

CSIRO HI Cell ISS Recorder Interface

STRESS CELL INTERFACE TO ISS SYSTEM

FEATURES

- Purposely designed to monitor stress
- Can be used to monitor a range of other slowly varying sensors such as tilt, creep meters, crack meters & ground motion meters
- Can monitor up to 16 non-seismic channels

APPLICATIONS

- Enables the end user to monitor the relationship between high or low stress conditions & microseismic events
- Operators with existing in mine microseismic systems may collect 3D or triaxial stress data using the ISS recorder
- Extremely low cost and neat solution for monitoring long term stress using existing mine assets
- Better utilization of existing monitoring systems
- Ideal for monitoring problems areas of closure, fault movement, temperature & strain



Monitor up to 16 non-seismic channels by the simple addition of a non-seismic interface unit.

The non-seismic option of the QS is used to monitor a range of slowly varying sensors such as tilt meters, creep meters, ground motion meters (GMM) as well as the CSIRO hollow inclusion cell.

A specific non-seismic interface unit is supplied for the CSIRO HI Cell as this sensor requires bridge balancing and zeroing features. The CSIRO HI cell provides 12 strain measurements as well as temperature and thus occupies 13 channels on the QS non-seismic interface.

TECHNICAL SPECIFICATIONS

Power	supply powered down from QS
Distance from QS	(maximum) 1000 m
A/D resolution	24 bit
Sampling Rate	1 sample per minute per channel
Data averaging	8 samples averaged for output

MINIMUM REQUIREMENTS

IN ORDER TO ACTIVATE THIS FEATURE

- Central Computer software (RTS) must be version 9.1.0 or above
- QS firmware version 3.1 or above
- QS serial number QS030033 or higher. If other serial numbers need this feature, they will need to have their internal wiring upgraded
- If the QS is connected via a Network Multiplexer (NM) or an Intelligent Multiplexer (IM), the firmware of the multiplexer must be upgraded to version 7.0 or above
- Each non-seismic channel that is enabled must be licenced on the RTS (rts/ns licence)
- A SAQS cannot support a non-seismic interface unit.

OPERATING PRINCIPLE

BASIC OPERATION

The QS will return the readings from the non-seismic sensors each time it is requested from the Central Computer. These parameters are stored in ASCII files on the Central Computer and can be used to produce graphical information or read into a spreadsheet and then used to produce customised plots or reports.

TIME INTERVAL BETWEEN READINGS

The non-seismic subsystem is designed to monitor very slowly varying geotechnical parameters such as closure, fault movement, temperature or strain. The CSIRO interface takes a full set of readings (one sample per channel per minute, averaged over eight minutes) over an 8 minute period and thus these values should be read at time intervals exceeding this.

RTS COMMAND

The command **nseis -i <box id> -b1**

will send a request to the QS to send the set of 16 readings. Only the readings from those channels that are enabled on the RTS (chncon) will be saved to the file. This command can be added to the list of scheduled jobs (cron jobs) that are run at fixed time intervals on the system.

CSIRO HOLLOW INCLUSION CELL

A special interface unit is provided for the CSIRO HI Cell that allows it to be connected to the QS and to be able to take readings of the strain (12) and also temperature as a non-seismic unit. The interface unit requires DC power from the QS and provides the CSIRO HI Cell with the power it requires.

The CSIRO HI Cell interface needs to be zeroed after initial installation and readings are then taken relative to this value. This means that there is no manual calibration required for this type of sensor as the interface unit can automatically perform this calibration.

The command **csiro0 -i <box id> -b <channel number>**

is used to perform this function. If the channel number is 0, all channels are zeroed.

GENERAL NON-SEISMIC SENSORS

A general interface is available that will allow the connection of up to 16 non-seismic sensors that produce a voltage output in the range (0 V to 12 V) proportional to the parameter being measured (closure, tilt, temperature, ground motion, methane level and so on).