

# ECO PHYSICS PLC 860

## Application examples

- Atmospheric research in remote areas
- Permanent monitoring of clean room conditions
- Plant physiological research



The photolytic converter PLC 860 is capable to converting selectively NO<sub>2</sub> in concentrations of a few ppt. This instrument is the right choice for areas with excellent air quality.



Monitoring of ambient air quality.

### Photolysis versus Catalysis.

It is acknowledged that NO<sub>2</sub>-converters based on chemical catalysis are not capable of measuring concentrations of NO<sub>2</sub> in low ppt-levels without considerable errors. Even low temperature catalytic molybdenum converters transform other nitrogen-containing compounds such as HNO<sub>3</sub>, PAN etc. to a considerable extent.

In so called "background" areas, on mountain tops, sea coasts or polar regions, the nitric oxides to be measured in the ambient air are typically in the low ppt-range. For these applications the PLC 860 selectively converts the NO<sub>2</sub> into NO.

In the photolytic process the sample gas passes through a cell where it is exposed to light at a specific wavelength from a metal halide lamp. This causes the NO<sub>2</sub> to be selectively converted to NO with negligible interference to other gases.

### Step by Step.

The principle for measuring NO and NO<sub>2</sub> precisely in low ppt-concentrations is as follows: In alternating cycles the sample gas flows either through the

photolytic cell or bypasses it. In the later case the sample gas enters directly the CLD, where only the NO content reacts with the ozone (PHASE 1). In the other case the sample gas is directed through the chamber of the PLC 860 and then guided to the CLD where the original content of NO plus the converted NO<sub>2</sub> are reacting with the ozone to give the value of NO.c (PHASE 3) referring to the value NO converted. The difference to the previously obtained NO-content is the value which, multiplied with the converter efficiency results in the true NO<sub>2</sub> concentration. In the two other intermediate steps (PHASES 2 and 4) the ozone is added in the pre chamber. Thus, the selectivity of the CLD reaction gets significantly increased due to the slower reactivity of interfering compounds.

### Combining the right CLD.

The PLC 860 is operated in connection with the ECO PHYSICS CLD NO-analyzer model CLD 88 p. The valve control and the calculations are performed in the master CLD.

- Selective NO<sub>2</sub> measurement in the range of parts per trillion
- Unique technology in a compact case for tabletop or rack mounting
- Simple integration with different CLD NO-analyzers



# PLC 860

## Specifications

Sample and calibration flow rate	0.6 l/min
Converter volume	270 ml
Light source	metal halide lamp (200 W)
Spectrum	320-400 nm
Power required	330 VA
Supply voltage	115/230 V and 50/60 Hz
Signal output	temperature of photolytic chamber

### Signal input

valve control for NO, NO<sub>x</sub>, calibration gas (from NO-analyzer)

### Dimensions

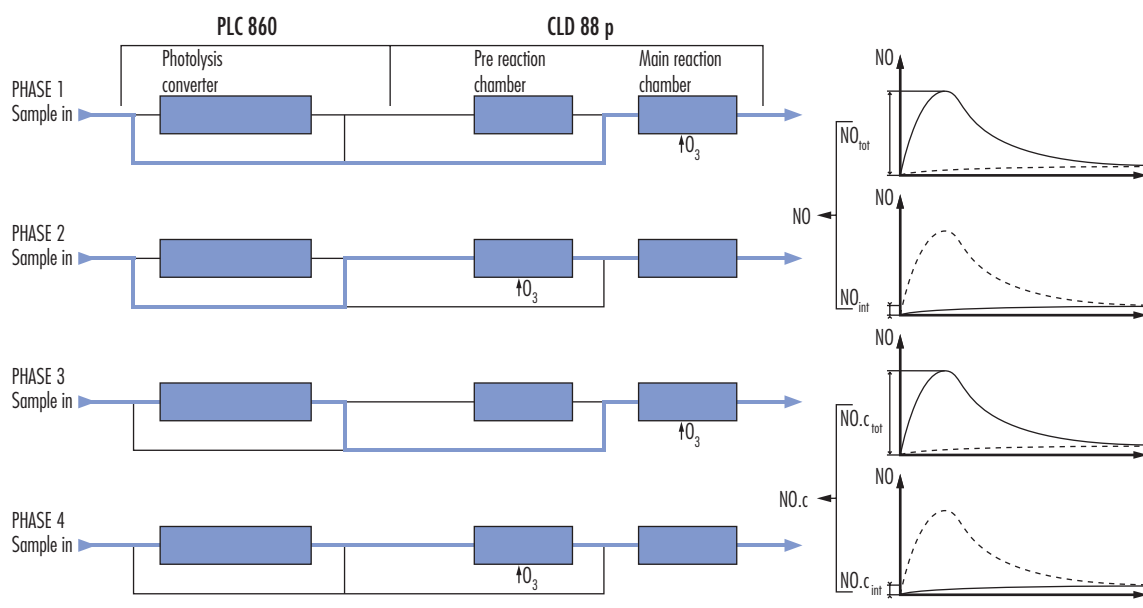
height: 133 mm (5 1/4 ")  
width: 450 mm (19 ")  
with moulding: 495 mm  
depth: 545 mm + connectors

### Weight

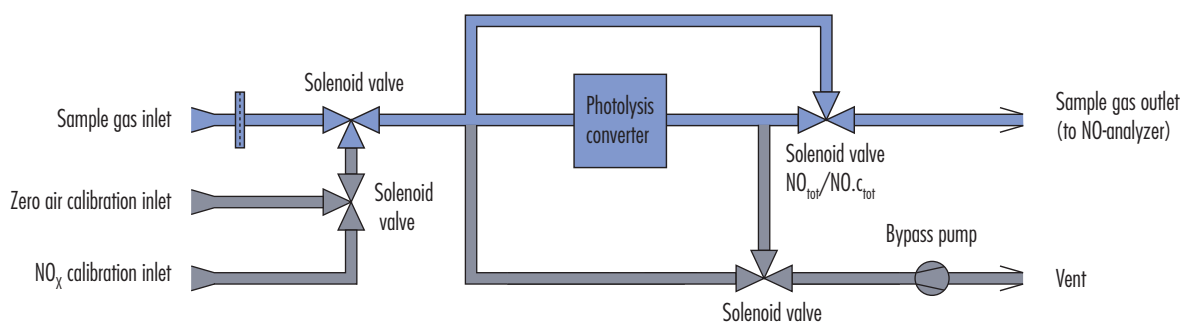
17 kg

ECO PHYSICS reserves the right to change these specifications without notice.

## Measuring principle



## Flow diagram



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