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		<p>1. Accelerometers</p> <p>This specification covers the description and requirements for installation and testing of all the equipment that will be used to monitor the acceleration and seismic monitoring during the operation of the facility.</p> <p>The Contractor is responsible for procuring, installing, and commissioning strong motion accelerometers at various locations within the dam structure, abutments, foundations, and surrounding areas as indicated in the Drawings or as instructed by the Engineer. These devices are intended to record acceleration time histories in the x, y, and z directions. The accelerometers shall be fixed either directly to the dam structure or, for external locations, on a solid concrete base, and must be safeguarded against water infiltration.</p> <p>Strong motion accelerometers shall comply with the below requirements at minimum:</p> <ul style="list-style-type: none"> • Type: Triaxial force balance accelerometers, orthogonally oriented transducers • Channels: 3 sensor channels for internal sensors • Full scale range: $\pm 4g$ • Bandwidth: DC to 200 Hz • Dynamic range: > 139 dB • Sampling rates: 500 sps • Calibration & test: Calibration facility from the data acquisition system locally or remotely from central recording station through DAS • Trigger selection: Independently selectable for each channel • Internal trigger: Threshold (0.01% to 100% of full scale) or STA/LTA algorithm • Type: Oscillator digitally locked to GPS • Timing accuracy: < 1 microsecond of UTC when GPS-locked • Data storage: Internal 16 GB SDHC card • Data offload: USB host port • Operation temperature range: -20°C to $+70^{\circ}\text{C}$ • Humidity: 0–100% RH • Enclosure rating: IP67 <p>Installation recommendations</p> <ul style="list-style-type: none"> • Location of each installed accelerometer shall be marked on the drawings, identifying the orientation of each axis • Sensor shall be anchored properly on the structure or fixed on top of rigid concrete block
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المعالي المهندس المعماري والهندسة المدنية والبيئة والبنية التحتية

الهيئة العامة للمياه والبيئة والبنية التحتية والبنية التحتية:



وزارة الموارد المائية والري
الهيئة العامة للمياه والبيئة والبنية التحتية
المركزية لتنفيذ مشاريع توشكي
الدراسة العامة للتكنولوجيا والأرصاد



المبنى	الوجوه	٣	عدد	<p>In case the measured value exceeds the trigger limit, a trigger breach report shall be sent to the engineer. If the result is confirmed and no stabilization observed, the reasons shall be investigated and possible preventive action proposed for approval to the Engineer for keeping the measurements below the maximum limit.</p> <ul style="list-style-type: none">• Sensors shall be distributed wisely to cover the impact on the entire structure <p>Reading</p> <ul style="list-style-type: none">• Reading shall be recorded automatically 24/7.• Data Acquisition unit shall grant synchronization to ensure the simultaneous of data recording from all the installed sensors• The Engineer shall propose trigger limits on the magnitude of the displacements based on the results of his Detail Design. <p>In case the measured value exceeds the trigger limit, a trigger breach report shall be sent to the engineer. If the result is confirmed and no stabilization observed, the reasons shall be investigated and possible preventive action proposed for approval to the Engineer for keeping the measurements below the maximum limit.</p>
٢	٢	٢	٢	<p>على تركيب واختبار وتشغيل أجهزة قياس الاهتزازات متتالية داخل محطة كهرباء السد العالي حيث يتم تركيبها على لوح معدني مصنع من الألمنيوم سبيل لا يقل درجته عن ٣٠٤ مثبت بالأسلاك المخصصة عن طريق توزيع مسامير أكرامون من الألمنيوم سبيل بطول مناسب ولا يقل درجتها عن ٣٠٤ مع استخدام المواد الأنيوية الموصى بها من الألمنيوم سبيل</p> <p>معدني طبقا للمواصفة التالية:</p> <p>2. Deep Dynamic sensors</p> <p>The objective of applying deep seismic sensors is to monitor the dam against seismic motions and other ambient dynamic aiming for</p> <ul style="list-style-type: none">• evaluating and observing the dam safety and integrity,• assessing and comparing the dam behaviour against the design criteria,• Contributing to dam stability seismic database. <p>The purpose of the recorded events and system parameter analysis is to ensure the continuous good working of the seismic monitoring system regarding the underground stability, by analysing and characterizing the micro-seismicity induced on the site (inside and outside the Dam "underground")</p> <p>The sensors shall comply with the below requirements at minimum:</p> <p>Sensor Specifications</p> <ul style="list-style-type: none">• Type: geophone or geophone accelerometers• Dynamic range 155 dB+• Bandwidth DC to 200Hz• Full-scale range $\pm 4g$• Hysteresis $< 0.1\%$ of full scale• Cross-axis sensitivity $< 1\%$ (including misalignment)• Zero-point thermal drift $< 500 \mu g/^\circ C$ (1g sensor)• Sensor Technology Triaxial orthogonal, XYZ oriented feedback sensor elements with capacitive displacement transducer• Sensitivity 1500 V/(m/s) trimmed to $\pm 0.5\%$ precision• Clip Level 13mm/s to 40 Hz• Bandwidth -3 dB points at 120 seconds and 160 Hz• Operable Tilt Range ± 2.5 Degrees

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السلطة العامة للموارد المائية والري - مصر

مجلس الإدارة



وزارة الموارد المائية والري
الهيئة العامة للري
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