

## C148

# ABB High Performance (HP)/Smart Color Measurement and QCS Color Control



Learn to maintain the ABB High Performance and Smart Color sensor hardware and software along with how to tune color control on a QCS system.

### Course type and methods

This is an instructor led workshop with short presentations and demonstrations, extended exercises, and hands-on sessions and discussion.

### Student Profile

This training is targeted to personnel responsible for the maintenance of the ABB HP and Smart Color sensor and personnel responsible for color control.

### Prerequisites

Students should have completed the C103 course and possess basic knowledge of personal computers, process control and electronics.

### Course objectives

Upon completion of this course the participants will be able to:

- Describe how color is quantified and how the Color sensor measures color
- Install and setup a Color sensor
- Perform calibration procedures
- Set-up Shade files
- Troubleshoot color measurement problems
- Perform preventive and corrective maintenance procedures
- Use associated health pages and diagnostic tools

- Set-up control related shade files
- Configure color control for site specifics
- Perform dye calibration
- Tune level 1 pump control
- Tune level 2 color control

### Main Topics

- Color theory
- Color sensor hardware
- Installation procedures
- Set-up and diagnostics
- Calibration
- Verification (static and dynamic)
- Operator Interface
- Shade set-up
- Color reflectance
- Shade file set-up
- Dye calibration
- OBA configuration
- Color control tuning

### Duration

The duration is 4 days

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## Course Outline

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Day 1	Day 2	Day 3	Day 4
<ul style="list-style-type: none"><li>• Course introduction<ul style="list-style-type: none"><li>- Color introduction</li><li>- Definitions</li><li>- Energy spectrum</li><li>- Color measurement methods</li><li>- Illuminants</li><li>- Standard observer</li><li>- Tristimulus curves</li><li>- Metamerism</li></ul></li><li>• Smart Color sensor<ul style="list-style-type: none"><li>- Hardware, mechanical and electrical overview</li><li>- Installation procedures</li></ul></li><li>• Lab Exercise<ul style="list-style-type: none"><li>- Sensor alignment</li><li>- Replacement procedures</li><li>- Tile height adjustment</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Review: questions/answers</li><li>• Setup and diagnostics<ul style="list-style-type: none"><li>- Color Health pages</li><li>- Calibration</li><li>- Sensor commissioning</li><li>- Start-up checks</li><li>- Normal measurement</li><li>- Standardize</li><li>- Calibrate sample</li><li>- Sample check</li><li>- Dynamic verification</li><li>- Opacity measurement</li><li>- Brightness measurement</li></ul></li><li>• Lab<ul style="list-style-type: none"><li>- Sensor calibration</li><li>- Health pages</li><li>- Diagnostic tools</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Review: questions/answers</li><li>• Operator interface<ul style="list-style-type: none"><li>- Color overview page</li><li>- Shade set-up page</li><li>- Color reflectance page</li></ul></li><li>• Lab<ul style="list-style-type: none"><li>- Shoot and save targets</li><li>- Set-up shade files</li></ul></li><li>• Control applications</li><li>• Dye pump types</li><li>• Field I/O<ul style="list-style-type: none"><li>- Dye metering locations</li><li>- Dye pump tuning</li><li>- Shade file set-up</li><li>- Dye calibration</li></ul></li></ul>	<ul style="list-style-type: none"><li>• Review: questions/answer</li><li>• Color control tuning<ul style="list-style-type: none"><li>- Process model</li><li>- Controller time constant</li><li>- Test mode</li><li>- Control matrix verification</li></ul></li><li>• Lab<ul style="list-style-type: none"><li>- Control matrix</li></ul></li></ul>

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