NAM (MKII)

NETWORK ACQUISITION MODULE

A flexible seismic server, designed to provide a bespoke data-flow system for large arrays, at an affordable price.

The NAM is a stable, robust data hub with unrivalled configurability, ideal for large or complex regional and national arrays and other multi station monitoring solutions.

As a communications hub, the NAM acquires multiple data streams from connected instruments (either local or remote, over serial or IP communications) and acts as both a data store and data transmitter. Additionally, it can deliver real-time protocol conversions to a variety of seismic formats.

For stations where access to GNSS (Global Navigation Satellite Systems) is impractical, the NAM can also operate as a Network Time Protocol (NTP) server, synchronising the remote stations to a local GNSS receiver.

Applications

> National and regional networked arrays
> Volcano monitoring arrays
> Structural health monitoring solutions
> Borehole
> Vault

Images show the Güralp NAM

Key features

Stable, robust and flexible for confident long-term deployments with total autonomy

Designed to act as a data concentrator in seismic networks, capable of acquiring data from up to 500 instruments at 100 sps

Control using either Web interface or the console accessed via video, serial or SSH

GCF (Scream!), SEEDlink (SeisComP), CD1.1, GDI-link

Multi-user Linux operating system

Ethernet LAN (10/100/1000Base-T) 802.1q tagged VLAN support

Full TCP/IP support with PPP

LCD display for status information

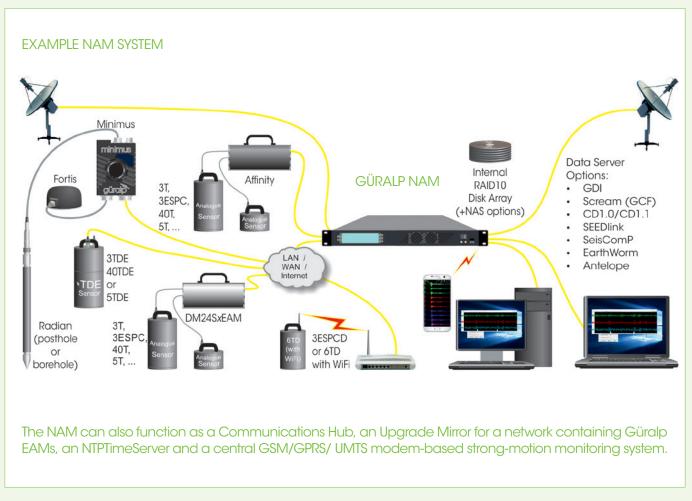8 / 16 / 24 RS-232 port expansion options

NAM (MKII)

The NAM is a highly configurable system, suitable for multi station applications on all scales.

The NAM acquires data from local and/or remote instruments, digitisers and other systems. Data can be acquired from EAMs and other NAMs functioning as concentrators, allowing complex networks to be assembled with ease.
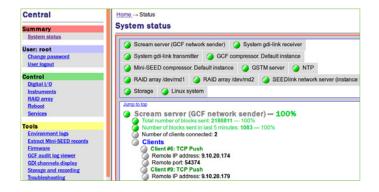
Directly supported instruments include the Güralp Radian, 3TDE, 40TDE, 5TDE, 6TD and 3ESPCD (with Ethernet option).

The data are stored in GCF and/or miniSEED format onto the integrated SSD. Unlimited external storage via NFS (Network File System) can be utilised if required.
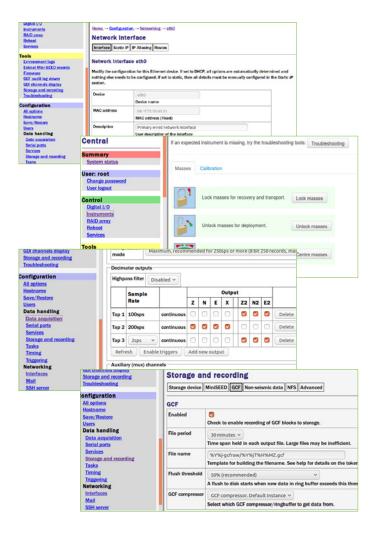
The NAM can also act as a data-server to remote clients, including Scream!, Earthworm and Antelope, using protocols such as GCF, CD1.1, SEEDlink and GDI-link.

EXAMPLE NAM SYSTEM

The NAM can also function as a Communications Hub, an Upgrade Mirror for a network containing Güralp EAMs, an NTPTimeServer and a central GSM/GPRS/ UMTS modem-based strong-motion monitoring system.

Web server interface

The NAM provides a secure Web server, giving authorised users access to its configuration options

The NAM has extended options for network and serial interfaces, including PPP support. Without rebooting, you can configure any serial port to input or output GCF data, communicate with modems, or provide access to the Linux shell.

Through the NAM, administrators can configure or control Güralp digitisers and digital instruments from anywhere on the network.

The NAM is fully compatible with Scream! software, and can gather data from Scream! servers or send to clients as desired. The NAM supports other formats such as SEEDlink and CD1.1.

The NAM records directly to disk in GCF and/or miniSEED format. External (NAS) RAID is supported for additional resilience and performance.

NAM (MKII)

SPECIFICATIONS

SOFTWARE	
Operating system	Linux
COMMUNICATION PROTOCOLS	
Interfaces / Connections	Serial (RS232, RS422, USB), Ethernet (10/100/1000BASE-T)
Internet technologies supported	TCP/IP, PPP, HTTP, HTTPS server and client, SSH, RSYNC, SCP Firewall and routing capabilities
DATA FORMATS	
Data recording	GCF, miniSEED
Data streaming protocols	GCF (Scream!), SEEDlink (SeisComP), CD1.1, GDI-link
Internal storage	Solid state (SSD) Hot swappable, journaling filing system Optional NAS storage expander for up to 12 TB of storage over four disks
External storage	Unlimited capacity via NFS
OPERATION AND POWER USAGE	
Power supply voltage	100-240 V AC 50-60 Hz
Power consumption	14.4 W with Ethernet
ENVIRONMENTAL / PHYSICAL	
Operating temperature range	+5 °C to +55 °C
Dimensions height × width × depth	44 mm × 483 mm × 230 mm (1u, 19" rack mounted)
Ports:	2 x Ethernet ports (1000BASE-T) 2 x RS232 1 x RS422 4 x USB 1 x Console (RS232) 1 x PS2 keyboard socket 1 x VGA/DVI display) Optional serial port expander for 8, 16 or 24 RS232 ports using one USB connection
SUPPORTING DOCUMENTATION	
Manual	Available online at: www.guralp.com/documents/MAN-EAM-0003.pdf