

ISO Geodetic Registry

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|---------------------------|------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Item class</i> | Transformation | |
| <i>Name</i> | ITRF2014 to KSA-GRF17 [GASGI v1] | |
| <i>Item status</i> | VALID | |
| <i>Identifier</i> | 781 | |
| <i>Information source</i> | <i>Title</i> | Technical Summary for Saudi Arabia National Spatial Reference System (SANSRS). |
| | <i>Author</i> | General Directorate of Geodesy |
| | <i>Publisher</i> | General Directorate of Geodesy, General Authority for Survey and Geospatial Information, Kingdom of Saudi Arabia |
| | <i>Publication date</i> | 2019-06 |
| | <i>Revision date</i> | 2021-02 |
| | <i>Other citation details</i> | https://www.gasgi.gov.sa/En/Products/Products_v1/Geodesy/Documents/Technical_Summary_for_SANSRS_v1.1.pdf (accessed 2021-06-07) |
| <i>Data source</i> | ISO Geodetic Registry | |
| <i>Remarks</i> | 3D Cartesian rotation rates representing the Arabian tectonic plate Euler pole rotation as derived from 41 KSA-GRF stations. | |
| <i>Operation version</i> | GASGI v1 | |
| <i>Scope</i> | Spatial referencing | |
| <i>Operation accuracy</i> | 0.001 m | |
| <i>Source CRS</i> | ITRF2014 - XYZ | |
| <i>Target CRS</i> | KSA-GRF17 - XYZ | |
| <i>Operation method</i> | Time-Dependent Position Vector Transformation (geocentric Cartesian domain) | |

Extent

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|--------------------------------|---------------------------------------------|-------|
| <i>Description</i> | Saudi Arabia - onshore and offshore. | |
| <i>Geographic Bounding Box</i> | <i>West-bound longitude</i> | 34.44 |
| | <i>North-bound latitude</i> | 32.16 |
| | <i>East-bound longitude</i> | 55.67 |
| | <i>South-bound latitude</i> | 16.29 |

Operation parameter values

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|---------------------------------------------|---------------------------------|
| <i>X-axis translation</i> | 0.0 millimetre |
| <i>Y-axis translation</i> | 0.0 millimetre |
| <i>Z-axis translation</i> | 0.0 millimetre |
| <i>X-axis rotation</i> | 0.0 milliarc-second |
| <i>Y-axis rotation</i> | 0.0 milliarc-second |
| <i>Z-axis rotation</i> | 0.0 milliarc-second |
| <i>Scale difference</i> | 0.0 parts per billion |
| <i>Rate of change of X-axis translation</i> | 0.0 millimetre per year |
| <i>Rate of change of Y-axis translation</i> | 0.0 millimetre per year |
| <i>Rate of change of Z-axis translation</i> | 0.0 millimetre per year |
| <i>Rate of change of X-axis rotation</i> | -1.199 milliarc-second per year |
| <i>Rate of change of Y-axis rotation</i> | 0.107 milliarc-second per year |
| <i>Rate of change of Z-axis rotation</i> | -1.468 milliarc-second per year |

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|-------------------------------------------|--------------------------------|
| <i>Rate of change of scale difference</i> | 0.0 parts per billion per year |
| <i>Time reference</i> | 2017.0 year |

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|--------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Item class</i> | OperationMethod |
| <i>Name</i> | Time-Dependent Position Vector Transformation (geocentric Cartesian domain) |
| <i>Item status</i> | VALID |
| <i>Identifier</i> | 82 |
| <i>Alias</i> | Time-Dependent 7-Parameter Transformation |
| <i>Alias</i> | 14-Parameter Transformation |
| <i>Alias</i> | Time-Dependent Position Vector Transformation |
| <i>Data source</i> | ISO Geodetic Registry |
| <i>Remarks</i> | Note the analogy with the rotation for the Time-dependent Coordinate Frame Transformation but beware of the differences! The Position Vector Transformation convention is used by IAG. |
| <i>Formula</i> | Geomatics Guidance Note No 7, part 2: Coordinate Conversions and Transformations including Formulas |

Operation parameters

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|---------------------------------------------|
| <i>X-axis translation</i> |
| <i>Y-axis translation</i> |
| <i>Z-axis translation</i> |
| <i>X-axis rotation</i> |
| <i>Y-axis rotation</i> |
| <i>Z-axis rotation</i> |
| <i>Scale difference</i> |
| <i>Rate of change of X-axis translation</i> |
| <i>Rate of change of Y-axis translation</i> |
| <i>Rate of change of Z-axis translation</i> |
| <i>Rate of change of X-axis rotation</i> |
| <i>Rate of change of Y-axis rotation</i> |
| <i>Rate of change of Z-axis rotation</i> |
| <i>Rate of change of scale difference</i> |
| <i>Time reference</i> |