

# COMMERCIAL SPECIFICATION

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## SCOPE OF SUPPLY

The scope of supply for this system is:

- Inspector model “COLOSSUS”
- Tubing, cables and connectors
- Membrane cell
- Manual, documentation and CE certificate
- All-in-one PC
- Transport box

## SYSTEM DESCRIPTION

The Convergence NF-RO system is a flexible test system that is suited for testing membranes in a pressure range of about 2-70 bar. The system is optionally equipped with a chemical cleaning system, backwash functionality and a low-pressure low-flow filtration functionality.

The user can use the system to do filtration/retention tests, cleaning studies and fouling studies on many types of membranes.

The system fits Convergence test cells of various sizes, but can also be connected to user test cells or 2.5” spiral wound modules.

The system is able to work with feed flows up to 350 l/h and pressures up to 69 bar. The system is designed for to run in crossflow, but can also operate in dead-end mode. The system allows measurement of fluxes and retentions (by measuring conductivity in feed and permeate).

The system is designed to test A5 size flat sheet membranes. The permeate flow can be controlled and measured to as low as 30 g/hr up to 30 kg/hr.

## FLWSHEET & USER REQUIREMENT SPECIFICATION

The flowsheet and URS are a part of the quotation and attached separately under document number: 18XXXXXXX - FS180XXX - REV01.pdf

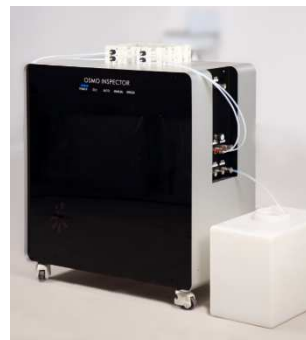
# TECHNICAL SPECIFICATION

## BASE SYSTEM

The price includes the following Base system items

- Base system COLOSSUS

Dimensions (cm) : 93 x 50 x 93 (LxWxH)  
 Typical weight : 120 kg  
 All-in-One PC : Included



## FLOWMETERS

The price includes the following flowmeters for the Convergence Inspector

- Pelton Wheel flowmeter LMX .24 + .45

Flow rate : See flowsheet  
 Accuracy : 2% actual rd of 90% top range  
 0.5% FSD of 10% bottom range



More details, see spec sheet or manual

- Coriolis M14

Flow rate : see flowsheet  
 Accuracy liquids : ± 0,2% of rate  
 Accuracy gases : ± 0,5% of rate



More details, see spec sheet or manual

## PUMPS

The price includes the following pumps items for the Convergence Inspector

- Hydracel G03X Pump

Material : stainless steel

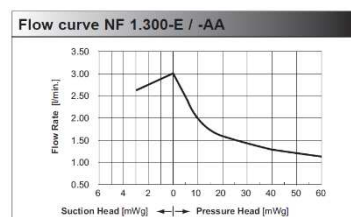
More details, see spec sheet or manual



- Membrane Pump NF1.300

Material : PP

More details, see spec sheet or manual



## PRESSURE

The price includes the following pressure items for the Convergence Inspector

- Pressure sensor High-end **680 series**

Pressure range	:	See flowsheet
Accuracy	:	+/- 0,1% of FS
Material	:	Stainless steel/FPM seal



More details, see spec sheet or manual

## VALVES

The price includes all necessary electronically controlled valves. In case of the flowsheet for the Convergence Inspector:

- Solenoid 2/2
- Solenoid 3/2
- Control valve **Badger RCV**

Control range	:	See flowsheet
Material	:	Stainless steel/PTFE seals



More details, see spec sheet or manual

## COMMUNICATION

The price includes all necessary Input/output modules to control and read out all components in the requested flowsheet. This can included, but is not limited to the following items and completely depend on the model, functionality and desires.

- Modbus Gateway
- Digital inputs/outputs
- Analogue inputs/outputs (4 - 20 ma / 0 - 5V / Frequency / Etc)
- Serial interface modules (RS232 / etc) for external equipment
- PWM modules

## TUBING

The price includes all necessary high and low pressure tubing to connect all the components. Sizes are based on flow range and pressure drops.

- Swagelok high pressure tubing and fittings
- Check valves
- Pressure reliefs
- Quick connects (Shut-off and/or full flow)
- High pressure flexible tubing to connect the measuring module/cell

## ACCESSORIES

The price includes all accessories below:

- Flat cell A7

Membrane size (mm) : 50 x 80 (LxW)  
Material : RVS316  
Maximum pressure : 69 bar



- Transport box Colossus

Size : 110x80x130cm  
Material : PVC foam  
Type : modular



- Temperature Sensor PT100

Range : -200 - 100 °C  
Accuracy :  $\pm 0,2\%$

More details, see spec sheet or manual

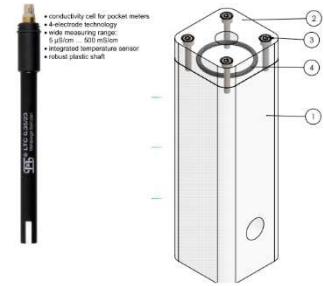
## OPTIONAL ITEMS

- Optional Conductivity sensor LTC0,35/23

4-electrode technology wide measuring range.  
See flowsheet for calibrated conductivity at factory

Range : 5 uS/cm ... 500 mS/cm  
Accuracy/Cell const : 0.33 cm<sup>-1</sup> +/- 5%

More details, see spec sheet or manual

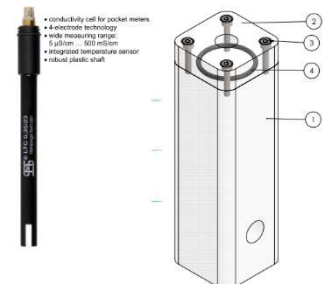


- Optional Conductivity sensor LTG0,1/22 LTG0,1/23

4-electrode technology wide measuring range.  
See flowsheet for calibrated conductivity at factory

Range : 1 uS/cm ... 100 mS/cm  
Accuracy/Cell const : 0.33 cm<sup>-1</sup> +/- 5%

More details, see spec sheet or manual

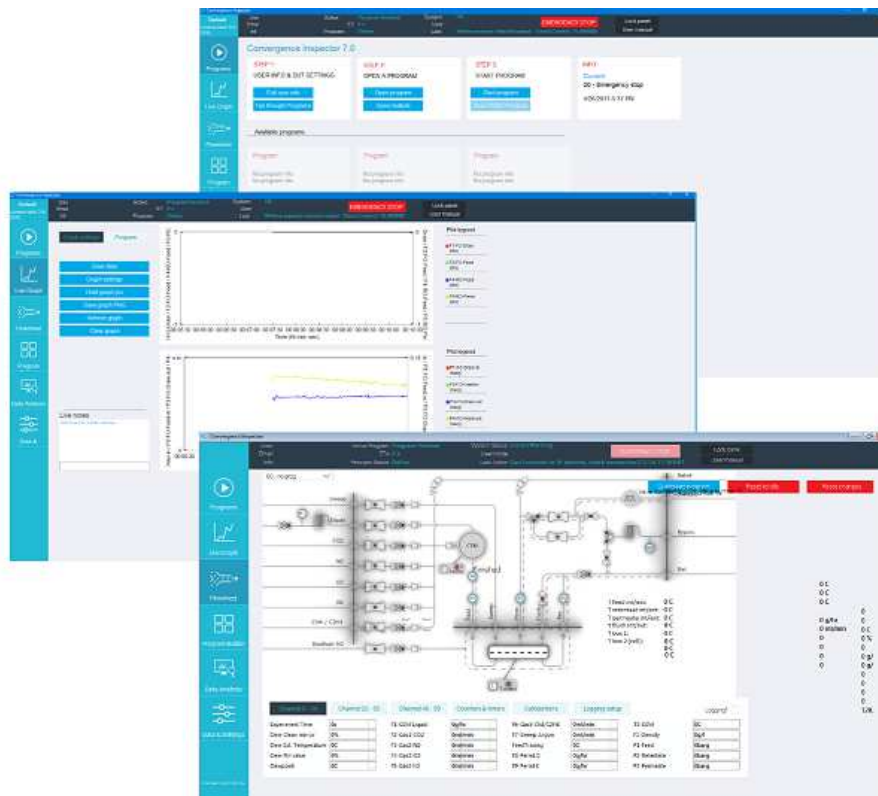


## SOFTWARE & SUPPORT LICENSE

The Software License & Support contains the following services:

- The infinite use of software delivered by Convergence.
- Support for the design of test programs
- Software updates
- Support of our Helpdesk for Convergence Inspector related questions and problems
- Remote assistance to train new Convergence Inspector users

The Helpdesk is available from Monday to Friday from 8:30 - 17:00 (CEST) via [helpdesk@con-vergence.com](mailto:helpdesk@con-vergence.com) or via +31 53 461 55 57.



# TERMS & CONDITIONS

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## PAYMENT CONDITIONS

40% after PO, 60% at shipment.

## TERMS AND CONDITIONS

The general terms and conditions of Convergence are applicable to all products and services (separately enclosed), unless otherwise stated in this quote or mutually agreed upon by written forms.

## DELIVERY TERMS

All prices are Ex Works (EXW) according to Incoterms 2010.

## DELIVERY TIME

Production time is scheduled at around 16 weeks after order confirmation and receipt of down-payment.

## WARRANTY

Convergence ensures the proper functioning of the system and the components supplied under the terms of the contract. The warranty period is 1 year after delivery. The warranty is only valid if the instrument is installed and operated in accordance with the requirements of operating and maintenance instructions as required and set by Convergence. During the warranty period, an operation and service log must be kept. Normal wear and tear and defects caused by improper actions are excluded. Repairs and replacement parts will not extend the warranty period.

## VALIDITY

This offer is valid for 90 days after quotation date.

## CANCELLATION

In case of customer cancellation during any time of the production, Convergence will charge the made costs: 10% of PO if canceled within the first week, 30% of PO if canceled within 5 weeks and 80% of PO if canceled later.

