Units of moisture measurings and their conversions

Established moisture measuring instruments (like GMH3830 before V1.4) are displaying the material moisture relative to the dry weight of a material. In practice other units are used, too, especially the wet basis moisture content. The display of newer instruments (like GMH3830 V1.4 or GMR100) can be switched to both units.

**Moisture content MC or u (relative to dry weight) = dry basis moisture content**

Most common unit for moisture measuring instruments. The unit is %, sometimes used: % MC. The unit expresses the moisture content like calculated below:

\[
\text{Moisture content } u \left[\%\right] = \frac{\text{weight}_{\text{wet}} - \text{weight}_{\text{dry}}}{\text{weight}_{\text{dry}}} \times 100
\]

Or:

\[
\text{Moisture content } u \left[\%\right] = \frac{\text{weight}_{\text{water}}}{\text{weight}_{\text{dry}}} \times 100
\]

- weight\textsubscript{wet}: weight of the wet material
- weight\textsubscript{water}: weight of water in the wet material
- weight\textsubscript{dry}: oven-dry weight of material

Examples:
1kg of wet wood, which contains 500g of water has a moisture content u of 100%
1kg of wet wood, which contains 200g of water has a moisture content u of 25%

**Wet-Basis Moisture Content w (relative to total weight)**

The wet-basis moisture content expresses the ratio of the mass of water to the total mass of the substance. The ratio is represented by the following equation (the unit is % as well):

\[
\text{wet-basis moisture } w \left[\%\right] = \frac{\text{weight}_{\text{wet}} - \text{weight}_{\text{dry}}}{\text{weight}_{\text{wet}}} \times 100
\]

Or:

\[
\text{wet-basis moisture } w \left[\%\right] = \frac{\text{weight}_{\text{water}}}{\text{weight}_{\text{wet}}} \times 100
\]

Conversion meter display u -> wet-basis moisture w

\[
\text{wet-basis moisture } w \left[\%\right] = 100 \times \frac{\text{Moisture content } u \left[\%\right]}{100 + \text{Moisture content } u \left[\%\right]}
\]

Examples:
1kg of wet wood, which contains 500g of water has a moisture content u of 50%
1kg of wet wood, which contains 200g of water has a moisture content u of 20%
rarely used:

**Dry-Content**
The unit is % again.

\[
dry\ content[\%] = \frac{weight_{dry}}{weight_{wet}} \times 100
\]

Conversion meter display u -> dry content

\[
dry\ content[\%] = \frac{10000}{(100 + \text{Moisture content u[\%]})}
\]

Examples:
- 1kg of wet wood, which contains 500g of water has a moisture content u of 50%
- 1kg of wet wood, which contains 200g of water has a moisture content u of 80%