2D Debus & Diebold Meßsysteme GmbH Alte Karlsruher Straße 8, D-76227 Karlsruhe
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LG-L9-000 Logger 9

Key Features:

- Additionally up to 16/24/32 16-Bit analog input channels with max. 6.4 kHz sampling rate
- 4 digital speed inputs
- 8 GB internal memory
- 4 separate CAN lines
- 2 separate Ethernet lines
- 1 USB, 1 RS232 serial interface
- Master/slave configuration with LG-L9-000 possible to have 64 analog input channels with max 6.4kHz sampling rate
- Dorna X2 transponder signals supported.

26.09.2017/LK

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Technical specifications

Logging		
Memory	GB	8
Sampling frequency	Hz/CH	16/24/32x 6.4 kHz
CAN channels		512
Max. lap length		No limit
Analogue input channels		
Single ended inputs (AIN1.. AIN32)		32
Time multiplex (8 CH grouped)		Yes
Input voltage range (switchable)	V	32x 0..5
or	V	16x 0..20
		16x pull-up switchable (4k7Ω)
Input filters (12 dB)		
anti-aliasing	Hz	1600, 1% spec Butterworth
Resolution	Bit	16
Precision	µV	50
Over voltage protection	sec	For 2
Digital input channels		
Input capture (DIN1..DIN4)	CH	4
Threshold	V	4 x variable
Max. frequency	kHz	TBD
Pull-up to 12V (switchable)	kΩ	10
Counters		4
Source		DIN1..DIN4
Output channels		
Type open collector (per channel)		2
Trigger		Per channel
Sink current (per channel)	A	1
Communications		
CAN-lines		4
Speed	KBaud	125 - 1000
Terminations (software switchable)	Ω	Off / 120
Identifiers standard	Bit	11 and 29
Ethernet		2
Physical	Mbit/s	10/100
Protocol		TCP/IP
USB		1 (USB Slave)
RS232		1
	kBps	Max. 250
Mechanical characteristics		
Dimensions	mm	76 x 90 x 26
Weight	g	245
Housing material		Aluminum
Environmental		
Shock	G	40
	ms	10
Vibration tested at	G	12
	Hz	1000
Humidity	%	5 to 95
Sealing class	IP	67
Ordering information		
Art. No.:		LG-L9-000

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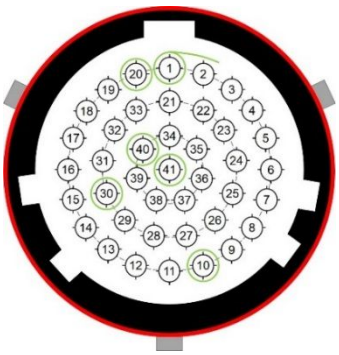
Connector pinning

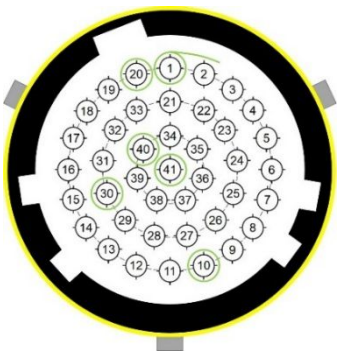
"LIFE" Connector



ASDD2 12-41 PN

PIN	CON	DESCRIPTION
1	Vext	Logger Supply Input (5-20V)
2	BGND	Logger Supply Ground
3	ON/OFF	Switched Power (8-20V⇒ON)
4	USB1 Power(IN)	USB Power for BUS Powered
5	AGND	Logger Analog Sensor Ground
6	CAN1 H	High Level CAN1
7	CAN1 L	Low Level CAN1
8	CAN2 H	High Level CAN2
9	CAN2 L	Low Level CAN2
10	TxD1	RS-232 TxD1 (GPS)
11	RxD1	RS-232 RxD1 (GPS)
12	USB1+	USB1 Signal Line +
13	USB1-	USB1 Signal Line -
14	ETH1 T+	Ethernet1 TxD+
15	ETH1 T-	Ethernet1 TxD-
16	ETH1 R+	Ethernet1 RxD+
17	ETH1 R-	Ethernet1 RxD-
18	CAN3 H	High Level CAN3
19	CAN3 L	Low Level CAN3
20	CAN4 H	High Level CAN4
21	CAN4 L	Low Level CAN4
22	DIN1	Digital Input1 (SW-PU/SW-PD/Current-Sensor)
23	DIN2	Digital Input2 (SW-PU/SW-PD/Current-Sensor)
24	DIN3	Digital Input3 (SW-PU/SW-PD/Current-Sensor)
25	DIN4	Digital Input4 (SW-PU/SW-PD/Current-Sensor)
26	DOUT1	Digital Output1 (OC/max.2A)
27	DOUT2	Digital Output2 (OC/max.2A)
28	+5V-Supply	+5V Sensor Supply (Ratio to ADC)
29	+12V-Supply	+12V Sensor Supply
30	ETH2 T+	Ethernet2 TxD+
31	ETH2 T-	Ethernet2 TxD-
32	ETH2 R+	Ethernet2 RxD+
33	ETH2 R-	Ethernet2 RxD-
34	AIN1/HS	Analog Input1/SW PullUp@+5V
35	AIN2/HS	Analog Input2/SW PullUp@+5V
36	AIN3/HS	Analog Input3/SW PullUp@+5V
37	AIN4/HS	Analog Input4/SW PullUp@+5V
38	AIN5/HS	Analog Input5/SW +20V
39	AIN6/HS	Analog Input6/SW +20V
40	AIN7/HS	Analog Input7/SW +20V
41	AIN8/HS	Analog Input8/SW +20V

"EXT" Connector



ASDD2 12-41 PA

PIN	CON	DESCRIPTION
1	VOUT(5-20V)	Logger Supply Output
2	BGND	Logger Supply Ground
3	+12V-Supply	+12V Sensor Supply
4	+5V-Supply	+5V Sensor Supply (Ratio to ADC)
5	AGND	Logger Analog Sensor Ground
6	CAN3 H	High Level CAN3
7	CAN3 L	Low Level CAN3
8	CAN4 H	High Level CAN4
9	CAN4 L	Low Level CAN4
10	*TxD2*	*RS-232 TxD2 (TBD)*
11	*RxD2*	*RS-232 RxD2 (TBD)*
12	*USB2+*	*USB2 Signal Line +*
13	*USB2-*	*USB2 Signal Line -*
14	*USB2 Power(OUT)*	*USB2 Power Supply Stick*
15	+12V-Supply	+12V Sensor Supply
16	+5V-Supply	+5V Sensor Supply (Ratio to ADC)
17	AGND	Logger Analog Sensor Ground
18	AIN9/LS	Analog Input9/SW PullUp@+5V
19	AIN10/LS	Analog Input10/SW PullUp@+5V
20	AIN11/LS	Analog Input11/SW PullUp@+5V
21	AIN12/LS	Analog Input12/SW PullUp@+5V
22	AIN13/LS	Analog Input13/SW +20V
23	AIN14/LS	Analog Input14/SW +20V
24	AIN15/LS	Analog Input15/SW +20V
25	AIN16/LS	Analog Input16/SW +20V
26	AIN17/LS	Analog Input17/SW PullUp@+5V
27	AIN18/LS	Analog Input18/SW PullUp@+5V
28	AIN19/LS	Analog Input19/SW PullUp@+5V
29	AIN20/LS	Analog Input20/SW PullUp@+5V
30	AIN21/LS	Analog Input21/SW +20V
31	AIN22/LS	Analog Input22/SW +20V
32	AIN23/LS	Analog Input23/SW +20V
33	AIN24/LS	Analog Input24/SW +20V
34	AIN25/LS	Analog Input25/SW PullUp@+5V
35	AIN26/LS	Analog Input26/SW PullUp@+5V
36	AIN27/LS	Analog Input27/SW PullUp@+5V
37	AIN28/LS	Analog Input28/SW PullUp@+5V
38	AIN29/LS	Analog Input29/SW +20V
39	AIN30/LS	Analog Input30/SW +20V
40	AIN31/LS	Analog Input31/SW +20V
41	AIN32/LS	Analog Input32/SW +20V

⇒ not yet implemented

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Allocation of the sampling rates (Base rate 6.4 kHz)

#		T0	T1	T2	T3	T4	T5	T6	T7	Hz
		ADCEXT1_1								6400
		ADCEXT1_2								
		ADCEXT1_3								
		ADCEXT1_4								
		ADCEXT1_5								
		ADCEXT1_6								
		ADCEXT1_7								
8	32	ADCEXT1_8								
		ADCEXT2_1								
		ADCEXT2_2								
		ADCEXT2_3								
		ADCEXT2_4								
		ADCEXT2_5								
		ADCEXT2_6								
		ADCEXT2_7								
16	64	ADCEXT2_8								
		ADCEXT3_1								
		ADCEXT3_2								
		ADCEXT3_3								
		ADCEXT3_4								
		ADCEXT3_5								
		ADCEXT3_6								
		ADCEXT3_7								
24	96	ADCEXT3_8								
		ADCEXT4_1								
		ADCEXT4_2								
		ADCEXT4_3								
		ADCEXT4_4								
		ADCEXT4_5								
		ADCEXT4_6								
		ADCEXT4_7								
32	128	ADCEXT4_8								
		Vext_Msg				SectorNr				800
		USB_Msg				SectorCnt				
		3V3_Msg				SD WrTime				
		5V0_Msg				DMA Sync				
		5V0_Ext				DIGIT1				
		12V_Ext				DIGIT2				
		5V0_Cur				DIGIT3				
48	40	12V_Cur				DIGIT4				
		CAN1				CAN9				
		CAN2				CAN10				
		CAN3				CAN11				
		CAN4				CAN12				
		CAN5				CAN13				
		CAN6				CAN14				
		CAN7				CAN15				
64	48	CAN8				CAN16				
		CAN17		CAN25		CAN33		CAN41		400
		CAN18		CAN26		CAN34		CAN42		
		CAN19		CAN27		CAN35		CAN43		
		CAN20		CAN28		CAN36		CAN44		
		CAN21		CAN29		CAN37		CAN45		
		CAN22		CAN30		CAN38		CAN46		
		CAN23		CAN31		CAN39		CAN47		
40	160	CAN24		CAN32		CAN40		CAN48		
		CAN49	CAN57	CAN65	CAN73	CAN81	CAN89	CAN97	CAN105	200
		CAN50	CAN58	CAN66	CAN74	CAN82	CAN90	CAN98	CAN106	
		CAN51	CAN59	CAN67	CAN75	CAN83	CAN91	CAN99	CAN107	
		CAN52	CAN60	CAN68	CAN76	CAN84	CAN92	CAN100	CAN108	
		CAN53	CAN61	CAN69	CAN77	CAN85	CAN93	CAN101	CAN109	
		CAN54	CAN62	CAN70	CAN78	CAN86	CAN94	CAN102	CAN110	
		CAN55	CAN63	CAN71	CAN79	CAN87	CAN95	CAN103	CAN110	
48	224	CAN56	CAN64	CAN72	CAN80	CAN88	CAN96	CAN104	CAN112	
		CAN113	CAN121	CAN129	CAN137	CAN145	CAN153	CAN161	CAN169	
		CAN114	CAN122	CAN130	CAN138	CAN146	CAN154	CAN162	CAN170	
		CAN115	CAN123	CAN131	CAN139	CAN147	CAN155	CAN163	CAN171	
		CAN116	CAN124	CAN132	CAN140	CAN148	CAN156	CAN164	CAN172	
		CAN117	CAN125	CAN133	CAN141	CAN149	CAN157	CAN165	CAN173	
		CAN118	CAN126	CAN134	CAN142	CAN150	CAN158	CAN166	CAN174	
		CAN119	CAN127	CAN135	CAN143	CAN151	CAN159	CAN167	CAN175	
56	288	CAN120	CAN128	CAN136	CAN144	CAN152	CAN160	CAN168	CAN176	
		CAN177	CAN185	CAN193	CAN201	CAN209	CAN217	CAN225	CAN233	
		CAN178	CAN186	CAN194	CAN202	CAN210	CAN218	CAN226	CAN234	
		CAN179	CAN187	CAN195	CAN203	CAN211	CAN219	CAN227	CAN235	
		CAN180	CAN188	CAN196	CAN204	CAN212	CAN220	CAN228	CAN236	
		CAN181	CAN189	CAN197	CAN205	CAN213	CAN221	CAN229	CAN237	
		CAN182	CAN190	CAN198	CAN206	CAN214	CAN222	CAN230	CAN238	
		CAN183	CAN191	CAN199	CAN207	CAN215	CAN223	CAN231	CAN239	
64	352	CAN184	CAN192	CAN200	CAN208	CAN216	CAN224	CAN232	CAN240	
		CAN241	CAN249	CALC#1	CALC#9	V_SAT	SSHH	Laps	XCP_Start	
		CAN242	CAN250	CALC#2	CALC#10	ValidSat	LapGps	Laptime	XCP_Snd	
		CAN243	CAN251	CALC#3	CALC#11	HHMM	EVENTTRG	SecMeter	XCP_Rec	
		CAN244	CAN252	CALC#4	CALC#12	Course	CPU_MAX	Secs	XCP_Stat	
		CAN245	CAN253	CALC#5	CALC#13	Lat_Dec	XCP_Delay	Sectime	XCP_Cnt12	
		CAN246	CAN254	CALC#6	CALC#14	Lon_Dec	SysTime	TRIGGER	XCP_Cnt34	
		CAN247	CAN255	CALC#7	CALC#15	Altitude	RecTime	OUT#1	XCP_Cnt56	
72	416	CAN248	CAN256	CALC#8	CALC#16	MMDD	LapMeter	OUT#2	XCP_Cnt78	