Ex nAC II T5** | **for type 24**S*A***L**** |
| **II 3G Ex nAC II T5** | **for type 24**S*D***L**** |
| **II 3G Ex nA II T5** | **for type – for type 24**S*C***L**** |
| **II 3D Ex tD A22 IP66/67 T70°C** | **with aluminium enclosure** |
| **II 3D Ex tD A22 IP66/67 T70°C** | **with stainless steel enclosure** |



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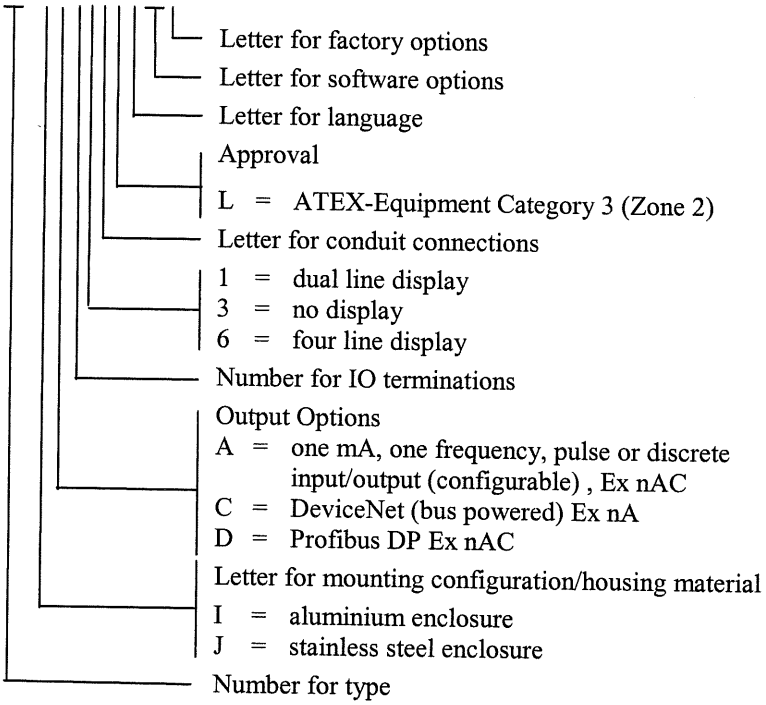
(until 31.03.2007 EXAM BBG Prüf- und Zertifizier GmbH)

Subject and Type

Transmitter type 24**S*****L****




Description

Instead of the aluminium enclosure a stainless steel enclosure can be used. Both enclosures are separate tested in BVS PP 07.2093 EC in accordance to EN 60079-0:2006, EN 60079-7:2003, EN 61241-0:2006 and EN 61241-1:2004 for category 2G Ex e II and 2D Ex tD A21. So the enclosures also fulfil the requirements for 3G and 3D. The design of the inner electronic and the optionally used plug sockets and gaskets are unchanged.

Parameters

Unchanged

Special conditions for safe use

The permissible ambient temperature range for the transmitter is -40 °C up to +60 °C. The use of the transmitter at an ambient temperature under -20 °C is only admissible, if the cables and cable entries or conduit entries are suitable for that temperature and use.

The cable entries or conduit entries shall have a degree of protection of at least IP54 for use in zone 2, a degree of protection of at least IP6X for use in zone 22.



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(until 31.03.2007 EXAM BBG Prüf- und Zertifizier GmbH)

Special conditions for safe use for transmitters with plug sockets:

Type 24**S*C***L****

The plug must be suitable for the plug socket type Turck FSV57-*M/M20/CS or FSV57-*M/14.5/CS. The plug must fulfil the requirements of Category 3G respectably 3D dependent on the use in Zone 2 or Zone 22.

Type 24**S*D***L****

The plug must be suitable for the plug socket type Turck FKW 4.5-*M/M20/CS or FKW 4.5-*M/14.5/NPT/CS

The plug must fulfil the requirements of Category 3G respectably 3D dependent on the use in Zone 2 or Zone 22.

Type 24**S*C***L**** and Type 24**S*D***L****

The plugs must be equipped with a connecting nut which assures a safe fixing of the plug at the plug socket.

In the plugged and screwed status the plugs must assure the type of protection IP 67 in accordance withEN 60529 for the contacts.

The plug must be equipped with a securing element in accordance with EN 61241-0, 19.1 b) which can only be removed with a tool, to assure an unintentional disconnecting.

If the plug socket is not connected with a plug, the plug socket is to be protected against water and dust in minimum IP 67 in accordance with EN 60529. Before the plug socket will be connected to a plug it must be guaranteed that there is no dust or water in the plug and the plug socket.

The operator shall made provisions external to the apparatus, to provide transient protection device set at a level not exceeding 40% of the rated voltage at the plug sockets.

Test and assessment report
BVS PP 05.2080 EG as of 28.05.2008

**DEKRA EXAM GmbH**
Bochum, dated 28. May 2008

Signed: _____
Certification body

Signed: _____
Special services unit

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We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

44809 Bochum, 28. May 2008
BVS-Kem/Wa A 20070611

**DEKRA EXAM GmbH**

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Certification body

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Special services unit



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