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CTBT: SCIENCE AND TECHNOLOGY CONFERENCE

güralp

The Güralp Affinity as a replacement for the DM24SxAM

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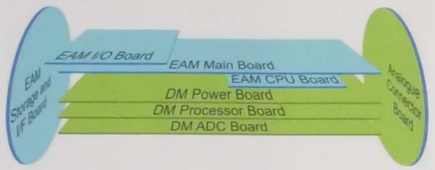
1. A REPLACEMENT FOR DM24 DIGITISERS

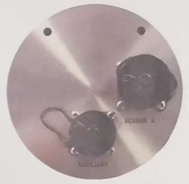
The Güralp Affinity digitiser and datalogger is presented as a replacement for the long-running DM24-based digitizer products, incorporating authentication capability. A key design concept is that the operator experience should be the same as far as possible, in order to minimise the learning curve and maximise the existing investment in knowledge and experience.

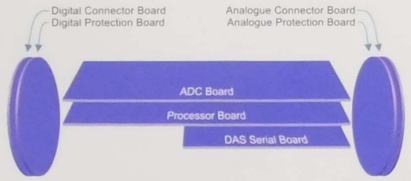
2. HARDWARE AND PHYSICAL

DM24SXAM



AFFINITY





HW INTERFACE PROPERTY	DM24SxAM	AFFINITY
SENSOR A port	Full functionality	Full functionality
SENSOR B port	Basic functions (for accelerometer)	**Full functionality, as A port**
AUXILIARY port	X channel + 5 multiplexed inputs	X channel + **10 multiplexed** inputs
DATA port	General purpose serial port / alternative power input	General purpose serial port / alternative power input
ETHERNET port	100BASE-TX Ethernet connection	100BASE-TX Ethernet connection
POWER port	Power in, tamper line, switched output	**Power in, switched output**
USB port	Standard USB	**USB OTG support**
GPS port	GSL GPS receiver + serial ttySA2	GSL GPS receiver + serial ttySA2
GPIO port	Internal USB device access, 4 tamper lines, RS232 console	**3 tamper lines,** RS232 console
Transient protection	Basic	**Enhanced**

Affinity is the new generation of Güralp digitiser/datalogger for the IMS

- Improved performance
- Increased flexibility
- New features

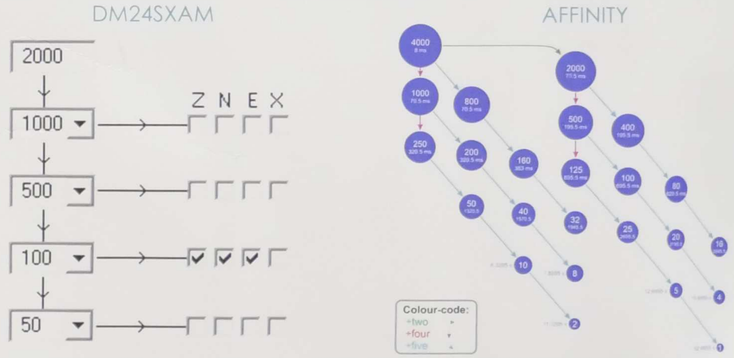
Carefully designed for maximum compatibility

- Small software learning curve
- Directly interchangeable hardware

3. SOFTWARE AND FEATURES

FEATURE	DM24SXAM	AFFINITY
Output sample rate options	Limited to one decimation chain, 4 rates	**Any combination of sample rates simultaneously**
Configuration save/restore	Partial (EAM module only)	**Complete, including ADC and decimation config**
Max Sample Rate	1000 sps	**4000 sps**
Data flow limit	Limited by internal 230.4kbps link	**Unlimited**
Timing source	NMEA, NTP	NMEA, **PTP**, NTP
Mux channel sample rate	1sps @ 23 bit or 2/4sps @ 16 bit	1,2,4,**5,8,10** sps @ **24** bit
Internal Storage	512MiB O/S + 2GiB storage (proprietary)	**1 GiB** O/S + **64GiB** storage (micro SD)

DECIMATION



4. PERFORMANCE

PERFORMANCE (SANDIA TESTS)	DM24SXAM	AFFINITY
Power Consumption	3.2 W	**2.2 W**
Input Impedance	116.8 kΩ	113.5 kΩ
Crosstalk	-135 dB	**-150 dB (none detected)**
CMRR	-79.2 dB	**-102.5 dB**
Absolute Timing	<1 µs	<1 µs
Inter-channel skew	<1 µs	**<0.1 µs**
MPDR (0.02 to 16Hz)	137 dB	137 dB
THD	-118 dB	**-124 dB**

PUTTING AN END TO NUCLEAR EXPLOSIONS