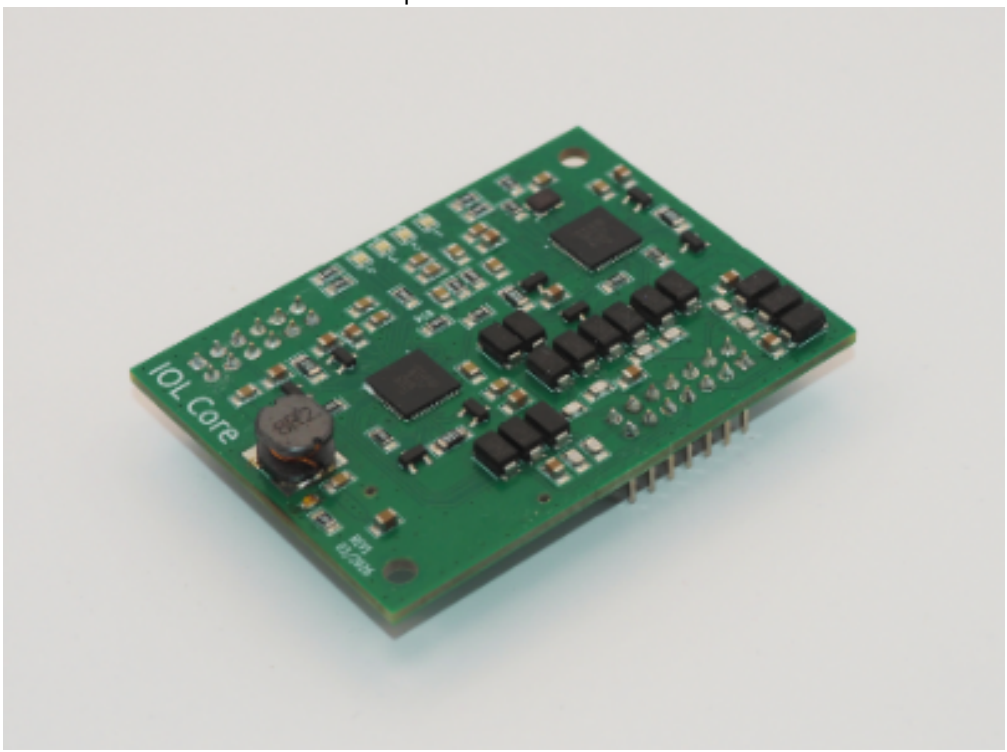
10. OEE Calculation Reference

Hardware manual

www.pinetek-networks.com



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10. OEE Calculation Reference

This chapter documents exactly how **Pinetek Insight** computes its figures, so every displayed value can be audited. All analysis views, reports and the AI Assistant use the same calculation functions; figures are consistent everywhere.

10.1 Data captured per production run

Quantity	Source
Actual quantity (units in)	Input-stage counter × units-per-count [PBX]
Good quantity (units out)	Output-stage counter × units-per-count [PBX]
Defect quantity	Defect/Reject-stage counter; can be corrected by the operator at run end (5.2.4)
Target quantity	Entered at changeover
Running time	Total time in states *Running* and *Running Slow* (from state events)
Unplanned downtime	Total time in state *Down*
Planned production time	Wall-clock run duration (start → end)
Ideal cycle time	From the product (or program default) configuration

10.2 Availability

```
Availability = Running time / (Running time + Unplanned downtime)
```

Availability relates run time to operating time. Time in *Planned Stop*, *Changeover* and *Draining* is not an availability loss, only unplanned *Down* time reduces Availability. This follows the standard OEE definition in which planned stops are excluded from the loss calculation.

10.3 Performance

```
Performance = (Ideal cycle time × Actual quantity) / Running time
```

Performance compares the time the production *should* have taken at ideal speed with the time it actually ran. Slow cycles and minor stops (shorter than the stage timeout) reduce Performance. The value is capped at 100%.



Performance is only as accurate as the configured **ideal cycle time** (chapter 7.2).

10.4 Quality

```
Quality = Good quantity / Actual quantity
```

Good quantity is the output-stage count; actual quantity is the input-stage count. Operator corrections of the defect quantity at run end are reflected here.

10.5 OEE

```
OEE = Availability × Performance × Quality
```

10.6 Aggregation across runs

When several runs are combined (period views, grouping by product/program, reports), the factors are weighted, not simply averaged:

Factor	Aggregation
Quality	Volume-weighted: Σ good / Σ actual over all runs
Availability	Time-weighted: Σ running / Σ (running + unplanned downtime)
Performance	Running-time-weighted mean of the per-run values, mathematically equal to Σ (ideal cycle × count) / Σ running time
OEE	Recomputed from the three aggregated factors: A × P × Q

This means a long run influences the aggregate more than a short one; a simple arithmetic mean of run OEEs would distort the result.

10.7 OEE colour scale

OEE values are colour-coded throughout the application. The default bands:

Band	Default threshold	Colour
Excellent	≥ 85 %	dark green
Good	≥ 75 %	light green
Fair	≥ 60 %	yellow
Poor	≥ 40 %	orange
Critical	< 40 %	red

The thresholds are configurable under *System → System → OEE Thresholds* (chapter 9.1).