

# Automatic measuring range switch (AutoRange)

## Use and function

In addition to five measuring ranges, the Alyza IQ NH<sub>4</sub> HR also offers automatic measuring range switching. This AutoRange function can be switched on in the settings, but is switched off per default. The latter results in the standard behavior of all "IQ sensors" – the measuring system displays "OFL" (= overflow) if the measuring range is exceeded.

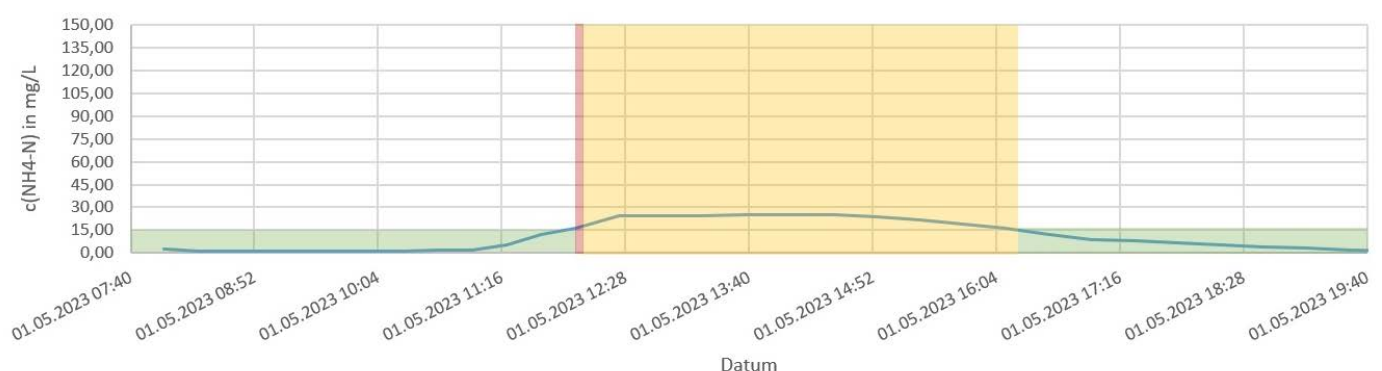
However, it is often of interest to customers during peak loads, to obtain "at least an approximate measured value". This is because with "OFL" you only know that the measuring range has been exceeded, but not to what extent. The AutoRange function closes this knowledge gap.

### General mode of operation

During commissioning, a measuring range is selected, the so-called selected measuring range. This measuring range should be selected so that the typical concentration range of the application is covered, in our example 0 ... 15 mg/L (Figure 1, left green area).



Alyza IQ NH<sub>4</sub> HR



When the AutoRange function is activated, the Alyza IQ NH<sub>4</sub> HR switches to the highest measuring range 0 ... 150 mg/L (Figure 1, yellow range) as soon as the measured value exceeds 15 mg/L (Figure 1, red area).

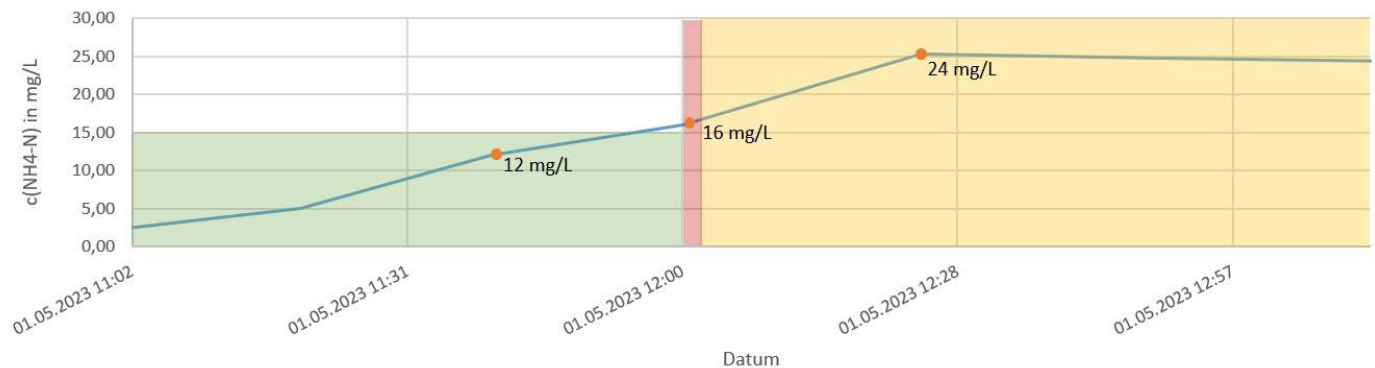
All subsequent measurements take place in this measuring range. If the value falls below the upper limit of the selected measuring range again, the analyzer switches back to the selected measuring range (Figure 1, right green area).

Figure 1:  
Change (red) from selected measuring range (green left) to highest measuring range (yellow) and back (green right)

### Details when changing to the highest measuring range

The following steps take place when changing from the selected measuring range to the highest measuring range (Figure 2):

1. Measurement takes place in the selected measuring range 0... 15 mg/L (green range), result 12 mg/L
2. Further measurement takes place in the selected measuring range, result 16 mg/L
3. Last measurement is discarded because upper measuring range limit exceeded; analyzer changes the measuring range (red area); this results in a shift of the measuring interval by a few minutes
4. Analyzer continues measuring, now in the highest measuring range 0 ... 150 mg/L (yellow range), result 24 mg/L
5. Analyzer continues measurements in the highest measuring range



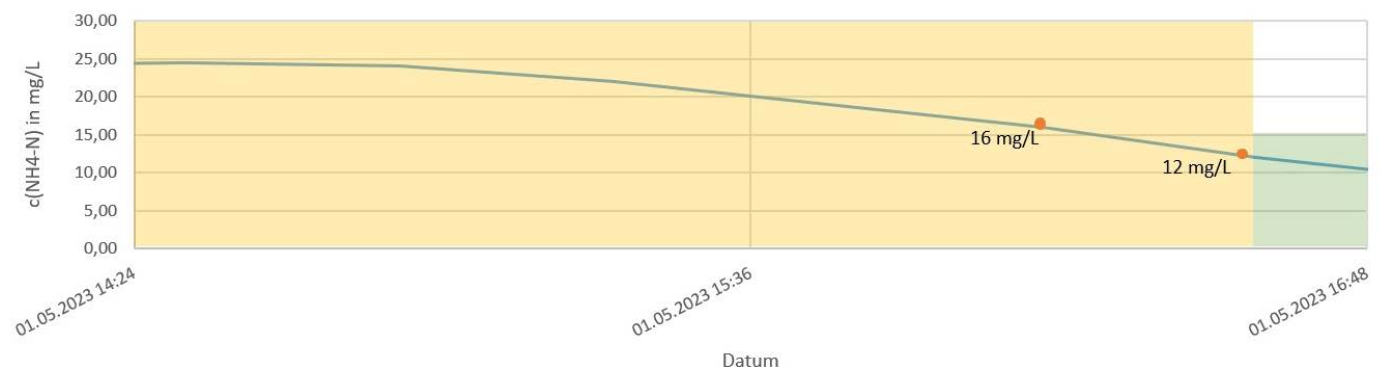
The measurement with 16 mg/L will not appear in the stored measured values as it was discarded. The subsequent measurement with 24 mg/L will appear with a measurement interval delayed by a few minutes.

Figure 2:  
Detailed view of the change (red) from selected measuring range (green) to highest measuring range (yellow)

### Details when changing to the selected measuring range

The following steps take place when changing from the highest measuring range to the selected measuring range (Figure 3):

1. Measurements are made in the highest measuring range 0... 150 mg/L (yellow range)
2. Measurement results in 16 mg/L
3. Measurement results in 12 mg/L; analyzer switches to the selectable measuring range 0 ... 15 mg/L (green range)
4. Next measurement takes place in the selected measuring range
5. Analyzer continues measurements in the selected measuring range



All measurements are included in the stored measured values. The measurement interval is not shifted.

Figure 3:  
Detailed view of the change from highest measuring range (yellow) to selected measuring range (green)

### Accuracy with measuring range switch

It can be assumed that the selected measuring range is calibrated regularly, as the corresponding standard solutions are installed for this measuring range. The accuracies specified in the technical data apply to daily calibration.

If the highest measuring range is only used in the course of an automatic measuring range switch, it is not calibrated regularly. The specified accuracy can therefore not be guaranteed. However, this is not the main focus of such an application. The most important objective is to obtain an estimate of how far the selected measuring range has been exceeded.



#### The most important facts in brief

- Benefit of the AutoRange function: Indication of the concentration when the measuring range is exceeded
- Change of measuring ranges when the upper measuring range limit of the selected measuring range is exceeded or undercut
- When changing to the highest measuring range, discard the triggering measurement and slightly shift the measuring interval
- When changing to the selected measuring range, no discarding of the measurement, no shifting of the measuring interval
- Accuracy in the highest measuring range cannot be guaranteed with AutoRange

Alyza IQ NH<sub>4</sub> HR on the web:

Do you have further questions?

Please contact our Customer Care Center



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