Long-term radiation and meteorological measurements are available from a large number of ground measuring stations. However, close examination of the data often reveals a lack of quality, often for extended periods of time. Quality Control Procedures (QCPs) are a measure of how well data serve the purpose for which they were produced. We have searched in the bibliographic references the QCPs that are available for the solar radiation and meteorological data series which are of interest in the field of renewable energies, grouping them together by average time periods, checking them and modifying them if necessary. All of the QCPs that are presented in this document are applicable for all latitudes; they are not optimized regionally nor seasonally with the aim of being generic. The research leading to these results has partly received funding from the European Union’s Seventh Framework Programme (FP7/2007-2013).

**Types of Quality Control Procedures (QCPs)**

- **Range QCPs**: verify that values are within a specific range (based on extrema for physically possible values and based on rare observations for possible but extremely rare values).
- **Step QCPs**: aimed at detecting unrealistic increments or stagnations in the time series, with respect to their sampling and integration period.
- **Consistency QCPs**: verify the consistencies between two or more independent time series.

### Monthly Daily Hourly Sub-hourly

**Global Horizontal Irradiance (GHI) (Wm\(^{-2}\))**

- QCP based on range [3,7]
  - 0.03 GHItoa < GHI < 1.2 I\(_0\)
- QCP based on rare observations [3,7]
  - 0.03 GHItoa < GHI < 1.2 I\(_0\)

**Beam Horizontal Irradiance (BHI) (Wm\(^{-2}\))**

- QCP based on range [3,7]
  - 0.03 GHItoa < GHI < min(1.2 I\(_0\), 1.5 I\(_0\) \(\cos(SZA)^{1.2} + 100\))
- QCP based on rare observations [3,7]
  - 0.03 GHItoa < GHI < 1.2 I\(_0\) \(\cos(SZA)^{1.2} + 30\)

**Diffuse Horizontal Irradiance (DHI) (Wm\(^{-2}\))**

- QCP based on range [3,7]
  - 0.03 GHItoa < DHI < 0.8 I\(_0\)
- QCP based on rare observations [3,7]
  - 0.03 GHItoa < DHI < 0.8 I\(_0\)

**Temperature (°C)**

- QCP based on range [10,14]
  - -90 < Temp < + 60
- QCP based on rare observations [10,14]
  - -90 < Temp < + 60

**Humidity (%)**

- QCP based on range [14]
  - 0 < Hum < 100
- Step QCP [9]
  - Maximum step for two following values: 30 %

**Wind Speed (m s\(^{-1}\))**

- QCP based on 2-minute average [10]
  - 0 < WS < 150
- Step QCP [11,14]
  - Maximum step for two following values: 20 m s\(^{-1}\)

### Quality Control (QC) Output Report:

After checking the plausibility of the data, some graphs, histograms and figures of flagged values may help in the interpretation of the result of QC and also to detect some other features of data.

---

**GHItoa** = Horizontal Irradiance at top of atmosphere; **I\(_0\)** = normal irradiance at the top of the atmosphere corrected from Sun-Earth distance; **SZA** = Solar Zenithal Angle (rad); **BHI** = Beam Horizontal Irradiance.

QCPs in bold have been modified compared to their corresponding bibliographic references.