

## 8-6. Other calculation processing (Other)

### 8-6-1. Superimposing two data (Align)

If there are two or more data in the same dataset and all the data have the same number of pixels, executing [Other]-[Align] will display the following screen.

By adjusting rotation angle, enlargement/reduction, and movement (up/down/left/right) of one of the two data, the two data are made to overlap for each pixel.

The screenshot shows the 'Image alignment' dialog box. The main window displays a 'Difference image (white = no difference)' between two data sets. The interface includes several control panels:

- Gain:** A vertical slider on the left to adjust image gain.
- Source/Target:** Fields for selecting the source and target data, with a dropdown menu for the target.
- Angle:** A numeric input for rotation angle (0 degrees).
- Scale:** A numeric input for enlargement or reduction (set to 1).
- Translation:** Inputs for horizontal (X) and vertical (Y) movement.
- Image matcher settings:** Includes 'Auto' (Method: BRISK), 'Result' (checked), 'DRO' (checked), and 'Histogram equalization' (unchecked).
- Buttons:** 'Import...', 'Export...', 'APPLY', and 'CANCEL'.

Callouts provide detailed instructions for each control:

- Image gain:** Image gain
- Name of data to be changed:** Name of data to be changed
- Select reference data name:** Select reference data name
- Enter the rotation angle:** Enter the rotation angle (Positive: clockwise, Negative: Counterclockwise)
- Enter scale up/down:** Enter scale up/down (>1: Enlarge, <1: Reduce)
- Expansion:** Expansion
- Reduction:** Reduction
- Move up and down:** Move up and down
- Move left and right:** Move left and right
- Counterclockwise rotation:** Counterclockwise rotation
- Clockwise rotation:** Clockwise rotation
- Enter amount of horizontal movement:** Enter amount of horizontal movement (Positive: Move right, Negative: Move left)
- Enter amount of vertical movement:** Enter amount of vertical movement (Positive: move down, Negative: move up)
- Execution:** Execution
- Cancel:** Cancel
- Show matching results:** Show matching results (Left figure)
- Difference display:** Difference display between two data. Difference value = 0 → white, Difference value > 0 → red, Difference value < 0 → blue.
- Load saved settings:** Load saved settings from file
- Save settings:** Save settings to file
- Automatically:** Automatically
- Select feature point:** Select feature point detection method
- Histogram flattening:** Histogram flattening is performed on the two images before matching. Recommended for use when contrast is high.
- Dynamic range optimization:** Dynamic range optimization processing is performed on the two images before matching. Always recommended to be ON.

At the bottom, a smaller image shows the result of the alignment, with colored lines indicating feature point correspondences between the two images.