

Calorimeter CWD2005 DPC

Kalorimeter CWD2005 DPC



Documentation

- 1) General Arrangement Drawing
+ Components and Spare Parts List
- 2) P&I Diagram
- 3) Wiring Diagram
- 4) Test and Calibration Certificate(s)

Additional documentation

- Manual Calorimeter CWD2005 DPC (UNION Instruments GmbH)

Dokumentation

- 1) Gesamtzeichnung
+ Komponenten- und Ersatzteilliste
- 2) R&I Fließschema
- 3) Elektrischer Schaltplan
- 4) Test- und Kalibrierzertifikat(e)

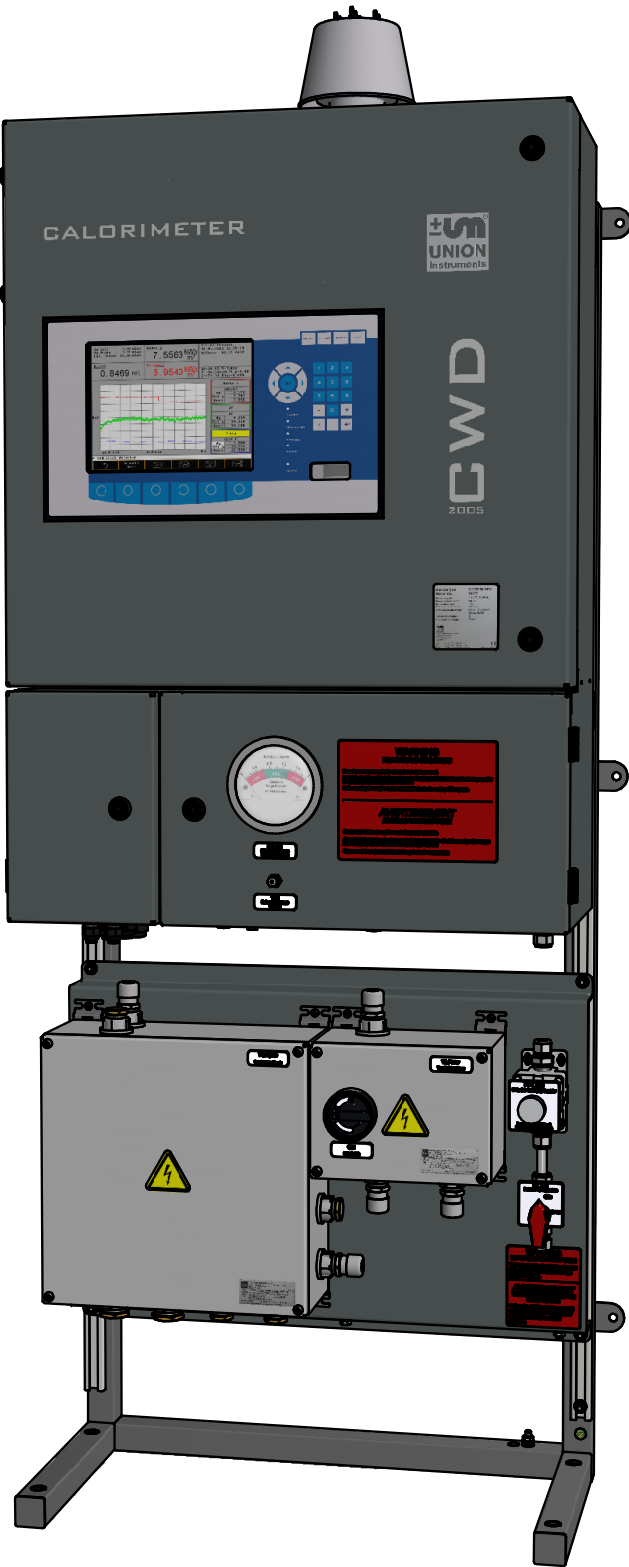
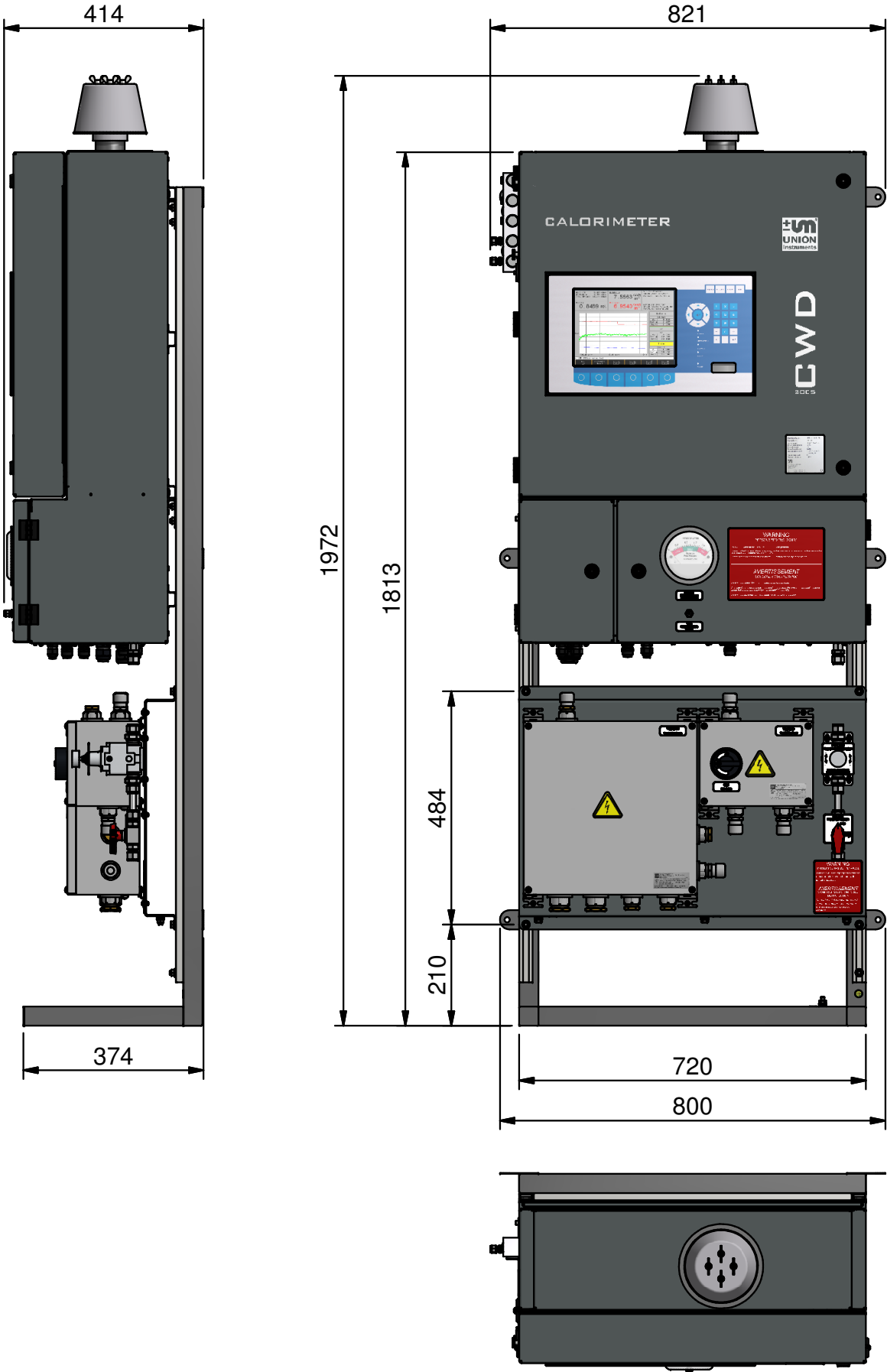
Zusätzliche Dokumentation

- Betriebsanleitung Kalorimeter CWD2005 DPC (UNION Instruments GmbH)
-

1

General Arrangement Drawing ***Gesamtzeichnung***

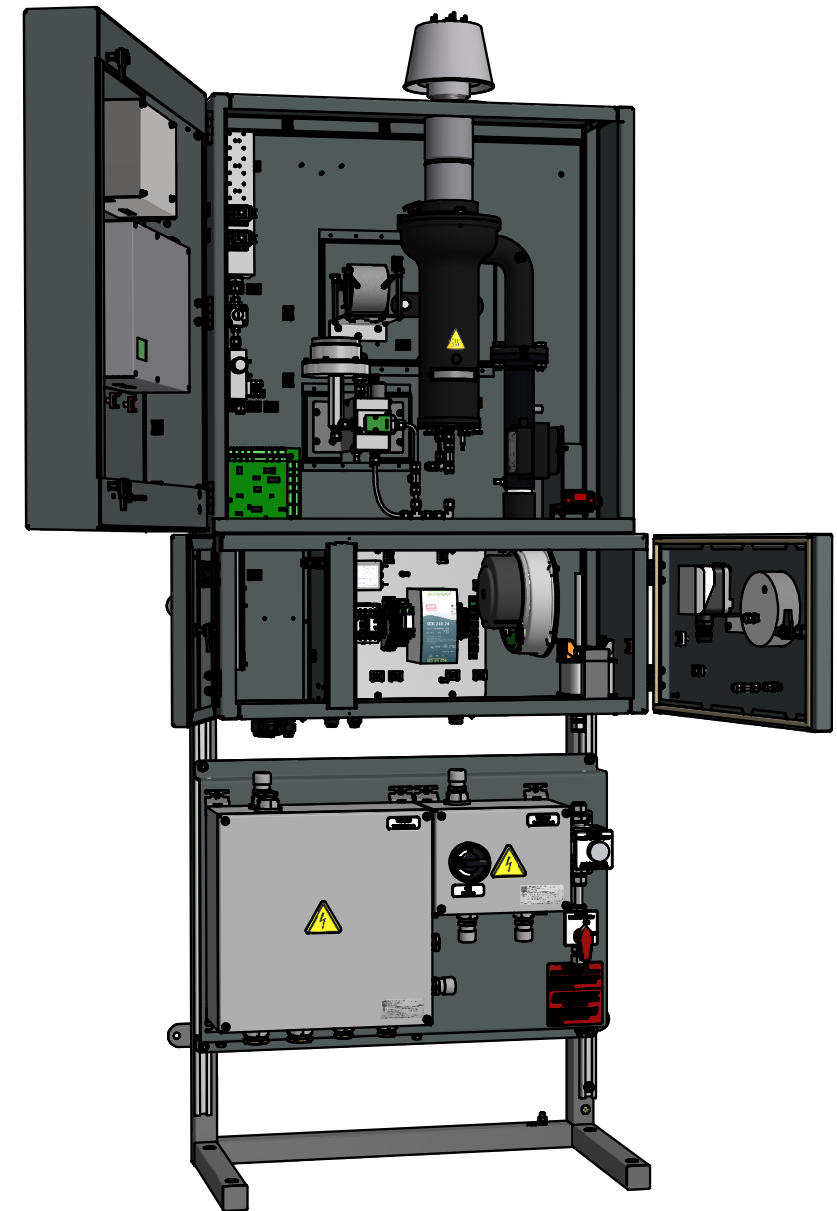
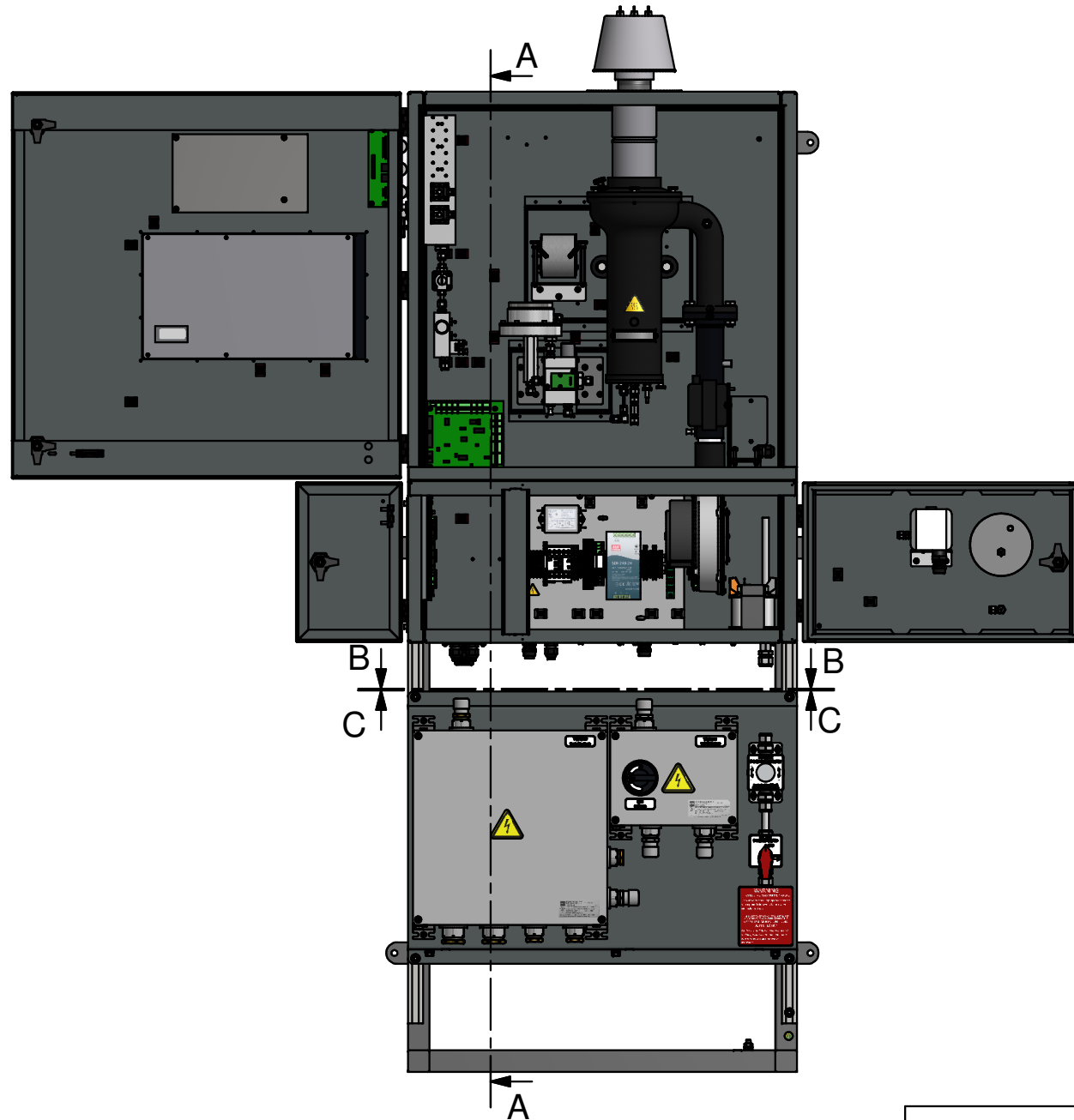
General View (outside)
Hauptansichten (außen)



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					Material / Werkstoff		
					Description / Beschreibung		
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					Part no. / Artikelnummer		
					02100199989		
					Spare part no. / Ersatzteilnummer		

					Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715		
							
					1 / 8		
-	V1.00	2028	10.06.2015	Finkler	Approx weight / Ungefähres Gewicht: -		
Index	Version	Mantis-ID	Date	Name			

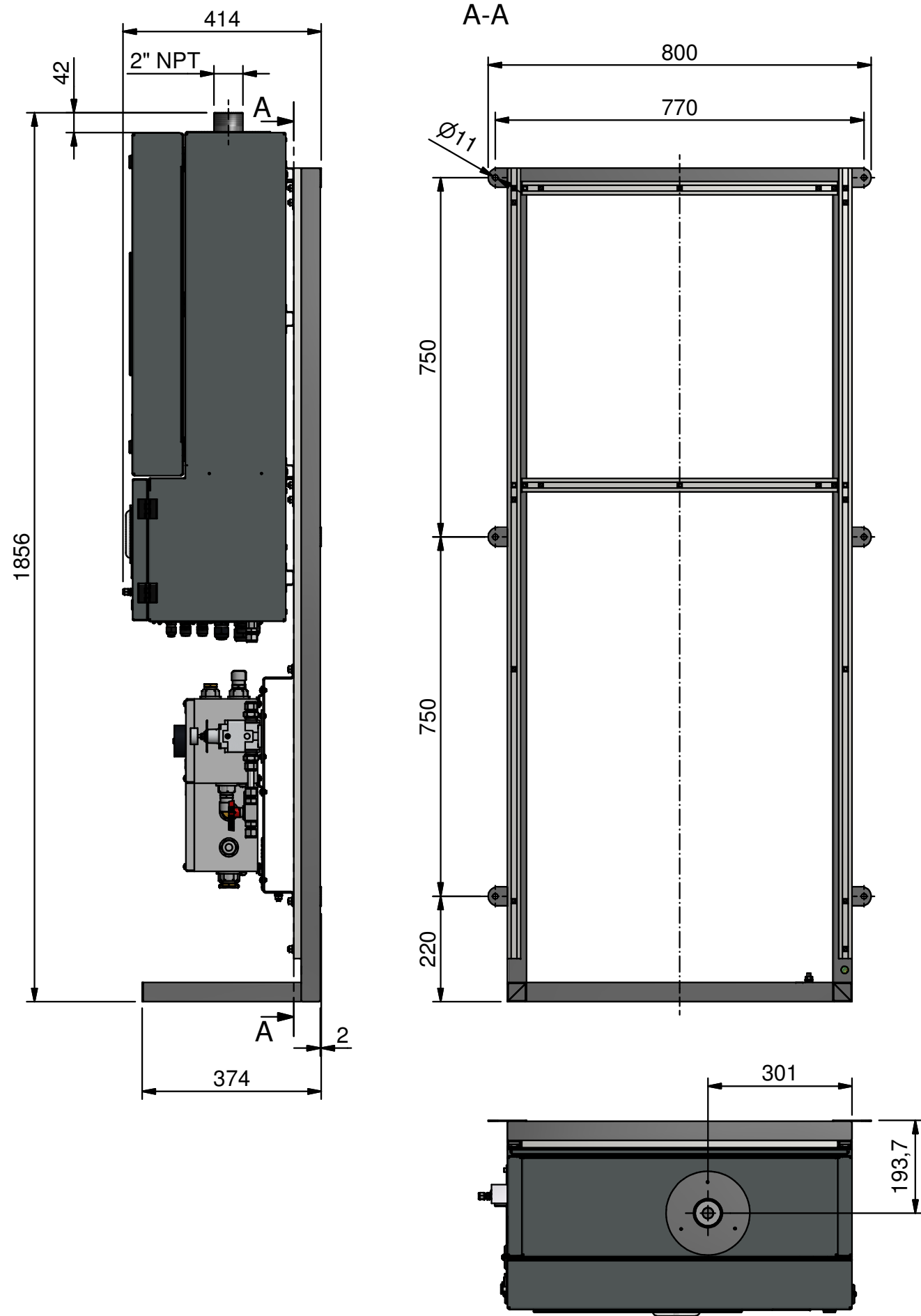
C-C



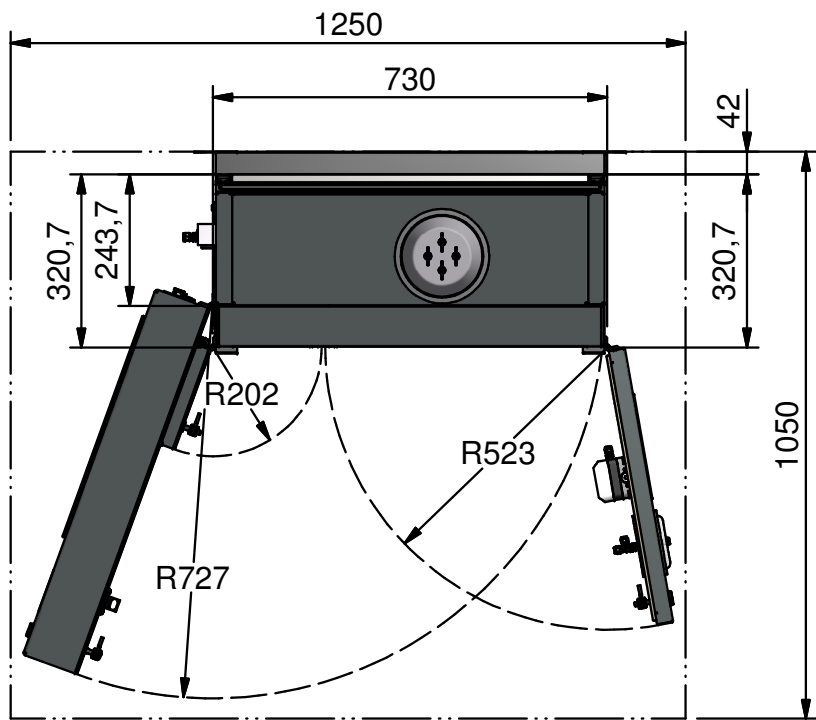
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						Description / Beschreibung Calorimeter CWD2005 DPC									
						Part no. / Artikelnummer		Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715							
						02100199989									
						Spare part no. / Ersatzteilnummer		 2 / 8							

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Index		Version		Mantis-ID		Date		Name							

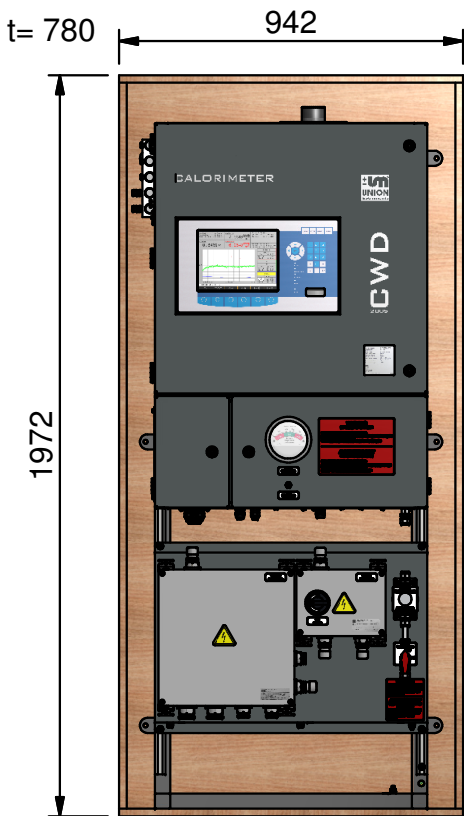
Wall Mounting (Standard) & Transport
Wandmontage (Standard) & Transport



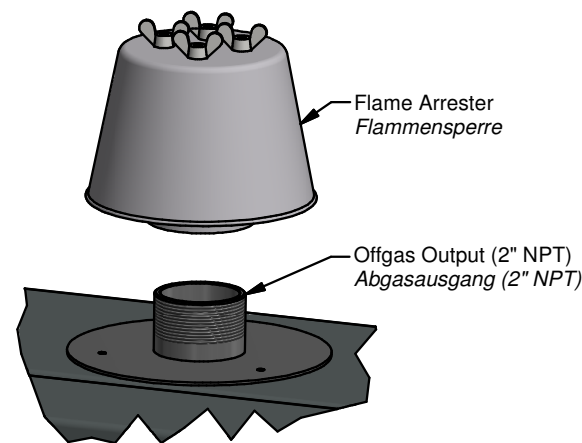
Minimum Mounting Space
Mindesteinbauraum



Transport Box
Transportkiste

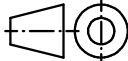


Flame Arrester Mounting
Flammensperre Montage



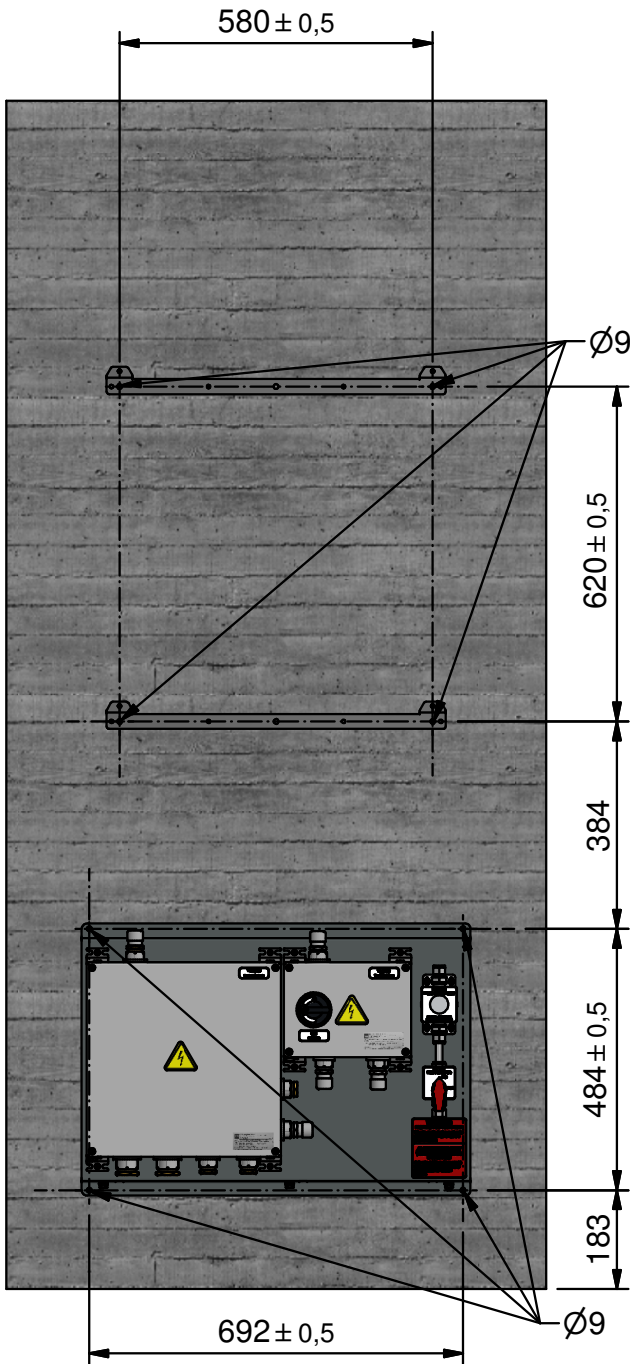
Mount flame arrester on 2" NPT thread.
Flame Arrester is loose supply part.

Flammensperre auf das 2" NPT Gewinde
des Abgasrohres aufschrauben.
Flammensperre wird lose mitgeliefert.

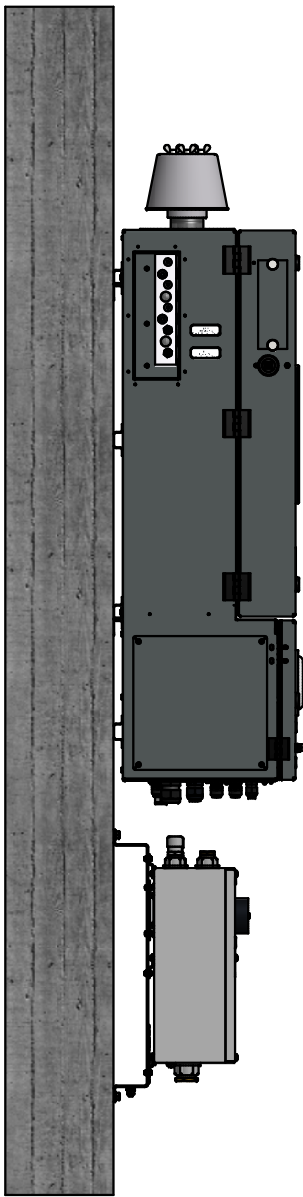
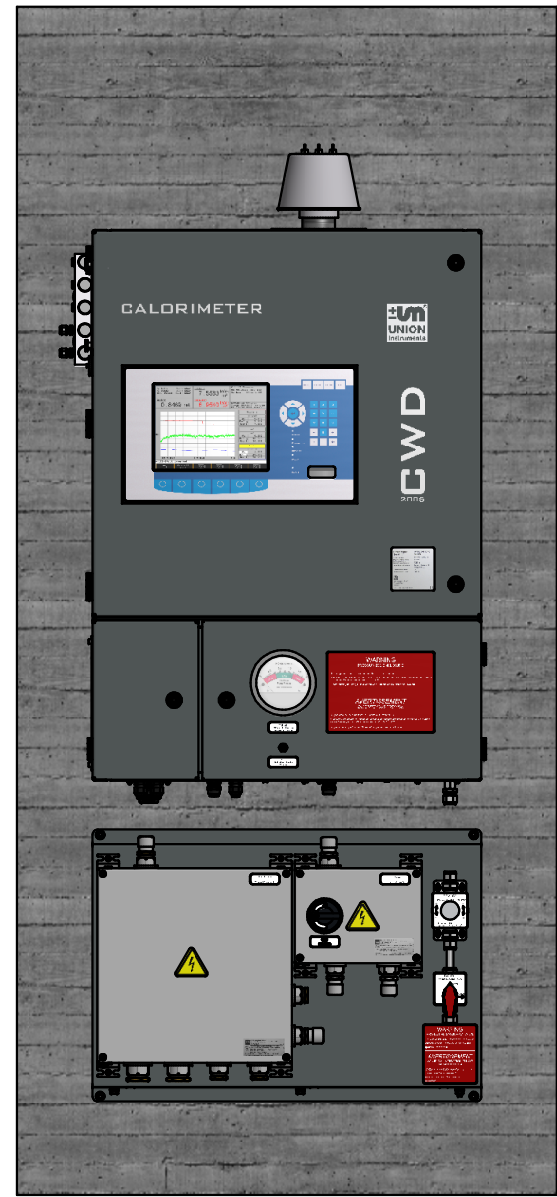
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				Part no. / Artikelnummer 02100199989	Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715	
				Spare part no. / Ersatzteilnummer ---		
-	V1.00	2028	10.06.2015	Finkler		
Index	Version	Mantis-ID	Date	Name	Approx weight / Ungefähres Gewicht: -	

Wall Mounting (Options)
Wandmontage (Optionen)

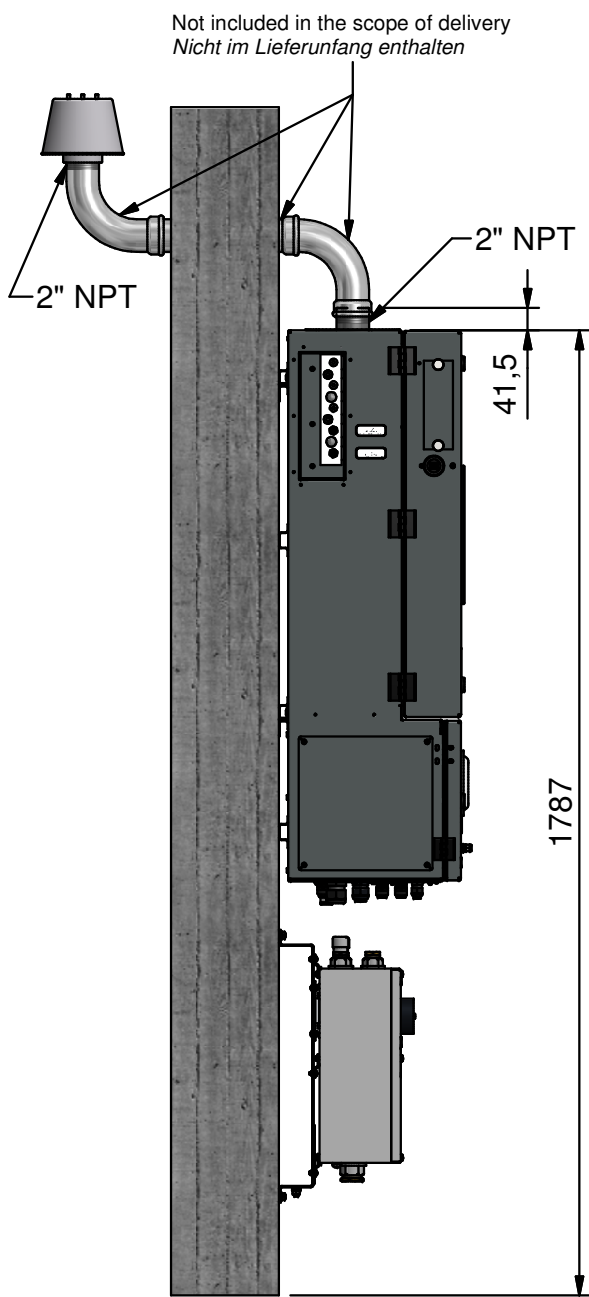
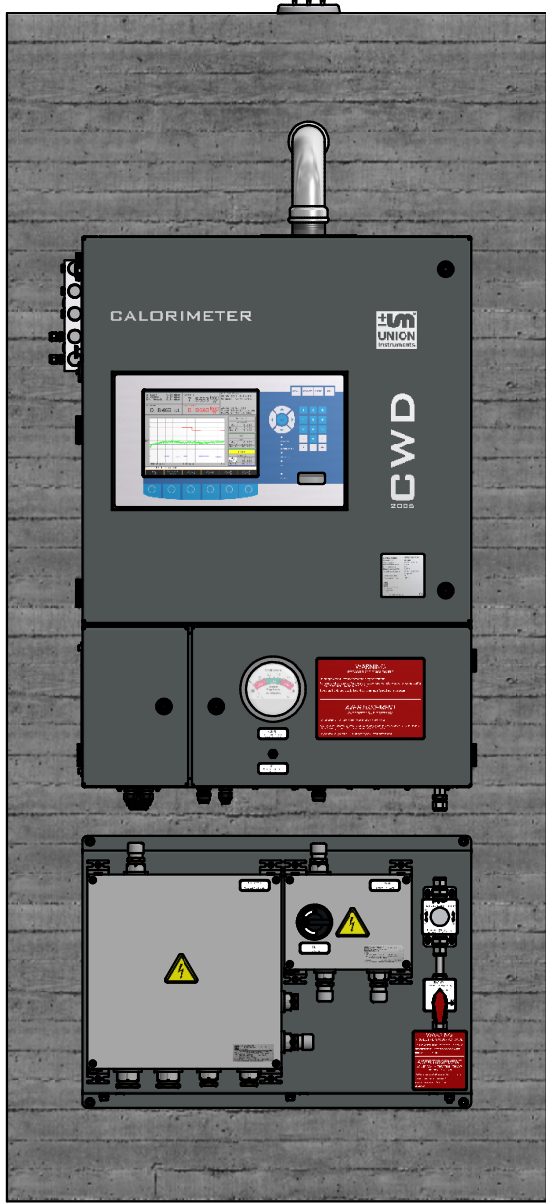
Pattern of Pattern for Wall Mounting
Bohrbild für Wandmontage



Option 1 (Flame Arrester internal)
Option 1 (Flammensperre intern)



Option 2 (Flame Arrester external) - Max. Piping Length: 3 Meters
Option 2 (Flammensperre extern) - Max. Rohrlänge: 3 Meter



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					Description / Beschreibung		
					Calorimeter CWD2005 DPC		
					Part no. / Artikelnummer 02100199989	Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715	
					Spare part no. / Ersatzteilnummer ---		4 / 8
-	V1.00	2028	10.06.2015	Finkler			
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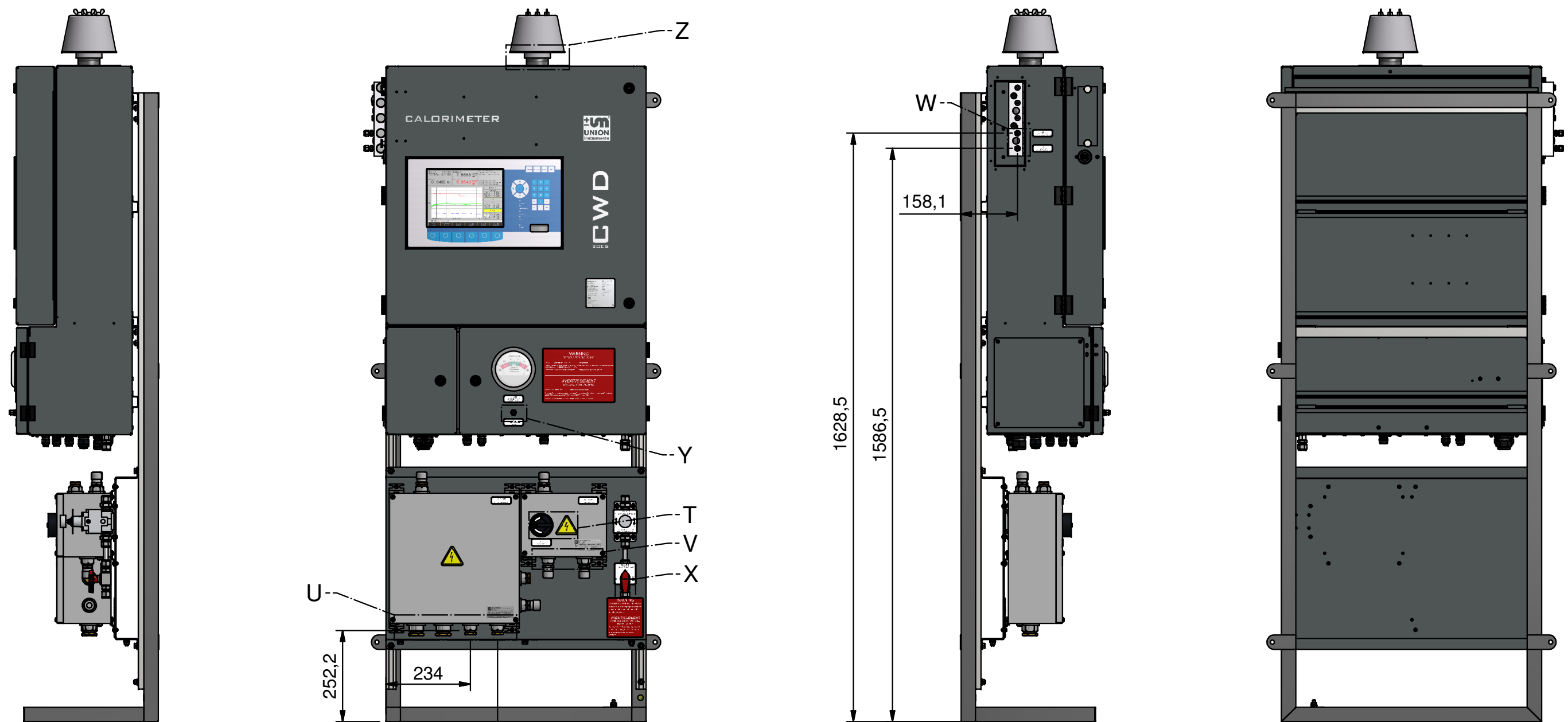


Setup Options
Aufbauvarianten

Picture	Description
	Standard installation as currently approved, imaged to better compare changes in following review proposal
	Direct wall mounting If a suitable position for wall mounting is available, customer can mount system directly on wall instead of using a rack.
	Exhaust pipe extension System is for indoor use. The systems combusted gas must be routed to the outside. Either through a proper ventilation system of the installation location or by leading the exhausts outside through a 2"-piping system and moving the flame arrester to the outside.
	Scaling down size of signals terminal box (left box) Reduce size of signals terminal box to be able to reduce overall size of system. In most cases the bigger terminal box is oversized and amount of possible signal connections is not needed.
 Max. distance 0.5 m to either side	Direct wall mounting with optional supply plate position Move supply mounting plate from bottom position to left or right of side of calorimeter. Max. distance between both parts: 0.5 m. Cables and piping as before just increased lengths.

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						Calorimeter CWD2005 DPC							
						Part no. / Artikelnummer 02100199989			Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715				
						Spare part no. / Ersatzteilnummer					5 / 8		
-		V1.00		2028		10.06.2015		Finkler					
Index		Version		Mantis-ID		Date		Name					
												Approx weight / Ungefähres Gewicht:	

Connections
Anschlüsse



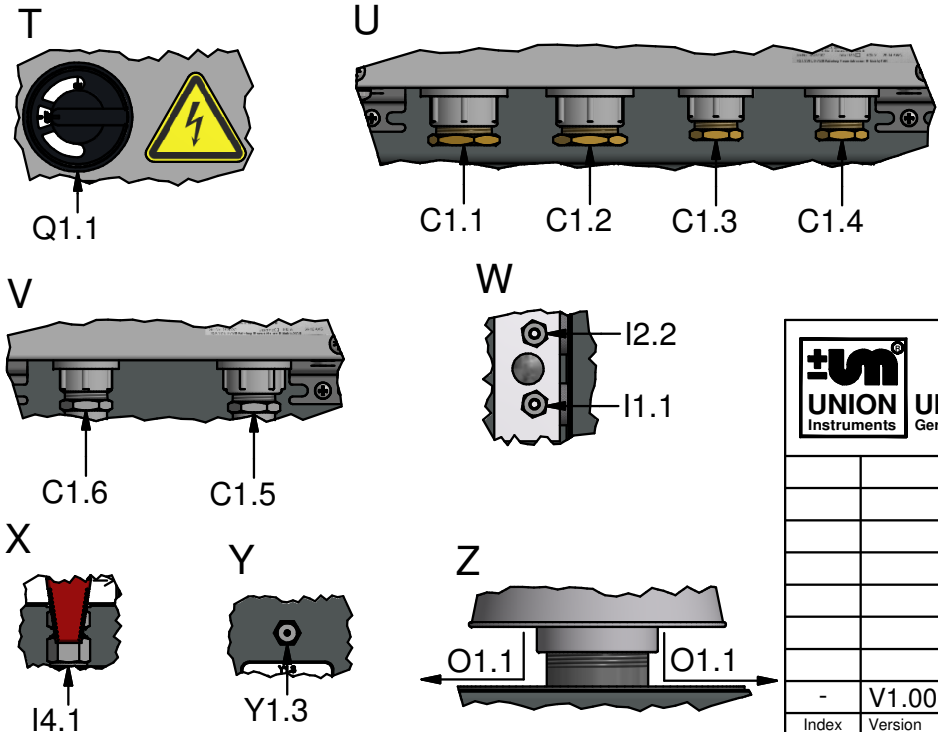
Main Switch / Schalter	
View T / Ansicht T	
No. Nr.	Description Beschreibung
Q1.1	Main Switch Hauptschalter

Cable Glands / Kabeldurchführungen		
View U & V / Ansicht U & V		
No. Nr.	Description Beschreibung	Connection Type Anschlussart
C1.1, C1.2	Cable Gland Kabelverschraubung	1" NPT
C1.3, C1.4, C1.6	Cable Gland Kabelverschraubung	3/4" NPT*
C1.5	Cable Gland Kabelverschraubung	1/2" NPT

* 4x Cable Gland: 3/4" NPT (2x Ø0,375"...0,500" + 2x Ø0,500"...0,625") loose included
* 4x Kabelversch. 3/4" NPT (2x Ø9,52...12,7 mm + 2x Ø12,7...15,78 mm) lose beigelegt

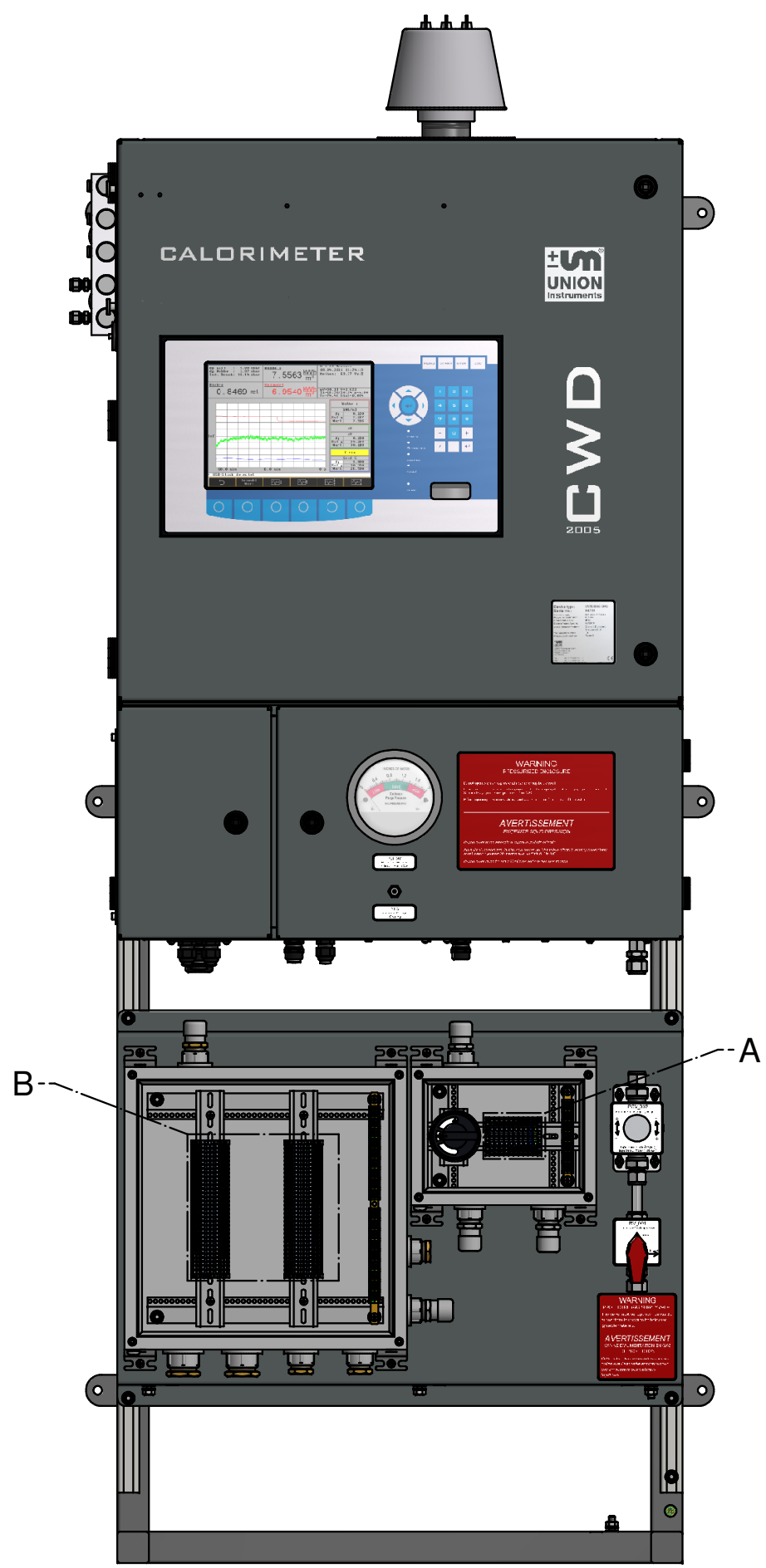
Connections / Anschlüsse		
View W, X, Y & Z / Ansicht W, X, Y & Z		
No. Nr.	Description Beschreibung	Connection type Anschlussart
I1.1	INPUT - Process Gas - Pressure: 30...60 mbar EINGANG - Prozessgas - Druck: 30...60 mbar	1/4" mm Stainless Steel Tube Fitting ** 1/4" mm Edelstahl
I2.2	INPUT - Calibration Gas - Pressure: 30...60 mbar EINGANG - Kalibriergas - Druck: 30...60 mbar	1/4" mm Stainless Steel Tube Fitting ** 1/4" mm Edelstahl
I4.1	INPUT - Compressed Air EINGANG - Druckluft	1/2" Stainless Steel tube fitting*** 1/2" Edelstahl Rohrverschraubung***
O1.1	OUTPUT - Exhaust Gas - Dissipate unpressurized AUSGANG - Abgas - Drucklos abführen	No connection necessary Kein Anschluss notwendig
Y1.3	Opening for Reference Pressure Öffnung für Referenzdruck	No connection necessary Kein Anschluss notwendig

** 2x Nut and clamping rings for 6 mm loose included
** 2x Mutter und Klemmringe für 6 mm lose beigelegt
*** 1x Adapter for 12 mm loose included
*** 1x Adapter für 12 mm lose beigelegt

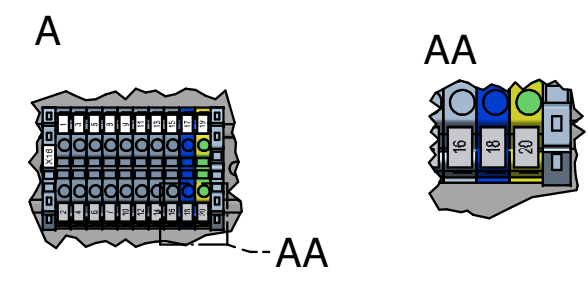


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					Part no. / Artikelnummer 02100199989			Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715		
					Spare part no. / Ersatzteilnummer ---			 6 / 8		
-	V1.00	2028	10.06.2015	Finkler	Approx weight / Ungefähres Gewicht: -					
Index	Version	Mantis-ID	Date	Name						

Electrical Connections
Elektrische Anschlüsse

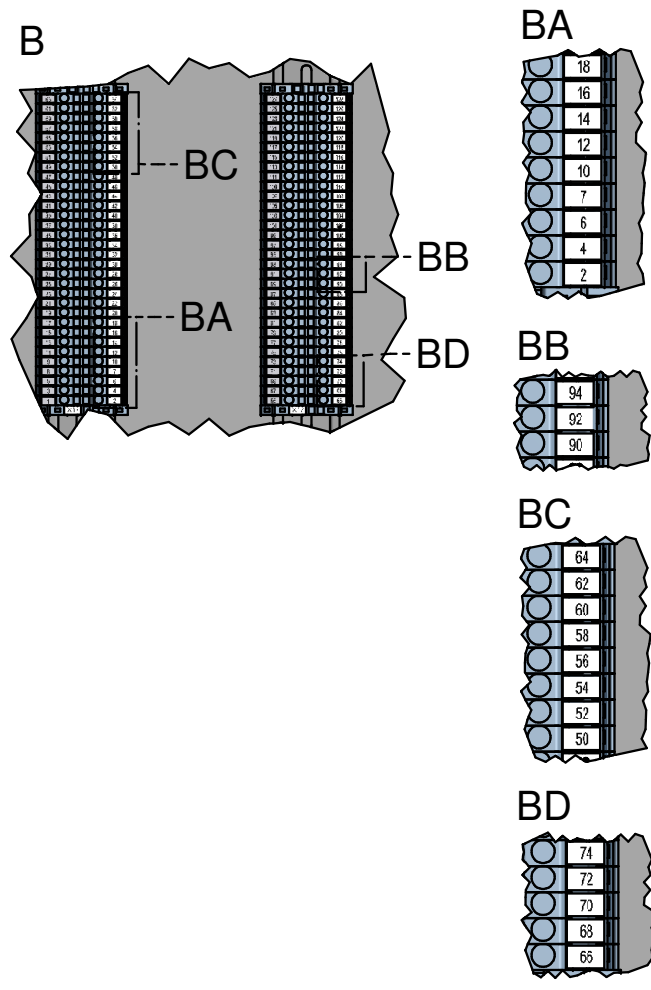


Power Supply & Protective Earth
Stromversorgung & Schutzleiter



Connections - View AA / Anschlüsse - Ansicht AA		
No. Nr.	Description Beschreibung	Connection Type Anschlussart
X16.16	Power Supply Line "L" - External residual-current circuit breaker (RCCB) and fuse (16 A) needed Versorgung „L“ - Fehlerstromschutzschalter (FI-Schalter) und Vorabsicherung (16 A) notwendig	Max. 4 mm²
X16.18	Power Supply Neutral "N" - External residual-current circuit breaker (RCCB) and fuse (16 A) needed Versorgung Neutralleiter „N“ - Fehlerstromschutzschalter (FI-Schalter) und Vorabsicherung (16 A) notwendig	Max. 4 mm²
X16.20	Protective Earth Schutzleiter	Max. 4 mm²

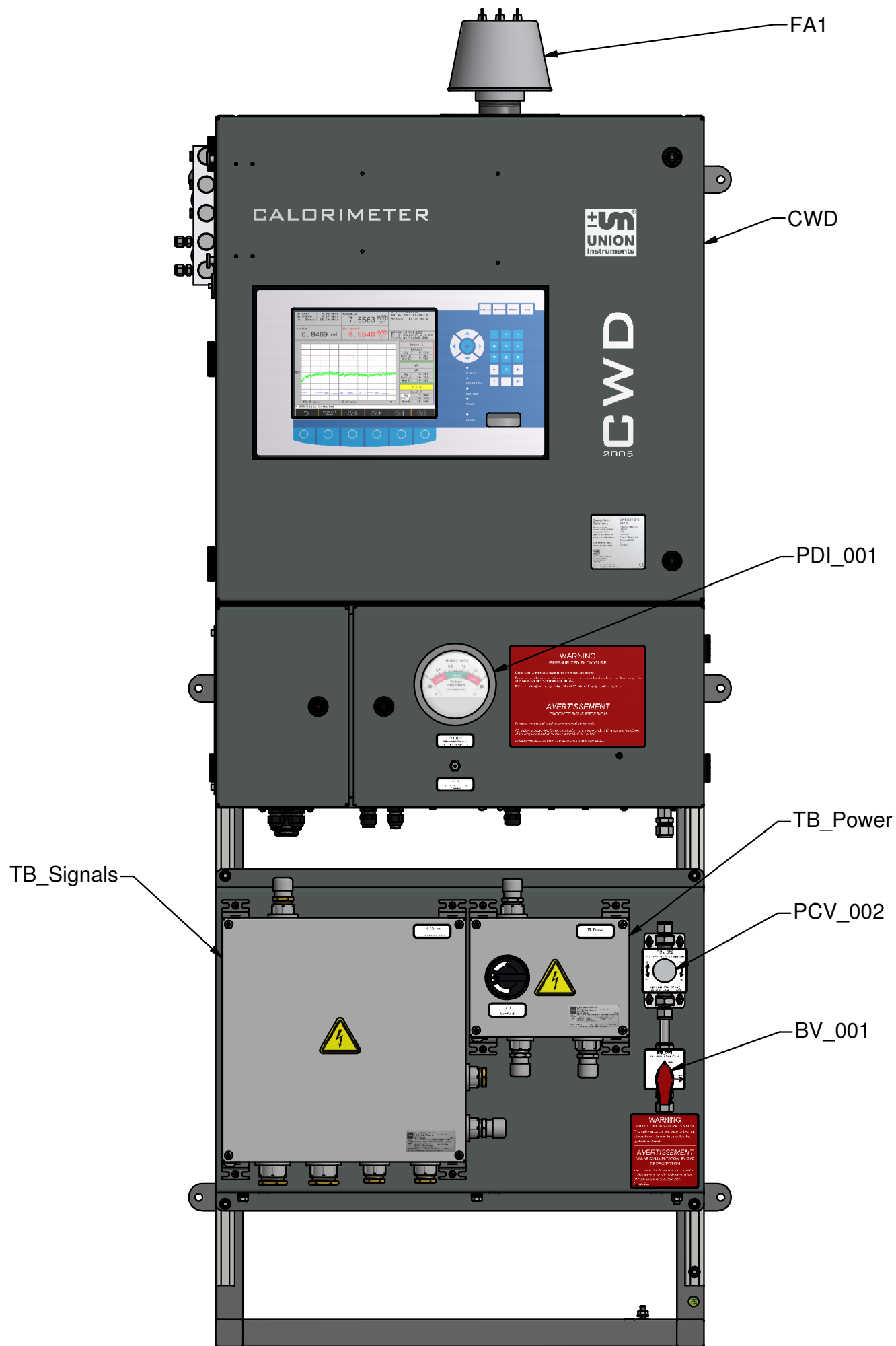
Relay Contacts & Analog Outputs
Relaiskontakte & Analogausgänge



Relay Contacts / Relaiskontakte View BA & BB / Ansicht BA & BB				
No. Nr.	Conf. Konf.	Description Beschreibung	Range Bereich	Connection Type Anschlussart
X17.2 X17.4 X17.6	COM NO NC	Relay Contact K1 Relaiskontakt K1	Operation delayed Betrieb verzögert	Max. 4 mm²
X17.8 X17.10 X17.12	COM NO NC	Relay Contact K2 Relaiskontakt K2	Maintenance Service	Max. 4 mm²
X17.14 X17.16 X17.18	COM NO NC	Relay Contact K3 Relaiskontakt K3	Fault Fehler	Max. 4 mm²
X17.90 X17.92 X17.94	COM NO NC	Relay Overpressure X9x.K1 Relaisüberdruck X9x.K1	Overpressure OK (from power supply)	Max. 4 mm²

Analog Outputs (4 - 20 mA) / Analogausgänge (4 - 20 mA) View BB & BC / Ansicht BB & BC				
No. Nr.	Conf. Konf.	Description Beschreibung	Range Bereich	Connection Type Anschlussart
X17.50 X17.52	+ -	Analog Output IOut1 Analogausgang IOut1	WI (Wobbe index) 4 - 20 mA 0 - 2500 btu/ft³	Max. 4 mm²
X17.54 X17.56	+ -	Analog Output IOut2 Analogausgang IOut2	SG (Specific gravity) 4 - 20 mA 0 - 2,00	Max. 4 mm²
X17.58 X17.60	+ -	Analog Output IOut3 Analogausgang IOut3	HCV, HHV (Higher calorific Value) 4 - 20 mA 0 - 2500 btu/ft³	Max. 4 mm²
X17.62 X17.64	+ -	Analog Output IOut4 Analogausgang IOut4	LCV, NHV (Lower calorific Value) 4 - 20 mA 0 - 2500 btu/ft³	Max. 4 mm²
X17.66 X17.68	+ -	Analog Output IOut5 Analogausgang IOut5	not installed nicht installiert	Max. 4 mm²
X17.70 X17.72	+ -	Analog Output IOut6 Analogausgang IOut6	not installed nicht installiert	Max. 4 mm²

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Material / Werkstoff		Description / Beschreibung Calorimeter CWD2005 DPC						
Part no. / Artikelnummer 02100199989		Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715						
Spare part no. / Ersatzteilnummer ---				7 / 8				
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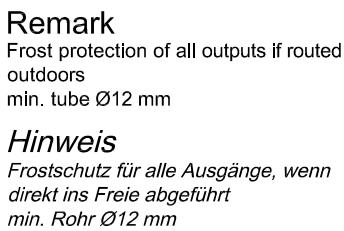


Part list Stückliste				
No. Pos.	Customer Tag Kunden Tag	UNION Tag UNION Tag	Description Beschreibung	Spare Part No. Ersatzteil-Nr.
1		BV_001	Ball Valve Kugelhahn	----
3		CWD	Calorimeter CWD2005 DP Kalorimeter CWD2005 DP	----
6		FA1	Flame Arrester 2" NPT Flammensperre2" NPT	07401199983
12		PCV_002	Pressure Control Valve 4...7 bar (58 psi) Druckregelventil 4...7 bar (101 psi)	84401199970
18		PDI_001	Differential Pressure Idicator 0...2 in.WC. Differenzdruck-Anzeige 0...2 in.WC.	02401199982
13		TB_Power	Terminal Box Power Klemmenkasten Power	----
14		TB_Signals	Terminal Box Signals Klemmenkasten Signale	----

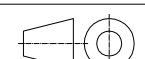
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					Part no. / Artikelnummer 02100199989		Tolerances / Freimaße: ISO 2768 - mK Workpiece edges / Werkstückkanten: ISO 13715			
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-	V1.00	2028	10.06.2015	Finkler	Approx weight / Ungefähres Gewicht: -					
Index	Version	Mantis-ID	Date	Name						

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P&I Diagram ***R&I Fließschema***



No. Nr.	Description Beschreibung
BV_001, BV_002 ...	Ball Valve <i>Kugelventil</i>
DR_001, DR_002 ...	Specific Gravity Measurement <i>Dichte-Messung</i>
PCV_001, PCV_002 ...	Pressure Control Valve <i>Druckregelventil</i>
PDC_001, PDC_002 ...	Differential Pressure Control <i>Differenzdruck-Regelung</i>
PDR_001, PDR_002 ...	Differential Pressure Measurement <i>Differenzdruck-Messung</i>
PDI_001, PDI_002 ...	Differential Pressure Indicator <i>Differenzdruck-Anzeige</i>
PSH_001, PSH_002 ...	Pressure Switch <i>Druckschalter</i>
SEV_001, SEV_002 ...	Solenoid Valve <i>Elektromagnetventil</i>
TR_001, TR_002 ...	Temperature Measurement <i>Temperatur-Messung</i>
V_001, V_002 ...	Fan <i>Ventilator</i>
W_001, W_002 ...	Heater <i>Heizung</i>
Z_001, Z_002 ...	Orifice Plate <i>Blende</i>

 UNION Instruments GmbH Germany						Issued / Ausgabe 10.06.2015 - Finkler		Version / Version V1.00		Matis-ID 2028	
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. . . .				.		Calorimeter CWD2005 DPC					
. . . .				.		Part no. / Artikelnummer 02100199985				Graphical symbols / Graphische Symbole: DIN 2429-1; DIN 2429-2 & DIN 19227 Caption s. page 2 / Legenden s. Blatt 2	
. . . .				.		Spare part no. / Ersatzteilnummer ----					
- V1.00				2028		10.06.2015		Finkler		1 / 1	
Index	Version	Mantis-ID	Date	Name	Approx weight / Ungefähres Gewicht: kg						

3

Wiring Diagram ***Elektrischer Schaltplan***

Terminal Block X17

Connection in CWD2005

(Terminal Box Signals)

	Customer		Union		Cable		
Relays	X17.2	Relais K1	COM	X17.1	25G1.1	X14.1	Operation delayed
	X17.4		NO	X17.3	25G1.2	X14.2	
	X17.6		NC	X17.5	25G1.3	X14.3	
	X17.8	Relais K2	COM	X17.7	25G1.4	X14.4	Maintenance
	X17.10		NO	X17.9	25G1.5	X14.5	
	X17.12		NC	X17.11	25G1.6	X14.6	
	X17.14	Relais K3	COM	X17.13	25G1.7	X14.7	Fault
	X17.16		NO	X17.15	25G1.8	X14.8	
	X17.18		NC	X17.17	25G1.9	X14.9	
4..20mA Outputs	X17.50	IOut1	+	X17.49	25G1,5.10	X5.1	WI (Wobbe Index)
	X17.52		-	X17.51	25G1,5.11	X5.2	0 - 2500 btu/ft³
	X17.54	IOut2	+	X17.53	25G1,5.12	X5.3	SG (Specific Gravity)
	X17.56		-	X17.55	25G1,5.13	X5.4	0 - 2,0
	X17.58	IOut3	+	X17.57	25G1,5.14	X5.5	HCV (Higher Calorific Value)
	X17.60		-	X17.59	25G1,5.15	X5.6	0 - 2500 btu/ft³
	X17.62	IOut4	+	X17.61	25G1,5.16	X5.7	LCV (Lower Calorific Value)
	X17.64		-	X17.63	25G1,5.17	X5.9	0 - 2500 btu/ft³
Modbus RTU (Option)	X17.108	Modbus RTU	Shield	X17.107	25G1,5.24	DE9 - H	Shield
	X17.110		TX	X17.109	25G1,5.18	DE9 - 2	RS232 TX
	X17.112		RX	X17.111	25G1,5.19	DE9 - 3	RS232 RX
	X17.114		GND	X17.113	25G1,5.20	DE9 - 5	GND Bus
	X17.116		+5V	X17.115	25G1,5.21	DE9 - 6	+5V bus out
	X17.118		B	X17.117	25G1,5.22	DE9 - 7	RS485- D0 (B)
	X17.120		A	X17.119	25G1,5.23	DE9 - 8	RS485+ D1 (A)

25G1,5.24 not connected

PROJEKT:
PROJECT:

CWD2005 DPC

MASCHINEN-HERSTELLER:
MECHANICAL MANUFACTURER:

STEUERUNGS-HERSTELLER:
CONTROL MANUFACTURER

KUNDE (BETREIBER):
OPERATOR

FIRMA/COMPANY

UNION INSTRUMENTS GMBH

ZEPPELINSTRASSE 42

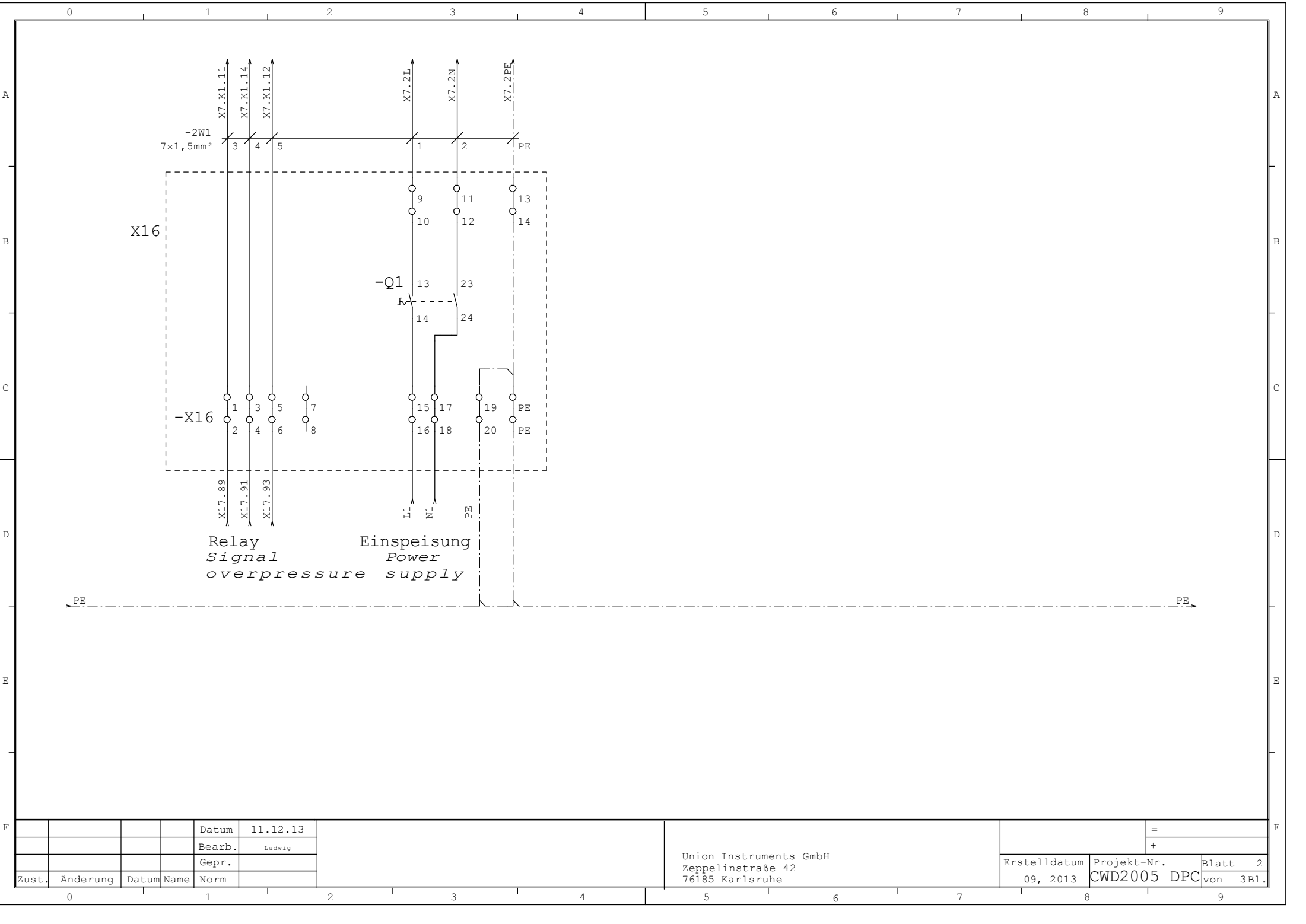
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TEL.:+49 (0) 721-680381 0

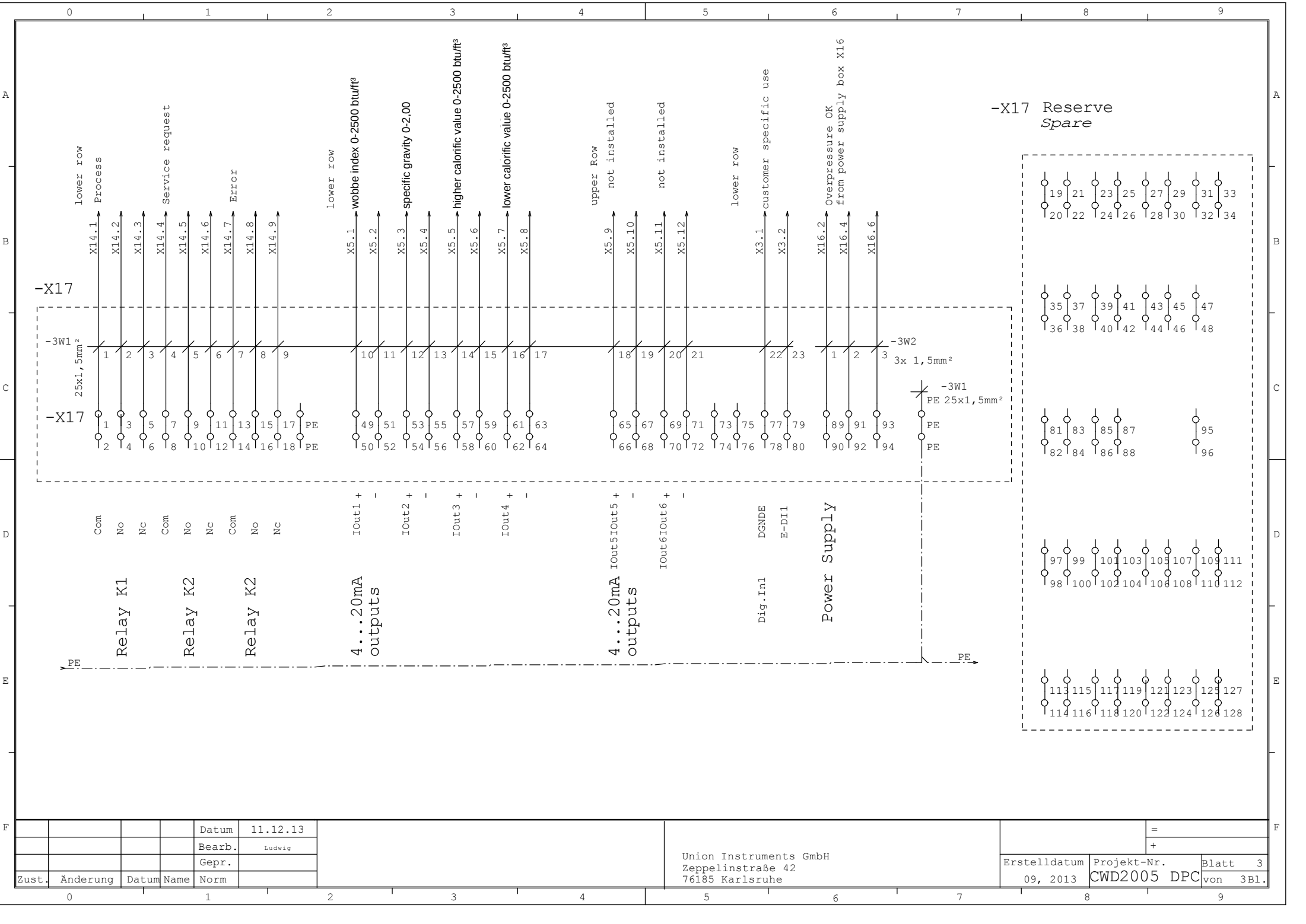
FAX.:+49 (0) 0721-680381 20

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				Gepr.							
Zust.	Änderung	Datum	Name	Norm						Erstelldatum	Projekt-Nr.
										09, 2013	CWD2005 DPC
										Blatt 1	von 3Bl.

Union Instruments GmbH
Zeppelinstraße 42
76185 Karlsruhe



				Datum	11.12.13	Union Instruments GmbH Zeppelinstraße 42 76185 Karlsruhe		Erstelldatum		Projekt-Nr.	Blatt	2
				Bearb.	Ludwig			09, 2013		CWD2005 DPC	von	3Bl.
				Gepr.								
Zust.	Änderung	Datum	Name	Norm								



				Datum	11.12.13
				Bearb.	Ludwig
				Gepr.	
Zust.	Änderung	Datum	Name	Norm	

Union Instruments GmbH
Zeppelinstraße 42
76185 Karlsruhe

Erstelldatum	Projekt-Nr.	Blatt	3
09, 2013	CWD2005 DPC	von	3Bl.

4

Test- and Calibrationcertificate(s)
Test- und Kalibrierzertifikat(e)

Test and Calibration Certificate



Union Instruments GmbH
Zeppelinstr. 42
D-76185 Karlsruhe
Germany

Phone +49 721 95243 0
Fax +49 721 95243 33
info@union-instruments.com
www.union-instruments.com

Customer Delta Instrument LLC
Order no DI15-11894
Type of instrument CWD2005 DPC
Serial no 95649

Range 1	based on net value		Range 2	based on net value	
Calorific Value	0,00 - 2500,00	btu/ft ³	Calorific Value	0,00 - 0,00	btu/ft ³
Wobbeindex	0,00 - 2500,00	btu/ft ³	Wobbeindex	0,00 - 0,00	btu/ft ³
Spec. Grav.	0,00 2,00		Spec. Grav.	0,00 2,00	
Wobbe-jet	0,50 mm		Wobbe-jet		mm
Air-jet	0,80 mm		Air jet		mm

Calibration-gas

Components	Vol %
CO	0,00%
H2	0,00%
CH4	100,00%
N2	0,00%
CO2	0,00%

Calorific	Wobbe	Spec. Grav.
913,653	1226,407	0,555
Output Signals		
mA	mA	mA
9,847	11,849	8,440

Testgas 2 net

Components	Vol%
C4H10	0,10%
C2H6	3,04%
C3H8	0,51%
CH4	80,69%
N2	14,65%
CO2	1,01%

Nominal
Result

Calorific	Wobbe	Spec. Grav.
802,632	997,559	0,647
804,000	999,000	0,646

Calibrated on / Kalibriert am: 21.05.2015 Signature:  König

Approved
freigegeben von / am: 17.06.2015 Signature:  Friz

Geschäftsführer: Bankverbindung:
Torsten Haug, Peter Kienke

St.-Nummer 35009/01946
USt.-Id. Nummer DE258461193

Volksbank-Karlsruhe
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BIC: GENODE61KA1