

Operating Instructions

**Project: MBARI R/V David Packard
KN-75 Deck Crane W/DOCKING HEAD
PWM + CANBUS**

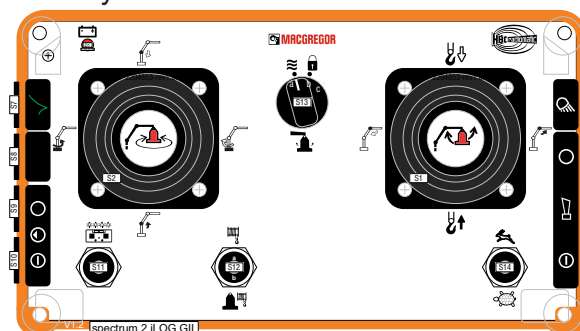
**Triplex item nr. 400198452 RC-DCR-HBC.S2.2-12
WBS Element 4/60185.1.C5
order nr.: 4504420729**

Serial nr.: 727-2204853

Model: spectrum 2 iLOG GII

Frequency: 2.4GHz / TC241

Delivery date: 12.12.2022



spectrum 2

Vedlegg 1: sikkerhets informasjon

Tilleggsinformasjon om sikkerhet

Vennligst les gjennom følgende viktig sikkerhetsinformasjon

- Reservesender:** Det er ikke tillatt å bruke to sendere med samme kode (iLOG/iON) samtidig.
Reserve iLOG
Reserve iON **Reservesender eller originalsender må være innelåst !**
- Reservemottaker:** Det er ikke tillatt å bruke to mottakere med samme kode samtidig.
Reservemottakere eller originalmottaker må være innelåst !
- Reservefunksjon:** Forhandleren har ansvar for eventuelt merking av tilleggfunksjoner hvis reserveknapper eller reservejoysticker blir tatt i bruk
- Gjenvinning av batterier:** **Batterier skal ikke kastes sammen med annet avfall.** I stedet, returnere batterier til godkjent gjenvinningsstasjon eller batteri forhandler som HBC-radiomatic Norge AS

Attachment 1: safety information

Additional information on safety

Please read through the following safety information

- Spare transmitter:** It is not allowed to use two transmitters with the same code (iLOG/iON) at the same time.
Spare iLOG
Spare iON **Either the spare transmitter or original transmitter must be secured!**
- Spare receiver** It is not allowed to use two receivers with the same code at the same time.
Either the spare receiver or original receiver must be secured!
- Spare function:** This system be delivered with spare buttons or joysticks. **The dealer is responsible for marking any additional functions** which may be connected in the future.
- Battery disposal:** **Batteries must not be disposed of with regular waste.** Instead, return batteries to an approved recycling station or battery dealer. HBC-radiomatic Norge AS will take batteries in return.

The clients PLC must continuously evaluate the Active Stop command and communication OK circuit!

The client has requested the 'active stop' function, and is thereby responsible to integrate it with their PLC system.

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Project: MBARI R/V David Packard
KN-75 Deck Crane W/Docking Head
PWM + CANBUS

Triplex item nr. 400198452 RC-DCR-HBC.S2.2-12
WBS Element 4/60185.1.C5
order nr.: 4504420729

Serial nr.: 727-2204853
Model: spectrum 2 LDO 01
Frequency: 2.4GHz / TC241

Delivery date: 12.12.2022

spectrum 2

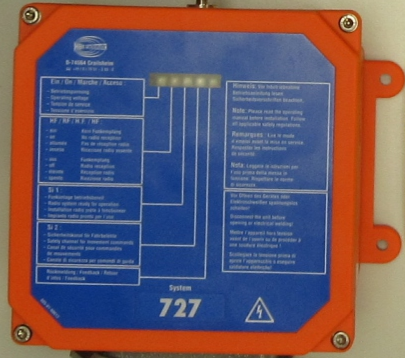
HBC-radiomatic

HBC-radiomatic

HBC-radiomatic

HBC-radiomatic

inkludert
"Tilleggsinformasjon om
sikkerhet" i bruksanvisning



RADIO CONTROLLED

WHEN WORKING ON THE SYSTEM, KEEP THE
RADIO CONTROL TRANSMITTER IN YOUR
POSSESSION OR PUT IT IN A SECURE PLACE

HBC-radiomatic Norge AS
www.radiomatic.no

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CAUTION - VORSICHT - ATTENTION - ATTENZIONE - ATENCION

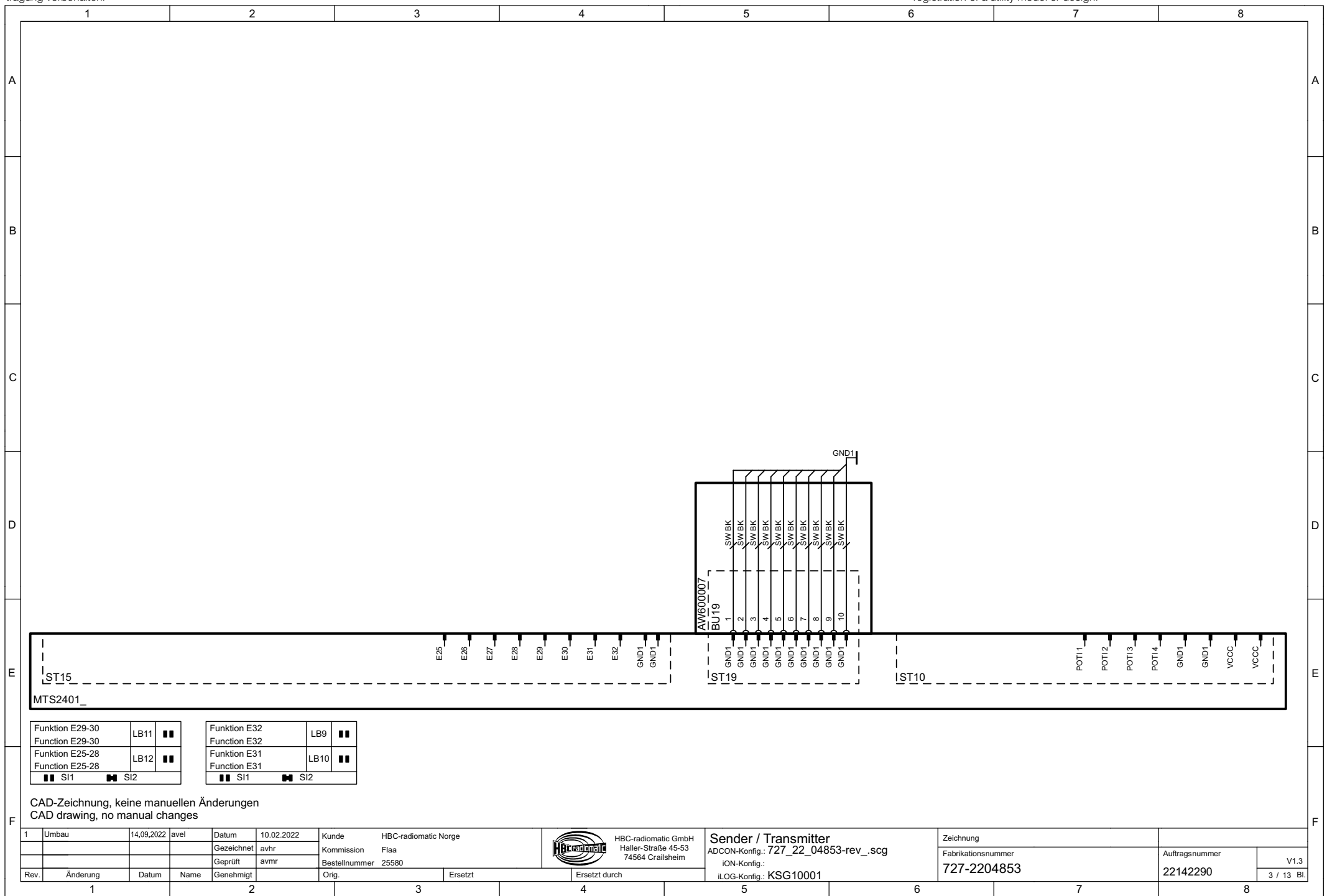
RADIO REMOTE CONTROLLED

FUNKGESTEUERT
RADIOCOMMANDE
RADIOCOMANDATO
RADIO COMANDO

HBC-radiomatic GmbH
Tel.: 449 - 7851 - 333 - 0
www.hbc-radiomatic.com



1	Umbau	14.09.2022	avel	Datum	10.02.2022	Kunde	HBC-radiomatic Norge			HBC-radiomatic GmbH Haller-Straße 45-53 74564 Crailsheim	Sender / Transmitter ADCON-Konfig.: 727_22_04853-rev_..scg iON-Konfig.: iLOG-Konfig.: KSG10001		Zeichnung				
				Gezeichnet	avhr	Kommission	Flaa						Fabrikationsnummer		Auftragsnummer		V1.3 2 / 13 B
				Geprüft	avmr	Bestellnummer 25580		727-2204853					22142290				
Rev.	Änderung	Datum	Name	Genehmigt		Orig.	Ersetzt		Ersetzt durch								
1				2		3		4		5		6		7		8	



[illegible]

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F	MTS2401_ CPS-LED CPS LED LB21 Extern / External (ST22 PIN 1/2) Intern / Internal (Onboard) CAD-Zeichnung, keine manuellen Änderungen CAD drawing, no manual changes							
	1	Umbau	14.09.2022	avel	Datum	10.02.2022	Kunde	HBC-radiomatic Norge
					Gezeichnet	avhr	Kommission	Flaa
					Geprüft	avmr	Bestellnummer	25580
	Rev.	Änderung	Datum	Name	Genehmigt		Orig.	Ersetzt
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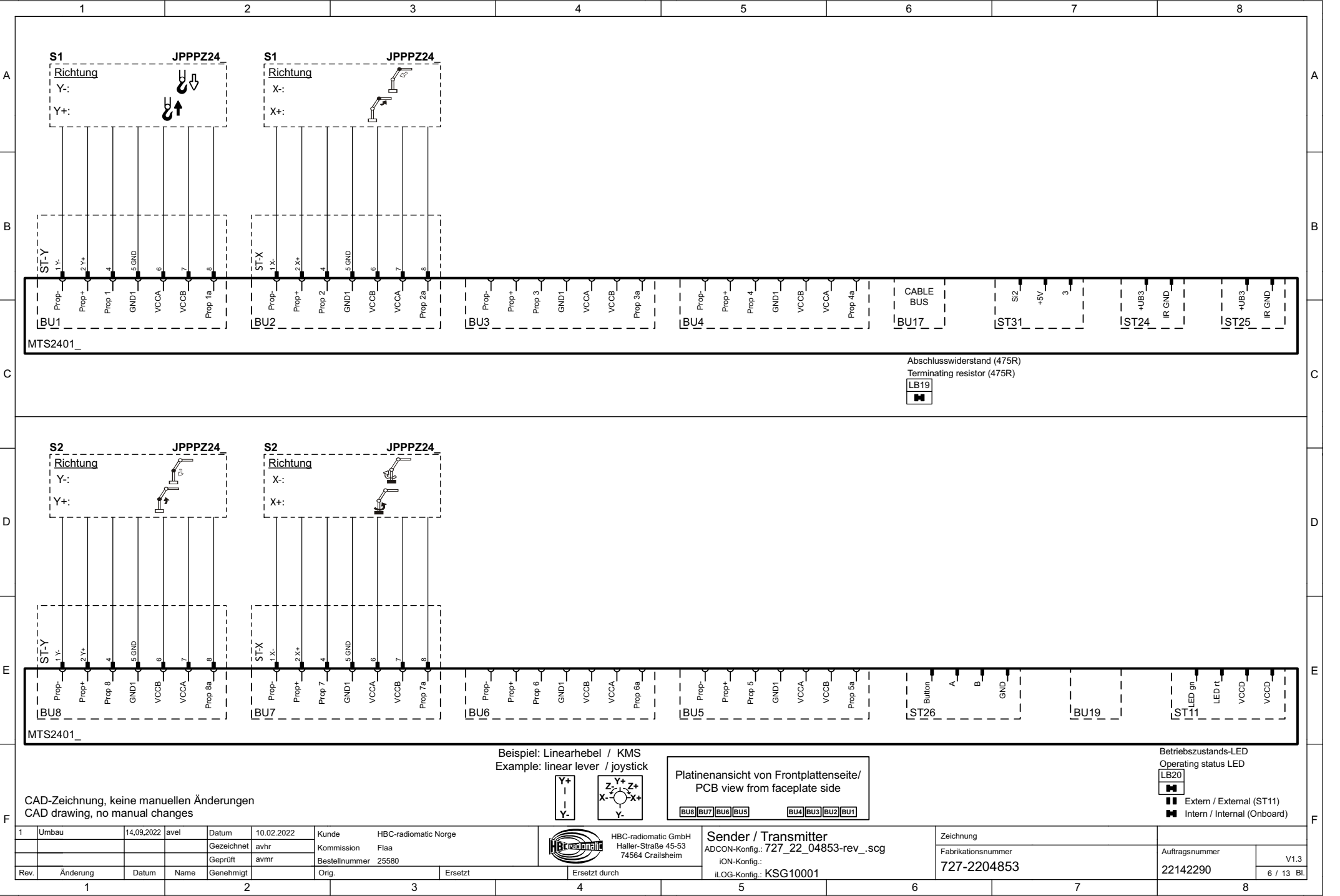


HBC-radiomatic GmbH
Haller-Straße 45-53
74564 Crailsheim

Sender / Transmitter
ADCON-Konfig.: 727_22_04853-rev_.scg
iON-Konfig.:
iLOG-Konfig.: KSG10001

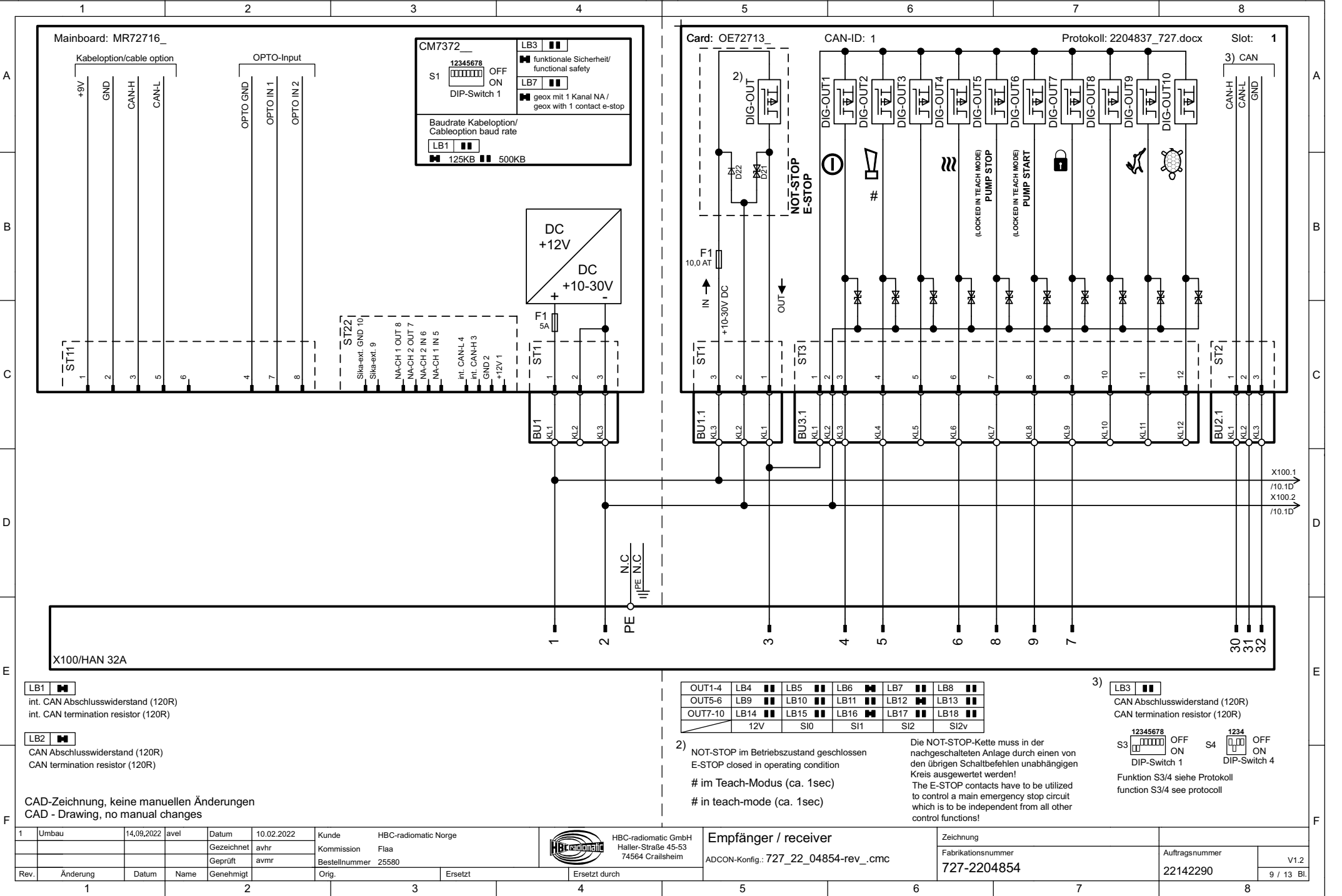
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Auftragsnummer
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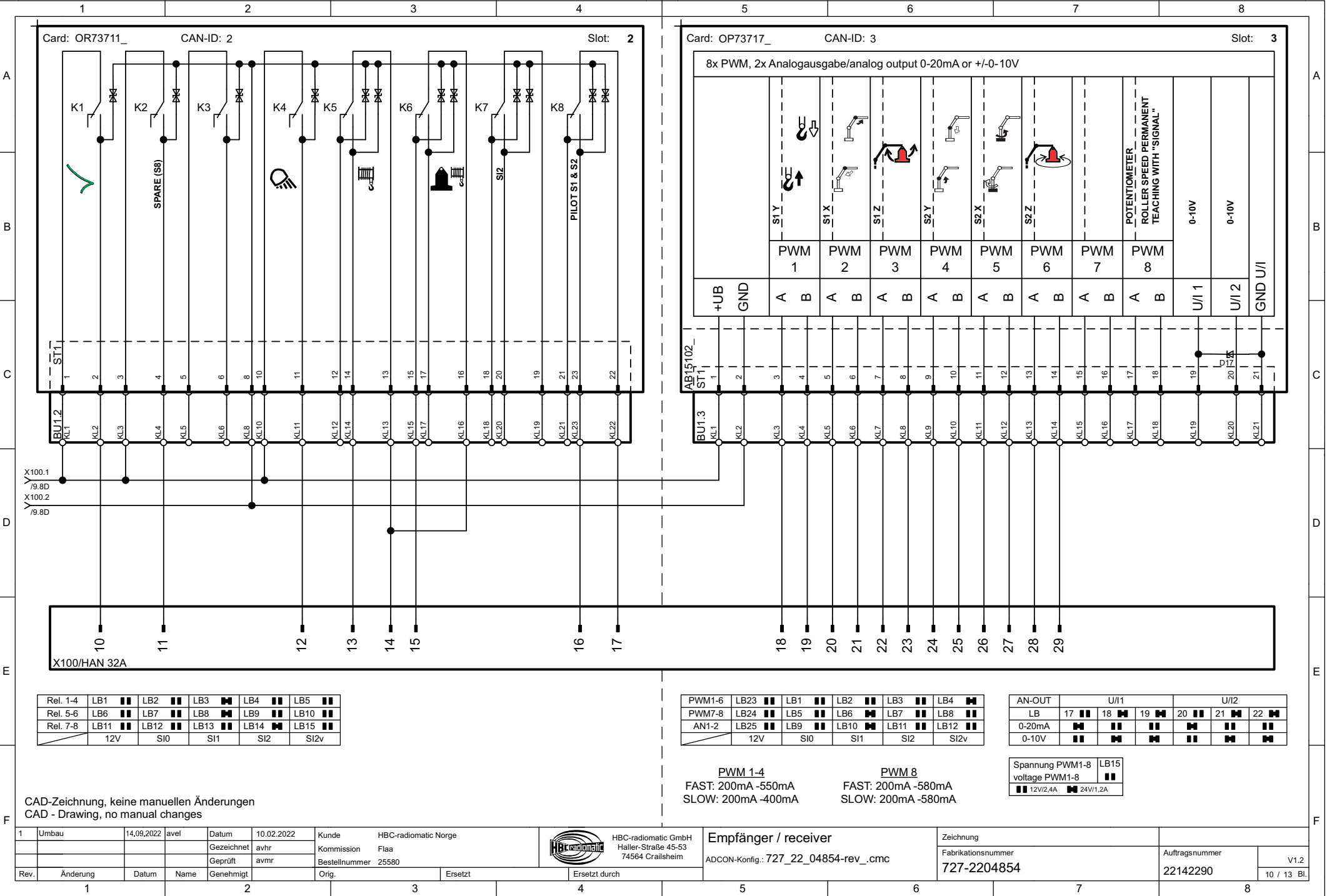
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Platine / Bedienelemente/ usw. PCB's / Operating elements / etc.			Stückliste Sender / Bill of material Transmitter														
Zeile	Name	Material	Typbezeichnung			Beschreibung		Alternativ-Material		Bemerkungen			Software				
1	107-90-00021	107-90-00021	radiomatic® ADCON														
2	107-90-00047	107-90-00047	radiomatic® iLOG 2. Generation														
3	AB17701_	AB17701_	Adapter für KMS-Kabel adapter for KMS-Cables														
4	AP0064C_	AP0064C_	Überrollbügel spectrum 2/B (Alu) rollover bar spectrum 2/B (aluminum)			beleuchtet, Handschmeichler orange illuminated, hand charmer orange											
5	BU20	010-02-00263	Buchsengehäuse, 3-polig socket housing, 3-pole			gerade, einreihig, weiß straight, single row, white											
6	D1	003-90-00886	Kunststoff-Lichtleiter plastic-light pipe			d=4,6 / 5,4x50mm											
7	EE00601_	EE00601_	Encoder			Encoder spectrum VDT2 iLOG GII							SE00910_ / SS00910_				
8	HTS2G43_	HTS2G43_	Housing transmitter spectrum 2 Unterteil Housing transmitter spectrum 2 lower housing			Stop-Schlagschalter / Vibrationsmotor, orange Stop-switch / vibration motor, orange											
9	HTS2J23_	HTS2J23_	Housing transmitter spectrum 2 iLOG GII Oberteil Housing transmitter spectrum 2 iLOG GII upper housing			Std.-Bearbeitung mit 2xKMS, 9xBedienelemente, orange std.-machining with 2xKMS, 9xoperating element, orange											
10	MTS2401_	MTS2401_	Mainboard transmitter spectrum 2/B			VDT2							SG19920_				
11	S1	JPPPZ24_	Joystick proportional, Prop/Prop mit Z-Achse, 30° Joystick proportional, Prop/Prop with Z-axis, 30°			Niederhalter (003-90-00006) + Faltenbalg (003-90-00004 or 003-90-00628 VITON) downholder (003-90-00006) + rubber bellow (003-90-00004 or 003-90-00628 VITON)											
12	S2	JPPPZ24_	Joystick proportional, Prop/Prop mit Z-Achse, 30° Joystick proportional, Prop/Prop with Z-axis, 30°			Niederhalter (003-90-00006) + Faltenbalg (003-90-00004 or 003-90-00628 VITON) downholder (003-90-00006) + rubber bellow (003-90-00004 or 003-90-00628 VITON)											
13	S3	IE230017	KHT, kurz KHT, short			d=16mm											
14	S4	IE230017	KHT, kurz KHT, short			d=16mm											
15	S5	IE230017	KHT, kurz KHT, short			d=16mm											
16	S6	IE230017	KHT, kurz KHT, short			d=16mm											
17	S7	IE230017	KHT, kurz KHT, short			d=16mm											
18	S8	IE230017	KHT, kurz KHT, short			d=16mm											
19	S9	IE230017	KHT, kurz KHT, short			d=16mm											
20	S10	IE230017	KHT, kurz KHT, short			d=16mm											
21	S11	IE120009	Kippschalter Rast-Rast klein toggle switch maintain-maintain small			d=12mm											
22	S12	IE120010	Kippschalter Rast-Rast groß std. toggle switch maintain-maintain big std.			d=12mm											
CAD-Zeichnung, keine manuellen Änderungen CAD drawing, no manual changes																	
1	Umbau	14.09.2022	avel	Datum	10.02.2022	Kunde HBC-radiomatic Norge				HBC-radiomatic GmbH Haller-Straße 45-53 74564 Crailsheim		Listen / Lists		Zeichnung			
				Gezeichnet	avhr	Kommission Flaa								Fabrikationsnummer		Auftragsnummer	
Rev.	Änderung	Datum	Name	Geprüft	avmr	Bestellnummer 25580								727-2204853		22142290	
				Genehmigt		Orig.		Ersetzt		Ersetzt durch						V1.3	
																11 / 13 Bl.	
	1																

1		2		3		4		5		6		7		8	
Platine / Bedienelemente/ usw. PCB's / Operating elements / etc.				Stückliste Sender / Bill of material Transmitter											
Zeile		Name		Material		Typbezeichnung		Beschreibung		Alternativ-Material		Bemerkungen		Software	
23		S13		IE320015		ELMA Drehschalter 2x6 ELMA rotary switch 2x6		d=12mm		011-01-00331					
24		S14		IE120009		Kippschalter Rast-Rast klein toggle switch maintain-maintain small		d=12mm							
25		TF01002_		TF01002_		Frontmodul spectrum mit RFID, safety features front-end module spectrum with RFID, safety features								SI00310_	
26		TF01101_		TF01101_		iLOG-Lesemodul für spectrum iLOG-reading module for spectrum								SI00210_	
27		TFB0201_		TFB0201_		Senderbusmodul 3xProp Eingänge spectrum transmitter bus module 3xProp Inputs spectrum								SI00510_	

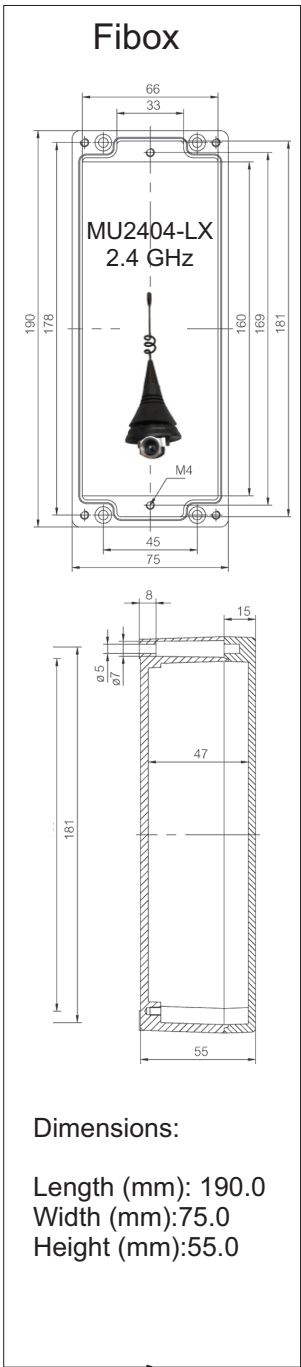
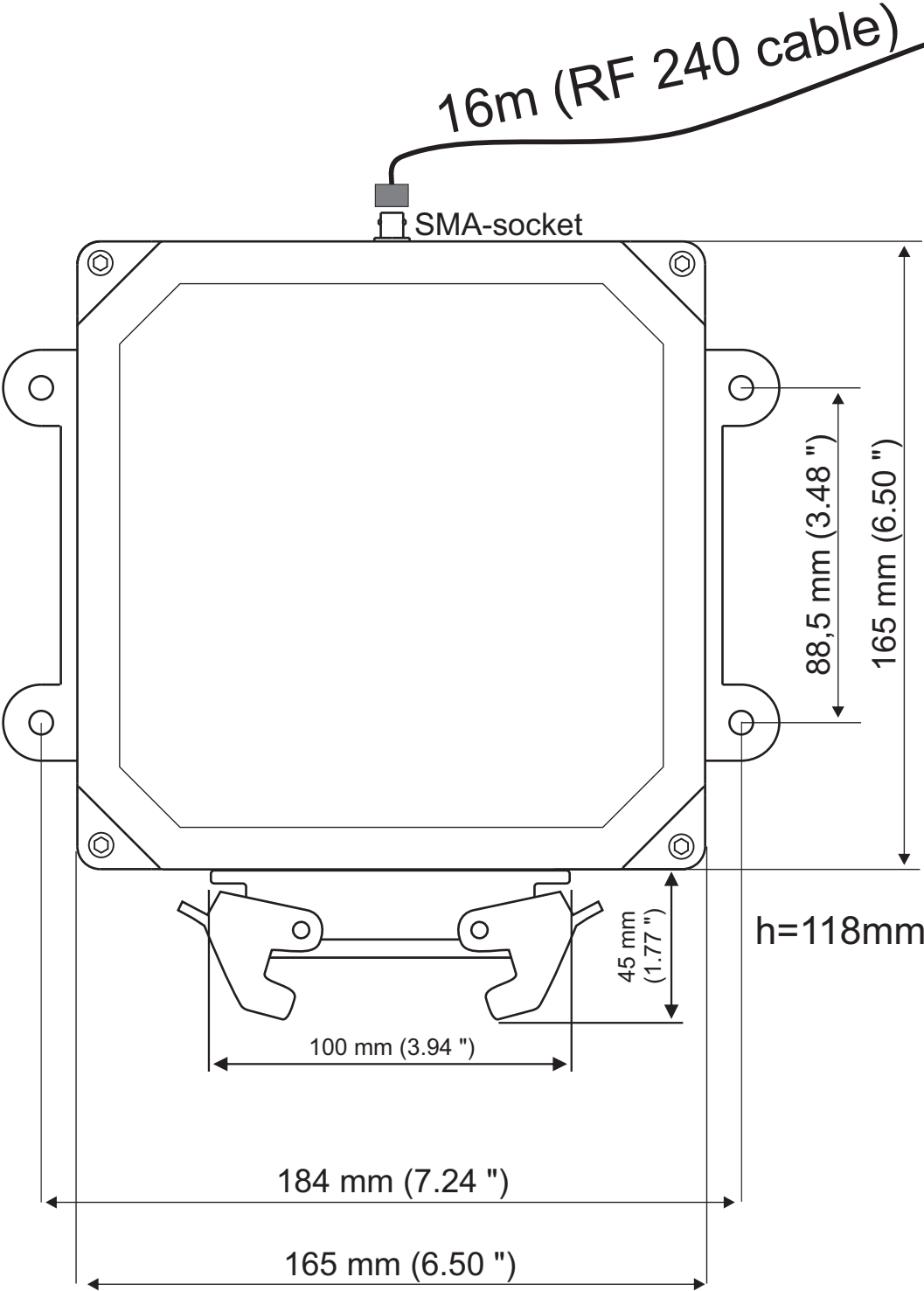
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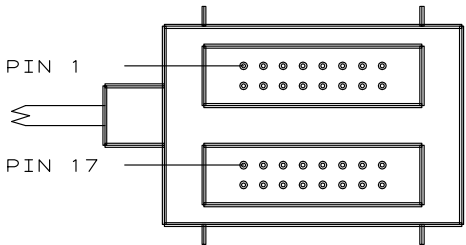
1		2		3		4		5		6		7		8			
Kabelbäume Harness				Stückliste Sender / Bill of material Transmitter													
Zeile		Name		Material		Typbezeichnung			Beschreibung			Alternativ-Material		Bemerkungen		Katalognummer	
1		AW410101		AW410101		Verdrahtungshilfe iLOG Lesemodul harness iLOG reader module			AVX-Buchse 4-polig, 4 Adern AVX-female connector 4-pole, 4 strands								
2		AW584801		AW584801		Verdrahtungshilfe technos A harness technos A			Micro Match 20-polig auf Micro Match 20-polig (120mm) Micro Match 20-pole at Micro Match 20-pole (120mm)								
3		AW594901		AW594901		Verdrahtungshilfe technos A harness technos A			Micro Match 6-polig auf Micro Match 6-polig (130mm) Micro Match 6-pole at Micro Match 6-pole (130mm)								
4		AW594902		AW594902		Verdrahtungshilfe spectrum 4/E harness spectrum 4/E			Micro Match 6-polig auf Micro Match 6-polig (250mm) Micro Match 6-pole at Micro Match 6-pole (250mm)								
5		AW600001		AW600001		Verdrahtungshilfe Input spectrum Serie harness Input spectrum Serie			AVX-Buchse 10-polig, 10 Adern AVX-female connector 10-pole, 10 strands								
6		AW600002		AW600002		Verdrahtungshilfe Input spectrum Serie harness Input spectrum Serie			AVX-Buchse 10-polig, 10 Adern AVX-female connector 10-pole, 10 strands								
7		AW600003		AW600003		Verdrahtungshilfe Input spectrum Serie harness Input spectrum Serie			AVX-Buchse 10-polig, 10 Adern AVX-female connector 10-pole, 10 strands								
8		AW600007		AW600007		Verdrahtungshilfe GND spectrum Serie harness GND spectrum Serie			AVX-Buchse 10-polig, 10 Adern AVX-female connector 10-pole, 10 strands								

1		2		3		4		5		6		7		8		
A	Platinen / Gehäuse / usw. PCB's / Housings / etc.			Stückliste Empfänger / Bill of material Receiver												A
	Zeile	Name	Material	Typbezeichnung	Beschreibung	Alternativ-Material	Bemerkungen	Software								
	1	107-90-00021	107-90-00021	radiomatic® ADCON												
	2	BU1	010-02-00499	Buchsenleiste 3-polig female connector strip 3-polig												
	3	BU1.1	010-02-00011	Buchsenleiste 3-polig female connector strip 3-polig												
	4	BU1.2	010-02-00524	Buchsenleiste 23-polig female connector strip 23-polig												
	5	BU1.3	010-02-00526	Buchsenleiste 21-polig female connector strip 21-polig												
	6	BU2.1	010-02-00506	Buchsenleiste 3-polig female connector strip 3-polig												
	7	BU3.1	010-02-00507	Buchsenleiste 12-polig female connector strip 12-polig												
	8	CM7372__	CM7372__	CAN-Manager	CAN-Manager TC20/38			SA00320_ / SB00320_ / SY00320_								
	9	HR168913	HR168913	Kunststoff-Gehäuse FSE727, HAN 32/50, BNC - MMCX, MR72716_ plastic-case FSE727, HAN 32/50, BNC - MMCX, MR72716_	orange orange											
	C	10	MR72716_	MR72716_	Mainboard Empfänger 727 Mainboard Receiver 727	DC 10-30V mit geox, Kabeloption, Optokoppler DC 10-30V with geox, cable option, optical isolator										
11		OE72713_	OE72713_	NOT-STOP-Ausgabekarte E-STOP-output card	DC, 10xHigh-Side-Switch + CAN Safety			SOE0130__s19 / SOE0220__hex								
12		OP73717_	OP73717_	PWM-Ausgabekarte PWM-output card	8x PWM, 2x Analogausgabe/analog output 0-20mA or +/-0-10V			SOP0112__s19								
13		OR73711_	OR73711_	Relais-Ausgabekarte relay-output card	DC, 4xNO 4xWechsler DC, 4xNO 4xChange Over Contact			SOR0110_								
D	Steckverbinder Plug-in connector			Stückliste Empfänger / Bill of material Receiver												D
	Zeile	Name	Material	Typbezeichnung	Beschreibung	Alternativ-Material	Katalognummer	Hersteller								
	1	AA080009	AA080009	Antennenkabel BNC + MMCX,240mm antenna cable BNC + MMCX,240mm	d=9,5mm			HBC								
	2	X100/HAN 32A	010-03-00097	Anbaugehäuse Size 32A addition housing Size 32A	gerade, niedrige Bauart, 2 Bügel straight, low Type of Construction, 2 clamp		09 20 032 0301	Harting								
	3	010-03-00080	010-03-00080	Steckereinsatz HAN 16A (Size 16/32A) plug insert HAN 16A (Size 16/32A)	Crimpanschluß crimp connection		09 20 016 3001	Harting								
E	4	010-03-00102	010-03-00102	Steckereinsatz HAN 32A (Size 32A) plug insert HAN 32A (Size 32A)	Crimpanschluß crimp connection		09 20 016 3011	Harting								
	Kabelbäume Harness			Stückliste Empfänger / Bill of material Receiver												E
	Zeile	Name	Material	Typbezeichnung	Beschreibung	Alternativ-Material	Bemerkungen	Katalognummer								
F	CAD-Zeichnung, keine manuellen Änderungen CAD drawing, no manual changes														F	
	1	Umbau	14.09.2022	avel	Datum	10.02.2022	Kunde HBC-radiomatic Norge		 HBC-radiomatic GmbH Haller-Straße 45-53 74564 Crailsheim	Listen / Lists	Zeichnung					
					Gezeichnet	avhr	Kommission Flaa				Fabrikationsnummer		Auftragsnummer			
					Geprüft	avmr	Bestellnummer 25580				727-2204853		22142290			
	Rev.	Änderung	Datum	Name	Genehmigt		Orig.	Ersetzt	Ersetzt durch				V1.3 13 / 13 Bl.			
1		2		3		4		5		6		7		8		

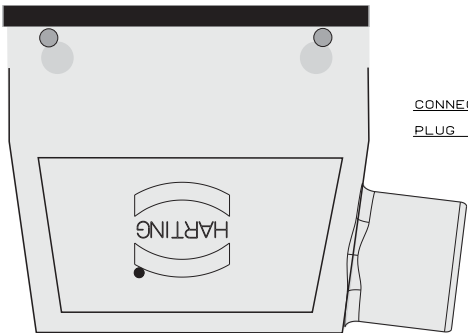
Receiver FSE 727 (HR 168)



Harting HAN 32 - plugg



VIEW FROM OUTSIDE



CONNECTOR
HBC RECEIVER

CONNECTOR : HAN 32 A

PLUG : 09 20 032 0520
HBC 010-03-00180



1. Dip-Schalter / dip-switch

1.1. S3

- Einstellung der CANopen Node-ID/adjustment of CANopen Node-ID

Schalter/switch S3		Funktion/function	Stellung/position	
Pos.	Wert/value		off	on
1	2 ⁰ x D	Node-ID CANopen		x
2	2 ¹ x D	Node-ID CANopen		x
3	2 ² x D	Node-ID CANopen	x	
4	2 ³ x D	Node-ID CANopen	x	
5	2 ⁴ x D	Node-ID CANopen	x	
6	2 ⁵ x D	Node-ID CANopen	x	
7	2 ⁶ x D	Node-ID CANopen	x	
8		reserviert/reserved	x	

- Node-ID [dez]: **3**

1.2. S4

- Einstellung der Bitrate CAN/adjustment of bit rate CAN

Schalter/switch S4		Funktion/function	Stellung/position	
Pos.	Wert/value		off	on
1	2 ⁰ x D	Bit-Rate CAN	x	
2	2 ¹ x D	Bit-Rate CAN	x	x
3	2 ² x D	Bit-Rate CAN	x	
4		reserviert/reserved	x	

Wert	Bit Rate [kBit/s]
0	50
1	125
2	250
3	500
4	1000
5	keine Funktion/no function
6	keine Funktion/no function
7	keine Funktion/no function

- CAN-Bit-Rate[kBit/s]: **250**

2. Globale Einstellungen / global configuration

2.1. Heartbeat

aktiv	Zykluszeit/ cycle time
☒	1s

2.2. CANopen-Safety

aktiv	Zykluszeit/ cycle time
☐	50ms

- CANopen Safety SRDOs

SRDO1-Objekt	ID	1	2
Inhalt/content	default**	NA*	NA inv*

SRDO2-Objekt	ID	1	2
Inhalt/content	default**	NA inv*	NA*

* NA = 0xFF (Notauskreis geschlossen/emergency stop closed)
NA = 0x00 (Notauskreis offen/emergency stop open)

** ID = default (ID-SRDO1 = 0xFF+2*Node-ID, ID-SRDO2 = 0x100+2*Node-ID)
ID = 0x___ (Festwert konfiguriert / fixed value configured)



3. TX-Data

3.1. Digitaleingänge/digital inputs (Schalter/switches)

Index/ index	Subindex/ subindex	Bit/ bit	Funktion/ funktion	Wertebereich/ range	Quelle/ source
6000	01	0	TRANSMITTER ON S3	0/1	1.Si1/0
		1	HORN S4	0/1	1.Si1/1
		2	SPARE S8	0/1	1.Si1/2
		3	S14	0/1	1.Si1/3
		4	S12 a	0/1	1.Si1/4
		5	S12 b	0/1	1.Si1/5
		6	S13 b	0/1	1.Si1/6
	02	7	S13 c (SPARE)	0/1	1.Si1/7
		0	S13 a	0/1	2.Si1/0
		1	S6	0/1	2.Si1/1
		2	S7	0/1	2.Si1/2
		3		0/1	2.Si1/3
		4		0/1	2.Si1/4
		5		0/1	2.Si1/5
		6		0/1	2.Si1/6
		7		0/1	2.Si1/7
	03	0	AKKU LOW	0/1	3.Si1/0
		1		0/1	3.Si1/1
		2		0/1	3.Si1/2
		3		0/1	3.Si1/3
		4		0/1	3.Si1/4
		5		0/1	3.Si1/5
		6		0/1	3.Si1/6
	04	7		0/1	3.Si1/7
		0	R1 (out of zero position (SPARE))	0/1	4.Si1/0
		1		0/1	4.Si1/1
		2		0/1	4.Si1/2
		3		0/1	4.Si1/3
		4		0/1	4.Si1/4
		5		0/1	4.Si1/5
	05	6		0/1	4.Si1/6
		7		0/1	4.Si1/7
		0		0/1	5.Si1/0
		1		0/1	5.Si1/1
		2		0/1	5.Si1/2
		3		0/1	5.Si1/3
		4		0/1	5.Si1/4
	06	5		0/1	5.Si1/5
		6		0/1	5.Si1/6
		7		0/1	5.Si1/7
		0		0/1	6.Si1/0
		1		0/1	6.Si1/1
		2		0/1	6.Si1/2
		3		0/1	6.Si1/3
	07	4		0/1	6.Si1/4
		5		0/1	6.Si1/5
		6		0/1	6.Si1/6
		7		0/1	6.Si1/7
		0		0/1	7.Si1/0

		1		0/1	7.Si1/1
		2		0/1	7.Si1/2
		3		0/1	7.Si1/3
		4		0/1	7.Si1/4
		5		0/1	7.Si1/5
		6		0/1	7.Si1/6
		7		0/1	7.Si1/7

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index	subindex	bit	Funktion	range	source
6000	0F	0	NA Zustand / E-Stop State	0/1	SI1
		1	NA Zustand / E-Stop State	0/1	SI1
		2	NA Zustand / E-Stop State	0/1	SI1
		3	NA Zustand / E-Stop State	0/1	SI1
		4	NA Zustand / E-Stop State	0/1	SI1
		5	NA Zustand / E-Stop State	0/1	SI1
		6	NA Zustand / E-Stop State	0/1	SI1
		7	NA Zustand / E-Stop State	0/1	SI1
	10	0	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		1	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		2	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		3	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		4	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		5	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		6	NA Zustand invertiert / E-Stop inverted	0/1	SI1
		7	NA Zustand invertiert / E-Stop inverted	0/1	SI1

3.3. Analogeingänge/Analog inputs

Index/ index	Subindex/ subindex	Funktion/ funktion	Wertebereich/ range	Quelle/ source
6400	01	S1 Y+ WINCH (FF-80)/ S1Y- (00-7F) 	-128 ... +127	Prop 1
	02	S1 X+ BOOM 2 (FF-80)/ S1X- (00-7F) 	-128 ... +127	Prop 2
	03	S2 Y+ BOOM 1 (FF-80)/ S2 Y- (00-7F) 	-128 ... +127	Prop 3
	04	S2 X+ SWING (FF-80)/ S2 X- (00-7F) 	-128 ... +127	Prop 4
	05	S1 Z+ (FF-80)/ S1 Z- (00-7F) 	-128 ... +127	Prop 6
	06	S2 Z+ (FF-80)/ S2 Z- (00-7F) 	-128 ... +127	Prop 7
	07			
	08			
	09	SPARE (Potentiometer R1 (Roller Speed))	0 ... 255	Prop 5
	0A		0 ... 127	

3.4. TX PDO-Mapping

- 1. TX PDO (0x180+Node-ID)

PDO-Objekt	1	2	3	4	5	6	7	8
Mappingparam.	6000/01	6000/02	6000/03	6000/04	6000/05	6000/06	6000/07	6000/0F

- 2. TX PDO (0x280+Node-ID)

PDO-Objekt	1	2	3	4	5	6	7	8
Mappingparam.	6000/08	6000/09	6000/0A	6000/0B	6000/0C	6000/0D	6000/0E	6000/10

- 3. TX PDO (0x380+Node-ID)

PDO-Objekt	1	2	3	4	5	6	7	8
Mappingparam.	6400/01	6400/02	6400/03	6400/04	6400/05	6400/06	6400/07	6400/08

- 4. TX PDO (0x480+Node-ID)

PDO-Objekt	1	2
Mappingparam.	6400/09	6400/0A