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Revision History

Issue	Changes Made	Date	Initials
1.0	First release	03/07/03	PV
1.1	Modified: Front panel drawing, Power connections, Ethernet connector Added: Box part number, Fans reference, LED hole description, Environment	10/07/03	PV
1.2	Modified: System box figure Added: Front panel top view figure	17/07/03	PV
2.0	Added: Cables section, countersunk holes	11/09/03	PV

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1 Outline Description

This SMT8180 specification details a system comprising of:

- 2x SMT180
- 9x SMT374
- 2x SMT376
- 1x SMT340
- 1x SMT363V-200
- 1 SHB cable (SMT511)
- 4 MMBX-SMA cable (SMT506-SMA)
- 4 LEMO connectors (2x FAG 2B 314 CLA, FAG 1B 306 CLA, FAG 2B 316.CLA)
- 4 LEMO mating parts (2x PHG 2B 314 CLLD, PHG 1B 306 CLLD, PHG 2B 316 CLLD)
- 1x metal box (Compac, R59012-250-1)

The system offers externally the following features:

- 4x McBSP connections
- 2x SMA analogue signals input
- 1x SMA clock input
- 1x SMA trigger input
- 1x Ethernet connection

1.1 Related Documents

SMT180 Technical specifications

2 Mechanical configuration

2.1 Box

The electronics system fits in a metal box that offers a very good shield against electro-magnetic interferences. Two SMT180 cards carry all the TIM modules necessary to the required operations. The first SMT180 is mounted at the bottom of the box and will be kept in place by screws through the mounting holes. The second SMT180 will be mounted on the lead of the box and screwed the same way as the first one. The TIM sites for both carriers will face the inside of the box, thus guaranteeing optimal heat dissipation during processing thanks to the 8 fans blowing air in and out. The fans can be fitted outside and/or inside the box. The Sunon fans will be on the outside, the ACT-RX fans (BP0535SA7) on the inside. The carrier mounting holes are countersunk on the outside of the box.

The box dimensions are as follow:

Length:	12.5''	= 318mm
Width:	10''	= 254mm
Height:	2.5''	= 64mm

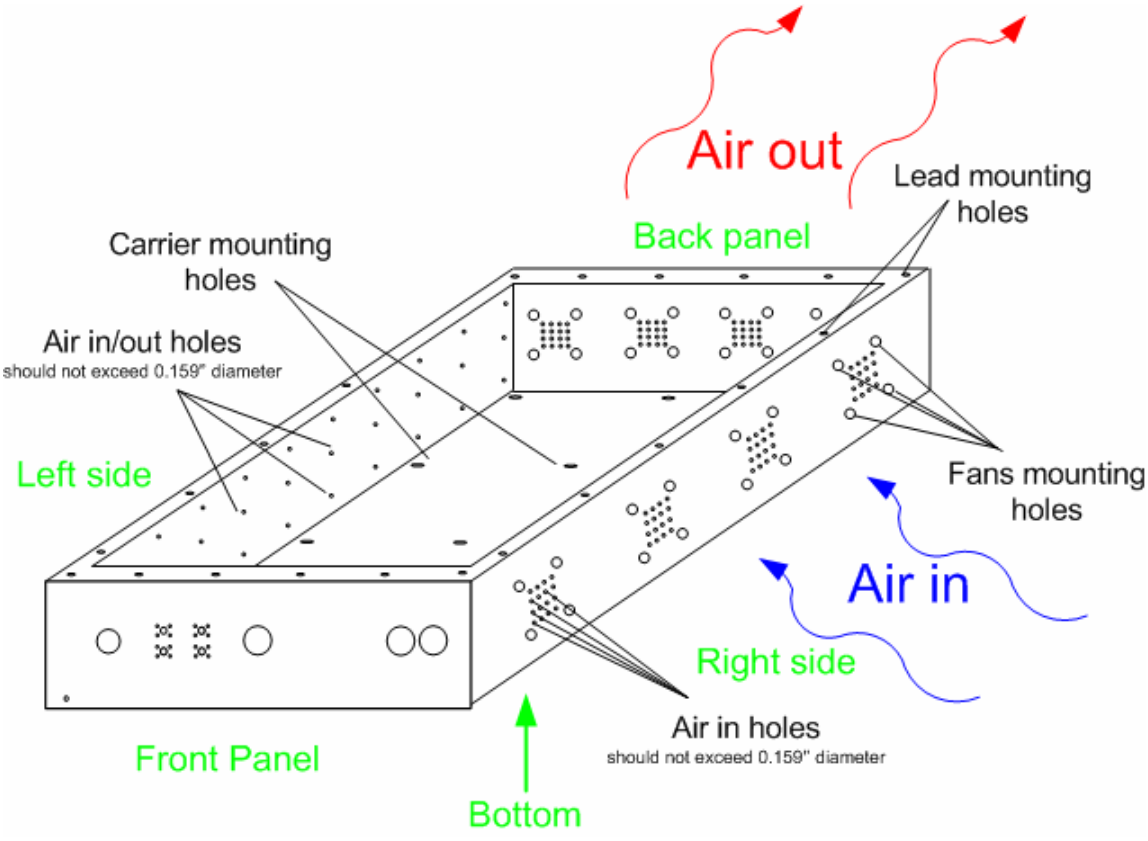

Figure 1 : System box

2.2 Front panel

The different system inputs and outputs are available on the front panel.

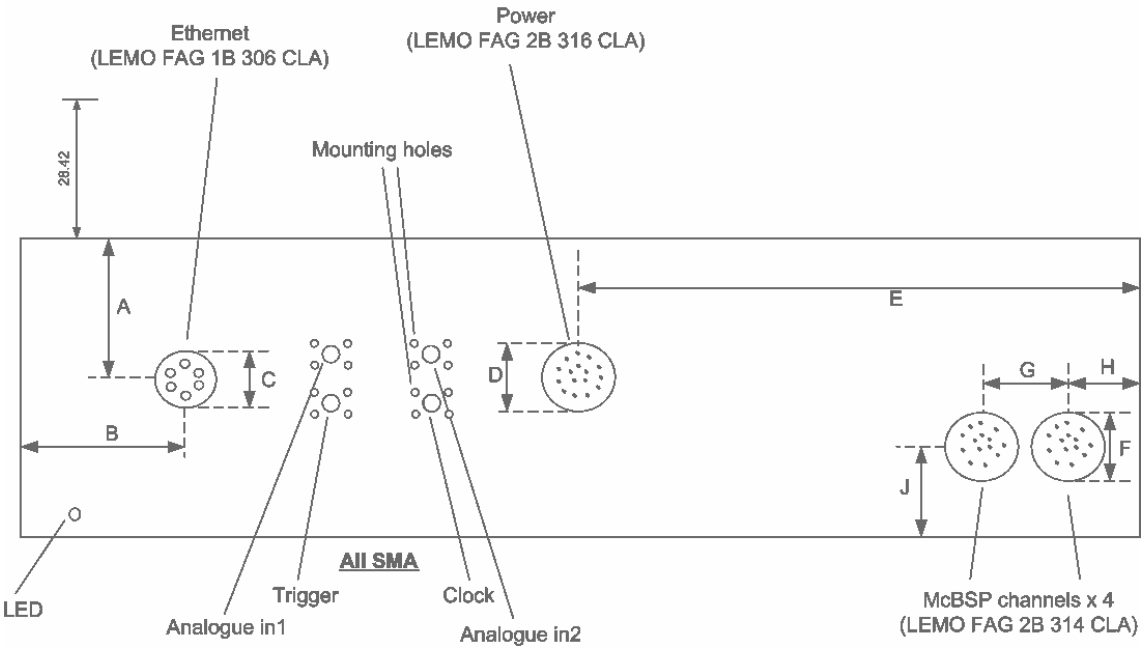

Figure 2 : Front panel

The use of LEMO connectors for McBSP, Ethernet and Power will prevent interferences from entering the box.

The LED hole diameter will not exceed 3mm (0.118''). Light coming out will indicate that the system is powered.

A	1.25''	31.8mm
B	1.5''	38.1mm
C	0.48''	12.1mm
D	0.59''	15.1mm
E	3.94''	100mm
F	0.6''	15.2mm
G	0.85''	21.5mm
H	0.63''	16mm
I	0.79''	20mm

Dimensions

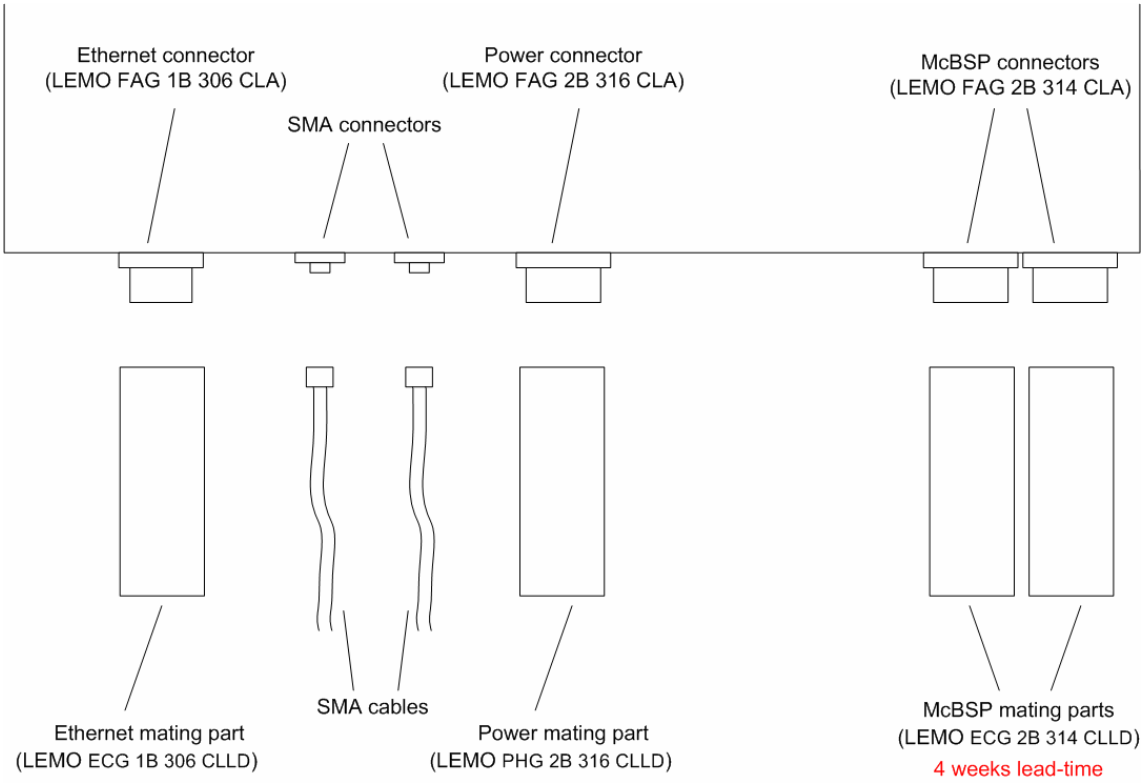

Figure 3 : Front panel top view

All the LEMO connectors and mating parts are available except the McBSP mating parts (LEMO PHG 2B 314 CLLD) that are on a four weeks lead-time! However for testing purposes it will be possible to remove the McBSP connectors and have a cable connected to the McBSP channels directly on the TIM modules.

2.3 Connectors pin out

2.3.1 Ethernet

The Ethernet connections from the front panel connector will be wired to the Ethernet connector on the SMT363.

LEMO FAG 1B 306 CLA

TX+	1	TX-	2
RX+	3	RX-	4
NC	5	NC	6

2.3.2 McBSP

There are a total of four McBSP channels available through two LEMO connectors on the front panel. The first McBSP LEMO connector (first McBSP connector from the right on the front panel) will be wired to both McBSP channels on the SMT376 in slot 3 of the SMT180 carrier card 1. The second McBSP LEMO connector will be wired to both McBSP channels on the SMT376 in slot 1 of the SMT180 carrier card 1. The pin out for both connectors is as follow:

LEMO FAG 2B 314 CLA

CLKS0	1	CLKS1	2
CLKR0	3	CLKR1	4
CLKX0	5	CLKX1	6
DR0	7	DR1	8
DX0	9	DX1	10
FSR0	11	FSR1	12
FSX0	13	FSX1	14

2.3.3 Power

The Power connections from the front panel connector will be wired to the power connector on both SMT180 carrier cards.

LEMO FAG 2B 316 CLA

+5V	1	+5V	2
+5V	3	+5V	4
+5V	5	GND	6
GND	7	GND	8
GND	9	GND	10
+5V	11	+5V	12
GND	13	+12V	14
GND	15	GND	16

2.4 Internal cables

2.4.1 Ethernet

The Ethernet cable is a modified version of SMT5363. The RJ45 end is replaced by a 6-pin LEMO connector (FAG 1B 306 CLA)

2.4.2 McBSP

The McBSP cables are special cables that will be latched on one side on the SMT376 McBSP header (2mm DIL latching connector) and soldered to 14-pin LEMO connectors (FAG 2B 314 CLA) on the other.

2.4.3 SDB

Two SDB cables (SMT510) connect the SMT340 in the system to the two SMT376.

2.4.4 SHB

One SHB cable (SMT511) connects the two carrier external ComPorts together.

2.5 System outline

The different TIM modules required for data acquisition, processing and interfacing are spread onto two SMT180 carrier boards as follow:

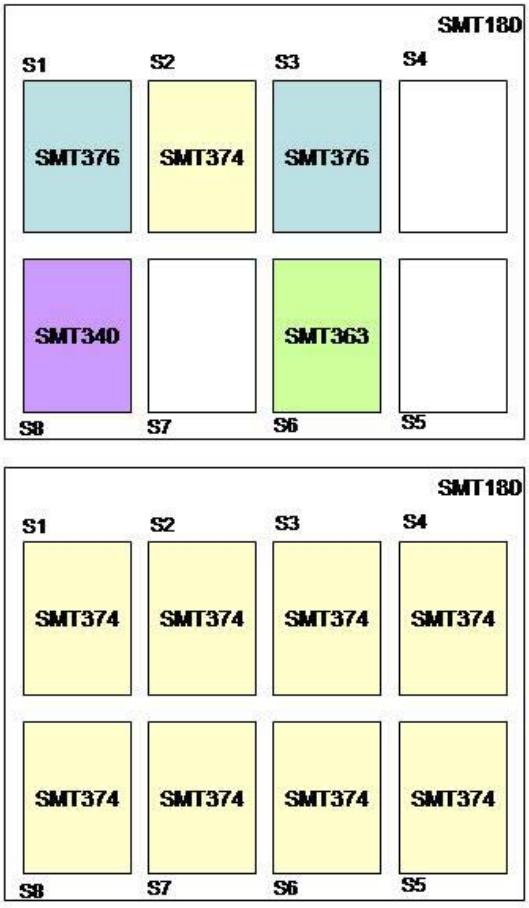

Figure 4 : System outline

The TIM modules are connected to each other using ComPort links and SDB cables. The ComPort connections between TIM sites are routed on the SMT180 carrier card. There are also some external ComPorts that enable to connect TIM modules on the first SMT180 to TIM modules on the second SMT180. Please refer the SMT180 specifications for more details.

3 Power consumption

Power required

+12V	1 A
+5V	14 A

Power distributed

+12V	2 A
+5V	24 A

4 Programmability

The SMT180 carrier card offers an external JTAG connection as well as an external ComPort connection. These can be used in order to debug the system, download a new configuration into the flash or download 3L_diamond applications. Please refer to the SMT180 technical specifications for more information.

5 Environment

The box could be operating in a very demanding environment and some precautions need to be taken.

Electromagnetic interferences could disturb the electronics inside the system. To avoid this problem holes diameter without shielded connectors will not exceed 4mm (0.159'').

Fans blow air in and out to cool the system down. It might be necessary to fit some air filters on the fans otherwise the box could become a dust trap.

Screws and connectors inside the box could become loose in the long term because of vibrations; applying some Silastic silicone will prevent this problem from occurring.

6 Safety

This module presents no hazard to the user.