

Manual integration

PeakValues boundaries, host metrics, 2% filter, area threshold, override/restore.

How peaks move from the integrator add-in into area, height, and response — and how manual overrides are stored and restored.

What the integrator returns

An integrator add-in (`IIntegrator.Integrate`) returns only boundary coordinates on each `PeakValues` object:

Field	Meaning
<code>BegX</code>	Peak start time (X)
<code>EndX</code>	Peak end time (X)
<code>BegB</code>	Baseline intensity at start
<code>EndB</code>	Baseline intensity at end

It does **not** return Area, Height, CenterX, or width metrics. Those are computed by the host.

Host metrics: IPeakMetricsCalculator

`ImportPeakValuesService` and `PeakIntegrationService` call `IPeakMetricsCalculator` / `PeakMetricsCalculator` with the signal arrays and the four boundaries. Derived metrics include:

Metric	Role
<code>Area</code>	Trapezoidal area above the linear baseline
<code>Height</code>	Apex height above baseline
<code>CenterX</code>	Apex time (stored as integration Time)
<code>FwAt50</code>	Full width at 50% height
<code>FwAt5</code>	Full width at 5% height
<code>Symmetry</code>	Peak symmetry

Import path (automatic Analyze)

- Integrator returns `PeakValues` (boundaries only).
- `ImportPeakValuesService.ImportPeakValues` computes metrics, keeps peaks whose apex falls in the analyte time window (and fused abutting companions).
- Relative filter:** peaks below **2% of the maximum** area/height among candidates are dropped (`maxMetric * 0.02`).

4. **Area threshold:** peaks below the method/channel threshold are dropped. Default is `DefaultPercent = 30` of the **Lowest** calibration response (or a named dose). See [Method design](#).
5. Response for quantitation is **Height** when `QuantitateByHeight` is set on the analyte; otherwise **Area**.

Manual override and restore

`PeakIntegrationService` owns live edits:

Action	Behavior
Manual boundary change	Metrics recalculated from new <code>BegX / EndX / BegB / EndB</code> ; original automated integration retained for restore
Zero peak	Collapses boundaries to a point and re-integrates; recorded as manual
Restore original	<code>RestoreOriginalIntegration</code> puts the automated integration back (or deletes the peak if none)

Reports can distinguish current vs automated vs manual via `Peak.Area` , `Peak.AutoInt.*` , and `Peak.ManInt.*` — see [Report formulas](#) and [Reports, import, and export](#).

Related

- Integrator add-ins: [Creating add-ins](#)
- Empty chroms / wrong provider: [Troubleshooting](#)