# MT310 - Replaced by Digitek Cobra

DAS4 Data Logger

DAS4 is a versatile data acquisition unit developed by Magneti Marelli for racing applications which require high resolution data from a large number of channels.

The unit is equipped with two CAN controllers allowing greater flexibility in the design of the on-board system architecture.

Communications with the PC analysis and programming software is via a point-to-point Ethernet line using a standard network adapter card (*not supplied*).

The 16 single-ended analogue inputs and 4 input capture channels complement the 2 CAN lines making the unit ideal for applications which combine chassis and engine analysis.
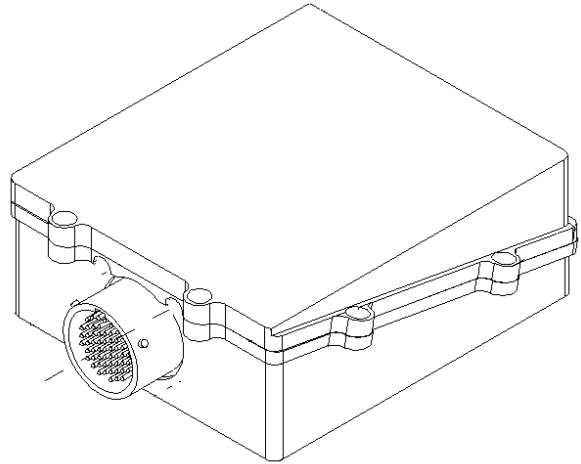
Characteristics

- 24 Mbytes memory

- Sampling rates up to 1000 Hz

- Up to 200 logged channels

- Up to 40 kbytes/sec logging rate

- 16 analogue inputs

- 4 wheel speed inputs

- Event-triggered high-speed burst logging

- 2 CAN lines

- High speed download via standard 10baseT Ethernet card (*not supplied*)

- Real time telemetry output (RS232, 4.8 kbps)

- Compatible with wide range of dashboards

- Free WINTAX2 LITE analysis software (compatible Win95/98/NT)

- Supplied with MIL-spec. mating loom connector

- Small, light, robust

Ordering Information

Description		Order code
MT310	DAS4 Data Logger + WINTAX2 LITE + Flying connector	083816041300

CAN terminations selected on connector

For further details please contact

MM Competition Systems Ltd
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RG20 6NE
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Technical data

Logging

Memory	24	Mbytes
Logging capacity	20	kbytes/s
Sampling frequency	1...1000	Hz
Channels	200	max.
Max. lap length (firmware limit)	3	Mbytes

Analogue Inputs

Single ended inputs (AIN1…16)	16	
Input voltage range	0…5	V
Input filters		
anti-aliasing	500	Hz
Resolution	12	Bit
Precision	± 1	LSB
Over voltage protection	60	V
for 1	s	

Digital Inputs

Input capture (IC1…4)	4	
threshold	3.35	V
max. frequency	5	kHz
max. input voltage	± 25V	
representation	2	µs/LSB
pull-up to 5 V	10	kΩ
Counters	4	
source	IC1…4	
representation	16-bit signed integer	
On/Off	2	
type	TTL	
trigger	rising edge	
applications	*beacon* → track marker	
	marker → manual marker	

Communications

CAN lines	2	
speed	1	Mbaud
terminations	pinout selectable	
identifiers	standard 11	bit
applications	data acquisition	
	dashboard comm.s	
Ethernet	1	
physical	10BASE-T	
protocol	NetBEUI	
applications	download	
	logger setup	
RS232	1	
applications	code load	
	real time telemetry	

Electrical / Mechanical Characteristics

Voltage reference	3	
voltage	5	V
max combined current	50	mA
Power supply	7...18	V dc
(without other sensors)	typ. 160	mA
protection	load dump	
	polarity inversion	
	short circuit to VBatt & GND	
Operating temperature	0...70	°C
Shock	50	g
	10	ms
Vibration tested at	10	g
	1500	Hz
Dimensions		
(box w/o connector)	117x105x40.5	mm
Weight	380	g
Container	Black anodised aluminium	IP64
Connector (Amphenol part no.s)		
logger	SJT00RT-16-35PN	
loom	SJTG06RT-16-35SN	

Dimensions
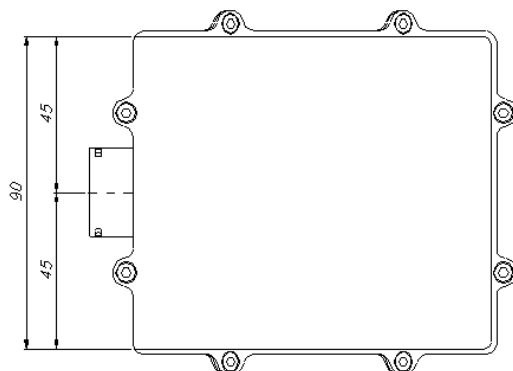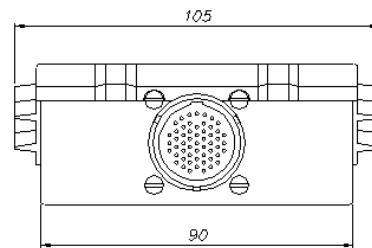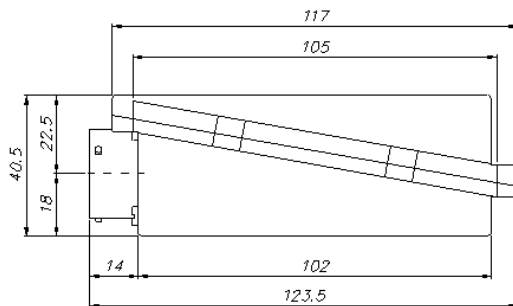
All dimensions in millimetres

Connector Pin Out

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Pin	Name	descr.	Pin	name	descr.	Pin	name	descr.
DAS4 pin-out: SJT00RT-16-35PN								
1	AIN1	0...5V input #1	21	AGND	analogue ground[1]	41	RX485_P	not used
2	AIN2	0...5V input #2	22	AGND	analogue ground[1]	42	RX485_N	not used
3	AIN3	0...5V input #3	23	AGND	analogue ground[1]	43	CAN1_T	Connect to CAN1_P to terminate CAN1
4	AIN4	0...5V input #4	24	AGND	analogue ground[1]	44	CAN1_P	CAN1 positive
5	AIN5	0...5V input #5	25	POWER	max 18V DC	45	CAN2_P	CAN2 positive
6	AIN6	0...5V input #6	26	SHIELD	shield	46	CAN2_T	Connect to CAN2_P to terminate CAN2
7	AIN7	0...5V input #7	27	GND_PWR	ground supply[1]	47	TX232	Tx RS232[3]
8	AIN8	0...5V input #8	28	GND_DIN	digital ground	48	TX485_P	not used
9	AIN9	0...5V input #9	29	MARKER	spare digital input	49	TX485_N	not used
10	AIN10	0...5V input #10	30	BEACON	track marker (internal pull-up 10kΩ to 5V)	50	CAN1_N	CAN1 negative
11	AIN11	0...5V input #11	31	CODELOAD	ground for codeload - do not connect on car loom	51	ETHTX_P	Tx Ethernet positive[3]
12	AIN12	0...5V input #12	32	GND_232	ground RS232[1]	52	CAN2_N	CAN2 negative
13	AIN13	0...5V input #13	33	GND_485	ground RS485[1]	53	ETHRX_P	Rx Ethernet positive[3]
14	AIN14	0...5V input #14	34	GND_CAN	ground CAN1&2[1]	54	ETHRX_N	Rx Ethernet negative[3]
15	AIN15	0...5V input #15	35	GND_IC	digital input capture ground[1]	55	ETHTX_N	Tx Ethernet negative[3]
16	AIN16	0...5V input #16	36	IC_1	internal pull-up 10kΩ to 5V			
17	VREF	5V reference[2]	37	IC_2	internal pull-up 10kΩ to 5V			
18	VREF	5V reference[2]	38	IC_3	internal pull-up 10kΩ to 5V			
19	VREF	5V reference[2]	39	IC_4	internal pull-up 10kΩ to 5V			
20	AGND	Analogue ground[1]	40	RX232	Rx RS232[3]			
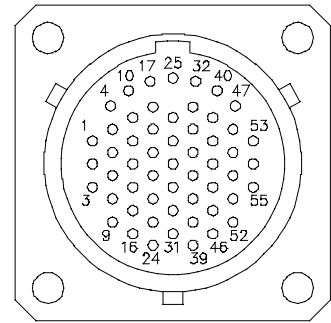
Application notes

PC RJ45 Ethernet connection

DAS4		
55	ETHTX_N	R D −
51	ETHTX_P	R D +
54	ETHRX_N	T D −
53	ETHRX_P	T D +
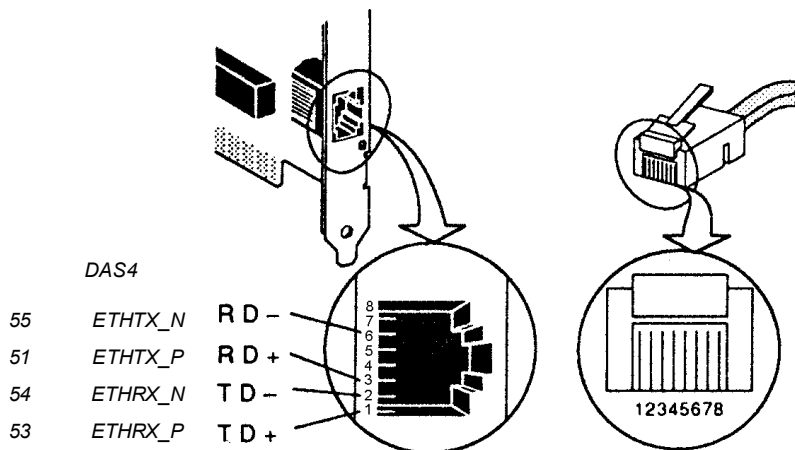
RJ-45 Connector Pin Assignments

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[1] All grounds connected internally

[2] Max. 50 mA total combined output of VREFs

[3] All Rx and Tx as seen from data logger