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**Annex of the Report
to the
Certificate
M6A 020196 0297 Rev. 00**

**Safety related Encoder Series R56 optical
Geberfamilie R56 optisch**

**Report No.: HT91542C-A
Revision 1.4 dated 17.08.2022**

1. Standards

No. Lfd. Nr.	Standards met by all devices Von allen Geräten erfüllte Standards
1	EN ISO 13849-1:2015 (Cat. 3, PL d)
2	EN 61508-1:2010 (SIL2)
3	EN 61508-2:2010 (SIL2)
4	EN 61800-5-2:2017
5	IEC 61800-5-3:2021

**2. Safety functions, encoder with serial EnDat 2.2 interface:
Sicherheitsfunktionen, Geber mit serieller EnDat 2.2 Schnittstelle:**

Lfd. Nr. No.	Sicherheitsfunktion Safety function
101	Provision of an absolute position value Pos1 by the encoder. The safety relevant resolution of Pos1 depends on the encoder type.
102	Provision of position value Pos2 by the encoder for the verification of Pos1.
103	For every position value the safe encoder shall provide current error bits F1, F2 at the CU-Interface.
104	As soon as the Safe CU requests Pos1, Pos2 or error bits via the CU interface, the safe encoder shall transmit these data safely to the Safe CU via the CU interface.

Restrictions:

The use of some encoders with EnDat 2.2 interface is restricted:



As single-encoder system for monitoring functions

- SIL 1 according to EN 61508
- Category 2, PL c according to EN ISO 13849-1:2015

As single-encoder system for closed-loop functions

- SIL 2 according to EN 61508
- Category 3, PL d according to EN ISO 13849-1:2015

If applicable the restriction is given for each encoder separately in the tables in chapter 3.



**3. Safety functions, encoder with serial EnDat 3 (E30-R2) interface:
Sicherheitsfunktionen, Geber mit serieller EnDat 3 (E30-R2) Schnittstelle:**


Lfd. Nr. No.	Sicherheitsfunktion Safety function
SF1	Safe provision and transfer of one or more items of safety information (e.g., position, speed, acceleration, temperature) from the encoder to the safe CU
SF2	Safe provision and transfer of the error bits and ignore bits for every item of safety information from the encoder to the safe CU
SF3	Provision of a safe electronic ID label in the encoder, and transfer to the safe CU
SF4	Provision of safe settings, and transfer to the safe CU. Note: the control can read and write the safe settings in the encoder
SF5	Provision and transfer of one item of additional, redundant information for each item of safety information for the safe comparison in the safe CU

**4. Safety functions, encoder with serial DRIVE-CLiQ interface:
Sicherheitsfunktionen, Geber mit serieller DRIVE-CLiQ Schnittstelle:**


Lfd. Nr. No.	Sicherheitsfunktion Safety function
101	Provision of an absolute position value Pos1 by the encoder in the formats XIST1 and XIST2.
102	Independent generation of the absolute position value Pos2 for the verification of Pos1.
103	Provision of a sign of life (SOL) for Pos2.
104	Provision of a sign of life LS1 / LS2.
105	Redundant calculation of a CRC16 over Pos2
106	Indication of the error state through error bits (F1 and F2), which are set in the encoder if Pos1 or Pos2 is erroneous or another safety-relevant error has occurred.
107	Provision of a unique serial number for the identification of the encoder.
108	Provision of a data triple XIST1" consisting of Pos1, Pos2 and a dedicated Offset for the position comparison.

5. List of certified R56 optical encoders with serial EnDat 2.2 interface:
Liste der zertifizierten optischen R56 Drehgeber mit serieller EnDat 2.2 Schnittstelle:

Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
ExN 13xx, ExN 4xx 		
1178026-03	ECN1325 2048 5MS16-C9 K 0,00 .. 65B07B 40 01 ... D EnDat22 37 01 FS	
1178026-53	ECN1325 2048 5MS16-C9 K 0,00 .. 65B07B 40 01 ... D EnDat22 37 05 FS	
1178027-01	EQN1337 2048 5MS16-C9 K 0,00 .. 65B07B 40 01 ... D EnDat22 37 01 FS	
1178027-53	EQN1337 2048 5MS16-C9 K 0,00 .. 65B07B 40 01 ... D EnDat22 37 05 FS	
1178028-02	ECN425 2048 1SS08-C4 K 1,00 01 65B07B 64 01 D EnDat22 37 01 FS	
1178029-02	EQN437 2048 1SS08-C4 K 1,00 01 65B07B 64 01 D EnDat22 37 01 FS	
1327452-02	ECN1325 2048 5MS16-C9 K 0,00 .. 67M07B 40 01 D EnDat22 37 01 FS	
1327453-04	EQN1337 2048 5MS16-C9 K 0,00 .. 67M07B 40 01 D EnDat22 37 01 FS	
1327454-01	ECN425 2048 1SS08-C4 K 1,00 01 67M07B 64 01 D EnDat22 37 01 FS	
1327454-03	ECN425 2048 5XS08-C4 R 0,00 .. 68T14 64 01 ... D EnDat22 37 01 FS	
1327454-04	ECN425 2048 5XS08-C4 R 0,00 .. 68S14 64 01 ... D EnDat22 37 01 FS	
1327454-05	ECN425 2048 1SS08-C4 K 1,00 01 68S14 64 01 ... D EnDat22 37 01 FS	
1327454-06	ECN425 2048 1SS08-C4 K 1,00 01 68T14 64 01 ... D EnDat22 37 01 FS	
1327455-01	EQN437 2048 1SS08-C4 K 1,00 01 67M07B 64 01 D EnDat22 37 01 FS	
1327455-03	EQN437 2048 5XS08-C4 R 0,00 .. 68T14 64 01 ... D EnDat22 37 01 FS	
1327455-04	EQN437 2048 5XS08-C4 R 0,00 .. 68S14 64 01 ... D EnDat22 37 01 FS	
1327455-05	EQN437 2048 1SS08-C4 K 1,00 01 68S14 64 01 ... D EnDat22 37 01 FS	
1327455-06	EQN437 2048 1SS08-C4 K 1,00 01 68T14 64 01 ... D EnDat22 37 01 FS	
ROx 13xx, ROx 4xx 		
1322270-01	ROC425 2048 5XS08-C4 R 0,00 .. 92A01C 64 01 ... D EnDat22 37 01 FS	
1322270-02	ROC425 2048 1SS08-C4 K 1,00 01 92A01C 64 01 ... D EnDat22 37 01 FS	
1322271-01	ROC425 2048 5XS08-C4 R 0,00 .. 03D03C 64 01 ... D EnDat22 37 01 FS	
1322271-02	ROC425 2048 1SS08-C4 K 1,00 01 03D03C 64 01 ... D EnDat22 37 01 FS	
1322271-03	ROC425 2048 5XS08-C4 A 0,00 .. 03D03C 64 01 ... D EnDat22 37 01 FS	
1322275-01	ROQ437 2048 5XS08-C4 R 0,00 .. 92A01C 64 01 ... D EnDat22 37 01 FS	
1322275-02	ROQ437 2048 1SS08-C4 K 1,00 01 92A01C 64 01 ... D EnDat22 37 01 FS	
1322276-01	ROQ437 2048 5XS08-C4 R 0,00 .. 03D03C 64 01 ... D EnDat22 37 01 FS	
1322276-02	ROQ437 2048 1SS08-C4 K 1,00 01 03D03C 64 01 ... D EnDat22 37 01 FS	


Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
	 ROx 30xx	
1329316-01	ROQ3037 2048 9CS09-SB R 0,00 .. 0AA51E 00 09 .. D EnDat22 37 10 FS	



**6. List of certified R56 optical encoders with serial EnDat 3 (E30-R2) interface:
Liste der zertifizierten optischen R56 Drehgeber mit serieller EnDat 3 (E30-R2) Schnittstelle:**

Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
	 ExN 13xx, ExN 4xx	
1296522-01	ECN1325 2048 5MS16-5u K 0,00 .. 65B07B 40 01 .. D E30-R2 84 01 FS	
1296523-01	EQN1337 2048 5MS16-5u K 0,00 .. 65B07B 40 01 .. D E30-R2 84 01 FS	
1327441-01	EQN1337 2048 5MS16-5u K 0,00 .. 67M07B 40 01 .. D E30-R2 84 01 FS	
1327442-01	ECN1325 2048 5MS16-5u K 0,00 .. 67M07B 40 01 .. D E30-R2 84 01 FS	

7. List of certified R56 optical encoders with serial DRIVE-CLiQ interface:


Liste der zertifizierten optischen R56 Drehgeber mit serieller DRIVE-CLiQ Schnittstelle:

Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
ExN 13xxS, ExN 4xxS 		
1179144-02	ECN1324S 2048 5MS16-XN K 0,00 .. 65B07B 40 01 D DQ01 39 01 FS	
1179144-04	ECN1324S 2048 5MS16-XN K 0,00 .. 67M07B 40 01 D DQ01 39 01 FS	
1179144-52	ECN1324S 2048 5MS16-XN K 0,00 .. 65B07B 40 01 D DQ01 39 05 FS	
1179145-03	EQN1336S 2048 5MS16-XN K 0,00 .. 65B07B 40 01 D DQ01 39 01 FS	
1179145-04	EQN1336S 2048 5MS16-XN K 0,00 .. 67M07B 40 01 D DQ01 39 01 FS	
1179146-07	ECN424S 2048 1SS08-TV K 1,00 0D 68S14 64 01 D DQ01 39 01 FS	
1179146-08	ECN424S 2048 5XS08-TV R 0,00 .. 68T14 64 01 D DQ01 39 01 FS	
1179146-09	ECN424S 2048 1SS08-TV K 1,00 0D 68T14 64 01 D DQ01 39 01 FS	
1179146-10	ECN424S 2048 5XS08-TV R 0,00 .. 68S14 64 02 D DQ01 39 01 FS	
1179146-11	ECN424S 2048 5XS08-TV R 0,00 .. 68S14 64 01 D DQ01 39 01 FS	
1179146-12	ECN424S 2048 5XS08-TV R 0,00 .. 68T14 64 02 D DQ01 39 01 FS	
1179147-08	EQN436S 2048 5XS08-TV R 0,00 .. 68T14 64 01 D DQ01 39 01 FS	
1179147-09	EQN436S 2048 1SS08-TV K 1,00 0D 68T14 64 01 D DQ01 39 01 FS	
1179147-10	EQN436S 2048 5XS08-TV R 0,00 .. 68S14 64 01 D DQ01 39 01 FS	
1179147-11	EQN436S 2048 1SS08-TV K 1,00 0D 68S14 64 01 D DQ01 39 01 FS	
1179147-12	EQN436S 2048 5XS08-TV R 0,00 .. 68T14 64 02 D DQ01 39 01 FS	
1179147-13	EQN436S 2048 5XS08-TV R 0,00 .. 68S14 64 02 D DQ01 39 01 FS	

Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
ROx 13xxS, ROx 4xxS 		
1176751-16	ROQ1332S 512 5MS1611 K 0,00 .. 0AA0WA 20 09 ... D DQ01 39 01 FS	
1176752-04	ROQ436S 2048 1SS08-TV K 1,00 0D 92A01C 64 01 D DQ01 39 01 FS	
1176752-05	ROQ436S 2048 5XS08-TV R 0,00 .. 92A01C 64 01 D DQ01 39 01 FS	
1176752-06	ROQ436S 2048 5XS08-TV R 0,00 .. 92A01C 64 02 D DQ01 39 01 FS	
1176753-05	ROQ436S 2048 1SS08-TV K 1,00 0D 03D39A 64 01 D DQ01 39 01 FS	
1176753-06	ROQ436S 2048 5XS08-TV R 0,00 .. 03D39A 64 01 D DQ01 39 01 FS	
1176753-07	ROQ436S 2048 5XS08-TV R 0,00 .. 03D39A 64 02 D DQ01 39 01 FS	
1179140-04	ROC424S 2048 1SS08-TV K 1,00 0D 92A01C 64 01 D DQ01 39 01 FS	
1179140-05	ROC424S 2048 5XS08-TV R 0,00 .. 92A01C 64 01 D DQ01 39 01 FS	
1179140-06	ROC424S 2048 5XS08-TV R 0,00 .. 92A01C 64 02 D DQ01 39 01 FS	
1179141-04	ROC424S 2048 5XS08-TV R 0,00 .. 03D39A 64 01 D DQ01 39 01 FS	
1179141-05	ROC424S 2048 1SS08-TV K 1,00 0D 03D39A 64 01 D DQ01 39 01 FS	
1179141-06	ROC424S 2048 5XS08-TV R 0,00 .. 03D39A 64 02 D DQ01 39 01 FS	
ROx 30xxS 		
1088741-15	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-16	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-25	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-26	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-39	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-41	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-46	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088741-70	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088741-73	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088741-76	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088741-85	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088741-86	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088742-15	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-16	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-25	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-26	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-46	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-63	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088742-64	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	



Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
1088742-70	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088742-73	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088742-76	ROC3020S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088742-85	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088742-86	ROC3024S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088744-15	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-16	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-25	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-26	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-39	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-41	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-46	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 10 FS	
1088744-70	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088744-73	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088744-76	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088744-85	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088744-86	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA51D 00 09 .. D DQ01 39 04 FS	
1088745-15	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-16	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-25	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-26	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-46	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-63	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-64	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 10 FS	
1088745-70	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088745-73	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088745-76	ROQ3032S 512 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088745-85	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1088745-86	ROQ3036S 2048 6TB10-V4 R 0,00 .. 0AA52D 00 09 .. D DQ01 39 04 FS	
1095434-01	ROC3024S 2048 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095434-02	ROC3020S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095434-03	ROC3020S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095434-16	ROC3020S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095434-23	ROC3024S 2048 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095434-26	ROC3024S 2048 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095436-01	ROQ3036S 2048 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095436-02	ROQ3032S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095436-03	ROQ3032S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095436-16	ROQ3032S 512 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095436-23	ROQ3036S 2048 0JS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	

Ident No. Ident Nr.	Product name Produktbezeichnung	Comment
1095436-26	ROQ3036S 2048 OJS10-4J R 0,00 .. 0AA51E 00 09 .. D DQ01 39 01 FS	
1095437-01	ROC3020S 512 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095437-02	ROC3024S 2048 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095437-03	ROC3020S 512 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095437-15	ROC3020S 512 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095437-16	ROC3020S 512 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095437-23	ROC3024S 2048 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095437-25	ROC3024S 2048 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095437-26	ROC3024S 2048 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095438-01	ROQ3036S 2048 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095438-02	ROQ3032S 512 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095438-03	ROQ3032S 512 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095438-15	ROQ3032S 512 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095438-16	ROQ3032S 512 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095438-23	ROQ3036S 2048 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
1095438-25	ROQ3036S 2048 OJS10-4J R 0,00 .. 0AA52 00 09 .. D DQ01 39 01 FS	
1095438-26	ROQ3036S 2048 OJS10-4J R 0,00 .. 0AA52E 00 09 .. D DQ01 39 01 FS	
		
ROQ 1332S		
1176751-16	ROQ1332S 512 5MS16-I1 K 0,00 .. 0AA0WA 20 09 D DQ01 39 01 FS	

**8. Version History:
Versionshistorie:**

Revision:	Name:	Date: Datum:	Changes / History: Änderungen / Historie
1.0	K. Leupold	11.09.2017	Initial version
1.1	M. Braun	15.01.2021	ROC 3025/ROQ 3037 and new variants added, discontinued variants deleted (HT96222T)
1.2	M. Braun	20.07.2021	ExN 13xx (with G177 V1) and new variants added, discontinued variants deleted (HT97028T, HT96824T)
1.3	E. Vlasova	04.08.2021	Safety functions in 1 are updated regarding system specification for new variants, added in 1.2.
1.4	G. Neumann	17.08.2022	Update of type approval certificate

	Release by Test Body: Freigabe Prüfstelle:	Release by Certification Body: Freigabe Zertifizierstelle:	Release by Manufacturer: Freigabe Hersteller:
Date: Datum:			
Signature: Unterschrift:			