Translation

(1) # EC-Type Examination Certificate

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

(3) ## DMT 00 ATEX E 089 X

(4) **Equipment:** **Terminal type Challenger **** with transmitter module type TCV 2i**

(5) **Manufacturer:** **GeCma Components GmbH**

(6) **Address:** **D - 50169 Kerpen**

(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 Deutsche Montan Technologie GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.
The examination and test results are recorded in the test and assessment report BVS PP 00.2084 EG.

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

EN 50014:1997+A1-A2	General requirements
EN 50020 :1994	Intrinsic Safety

(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 EC-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 2G EEx ib IIC T4	for the terminal
II (2)G [EEx ib] IIC	for the transmitter module

Deutsche Montan Technologie GmbH
Essen, dated 29.December 2000

Signed: Jockers
DMT-Certification body

Signed: Dill
Head of special services unit

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

(13) Appendix to

(14) # EC-Type Examination Certificate

DMT 00 ATEX E 089 X

(15) 15.1 Subject and type

Terminal type Challenger **** with transmitter module type TCV 2i

Instead of the **** letters and numerals will be placed to indicate different versions; the following variations are available:

Device type	**Version**
Challenger 18i-FMO	Control panel mounting, 18" monitor
Challenger 15i-FMO	Control panel mounting, 15" monitor
Challenger 15i-2-FMO	Control panel mounting, 15" monitor
Challenger KMU	Control panel mounting, keyboard and mouse
Challenger KB	Control panel mounting, keyboard
Challenger TB	Trackball
Challenger M	Mouse
Challenger MTD	Mouse/trackball decoder
transmitter module TCV 2i	19" plug-in unit consisting of: transmitter module, power supply module and keyboard/mouse encoder

15.2 Description

The terminal is used in conjunction with a transmitter module, which is located outside the hazardous area, for the visualisation of data and processes and for data entry via the keyboard or mouse.
The electronic components in the terminal are securely mounted in a metal housing. A viewing panel and an additional keyboard are located on the front of the housing.
The intrinsically-safe circuits are connected using terminals situated behind a cover on the rear of the housing.
The electronic components of the transmitter module are installed in a plug-in unit that plugs into the mounting rack.

15.3 Parameters

15.3.1 Challenger 18i-FMO and Challenger 15I-2-FMO terminals

15.3.1.1 Terminal strip K1: power supply circuits
Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16
Data per circuit

Voltage	Ui	DC	12,5	V
Current	Ii		543	mA
Output	Pi		6,8	W
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.1.2 Terminal strips K2 and K3: power supply circuits
Terminals 1 - 2 on each strip

Voltage	Ui	DC	12,5	V
Current	Ii		543	mA
Output	Pi		6,8	W
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.1.3 Terminal strip K4 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	Ui	DC	5.5	V
Current	Ii		71	mA

15.3.1.4 Terminal strip K5 for connection of data cables of Challenger TCV 2i transmitter module
Data per cable pair

Voltage	Ui	DC	±5.5	V
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.1.5 Video input (terminal X2)

Voltage	Uo	2	V
Current	Io	85	mA
Output	Po	170	mW
Effective internal capacitance	Co	100	µF
Effective internal inductance	Lo	4	mH

To connect an intrinsically-safe video circuit with the following maximum values:

Voltage	Ui		6	V
Current	Ii		188	mA
Output	Pi		194	mW
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.1.6 Terminal strip K9 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	Uo	DC	5.5	V
Current	Io		71	mA

15.3.1.7 Ambient temperature range Ta -10 °C to + 60 °C

15.3.2 Challenger 18i-FMO and Challenger 15I-2-FMO terminals

15.3.2.1 Terminal strip K1: power supply circuits
Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16
Data per circuit

Voltage	Ui	DC	13	V
Current	Ii		468	mA
Output	Pi		5.85	W
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

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15.3.2.2 Terminal strips K2 and K3: power supply circuits
Terminals 1 - 2 on each strip

Voltage	Ui	DC	13	V
Current	Ii		468	mA
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.2.3 Terminal strip K4 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	Uo	DC	5,5	V
Current	Io		71	mA

15.3.2.4 Terminal strip K5 for connection of data cables of Challenger TCV 2i transmitter module
Values per cable pair

Voltage	Ui	DC	±5,5	V
Effective internal capacitance	Ci	Negligible		
Effective internal inductance	Li	Negligible		

15.3.2.5 Ambient temperature range Ta -10 °C to + 60 °C

15.3.3 Challenger KB, Challenger KMU and Challenger MTD

15.3.3.1 Terminal strip K11 (terminals 1 -10) for connection of terminals (terminal strip K4)

Voltage	Ui	DC	5,5	V

15.3.3.2 Terminal strip K12 (terminals 11 -16) for connecting Challenger TB or Challenger M

Voltage	Uo	DC	5,5	V

15.3.3.3 Terminal strip K13 (terminals 17, 18) and terminal strip K12 or connecting voltage-free switches/pushbuttons

Voltage	Uo	DC	5,5	V
Current	Io		1	mA

15.3.3.4 Ambient temperature range Ta -10 °C to + 60 °C

15.3.4 Challenger TB and Challenger M for connecting to Challenger KB, Challenger KMU and Challenger MTD (terminal strip K11, terminals 11 - 16)

Voltage	Ui	DC	5,5	V
Ambient temperature range	Ta	-10 °C to + 60 °C		

15.3.5 TCV 2I transmitter module

15.3.5.1 Non-intrinsically safe electric circuits on the ± 12 V terminals, keyboard and mouse PS2 interfaces, RS-485 and VGA input/VGA output

Max. fault voltage	Um	AC	250	V

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15.3.5.2 Connector ST10: intrinsically safe electric circuits for connection to the terminal (terminal strip K5)

Voltage	Uo	DC	5,5	V
Current	Io		105	mA

15.3.5.3 Ambient temperature range Ta -10 °C to + 60 °C

(16) Test and assessment report
BVS PP 00.2084 EG as of 29.12.2000

(17) Special conditions for safe use
The following applies to the transmission module type Challenger TCV 2i:

17.1 The transmission module has to be installed outside the hazardous area in such a way that the connecting components will satisfy the requirements of IP20.

17.2 The connecting components for the external intrinsically-safe circuits of the transmission module are to be laid out so that bare parts are at least 50 mm away from connecting components or bare wires of non-intrinsically safe circuits or are separated from them by a barrier conforming to 6.4.1. of EN 50020:1994.

17.3 The transmission module has to be installed in the rack in such a way that there is a distances in air of at least 1.5 mm between bare parts of the intrinsically-safe circuits and the metal housing and of at least 6 mm between bare parts of the intrinsically-safe circuits and bare parts of non-intrinsically safe circuits.

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.

45307 Essen, 19.02.2001
BVS-Schu/Ar A 2000641

Deutsche Montan Technologie GmbH

DMT-Certification body

Head of special services unit

Am Technologiepark 1, 45307 Essen, Telefon (0201)172-1416, Telefax (0201)172-1716

Translation

(1) 2. Supplement to the EC-Type Examination Certificate

(2) Equipment and protective systems intended for use in potentially explosive atmospheres - Directive 94/9/EC
Supplement accordant with Annex III number 6

(3) No. of EC-Type Examination Certificate: **DMT 00 ATEX E 089 X**

(4) Equipment: **Terminal type Challenger **** with transmitter module type TCV 2i**

(5) Manufacturer: **GeCma Components GmbH**

(6) Address: **50169 Kerpen, Germany**

(7) The design and construction of this equipment and any acceptable variation thereto are specified in the appendix to this supplement.

(8) The certification body of DEKRA EXAM GmbH, notified body no. 0158 in accordance with Article 9 of the Directive 94/9/EC of the European Parliament and the Council of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive. The examination and test results are recorded in the test and assessment report BVS PP 00.2084 EG.

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

EN 60079-0:2009 General requirements
EN 60079-11:2007 Intrinsic safety ´i´

(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 appendix to this certificate.

(11) This supplement to the EC-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 2 G Ex ib IIC T4 Gb for the terminal
II (2) G [Ex ib Gb] IIC for the transmitter module

DEKRA EXAM GmbH
Bochum, dated 28.03.2012

Signed: Dr. Eickhoff
Certification body

Signed: Ruhnau
Special services unit

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(13) Appendix to

(14) **2. Supplement to the EC-Type Examination Certificate DMT 00 ATEX E 089 X**

(15) 15.1 Subject and type

Terminal type Challenger **** with transmitter module type TCV 2i

15.2 Description

The terminal can be modified according to the descriptive documents as mentioned in the pertinent Test and Assessment Report and receives also the following variants:

Challenger 22i-FMO
Challenger Touch 22i-FMO

Also the terminal and the transmitter module have been assessed in acc. with the standards EN 60079-0:2009 and EN 60079-11:2007; a modified marking is the result.

15.3 Parameters

15.3.1 Challenger 18i-FMO, Challenger 15i-2-FMO and Challenger 22i-FMO terminals

15.3.1.1 Terminal strip K1: power supply circuits
Terminals 3 - 4, 5 - 6, 7 - 8, 11 - 12, 13 - 14 and 15 - 16
Data per circuit

Voltage	Ui	DC	12.5	V
Current	Ii		543	mA
Power	Pi		6.8	W
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

15.3.1.2 Terminal strips K2 and K3: power supply circuits
Terminals 1 - 2 on each strip

Voltage	Ui	DC	12.5	V
Current	Ii		543	mA
Power	Pi		6.8	W
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

15.3.1.3 Terminal strip K4 for connection of Challenger KMU, Challenger KB and Challenger MTD using a cable up to 5 m in length

Voltage	Ui	DC	5.5	V
Current	Ii		71	mA

15.3.1.4 Terminal strip K5 for connection of data cables of Challenger TCV 2i transmitter module Data per cable pair

Voltage	Ui	DC	± 5.5	V
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

15.3.1.5 Video input (terminal X2)

Voltage	Uo		2.5	V
Current	Io		88	mA
Power	Po		176	mW
Effective internal capacitance	Co		100	µF
Effective internal inductance	Lo		4	mH

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To connect an intrinsically-safe video circuit with the following maximum values:

Voltage	Ui	6	V
Current	Ii	188	mA
Power	Pi	194	mW
Effective internal capacitance	Ci	Negligible	
Effective internal inductance	Li	Negligible	

15.3.1.6 Terminal strip K9 for connection of Challenger KMU-*, Challenger KB-* and Challenger MTD-*

15.3.1.6.1 Terminals 1 and 2: Power supply output, connected to circuit at terminal strip K3

Voltage	Uo	DC	12.5	V
Current	Io		543	mA
Power	Po		6.8	W

Max. external capacitance and inductance depend on the used power supply (connected to terminal strip K3)

15.3.1.6.2 Terminals 3 up to 7 : Signal circuits

Voltage	Uo	DC	5.5	V
Current	Io		71	mA

15.3.1.7 Terminal strip K40 (only for type Challenger Touch 22i-FMO)

15.3.1.7.1 Terminals 1 up to 4: Power supply

Voltage	Ui	DC	12.5	V
Current	Ii		543	mA
Power	Pi		6.8	W
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	
Dynamic output current Io max			95	mA

15.3.1.7.2 Terminals 5 up to 7: Datenstromkreis

Voltage	Ui	DC	12.5	V
Current	Ii		543	mA
Power	Pi		6.8	W
Effective internal capacitance	Ci		Negligible	
Effective internal inductance	Li		Negligible	

15.3.2 Challenger type KMU-2D, KB-2D and MTD-2D

15.3.2.1 Output (power supply) circuit (terminals K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max. external inductance	Lo		280	µH
Max. external capacitance	Co		58	µF

15.3.2.2 RS232 inputs (terminals K14-4, K14-6 and K14-7)

Voltage	Uo	DC	5.43	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max. external inductance	Lo		2	mH
Max. external capacitance	Co		58	µF

for the connection of an intrinsically safe circuit with following max. value

Voltage	Ui	DC	12	V

15.3.2.3 RS232 outputs (terminals K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max. external inductance	Lo		150	µH
Max. external capacitance	Co		2	µF

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15.3.3 Challenger type KMU-2S, KB-2S and MTD-2S

15.3.3.1 Output (power supply) circuit (terminals K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max. external inductance	Lo		280	µH
Max. external capacitance	Co		31	µF

15.3.3.2 RS232 inputs (terminals K14-4, K14-6 and K14-7)

Voltage	Uo	DC	5.43	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max. external inductance	Lo		2	mH
Max. external capacitance	Co		58	µF

for the connection of an intrinsically safe circuit with following max. value

Voltage	Ui	DC	12	V

15.3.3.3 RS232 outputs (terminals K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max. external inductance	Lo		150	µH
Max. external capacitance	Co		2	µF

15.3.4 Barrier network type BCBN1i

15.3.4.1 Power supply circuit (terminals K17-1 and K17-2)

Voltage	Ui	DC	12.5	V
Effective internal inductance	Li		Negligible	
Effective internal capacitance	Ci		Negligible	

15.3.4.2 Supply circuits (terminals K16)

terminals	Uo (V)	Io (mA)	Po (mW)	Co (µF)	Lo (µH)
K16-13 -K16-16	6	470	1467	40	160
K16-11 -K16-16	6	362	1128	40	270
K16-9 -K16-16	6	183	571	40	1000
K16-7 -K16-16	6	97	303	40	3700
K16-5 -K16-16	6	49	153	40	14000
K16-3 -K16-16	6	24	74	40	60000
K16-1 -K16-16	6	12	38	40	240000

15.3.5 Challenger type KMU-2-BCBN*, KB-2-BCBN* and MTD-2-BCBN*

15.3.5.1 Output (power supply) circuit (terminals K14-5 and K14-1)

Voltage	Uo	DC	5.43	V
Current	Io		356	mA
Power	Po		1.1	W
Max. external inductance	Lo		280	µH
Max. external capacitance	Co		58	µF

15.3.5.2 RS232 inputs (terminals K14-4, K14-6 and K14-7)

Voltage	Uo	DC	6	V
Current	Io		3.8	mA
Power	Po		5.7	mW
Max. external inductance	Lo		2	mH
Max. external capacitance	Co		40	µF

for the connection of an intrinsically safe circuit with following max. value

Voltage	Ui	DC	12	V

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15.3.5.3 RS232 outputs (terminals K14-8, K14-9 and K14-11)

Voltage	Uo	DC	10.8	V
Current	Io		15	mA
Power	Po		47	mW
Max. external inductance	Lo		150	µH
Max. external capacitance	Co		2	µF

15.3.6 For the data cable between transmitter module type TCV 2i and the terminal type Challenger 18i-FMO resp. 15i-2-FMO resp. 22i-FMO is valid:

Circuit resistance	> 15 Ω/km
Isolation resistance	> 50 MΩ x km
Cable capacitance	< 120 nF/km
Cable inductance	< 1400 µH/km
Test voltage conductor/conductor	> 1000 V_{eff}
Test voltage conductor/shield	> 500 V_{eff}
Radial thickness of insulation conductor	> 0.2 mm
Copper-diameter of a conductor	> 0.1 mm
Temperature range	-10 °C up tos +60 °C
max. length	600 meters

15.3.7 Ambient temperature range Ta -10 °C up to +60 °C

(16) Test and Assessment Report

BVS PP 00.2084 EG as of 28.03.2012

(17) Special conditions for safe use

The following applies to the transmission module type Challenger TCV 2i:

17.1 The transmission module has to be installed outside the hazardous area in such a way that the connecting components will satisfy the requirements of IP20.

17.2 The connecting components for the external intrinsically-safe circuits of the transmission module are to be laid out so that bare parts are at least 50 mm away from connecting components or bare wires of non-intrinsically safe circuits or are separated from them by a barrier conforming to 6.2.1. of EN 60079-11:2007.

17.3 The transmission module has to be installed in the rack in such a way that there is a distances in air of at least 1.5 mm between bare parts of the intrinsically-safe circuits and the metal housing and of at least 6 mm between bare parts of the intrinsically-safe circuits and bare parts of non-intrinsically safe circuits.

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.

DEKRA EXAM GmbH
44809 Bochum, 28.03.2012
BVS-Schu/Sch A 20110854

Certification body

Special services unit

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