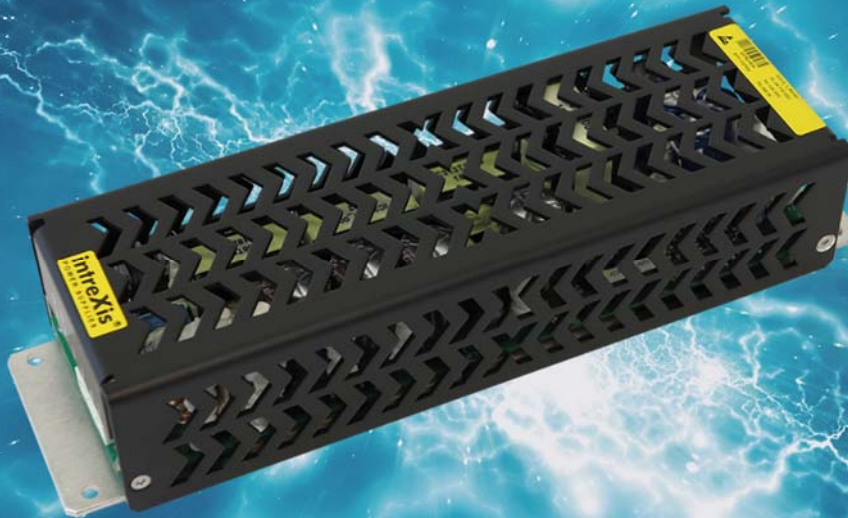


intreXis[®]

Power Supplies with the



Datasheet

intreXis Boardnet Converter Platform

IC313, 300 W Single-Output

24 Vin – 110 Vin

- ✖tra high efficiency: > 96 % @ 110 Vin, 300 W
- ✖tra wide input voltage range: 24 – 110 VDC or optimized for 110 VDC
- ✖tra high extra power for overload: 450 W for 100 ms
- ✖tra high peak short circuit current: trips reliably circuit breakers:
8 A characteristic B, 4 A characteristic C
- ✖tra high peak startup-current: Can source up to twice the nominal output
current during startup: satisfies high peak current absorption of
demanding loads during startup.
Startup-current: 25 A typ.

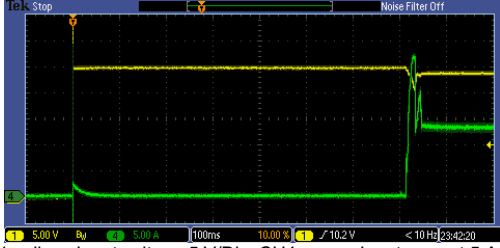
This datasheet covers the details of the IC313 power supplies with single output voltage and output power of 300 W. These DC/DC converters are designed according to EN 50155:2021 and IEC 60571:2012 for railway applications and are ideal for other demanding environments which require the highest performance and reliability.

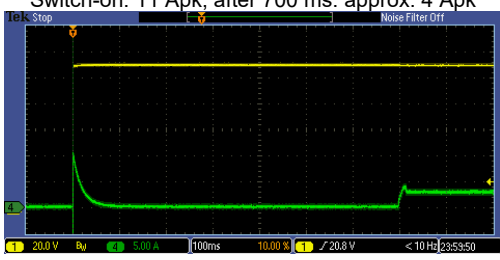
Output voltage: 24 V. Other voltages on request.

Ordering codes: IC313_5, IC313_6.

The differences between the variants are explained in this datasheet.

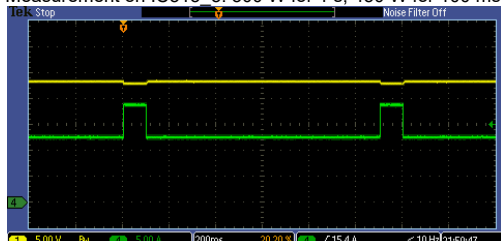
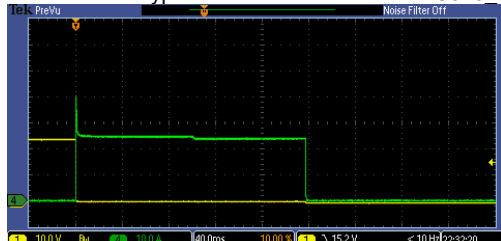
INPUT CHARACTERISTICS

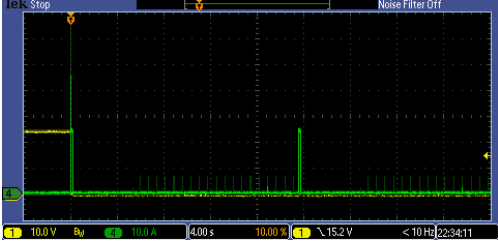
Continuous Input Voltage Range	IC313_5	IC313_6
	16.8 – 137.5 VDC	77.0 – 137.5 VDC
Temporary Input Voltage Range according to EN 50155:2021, 5.2.3	IC313_5	IC313_6
	14.4–154.0 VDC for 1.0 sec	66.0–154.0 VDC for 1.0 sec
Input Undervoltage Lockout	IC313_5	IC313_6
	Vin_OFF = 13.4 VDC \pm 2 % Vin_ON = 16.0 VDC \pm 2 %	Vin_OFF = 62.0 VDC \pm 2 % Vin_ON = 73.0 VDC \pm 2 %
Input Voltage Reverse Polarity Protection	IC313_5	IC313_6
	Nosels on connector ensure protection against polarity reversal	Active reverse polarity protection: lin_reverse < 500 μ A @ Vin = -154 VDC (with reverse polarity of Vin, the converter remains off without being damaged. Only a small reverse current lin_reverse flows. With correct polarity of Vin, the converter works correctly)
Inrush Current over the entire operating temperature range	<p>An active inrush limitation circuit limits the input inrush current at switch-on of the input voltage with a 10 Ω-resistor. The second peak 500 ms after switch-on is caused by the first converter-stage. (The charging current into EMI suppression capacitors is disregarded in the first microseconds after switch-on)</p> <p>Inrush Current @ 24 Vin, full load Switch-on: 2.4 Apk, after 700 ms: approx. 27 Apk</p>  <p>CH1 yellow: Input voltage 5 V/Div, CH4 green: Input current 5 A/Div, Timebase: 100 ms/Div</p>	

	<p>Inrush Current @ 110 Vin, full load Switch-on: 11 Apk, after 700 ms: approx. 4 Apk</p>  <p>Inrush Current Integral: $I_{inrush}^2 t < 25 \text{ A}^2\text{s}$ @ Vin = 16.8 – 137.5 VDC</p>			
Input Capacitance	1890 μF			
Input Current typ. @ full Load	24 Vin	36 Vin	72 Vin	110 Vin
	13.4 A	8.86 A	4.39 A	2.82 A
Input Power typ. @ no Load over the input voltage range	1.4 – 2.6 W			
Internal Input Fuse	Fuse included, therefore no external fuse or circuit breaker required. If you, nevertheless, install an external circuit breaker for any other reason, please select it according to the recommendation below.			
	IC313_5		IC313_6	
	$I^2t\text{-fuse} = 1126 \text{ A}^2\text{s}$		$I^2t\text{-fuse} = 563 \text{ A}^2\text{s}$	
External Circuit Breaker recommendation Important: Circuit Breaker must be rated for the maximum DC-input voltage	24 Vin	36 Vin	72 Vin	110 Vin
	25 A, type B	20 A, type B	10 A, type B	6 A, type B
Interruptions of Input Voltage Supply (Hold-up time)	Class S2 (10 ms) according to EN50155:2021 The converter continues to operate as intended during and after the interruption, with no degradation of performance or loss of function over the entire input voltage range (Performance criterion A).			
Startup time (Time input voltage ON to output voltage ON)	< 1 s for all input voltages			

OUTPUT CHARACTERISTICS

Output Voltage Nominal @ off load	+24.4 VDC
Max. Continuous Output Power @ Vin = 16.8–137.5 V, 14.4–154 V for 1.0 sec (no derating over the entire temperature range)	300 W
Max. Peak Output Power @ Vin = 16.8–137.5 V, 14.4–154 V for 1.0 sec	450 W for 100 ms

Minimum Load	No minimum load required.
Setpoint Accuracy	< 1.0 %
Load Regulation @ off-load to full load over the entire temperature range	< 3.6 %
Line Regulation @ full load over the entire temperature range	< 0.1 %
Output Ripple & Noise @ 20 MHz bandwidth, including spikes	<p>< 50 mVpp @ -25 – +85 °C < 250 mVpp @ -50 – -25 °C</p>
Overload, Startup Current and Short-Circuit	<p>The converter is continuous overload and short-circuit proof.</p> <p>Output overloaded: Short overloads up to 450 W for 100 ms: no limitation, output voltage remains stable:</p> <p>Measurement on IC313 5: 300 W for 1 s, 450 W for 100 ms:</p>  <p>CH1 yellow: output voltage 5 V/Div; CH4: output current 5 A/Div Timebase: 200 ms/Div</p> <p>High peak startup current: Sources up to twice the nominal output current during startup: satisfies high peak current absorption of demanding loads during startup: 25 A for 100 ms, then 23 A for 100 ms typ.</p> <p>Output short-circuited: When the output is shorted, the converter delivers 25 A for 100 ms, then 23 A for 100 ms typ.</p> <p>Measurement: typical short circuit current on IC313 5</p>  <p>CH1 yellow: Output voltage 10 V/Div, CH4 green: Output current 10 A/Div, Timebase: 40 ms/Div</p>

	<p>Then it switches off and tries periodically to switch on again, every 20 seconds for 200 ms typ.:</p> <p>Measurement: typical short circuit current on IC313 5</p>  <p>CH1 yellow: Output voltage 5 V/Div, CH4 green: Output current 10 A/Div, Timebase: 4 s/Div</p> <p>If the short-circuit is still present, the converter switches off again and tries again periodically. If the short-circuit is removed, the converter switches on at the next switch-on attempt (hiccup).</p> <p>Longer/Higher overloads: > 100 ms or > 450 W: converter switches off and retries (hiccup)</p>
Current Limit for overload >100 ms (varies due to component tolerances)	13.1 – 15.0 A
Short-Circuit current	25 A for 100 ms followed by 23 A for 100 ms, every 20 sec < 4 Arms trips reliably following circuit breakers: characteristic B: up to 8 A characteristic C: up to 4 A
Overvoltage Protection (OVP) (output voltage is limited, if main regulation loop fails)	< 30 VDC SELV-compliant according to EN 60950-1:2006+A2:2013, IEC 60950-1:2005+A1:2009+A2:2013 CSV
Paralleling of Outputs	Paralleling up to 7 units. Falling output-voltage-characteristic ensures current-sharing. Lead lines to load with equal length and cross section ensure accurate current-sharing between units. If one or more units fail, the other units continue delivering power without limitations.
Active Decoupling Diode for redundant Systems	A FET on the output, acting as a decoupling diode, is included for redundant systems with two or more power supply sources driving a load.
Maximum load-capacitance	25 mF

EFFICIENCY

Conditions	24 Vin	36 Vin	72 Vin	110 Vin
Efficiency typ. @ 100 % Load	93.2 %	94.0 %	95.0 %	96.7 %
Efficiency typ. @ 66 % Load	92.9 %	93.4 %	94.6 %	96.6 %
Efficiency typ. @ 33 % Load	91.2 %	91.8 %	92.7 %	95.3 %

SIGNALS AND INTERFACES

DC-OK Signal	Optically isolated solid-state relay (between connector X20/pin 5-6, see block diagram)
DC-OK transistor & LED switch on threshold	$V_{out} > +23.0 \text{ VDC} \pm 2 \%$
DC-OK transistor & LED switch off threshold	$V_{out} < +22.5 \text{ VDC} \pm 2 \%$
DC-OK max. transistor current, when on	50 mA max.
DC-OK max. transistor voltage-drop, when on	$< 1.7 \text{ VDC} @ 50 \text{ mA}$ (between connector X20/pin 5-6, see block diagram)
DC-OK max. transistor voltage, when off (max voltage which can be applied externally)	$\pm 154 \text{ VDC}$ (between connector X20/pin 5-6, see block diagram)
External ON/OFF Signal (Isolated optocoupler input)	<p>Output voltage is OFF if:</p> <ul style="list-style-type: none"> - connection between ON/OFF (X10/pin1) and +Vin input (X10/pin2,3) (low impedance connection $< 500 \Omega$) or - external voltage 14.4 – 154 VDC applied between ON/OFF (X10/pin1) and -Vin input (X10/pin4) <p>Current into ON/OFF-Pin: 1.0 – 2.5 mA (see block diagram)</p> <p>Output voltage is ON if:</p> <ul style="list-style-type: none"> - no connection between ON/OFF (X10/pin1) and +Vin input (X10/pin2,3) (high impedance $> 500 \text{ k}\Omega$) or - external voltage $< 8.0 \text{ VDC}$ applied between ON/OFF (X10/pin1) and -Vin input (X10/pin4)
LED	Green LED on output side indicates that output voltage is ok.

ELECTROMAGNETIC COMPATIBILITY (EMC)

Test	Standard	Test severity levels	Performance Criteria
Surges	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	1.2/50 μ s 42 Ω , 0.5 μ F DC power supply port ± 2 kV line to ground ± 1 kV line to line	Criterion B required, but compliant with more strict criterion A
Electrostatic discharge	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	± 6 kV contact discharge ± 8 kV air discharge	Criterion B required, but compliant with more strict criterion A
Fast transients	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	± 2 kV 5/50 ns tr/th 5 kHz repetition frequency	Criterion A
Radio-frequency common mode	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	150 kHz – 80 MHz 10 Vrms (carrier voltage) 80 % AM, 1 kHz Source impedance 150 Ω	Criterion A
Radio-frequency electromagnetic field	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	80 MHz – 1000 MHz 20 Vrms/m 80 % AM, 1 kHz unmodulated carrier; 1400 MHz – 2000 MHz 10 Vrms/m 80 % AM, 1 kHz unmodulated carrier; 2000 MHz – 2700 MHz 5 Vrms/m 80 % AM, 1 kHz unmodulated carrier; 5100 MHz – 6000 MHz 3 Vrms/m 80 % AM, 1 kHz unmodulated carrier	Criterion A
Conducted emissions	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	150 kHz – 500 kHz: 99 dB μ V quasi-peak 500 kHz – 30 MHz: 93 dB μ V quasi-peak	
Radiated emissions	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	30 MHz – 230 MHz: 40 dB μ V/m quasi-peak at 10 m 230 MHz – 1000 MHz: 47 dB μ V/m quasi-peak at 10 m	Class A required, but compliant with more strict Class B

ENVIRONMENATAL CHARACTERISTICS

Operating Temperature	-50 °C – +85 °C Class OT4: -40 – +70 °C and class ST1,ST2: +15 °C according to EN50155:2021 extended down to -50 °C
Cooling	Natural convection
Storage Temperature Range	-50 °C – +100 °C
Altitude Class	Class Ax (>1400 m) according to EN 50125-1:2014: 5000 m above sea level max.
Pollution Degree	PD2 according to EN50124-1:2017
Shock and Vibration	According to EN 61373:2010, category 1, class B
Rapid Temperature Variation	Class H2 according to EN 50155:2021: -25 °C to +15 °C / 95 %RH, ± 3 °C/s +10 °C to 40 °C / 60 %RH, ± 3 °C/s
Protective Coating	Class PC2 according to EN 50155:2021 The board is protected on both sides with a protective transparent fluorescent-pigment coating to prevent deterioration or damage due to moisture and atmospheric contaminants. The coating is compliant with class 2, according to IPC-A-610H
Prohibited Substances	No substances defined as Prohibited according to the RoHS, REACH, UNIFE (RISL), or Prohibited for the Project, are present. No substances defined as Declarable according to RoHS, REACH, UNIFE (RISL), or Declarable for the Project, are present.
Fire behaviour	EN 45545-2:2020 compliant with all Hazard Levels HL1-HL3 NFPA 130: 2023

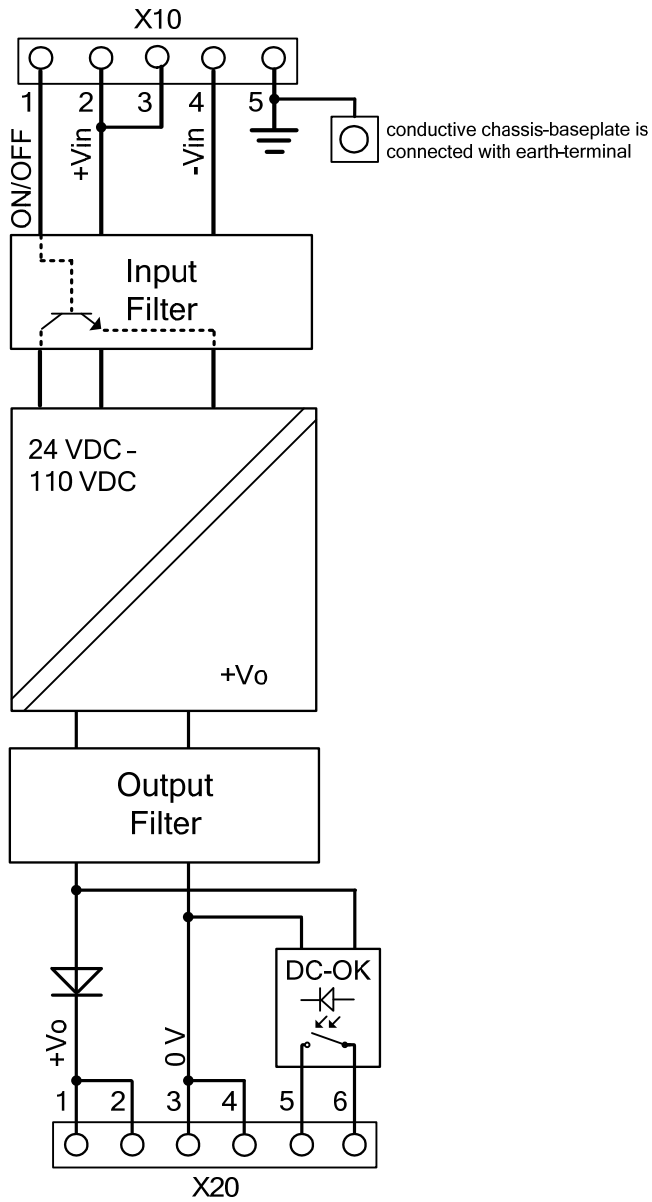
GENERAL CHARACTERISTICS

General Standard	EN 50155:2021 Railway applications - Rolling stock - Electronic equipment IEC 60571:2012 Railway applications - Electronic equipment used on rolling stock			
Useful Life Class	Class L4 (20 years) according to EN50155:2021			
MTBF Calculation method: MIL-HDBK-217-F2 Using demonstrated Failure Rates of components	Ground Benign (GB), +25 °C	Ground Benign (GB), +40 °C	Ground Fixed (GF), +40 °C	Ground Mobile (GM), +40 °C
	IC313_5: 6 965 000 h IC313_6: 8 265 000 h	IC313_5: 5 004 000 h IC313_6: 5 861 000 h	IC313_5: 987 000 h IC313_6: 1 138 000 h	IC313_5: 505 000 h IC313_6: 580 000 h
MTBF Calculation method: SN 29500 (IEC 61709)	IC313_5: 1 241 000 h @ +50 °C IC313_6: 1 401 000 h @ +50 °C			
Marking	Label with following information: - part number, input voltage range, output voltage, output power - serial number for identification and traceability (printed in text format and as barcode) - revision index			
Connector identification	Printings on chassis to identify connectors and pin-functions.			

SAFETY AND INSULATION

Safety Standards	IEC 60950-1:2005+A1:2009+A2:2013 CSV EN 62368-1:2020+A11:2020 IEC 62368-1:2018+COR1:2020
Insulation Coordination	According to EN50124-1:2017
Input, Output, Chassis	The input is galvanically isolated to the output. Input, output and signals are galvanically isolated to the chassis. The DC-OK Signal is isolated to the output and input (see blockdiagram)
Input to Output	Isolation Voltage: 3300 Vrms at 2000 m altitude, 60 s 2500 Vrms at 5000 m altitude, 60 s Clearance: 5.5 mm Creepage: 5.5 mm For the type test, the Y-capacitors must be removed according to EN 61287-1:2014. Please refer to the intreXis whitepaper "Insulation Test" for detailed information. For the routine test according to EN50124-1:2017 of Input to Output and Input to Chassis, intreXis AG recommends the following procedure: connect Output to Chassis, apply a test-voltage of 2125 VDC or 1500 VAC with trigger threshold >30 mA), 10 s between Input and Chassis. For this test, the Y-capacitors must not be removed. Please refer to the intreXis whitepaper "Insulation Test" for detailed information.
Input to Chassis	Isolation Voltage: 2000 Vrms, 60 s Clearance: 2.5 mm Creepage: 2.5 mm For the routine test, see above.
Output to Chassis	Isolation Voltage: 1000 Vrms, 60 s Clearance: 1.6 mm Creepage: 1.6 mm
DC-OK Signal to Output DC-OK Signal to Input DC-OK Signal to Chassis	Isolation Voltage: 2000 Vrms, 60 s Clearance: 2.5 mm Creepage: 2.5 mm
Insulation Resistance	Input – Chassis: > 550 MΩ Input – Output: > 550 MΩ Output – Chassis: > 550 MΩ DC-OK Signal to Output: > 550 MΩ DC-OK Signal to Input: > 550 MΩ DC-OK Signal to Chassis: > 550 MΩ Test-voltage: 500 VDC

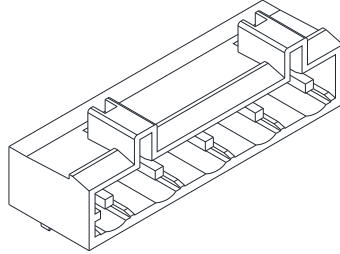
BLOCK DIAGRAM



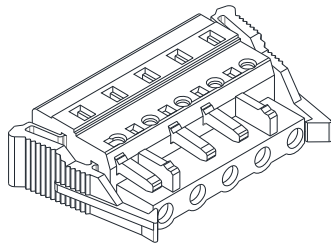
CONNECTOR TYPES

**Input connector
X10**

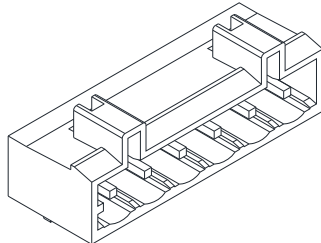
Wago 721-865/001-000
Pitch: 7.5 mm
Number of pins: 5



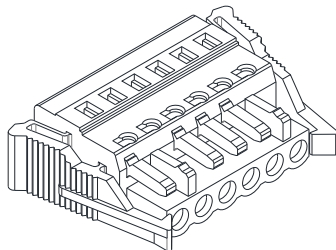
Mating part: Wago 721-205/037-000
Mating connectors are not included in scope of delivery

**Output connector
X20**

Wago 721-436/001-000
Pitch: 5.0 mm
Number of pins: 6



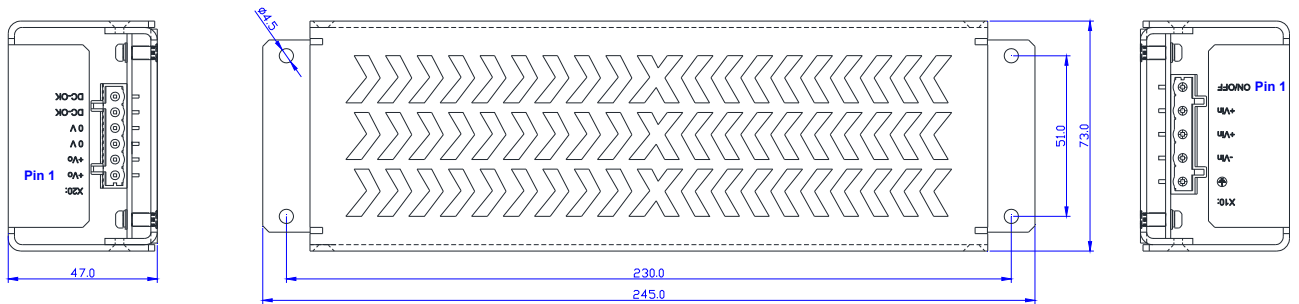
Mating part: Wago 721-106/037-000
Mating connectors are not included in scope of delivery



MECHANICAL CHARACTERISTICS

Chassis	Aluminium: EN AW 5052 - AL5052 - AlMg2.5 or EN AW 5754 - AL5754 - AlMg3 Baseplate: blank Cover: black anodized	
Overall dimensions	According to the drawing (millimeters, unless otherwise specified)	
Weight	IC313_5	IC313_6
	906 g	782 g
IP code	IP20	
Mounting	Mounting in any position is allowed	

Mechanical drawings:



Output Connector X20:

1. +Vo
2. +Vo
3. 0 V
4. 0 V
5. DC-OK
6. DC-OK

Input Connector X10:

1. ON/OFF
2. +Vin
3. +Vin
4. -Vin
5. Earth

The unit must be secured using four M4 screws or bolts (not supplied) in the mounting holes.

TEST COMPLIANCE SUMMARY (CERTIFICATE OF CONFORMITY)

Performed Test	Standard	Test conditions	Performance level	Reference document
Visual inspection	EN 50155:2021 IEC60571:2012	Aspect, dimensions, weight, markings	According to design specification	Test report
Performance test	EN 50155:2021 IEC60571:2012	Ambient temperature. Nominal supply voltage: 24 VDC and 110 VDC Supply voltage range: 16.8 – 137.5 VDC (static)	Criterion A	Test report
DC Power supply test Supply overvoltages	EN 50155:2021 IEC60571:2012	Supply voltage: 14.4 – 154 VDC 1s	Criterion B required, but tested with more strict criterion A	Test report
Insulation test	EN 50155:2021 IEC60571:2012	Input – Chassis 500 VDC Input – Output 500 VDC Output – Chassis 500 VDC DC-OK Signal – Output 500 VDC DC-OK Signal – Input 500 VDC DC-OK Signal – Chassis 500 VDC Repeated after Voltage withstand test Voltage withstand test: Input – Chassis 2000 Vrms 60 s Input – Output 3300 Vrms 60 s Output – Chassis 1000 Vrms 60 s DC-OK Signal – Output 2000 Vrms 60 s DC-OK Signal – Input 2000 Vrms 60 s DC-OK Signal – Chassis 2000 Vrms 60 s	Resistance > 20 MΩ (measured >550 MΩ, exceeding the requirement) No disruptive discharge	Test report
Low temperature start-up test Cold start test	EN 50155:2021 IEC60571:2012	T = -50 °C	Criterion A (exceeds the requirements, extended range down to -50 °C for extremely cold environments)	Test report
Dry heat test	EN 50155:2021 IEC60571:2012	T = +70 °C (cycle A) T = +85 °C (cycles B and C)	Criterion A	Test report
Low temperature storage test	EN 50155:2021 IEC60571:2012	T = -50 °C	Criterion A after recovery period	Test report
Cyclic damp heat test	EN 50155:2021 IEC60571:2012	T = +55 °C and +25 °C (2 cycles)	Criterion A	Test report
Electromagnetic compatibility test	EN 50155:2021 EN 50121-3-2:2016/ A1:2019 IEC60571:2012 IEC 62236-3-2:2018	See section 'Electromagnetic Compatibility (EMC)'		R-EM-354-1016-02A
Shock and vibration test	EN 50155:2021 IEC60571:2012	EN 61373:2010, Category 1, class B		Testreport_Vibrations R-MC-354-0222-02A

Additional tests:

Performed Test	Standard	Test conditions	Performance level	Reference document
Fire behaviour	EN 45545-2:2020	PCB: R25 (EN 60695-2-11, T16: No ignition at T=850 °C)	PASSED (HL1-HL2-HL3)	Fire_Certificate_IC313

Furthermore, the product is compliant with the requirements of:

- EC 1907/2006 (December, 18th 2006) REACH regulation: Registration, Evaluation, Authorisation and Restriction of Chemicals.
- UNIFE Railway Industry Substance List

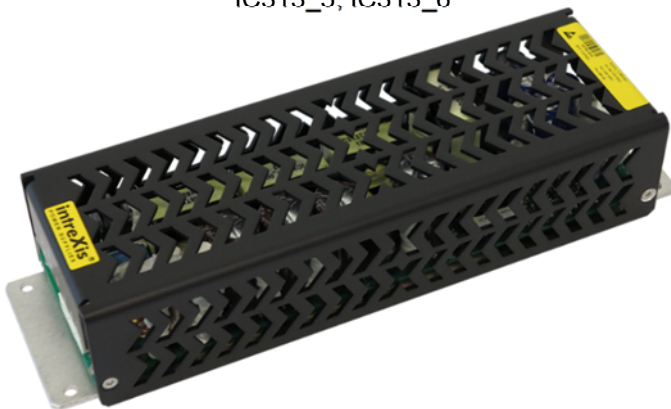
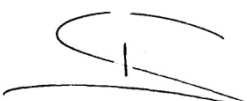
Neuhausen am Rheinfall, 29.03.2020

Thomas Schiegg
intreXis AG







EU DECLARATION OF CONFORMITY (DoC)

Product Models	IC313_5, IC313_6	
Name and address of the manufacturer	intreXis AG Tobelraastrasse 4 CH-8212 Neuhausen am Rheinfall Switzerland	
This declaration of conformity is issued under the sole responsibility of the manufacturer.		
<p>IC313_5, IC313_6</p> 		
The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:	Low Voltage Directive: RoHS Directive: EMC Directive:	2014/35/EU 2011/65/EU, (EU) 2015/863 2014/30/EU
References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:	Low Voltage Directive: RoHS Directive: EMC Directive: Railway Applications:	EN 62368-1:2020/A11:2020 IEC 63000:2016+AMD1:2022 CSV EN 50121-3-2:2016/ A1:2019 EN 50155:2021
Signed for and on behalf of:	intreXis AG Tobelraastrasse 4 CH-8212 Neuhausen am Rheinfall Switzerland	
Place, Date of issue	Neuhausen am Rheinfall, 12.12.2023	
Name, Function, Signature	Thomas Schiegg, Managing Director: 	



UK DECLARATION OF CONFORMITY (DoC)

Product Models	IC313_5, IC313_6	
Name and address of the manufacturer	intreXis AG Tobelraastrasse 4 CH-8212 Neuhausen am Rheinfall Switzerland	
This declaration of conformity is issued under the sole responsibility of the manufacturer.		
<p>IC313_5, IC313_6</p> 		
The object of the declaration described above is in conformity with the relevant UK legislation:	UK SI 2016 No. 1101:	Electrical Equipment (Safety) Regulations 2016
	UK SI 2012 No. 3032:	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
	UK SI 2016 No. 1091:	Electromagnetic Compatibility Regulations 2016
References to the relevant standards used or references to the other technical specifications in relation to which conformity is declared:	Low Voltage Directive:	BS EN 62368-1:2020/A11:2020
	RoHS Directive:	BS EN IEC 63000:2018
	EMC Directive:	BS EN 50121-3-2:2016/A1:2019
	Railway Applications:	BS EN 50155:2021
Signed for and on behalf of:	intreXis AG Tobelraastrasse 4 CH-8212 Neuhausen am Rheinfall Switzerland	
Place, Date of issue	Neuhausen am Rheinfall, 12.12.2023	
Name, Function, Signature	Thomas Schiegg, Managing Director: 	

INSTALLATION AND OPERATION

Safety	<div data-bbox="707 311 901 481" data-label="Image"> </div> <p data-bbox="924 315 1147 344">Warning / Caution!</p> <p data-bbox="924 378 1390 468">The power supplies should be installed and put into operation only by qualified personnel.</p> <p data-bbox="697 533 1423 591">Before installing or removing the unit, disconnect the power from the system.</p> <p data-bbox="697 611 1423 822">The main protective earthing terminal is provided on the connector X10/pin 5. For 72 V and 110 V input applications, in addition to the main protective earthing terminal (X10/pin 5), a separate protective earthing terminal must be connected permanently. This can be achieved by screwing the unit onto a conductive, earthed plate.</p>
Servicing	<p data-bbox="697 862 1423 1072">In case of failures, malfunctions or defects, the converter must be returned to intreXis for analysis and repair. In particular, the converter should be sent to intreXis for analysis if any damage has occurred to the unit (e.g. the unit dropped). Any attempts to open and repair the unit could void the warranty and could expose the operator to hazardous voltages.</p>
Spare Parts	<p data-bbox="697 1097 1423 1184">List and drawings of spare parts are not provided, since the failed units have to be returned to intreXis for analysis and repair.</p>
Disposal	<p data-bbox="697 1218 1423 1276">Disused units must be collected separately and disposed at a suitable recycling facility.</p>
Connecting the Cables	<p data-bbox="697 1317 1423 1435">Ensure that proper wires are used according to the input current specifications. Prepare the cables according to the specifications of the particular connector used.</p>
Operation of the Unit	<p data-bbox="697 1471 1423 1563">Once the input power is applied, the output voltage is enabled, unless the External ON/OFF signal is disabling the converter (OFF-state).</p>