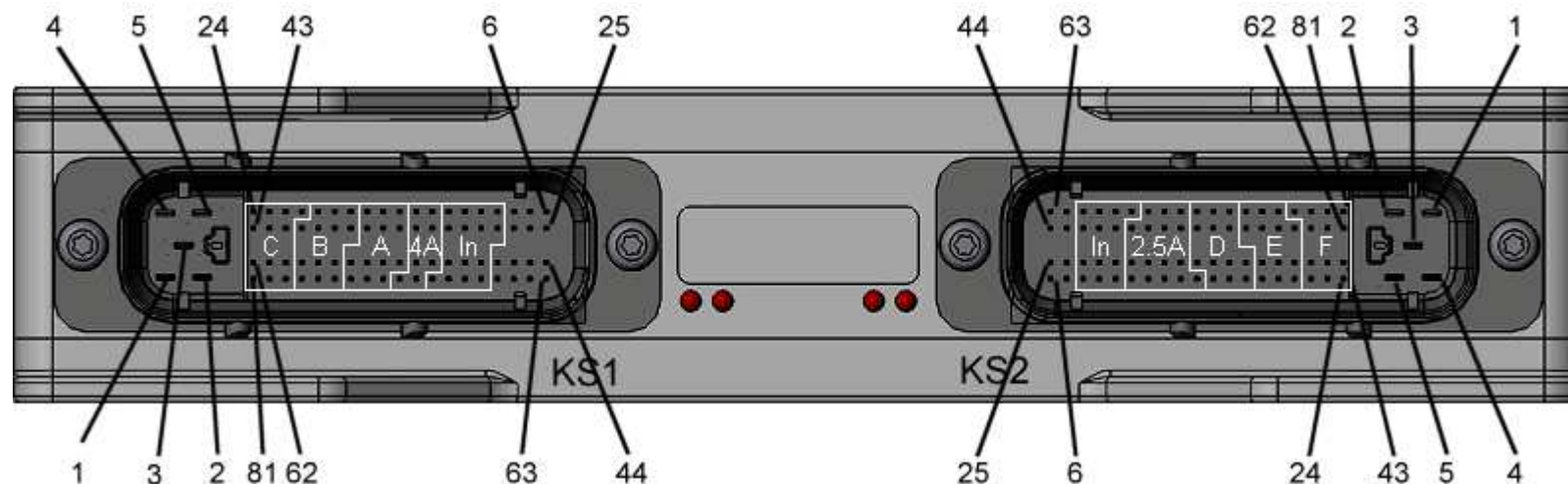


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- [Connectors positioning](#)
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- [Pin assignment KS2](#)
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## ESX-3XL - Mainboard - Hardware - Pin assignment (sorted by pin numbers)

### Connectors (male) of ESX-3XL (KS1 and KS2)



### Pin assignment of KS1 (Pins sorted by pin numbers)

[Back](#) to the table where pins are grouped by function

Connector	PinNo	Type	CAD signal name	Description	Mainboard Expansion slot A..F
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KS1	1	Pwr	POWER_C_PIN14	Expansion slot C - IO pin 14 (e.g. power supply)		x
KS1	2	Pwr	GND	Ground mainboard	x	
KS1	3	Pwr	POWER_A_PIN14	Expansion slot A - IO pin 14 (e.g. power supply)		x
KS1	4	Pwr	POWER_B_PIN14	Expansion slot B - IO pin 14 (e.g. power supply)		x
KS1	5	Pwr	+UB1	Power supply pin for outputs 1..8 (High-Side 4 A)	x	
KS1	6	Sig	+UE	Power supply electronic	x	
KS1	7	Sig	CAN1_H	CAN bus 1 (high)	x	
KS1	8	Sig	CAN1_H	CAN bus 1 (high)	x	
KS1	9	Sig	AIN_DIN14	Multi-functional input 14	x	
KS1	10	Sig	AIN_DIN10	Multi-functional input 10	x	
KS1	11	Sig	AIN_DIN6	Multi-functional input 6	x	
KS1	12	Sig	AIN_DIN2	Multi-functional input 2	x	
KS1	13	Sig	HS4A_PWM_MUT5	High-Side PWM output 5 (4 A)	x	
KS1	14	Sig	HS4A_PWM_MUT6	High-Side PWM output 6 (4 A)	x	
KS1	15	Sig	BABY_A_PIN10	Expansion slot A - IO pin 10		x
KS1	16	Sig	BABY_A_PIN6	Expansion slot A - IO pin 6		x
KS1	17	Sig	BABY_A_PIN2	Expansion slot A - IO pin 2		x
KS1	18	Sig	BABY_B_PIN11	Expansion slot B - IO pin 11		x
KS1	19	Sig	BABY_B_PIN7	Expansion slot B - IO pin 7		x
KS1	20	Sig	BABY_B_PIN3	Expansion slot B - IO pin 3		x
KS1	21	Sig	BABY_C_PIN12	Expansion slot C - IO pin 12		x
KS1	22	Sig	BABY_C_PIN8	Expansion slot C - IO pin 8		x
KS1	23	Sig	BABY_C_PIN4	Expansion slot C - IO pin 4		x
KS1	24	Sig	PWR_OPT_C_PIN13	Expansion slot C - IO pin 13 (e.g. free-wheeling current)		x
KS1	25	Sig	D+	Ignition	x	
KS1	26	Sig	CAN1_L	CAN bus 1 (low)	x	
KS1	27	Sig	CAN1_L	CAN bus 1 (low)	x	
KS1	28	Sig	AIN_DIN15	Multi-functional input 15	x	
KS1	29	Sig	AIN_DIN11	Multi-functional input 11	x	
KS1	30	Sig	AIN_DIN7	Multi-functional input 7	x	

KS1	31	Sig	AIN_DIN3	Multi-functional input 3	x	
KS1	32	Sig	HS4A_PWM_MUT1	High-Side PWM output 1 (4 A)	x	
KS1	33	Sig	HS4A_PWM_MUT2	High-Side PWM output 2 (4 A)	x	
KS1	34	Sig	BABY_A_PIN11	Expansion slot A - IO pin 11		x
KS1	35	Sig	BABY_A_PIN7	Expansion slot A - IO pin 7		x
KS1	36	Sig	BABY_A_PIN3	Expansion slot A - IO pin 3		x
KS1	37	Sig	BABY_B_PIN12	Expansion slot B - IO pin 12		x
KS1	38	Sig	BABY_B_PIN8	Expansion slot B - IO pin 8		x
KS1	39	Sig	BABY_B_PIN4	Expansion slot B - IO pin 4		x
KS1	40	Sig	PWR_OPT_B_PIN13	Expansion slot B - IO pin 13 (e.g. free-wheeling current)		x
KS1	41	Sig	BABY_C_PIN9	Expansion slot C - IO pin 9		x
KS1	42	Sig	BABY_C_PIN5	Expansion slot C - IO pin 5		x
KS1	43	Sig	BABY_C_PIN1	Expansion slot C - IO pin 1		x
KS1	44	Sig	TXD	RS232 1 (TxD)	x	
KS1	45	Sig	CAN2_H	CAN bus 2 (high)	x	
KS1	46	Sig	CAN2_H	CAN bus 2 (high)	x	
KS1	47	Sig	AGND	Analog ground (Uext1)	x	
KS1	48	Sig	AIN_DIN12	Multi-functional input 12	x	
KS1	49	Sig	AIN_DIN8	Multi-functional input 8	x	
KS1	50	Sig	AIN_DIN4	Multi-functional input 4	x	
KS1	51	Sig	HS4A_PWM_MUT3	High-Side PWM output 3 (4 A)	x	
KS1	52	Sig	HS4A_PWM_MUT4	High-Side PWM output 4 (4 A)	x	
KS1	53	Sig	BABY_A_PIN12	Expansion slot A - IO pin 12		x
KS1	54	Sig	BABY_A_PIN8	Expansion slot A - IO pin 8		x
KS1	55	Sig	BABY_A_PIN4	Expansion slot A - IO pin 4		x
KS1	56	Sig	PWR_OPT_A_PIN13	Expansion slot A - IO pin 13 (e.g. free-wheeling current)		x
KS1	57	Sig	BABY_B_PIN9	Expansion slot B - IO pin 9		x
KS1	58	Sig	BABY_B_PIN5	Expansion slot B - IO pin 5		x
KS1	59	Sig	BABY_B_PIN1	Expansion slot B - IO pin 1		x

KS1	60	Sig	BABY_C_PIN10	Expansion slot C - IO pin 10		x
KS1	61	Sig	BABY_C_PIN6	Expansion slot C - IO pin 6		x
KS1	62	Sig	BABY_C_PIN2	Expansion slot C - IO pin 2		x
KS1	63	Sig	RXD	RS232 1 (RxD)	x	
KS1	64	Sig	CAN2_L	CAN bus 2 (low)	x	
KS1	65	Sig	CAN2_L	CAN bus 2 (low)	x	
KS1	66	Sig	Uext1	Regulated voltage output 1 (e.g. sensor supply)	x	
KS1	67	Sig	AIN_DIN13	Multi-functional input 13	x	
KS1	68	Sig	AIN_DIN9	Multi-functional input 9	x	
KS1	69	Sig	AIN_DIN5	Multi-functional input 5	x	
KS1	70	Sig	AIN_DIN1	Multi-functional input 1	x	
KS1	71	Sig	HS4A_PWM_MUT7	High-Side PWM output 7 (4 A)	x	
KS1	72	Sig	HS4A_PWM_MUT8	High-Side PWM output 8 (4 A)	x	
KS1	73	Sig	BABY_A_PIN9	Expansion slot A - IO pin 9		x
KS1	74	Sig	BABY_A_PIN5	Expansion slot A - IO pin 5		x
KS1	75	Sig	BABY_A_PIN1	Expansion slot A - IO pin 1		x
KS1	76	Sig	BABY_B_PIN10	Expansion slot B - IO pin 10		x
KS1	77	Sig	BABY_B_PIN6	Expansion slot B - IO pin 6		x
KS1	78	Sig	BABY_B_PIN2	Expansion slot B - IO pin 2		x
KS1	79	Sig	BABY_C_PIN11	Expansion slot C - IO pin 11		x
KS1	80	Sig	BABY_C_PIN7	Expansion slot C - IO pin 7		x
KS1	81	Sig	BABY_C_PIN3	Expansion slot C - IO pin 3		x

## Notes:

- Standard mode for RS-232 is a three line serial connection (RxD, TxD, Gnd) with no handshake (neither hardware nor software)
- Handshake lines RTS and CTS of RS-232 are **not** available
- RxD-, TxD-lines are **not** electrical isolated
- **Avoid short circuits on TxD-lines to GND or +U<sub>B</sub> under all circumstances!!!**

## Pin assignment of KS2 (Pins sorted by pin numbers)

[Back](#) to the table where pins are grouped by function

Connector	PinNo	Type	CAD signal name	Description	Mainboard	Expansion slot A..F
KS2	1	Pwr	POWER_E_PIN14	Expansion slot E - IO pin 14 (e.g. power supply )		x
KS2	2	Pwr	+UB3	Power supply pin for outputs 17..24 (High-Side 2.5 A)	x	
KS2	3	Pwr	POWER_D_PIN14	Expansion slot D - IO pin 14 (e.g. power supply )		x
KS2	4	Pwr	POWER_F_PIN14	Expansion slot F - IO pin 14 (e.g. power supply )		x
KS2	5	Pwr	+UB2	Power supply pin for outputs 9..16 (High-Side 2.5 A)	x	
KS2	6	Sig	CAN4_L	CAN bus 4 (low)	x	
KS2	7	Sig	AGND	Analog ground (Uext3)	x	
KS2	8	Sig	AIN_DIN19	Multi-functional input 19	x	
KS2	9	Sig	AIN_DIN23	Multi-functional input 23	x	
KS2	10	Sig	AIN_DIN27	Multi-functional input 27	x	
KS2	11	Sig	HS2.5A_PWM_MUT11	High-Side PWM output 11 (2.5 A)	x	
KS2	12	Sig	HS2.5A_PWM_MUT15	High-Side PWM output 15 (2.5 A)	x	
KS2	13	Sig	HS2.5A_PWM_MUT19	High-Side PWM output 19 (2.5 A)	x	
KS2	14	Sig	HS2.5A_PWM_MUT23	High-Side PWM output 23 (2.5 A)	x	
KS2	15	Sig	HS2.5A_PWM_MUT24	High-Side PWM output 24 (2.5 A)	x	
KS2	16	Sig	BABY_D_PIN3	Expansion slot D - IO pin 3		x
KS2	17	Sig	BABY_D_PIN7	Expansion slot D - IO pin 7		x
KS2	18	Sig	BABY_D_PIN11	Expansion slot D - IO pin 11		x
KS2	19	Sig	BABY_E_PIN2	Expansion slot E - IO pin 2		x
KS2	20	Sig	BABY_E_PIN6	Expansion slot E - IO pin 6		x
KS2	21	Sig	BABY_E_PIN10	Expansion slot E - IO pin 10		x
KS2	22	Sig	BABY_F_PIN1	Expansion slot F - IO pin 1		x
KS2	23	Sig	BABY_F_PIN5	Expansion slot F - IO pin 5		x
KS2	24	Sig	BABY_F_PIN9	Expansion slot F - IO pin 9		x

KS2	25	Sig	CAN4_H	CAN bus 4 (high)	x	
KS2	26	Sig	Uext3	Regulated voltage output 3 (e.g. sensor supply)	x	
KS2	27	Sig	AIN_DIN18	Multi-functional input 18	x	
KS2	28	Sig	AIN_DIN22	Multi-functional input 22	x	
KS2	29	Sig	AIN_DIN26	Multi-functional input 26	x	
KS2	30	Sig	HS2.5A_PWM_MUT10	High-Side PWM output 10 (2.5 A)	x	
KS2	31	Sig	HS2.5A_PWM_MUT14	High-Side PWM output 14 (2.5 A)	x	
KS2	32	Sig	HS2.5A_PWM_MUT18	High-Side PWM output 18 (2.5 A)	x	
KS2	33	Sig	HS2.5A_PWM_MUT22	High-Side PWM output 22 (2.5 A)	x	
KS2	34	Sig	PWR_OPT_D_PIN13	Expansion slot D - IO pin 13 (e.g. free-wheeling current)		x
KS2	35	Sig	BABY_D_PIN4	Expansion slot D - IO pin 4		x
KS2	36	Sig	BABY_D_PIN8	Expansion slot D - IO pin 8		x
KS2	37	Sig	BABY_D_PIN12	Expansion slot D - IO pin 12		x
KS2	38	Sig	BABY_E_PIN3	Expansion slot E - IO pin 3		x
KS2	39	Sig	BABY_E_PIN7	Expansion slot E - IO pin 7		x
KS2	40	Sig	BABY_E_PIN11	Expansion slot E - IO pin 11		x
KS2	41	Sig	BABY_F_PIN2	Expansion slot F - IO pin 2		x
KS2	42	Sig	BABY_F_PIN6	Expansion slot F - IO pin 6		x
KS2	43	Sig	BABY_F_PIN10	Expansion slot F - IO pin 10		x
KS2	44	Sig	CAN3_L	CAN bus 3 (low)	x	
KS2	45	Sig	AGND	Analog ground (Uext2)	x	
KS2	46	Sig	AIN_DIN17	Multi-functional input 17	x	
KS2	47	Sig	AIN_DIN21	Multi-functional input 21	x	
KS2	48	Sig	AIN_DIN25	Multi-functional input 25	x	
KS2	49	Sig	HS2.5A_PWM_MUT9	High-Side PWM output 9 (2.5 A)	x	
KS2	50	Sig	HS2.5A_PWM_MUT13	High-Side PWM output 13 (2.5 A)	x	
KS2	51	Sig	HS2.5A_PWM_MUT17	High-Side PWM output 17 (2.5 A)	x	
KS2	52	Sig	HS2.5A_PWM_MUT21	High-Side PWM output 21 (2.5 A)	x	
KS2	53	Sig	BABY_D_PIN1	Expansion slot D - IO pin 1		x
KS2	54	Sig	BABY_D_PIN5	Expansion slot D - IO pin 5		x

KS2	55	Sig	BABY_D_PIN9	Expansion slot D - IO pin 9		x
KS2	56	Sig	PWR_OPT_E_PIN13	Expansion slot E - IO pin 13 (e.g. free-wheeling current)		x
KS2	57	Sig	BABY_E_PIN4	Expansion slot E - IO pin 4		x
KS2	58	Sig	BABY_E_PIN8	Expansion slot E - IO pin 8		x
KS2	59	Sig	BABY_E_PIN12	Expansion slot E - IO pin 12		x
KS2	60	Sig	BABY_F_PIN3	Expansion slot F - IO pin 3		x
KS2	61	Sig	BABY_F_PIN7	Expansion slot F - IO pin 7		x
KS2	62	Sig	BABY_F_PIN11	Expansion slot F - IO pin 11		x
KS2	63	Sig	CAN3_H	CAN bus 3 (high)	x	
KS2	64	Sig	Uext2	Regulated voltage output 2 (e.g. sensor supply)	x	
KS2	65	Sig	AIN_DIN16	Multi-functional input 16	x	
KS2	66	Sig	AIN_DIN20	Multi-functional input 20	x	
KS2	67	Sig	AIN_DIN24	Multi-functional input 24	x	
KS2	68	Sig	AIN_DIN28	Multi-functional input 28	x	
KS2	69	Sig	HS2.5A_PWM_MUT12	High-Side PWM output 12 (2.5 A)	x	
KS2	70	Sig	HS2.5A_PWM_MUT16	High-Side PWM output 16 (2.5 A)	x	
KS2	71	Sig	HS2.5A_PWM_MUT20	High-Side PWM output 20 (2.5 A)	x	
KS2	72	Sig	BABY_D_PIN2	Expansion slot D - IO pin 2		x
KS2	73	Sig	BABY_D_PIN6	Expansion slot D - IO pin 6		x
KS2	74	Sig	BABY_D_PIN10	Expansion slot D - IO pin 10		x
KS2	75	Sig	BABY_E_PIN1	Expansion slot E - IO pin 1		x
KS2	76	Sig	BABY_E_PIN5	Expansion slot E - IO pin 5		x
KS2	77	Sig	BABY_E_PIN9	Expansion slot E - IO pin 9		x
KS2	78	Sig	PWR_OPT_F_PIN13	Expansion slot F - IO pin 13 (e.g. free-wheeling current)		x
KS2	79	Sig	BABY_F_PIN4	Expansion slot F - IO pin 4		x
KS2	80	Sig	BABY_F_PIN8	Expansion slot F - IO pin 8		x
KS2	81	Sig	BABY_F_PIN12	Expansion slot F - IO pin 12		x

[Back](#) to the table where pins are grouped by function

**see also:**

[- Pin assignment of TUX and BOB test environment](#)

[- Pin assignment of TUX adapter cable](#)

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