



March 23, 2015

Intrinsic Safety Evaluation No. 18-ISA150004-0  
A&CC PAR No. 0098662

Grunewald GmbH  
Attention: Robert Gersmann  
Oberallener Weg 7  
D-59069 Hamm  
Germany

Dear Mr. Gersmann:

The review of your application dated September 13, 2010, for the Type SMALL-Ex Single and Multi-Measuring Instruments (SMALL-P, -T, -N, -NT, -V), is complete.

The design of the Type SMALL-Ex Single and Multi-Measuring Instruments meets the applicable requirements of Title 30 Code of Federal Regulations, Part 18.68 (30 CFR Part 18.68). We assign Intrinsic Safety Evaluation No. 18-ISA150004-0 to this design.

The following apply to Intrinsic Safety Evaluation No. 18-ISA150004-0:

1. You must build each Type SMALL-Ex Single and Multi-Measuring Instruments bearing this Intrinsic Safety Evaluation number according to the drawings and specifications on file at the MSHA Approval and Certification Center. A list of these drawings and specifications is enclosed.
2. The Type SMALL-Ex Single and Multi-Measuring Instruments shall be conspicuously labeled to show your company's name, model or type number, and the assigned MSHA Intrinsic Safety Evaluation number.
3. You are not permitted to make changes to the design of these Type SMALL-Ex Single and Multi-Measuring Instruments without our approval.
4. We may require you to make changes to the design, or to modify the Type SMALL-Ex Single and Multi-Measuring Instruments in the field, in the interest of safety.
5. We have the right to revoke this Intrinsic Safety Evaluation, for cause, at any time.
6. This letter does not authorize you to advertise the Type SMALL-Ex Single and Multi-Measuring Instruments as permissible for use in underground gassy mines or as being approved or certified by the Mine Safety and Health Administration

(MSHA). These instruments must be evaluated and accepted as part of an MSHA approved permissible system or machine.

7. The following requirements apply to the Type SMALL-Ex Single and Multi-Measuring Instruments:
  - a. The input power to the Type SMALL-Ex measuring instruments must be from an MSHA approved intrinsically safe power source with a maximum output of 14 volts and 3 Amps.
  - b. The installation of the Type SMALL-Ex measuring instruments must conform to the Operating Manual, dated 4/14, on file with this approval. Grunewald GmbH is obligated to provide copies of the Operating Manual to its customers, distributors, and end users.
  - c. The installation shall preclude intermingling between intrinsically safe circuits, including their associated wires and cables, and all other circuits, wires, and cables.
  - d. The output connections of the SMALL-Ex signal outputs (K58, K60, X50) must be evaluated and accepted as part of an MSHA approved permissible system or machine.

You are required to inform your customers, distributors, and end users of these requirements.

You will receive an invoice for the cost to process your application.

If you have any comments or questions relative to this letter, please contact Gail L. Nicola at 304-547-2010.

Sincerely,



Dennis L. Ferlich  
Chief, Approval and Certification Center

Enclosures

DRAWING LIST

Grunewald GmbH  
 Type SMALL-Ex Single and Multi-Measuring Instruments  
 SMALL-P, SMALL-T, SMALL-N, SMALL-NT, SMALL-V  
 Intrinsic Safety Evaluation No. 18-ISA150004-0  
 Investigation No. IA-25344

<u>Title</u>	<u>Drawing No.</u>	<u>Revision</u>
(Controlled) Drawing List	1-0-0-0, Sht. 1 – 2 *	V1.1
SMALL-P/RG/12/30b/G2/HL05m/A/KG/S14	3-12-100-201-a	V.0
SMALL-T/IL/12/65C/G2/100/L05m/F	3-13-200-011-a	V.0
SMALL-V/RG/12/60L/025/100/50b/ 100C/G/HL10m/A/KG/S4	3-14-025-025-a	V.0
SMALL-N/RG/12/300mm/G/L0,3m/A/KG/S4	3-15-100-042-a	V.0
Overview SMALL-EX@P,T,N mechanical and electrical connections	1-0-0-1, Sht. 1 & 2 *	V0.3
Overview SMALL-EX@P,T,N mechanical and electrical connections	1-0-0-2, Sht. 1 & 2 *	V0.3
Overview SMALL-EX@V Single/Multi measuring mechanical and electrical connections	1-0-0-3, Sht. 1 & 2 *	V0.3
PCB- System SMALL 3- wire, round enclosure	1-0-0-4, Sht. 1 of 2	V0.4
GWR_100/1 (circuit pcb)	7-05-06-010, Sht. 1 – 16 *	V1.30
GWR_100/1 Display (Layouts & Circuits)	7-05-06-007, Sht. 1 - 12	V1.30
GWR_100/1 Display (Partlist)	7-05-06-007, Sht. 1 - 3	V1.30
PCB- System SMALL 3- wire, In-line enclosure	1-0-0-5, Sht. 2 of 2	V0.4
GWR_120/1 (circuit pcb)	7-05-06-011, Sht. 1 – 19 *	V1.30
GWR_IMP	7-05-06-013, Sht. 1 – 7 *	V1.30
GWR_Mag	7-05-06-014, Sht. 1 – 6 *	V1.30
GWR_Hall	7-05-06-119, Sht. 1 – 7 *	V1.30
Datasheet Cable	1-0-0-17, Sht. 1 – 9 *	V0.2

**Factory Inspection Form:** See Mr. Jorge Wittkamp's certified statement dated 06.03.2015, submitted in lieu of a Factory Inspection Form.

**Operating Manual:** See Operating Manual dated 4/14, on file in the correspondence folder with this approval.