

Manual

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Concentration Transmitter Model C2

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Copyright

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There are no further reaching warranty claims to take because of the content of existing document.

Non-warranty

Chemtronic takes no responsibility or warranty for technical or editorial mistakes or omissions in this document. The information in this publication will be provided without warranty for their correctness. Chemtronic reserves all rights to make changes to this document without announcement.

Chemtronic Waltemode GmbH is by no means liable for any consequential damages or miscellaneous damages, which occur during the use or storage of the system.

Some countries do not allow the limitation of liability, so that this exclusion is possibly not valid for you.

Warranty conditions

The warranty for this product takes place according to the legal provisions. As place of warranty we explicitly name Chemtronic Waltemode GmbH, Monheim am Rhein. In case of warranty service at the customer site, we will charge additional expenses e.g. travel expenses, overnight cost, etc. Consumable parts as well as wearing parts e.g. lamps, gaskets, etc. are not covered by warranty.

Improper use, gross negligence, use of the system outside of the technical specifications, missing or improper maintenance will cause a loss of the warranty claim.

Please pay attention to our general terms of contract.

Safety instructions

Pay attention to the following general safety instructions during use and operation of the system. Ignoring these instructions or special warnings inside of this manual can damage the sensor, cause inaccurate measurements, and possibly result in unsafe installations. Chemtronic Waltemode GmbH will not take any responsibility for consequences arising from ignoring the safety instructions and warnings.

For ALL chemical liquids

The reagents or standards may be toxic or otherwise harmful to human health. Observe appropriate precautions when handling and disposing the reagents. Review the appropriate published material safety data sheets regarding the safe handling and disposal of all reagents or standards.

Electrical installation

Qualified technical personnel must install the electrical installation of the system.

Hazardous area

DO NOT INSTALL the system in hazardous area without the optional Ex-proof equipment. Operation of non Ex- proof systems in hazardous area will cause a high risk.



Using the system in hazardous areas (Ex Zone I / Ex Zone II) will only be safe with the installation of the optional special Ex-proof designs including all required certifications



Maintenance

Always disconnect the instrument from power during maintenance, replacement of components, installation of additional components or any other operations at the open instrument.

Only qualified technical personnel must perform this work.

Operating the instrument with open enclosure

Only qualified technical personnel should operate the instrument when the enclosure is open.

Take care that no moisture enters the enclosure.



Some components inside the instrument may energized with voltages, which can cause lethal shocks in case of contact. Be careful during installation, handling and operation of the instrument.



Improper installation / operation of the system

Warranty is void if the system is installed improperly, handled improperly, used outside of the technical specifications (of the instrument), or damaged by gross negligence.

Storage

Please inspect the instrument immediately after receiving for potential shipping damages.

If the instrument has already been unpacked for inspection or testing, or if the instrument has been removed from the process and it is not to be installed or reinstalled for more than 1 day, the following procedure should be observed:

1. If the instrument has been in service, the wetted portion should be thoroughly cleaned (typically with clean water) and then thoroughly dried.
2. The instrument should be placed in the original packing material.
In case the original packing material is not available place the instrument in a sealed heavy plastic bag with a desiccant added to assure clean dry storage.
3. The instrument should then be stored in a protected area until time of installation.

Transport damage

Please inspect the instrument immediately after receiving for potential shipping damages.

For any claims to the transportation insurance or warranty repair, it is absolutely required to notify transportation damages immediately after receiving the instrument. In case of obvious damages of the outer packaging, the carrier must give a receipt for this damage to make demands for the insurance.

In case of a delayed announcement the insurance will not pay for damages and Chemtronic Waltemode GmbH will not assume liability for these damages.

Shipment of the instrument

Please clean the instrument carefully before shipment (e.g. for revision / repair). Please use fixed packaging to protect the instrument against any shipping damages.

If at all possible the original packaging should be used.

Before installation and start-up

Installation guidelines



Please read the additional safety instructions before installation and start-up.



- Qualified technical personnel must perform installation, repair and maintenance.
- The system should be installed in a dry and dust-free location.
- Avoid direct sunshine
- The temperature should not exceed or fall below a range of -10°C up to +50°C
- Air purge is required at temperatures above 35 °C, to avoid heat accumulation (use dry instrument air only).
- Follow connection plan carefully, when installing system.
- The supply power has to be without larger disturbance sources as e. g. large motors, pumps, etc..
- Used the specified supply voltage only.
- Due to potential noise problems use original sensor cables only.
- Do not extend the sensor cables.
- The distance between measuring cables and power cables should be at least 0.5 meters.
- The lengths of measuring cables at Sensors end must have a length, which the dismantled Sensor can be laid on the ground (during calibration, repairing, etc.).

General

The model C2 measuring transmitter, used with an Chemtronic absorption sensor / probe, measures turbidity or alternative the color concentrations in liquid media. A digital graphic display (0 - 100%) shows the measured values in % of range. The measured values can be transmitted via an analogue output signal (0/4 - 20mA) for evaluation and documentation of the measuring results.

Setpoint and response delay for the built-in alarm relay is set in the main menu.

The alarm relay switches on when a programmed measuring value is exceeded.

In the event that the measured value fluctuates around the limit value, a pre-programmed switching hysteresis of 1% prevents the relay from fluttering (rapid on/off switching),

Example:

Limit value (setpoint) is set to 15%, the measured value exceeds the 15% mark so that the relay switches.

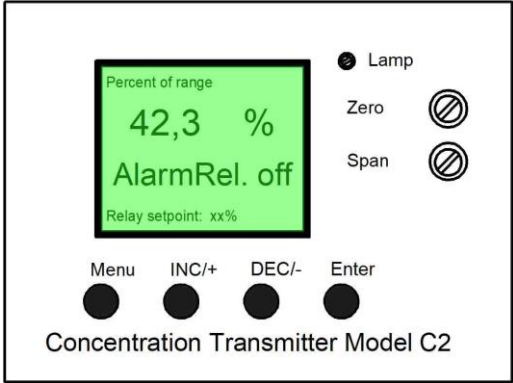
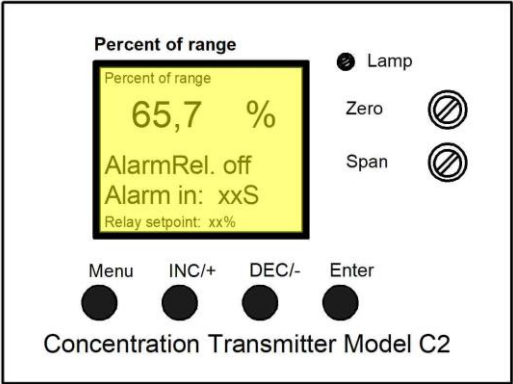
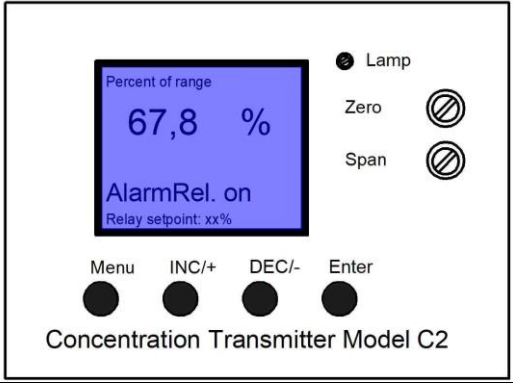
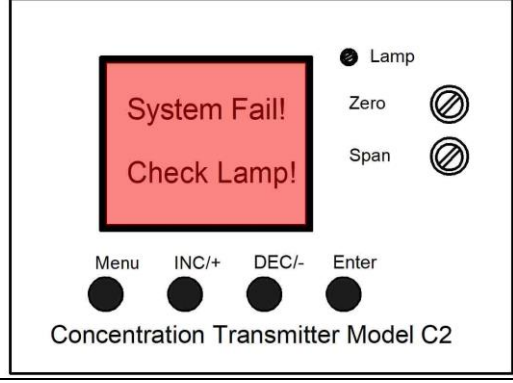
The relay switches off when the measured value falls below 14%, due to the 1% switching hysteresis.

The fault relay switches off in the event of a power failure or a fault on the device (active off).

Basic equipment of the measuring amplifier

- 1.8" TFT graphic display
- Internal power supply unit (5V/1A to supply the measuring lamp/LED)
- Active analogue output 0/4 - 20mA, maximum 500 Ohm
- 1x alarm / limit relay, maximum contact load 24V/1A
- 1x fault relay, active off, maximum contact load 24V/1A
- Operating voltage 24V DC +/-10%

Betriebszustände des Messumformers

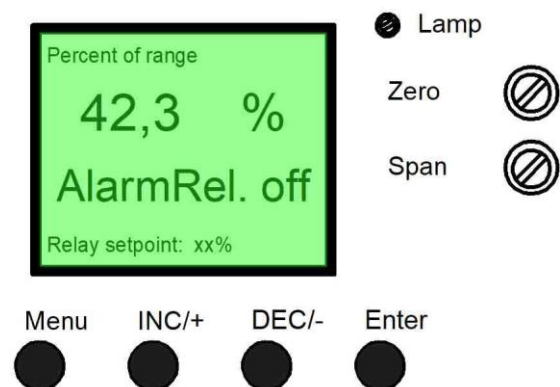
Display	Status	Color
0 – 100%	Measurement in progress: Measuring value lower then alarm relay's switching value. Alarm / limit relay switched off. *Fault relay switched on.	Display grün / green  Concentration Transmitter Model C2
0 – 100%	Measurement in progress: Measuring value higher then alarm relay's switching value. Programmed switch-on delay started. Countdown until alarm relay switches, is running. Alarm / limit relay still switched off. *Fault relay switched on.	Display gelb / yellow  Concentration Transmitter Model C2
0 – 100%	Measurement in progress: Measuring value higher then alarm relay's switching value. Programmed response delay expired. *Alarm / limit relay switched on. *Fault relay switched on.	Display blau / blue  Concentration Transmitter Model C2
	Error message (check lamp / LED in sensor) Alarm relay switched on. *Fault relay switched off. Contact Chemtronic if necessary.	Display rot / red  Concentration Transmitter Model C2

* Fault relay (active off) (switched on = system OK, switched off = system fault)

General

The converter model C2 used with an absorption -sensor / -probe is used to measure turbidity in liquids. The instrument provides an 1,8" TFT- graphic display, an analogue output signal 0/4-20mA as well as a setpoint alarm relay and a system fail relay.

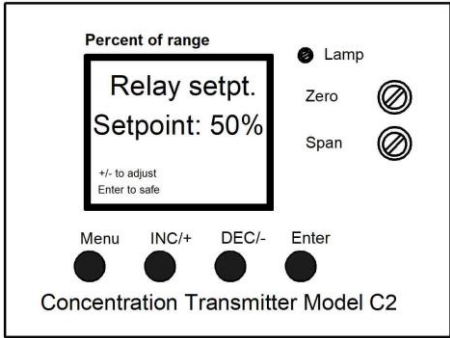
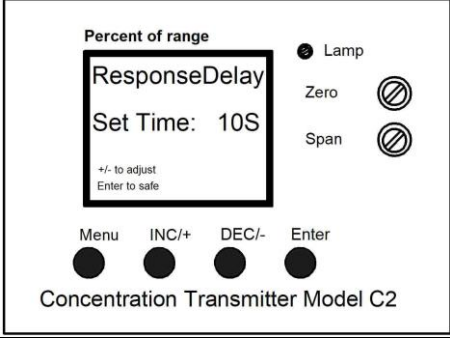
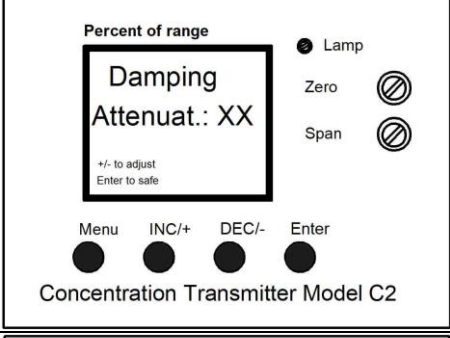
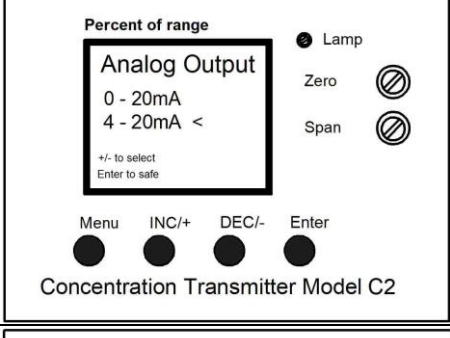
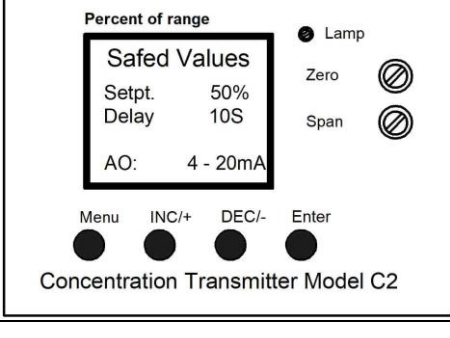
Operation Elements



Potentiometer „Lamp“	Factory preset (use only after consultation of Chemtronic service)
Potentiometer „Zero“	Set zero reading at clear liquid
Potentiometer „Span“	Set the measuring value using a calibration liquid with known turbidity.
Button „Menu“	Access „Main Menu“
Button „INC/+“	Adjust the values in the menu (e.g. relay's setpoint)
Button „DEC/-“	Adjust the values in the menu (e.g. relay's setpoint)
Button „Enter“	Confirm the values in the menu / leave the menu

Main Menu

Set relay's limit value, relay's switching delay and analog output

Button	Function	Display
Menu	Buttons „INC/+“ „DEC/-“ Relay's Setpoint: Enter the limit value (Setpoint). Display color changes to yellow if the measured values exceed the set value. Confirm with "Enter", proceed to the next menu item.	 Percent of range Relay setpt. Setpoint: 50% +/- to adjust Enter to safe Menu INC/+ DEC/- Enter Concentration Transmitter Model C2
Enter	Buttons „INC/+“ „DEC/-“ Set switching delay: Alarm relay switches when the setpoint is exceeded and the set delay has elapsed. Display color changes to blue. Confirm with "Enter", proceed to the next menu item.	 Percent of range ResponseDelay Set Time: 10S +/- to adjust Enter to safe Menu INC/+ DEC/- Enter Concentration Transmitter Model C2
Enter	Buttons „INC/+“ „DEC/-“ Damping of measuring values: The number of averaged measuring values can be set between 1 and 25 to ensure stable readings. Confirm with "Enter", proceed to the next menu item.	 Percent of range Damping Attenuat.: XX +/- to adjust Enter to safe Menu INC/+ DEC/- Enter Concentration Transmitter Model C2
Enter	Buttons „INC/+“ „DEC/-“ Analog output mode: Select whether the device's analog output should be either 0-20mA or 4-20mA. (corresponding to 0-100% of range) Confirm with "Enter".	 Percent of range Analog Output 0 - 20mA 4 - 20mA < +/- to select Enter to safe Menu INC/+ DEC/- Enter Concentration Transmitter Model C2
	The saved values will be displayed for approx. 4 seconds, then automatically proceeds to measuring mode.	 Percent of range Saved Values Setpt. 50% Delay 10S AO: 4 - 20mA Menu INC/+ DEC/- Enter Concentration Transmitter Model C2

Calibration

Following items are needed to calibrate the system:

- 1 x Screwdriver for potentiometer adjustment
- 1 - 2 l Laboratory sample with a concentration of 0 % measurement range (normally water)
- 1 - 2 l Laboratory sample with a concentration of approx. 60% - 90% of measurement range

Calibration procedure (using calibration liquids)

- Connect the instrument according to the valid connection plan
- Fill the first laboratory sample into the clean sensor (concentration 0 %, normally water)
- Protect sensor against ambient light
- Adjust the zero potentiometer until the LCD display shows „000%“.
- Empty the sensor
- Fill the second laboratory sample into the clean sensor (concentration e. g. 75 % of range)
- Protect sensor against ambient light
- Adjust the span potentiometer until the LCD display shows „75%“.
- Empty the sensor
- The system is calibrated
- Adjust the required relays setpoint by using the SET potentiometer.
- Adjust the required relays delay time by using the DELAY potentiometer (0 ... 30 sec.).

Calibration by using calibration filters

Error de Following items are needed to calibrate the system:

- 1 x Screwdriver for potentiometer adjustment
- 1 - 2 l Laboratory sample with a concentration of 0 % measurement range (normally water)
- Calibration filters with approx. 60% - 90% of measurement range

Calibration procedure (using calibration filters)

- Connect the instrument according to the valid connection plan
- Fill the first laboratory sample into the clean sensor (concentration 0 %, normally water)
- Protect sensor against ambient light
- Adjust the zero potentiometer until the LCD display shows „000%“.
- Insert the calibration filter into the sensor slot (concentration of the filter e. g. 75 % of range)
- Protect sensor against ambient light
- Adjust the span potentiometer until the LCD display shows „75%“.
- Empty the sensor
- The system is calibrated
- Adjust the required relays setpoint by using the SET potentiometer.
- Adjust the required relays delay time by using the DELAY potentiometer (0 ... 30 sec.).

Trouble Shooting

Instrument shows permanently over range:

Turbidity over range!
Check if sensors measuring windows are clean!
Check zero reading with clear liquid in the sensor / probe!
Check calibration!
Check wiring of the sensor cables!
Check the measuring lamp of the sensor!

Fluctuating measuring values:

Check Damping.

Instrument relay does not switch:

Check wiring of the sensor cables!
Check relay's setpoint!
Check relay's response delay!

Instrument relay is permanently switched on:

Turbidity over range!
Check if sensors measuring windows are clean.
Check wiring of the sensor cables!
Check relay's setpoint!
Check the measuring lamp of the sensor!
Check wiring of the sensor cables!

Setpoint relay switches permanent on and off:

Check relay's setpoint!
Check relay's response delay!

System fail is signalised:

Check wiring of the sensor cables!
Check the measuring lamp of the sensor!
System defective call service!

Analogue Output 0/4-20mA

The analogue output of the transmitter is factory preset to 0-20mA or 4-20mA according to customer's specification.

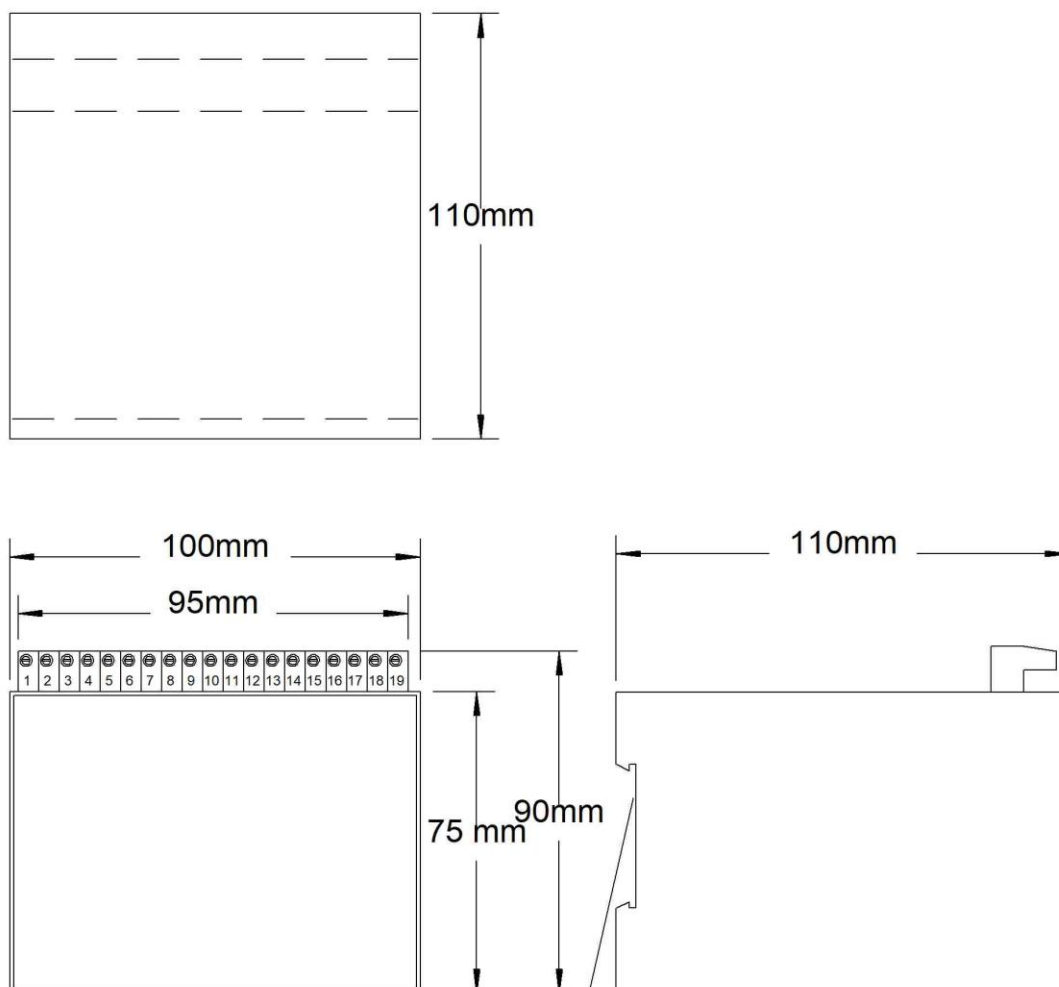
Lamp current of different sensor types

The listed sensors and probes will have different lamp parameters.

All sensors of the MoniSpec-C-A series require a lamp current of **1 A**. All other sensors and probes require a lower lamp current of **300mA** or in case of an IR-LED as measuring lamp **70mA**.

Model	1 A	300 mA	70 mA
MoniSpec-C-A	◆		
LAS		◆	
CSW-...		◆	
AP2 / TURBImat-...			◆

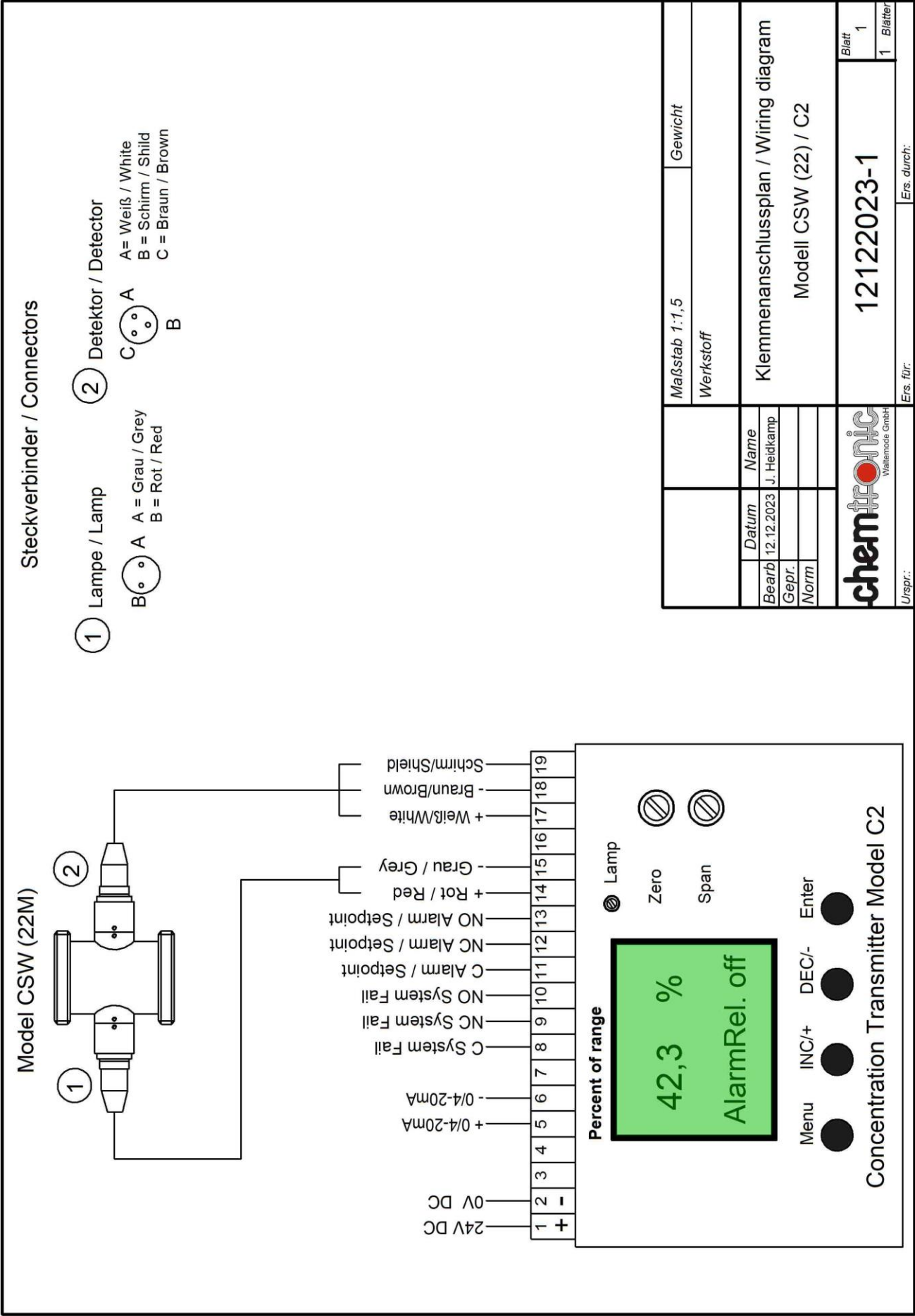
Dimensional Drawing



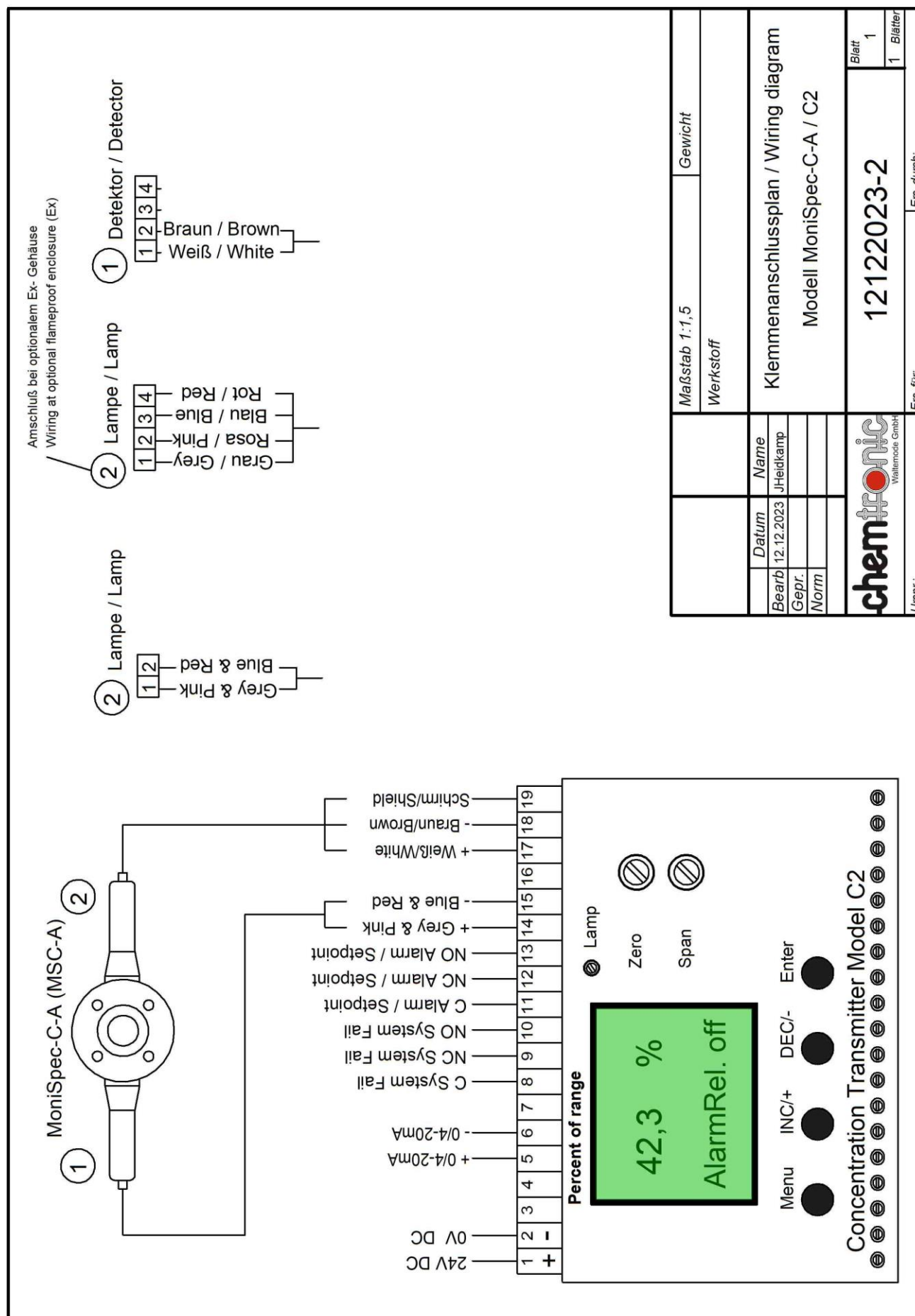
Klammer Hutschienenmontage 35 x 7,5mm / EN50 022
Clamp rail mount 35 x 7,5mm acc. EN50 022

						Maßstab 2:1		Gewicht			
						Werkstoff ABS					
				Datum	Name	Abmessungen / Dimensions Mod. C2					
				Bearb	12.12.2024					J. Heidkamp	
				Gepr.							
				Norm							
				 Waltemode GmbH		24112014-1				Blatt 1	
										1 Blätter	
Zust.	Änderung	Datum	Name	Urspr.:	Ers. für:			Ers. durch:			

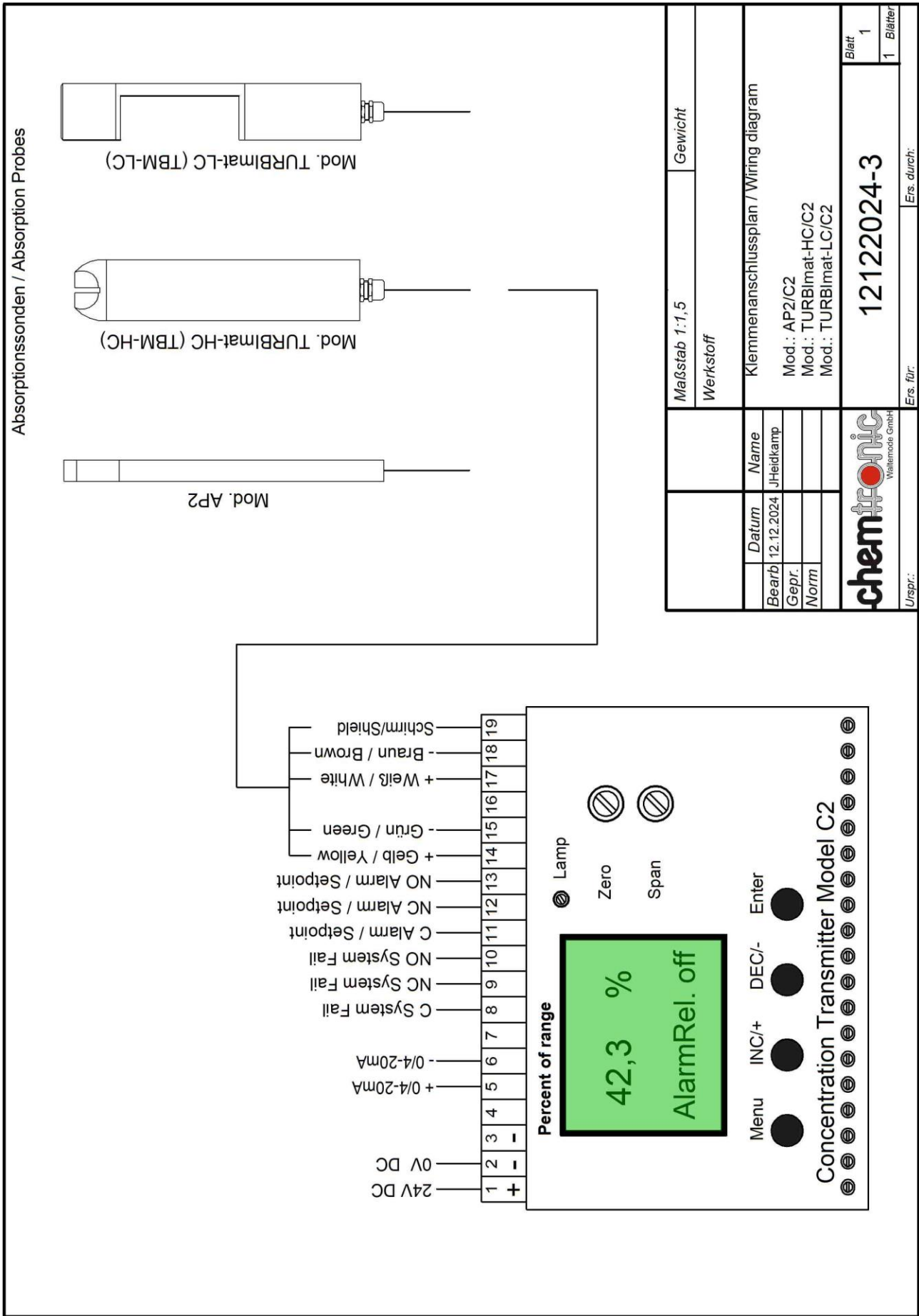
Wiring Diagram Model CSW / C2



Wiring Diagram Model MoniSpec-C-A/C2

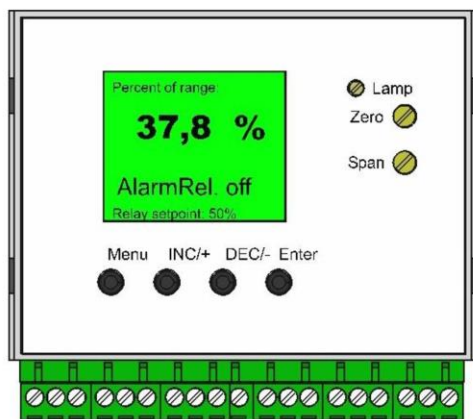


Wiring Diagram Models TURBImat/C2 and AP2/C2



Technical Data

Model C2



- Wide measurement range (max. 4 AU / Ext.)
- Analogue output: 0 / 4 – 20mA
- Programmable relay set point
- Programmable delay time (max. 99 Sec. set point relay)
- 1/8" TFT graphic display
- Automatic self diagnostic
- ABS- Rail mount enclosure IP30

Description:

The turbidity transmitter model C2 can be used with different Chemtronic sensors / probes models CSW, LAS, MoniTurb-C-A, TURBlmat or AP2. The system uses the principle of light absorption to detect dissolved or suspended particles in liquids. The transmitter as well as the sensor is distinguished by easy operation and low maintenance. The calibration of the system is done via zero and span adjustment. Because of the automatic self diagnostic routine, highly reliable measurement results are assured. Actual measurement values are shown by the implemented display. The 0/4-20mA output allows transferring of the measurement results to an external PLC- system.

Applications:

- Product concentration
- Turbidity measurement
- Oil in water / Water in oil
- Single wavelength color measurement

Operational areas:

- Chemical industry
- Petrochemical industry
- Pulp & Paper
- Bear & Beverage

Technical Data:

Supply voltage: 24 V DC $\pm$ 10%
Power consumption: Maximum 15 W
Set point: 1 Relay (24V / 2A)
System fail: 1 Relay (24V / 2A)
Analogue output: 0/4 - 20mA / 800Ohm

Measurement range: 0 – 4 AU
Reproducibility: $\pm$ 1 %
Ambient temperature: 5°C to 45°C
Enclosure: IP30 / NEMA1 ABS- rail mount
Dimensions: 100 x 90 x 110mm / 0,3Kg

Chemtronic Waltemode GmbH

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EU- Konformitätserklärung

Gemäß Richtlinie 2014/30 / EU

Für das folgend bezeichnete Erzeugnis:

EU- Declaration of Conformity

according to directive 2014/30 / EC

For the following named product:

Modell C2 (Messverstärker zur Absorbtionsmessung) / Model C2 (Transmitter Absorption measurement)

wird hiermit bestätigt, dass es den Schutzanforderungen entspricht, die in der Richtlinie des Rates zur Angleichung der Rechtsvorschriften der Mitgliedsstaaten über die elektromagnetische Verträglichkeit festgelegt sind. Zur Beurteilung des Erzeugnisses hinsichtlich elektromagnetischer Verträglichkeit wurden folgende Normen herangezogen:

EN61000-6-1 (2007)
EN61000-6-3 (2011)
EN61000-3-2 (2006)
EN61000-3-3 (2009)+A1

Herewith it is certified, that it corresponds to the protection requirements laid down in the guidelines of the board for equivalence of legal regulations of the member states about the electromagnetic compatibility.

For the judgement of the product regarding electromagnetic compatibility following standard were consulted:

Störfestigkeit / interference immunity
Emission
Oberwellen / harmonic waves
Flicker

Diese Erklärung wird, verantwortlich für den Hersteller / Importeur

This declaration is given, in responsibility for the producer / importer

Chemtronic Waltemode GmbH
Niederstraße 144
40789 Monheim am Rhein
Germany

abgegeben durch Herrn

by Mr.



G. Waltemode

Monheim den 20.10.2023