

# R&S® ZN-Z15

## RFFE INTERFACE

### Specifications

<b>RFFE interface</b> (order no. 1325.5905.02 and 1325.5905.03)	RFFE GPIO	controls up to two independent MIPI RFFE devices ten output lanes with different power capability
LAN interface	RJ-45	10/100BASE-T
USB interface		USB type B plug, version 2.0
DIRECT CTRL IN interface		direct control bus input
DIRECT CTRL OUT interface		direct control bus output, power out: max. 180 mA
R&S® ZN-Z15 power input		12 V DC $\pm$ 10 %, 1.2 A
External power supply (order no. 3586.3888.00)		R&S® TRG45A AC/DC adapter, 45 W

<b>RFFE GPIO interface</b> (order no. 1325.5905.02)	provides two independent MIPI RFFE busses, and ten individually configurable output lanes with different power handling capabilities		
Connector type	25-pin D-Sub female		
Ground (analog and digital)	pin 1, 3, 5, 11 and 22		

Output voltage	output configuration selected	voltage range	voltage step size	max. current
RFFE port 1 VIO	pin 2	0 to +2 V	1 mV	20 mA
RFFE port 1 DATA	pin 15	0 to +2 V	1 mV	20 mA
RFFE port 1 CLK	pin 14	0 to +2 V	1 mV	20 mA
	configurable clockrate: 31.25 kHz to 52 MHz			
RFFE port 2 VIO	pin 4	0 to +2 V	1 mV	20 mA
RFFE port 2 DATA	pin 17	0 to +2 V	1 mV	20 mA
RFFE port 2 CLK	pin 16	0 to +2 V	1 mV	20 mA
	configurable clockrate: 31.25 kHz to 52 MHz			
GPIO 1 to 8	pin 6 to pin 9, pin 18 to pin 21	-5 V to +10 V, typ. -6 V to +12 V	5 mV	20 mA
GPIO 9 and 10	pin 10 and 23	-5 V to +10 V, typ. -6 V to +12 V	5 mV	100 mA



<b>RFFE GPIO interface</b> (order no. 1325.5905.03)		including voltage/current measurement with switchable source resistance 32 internal ADC channels are available on the RFFE GPIO interface measuring voltage and current at each RFFE and GPIO pin simultaneously				
<b>Voltage measurement</b>		voltage range	resolution	accuracy <sup>1</sup>		
RFFE port 1 and 2, VIO, DATA and CLK	pin 2 and 4, pin 14 to pin 17	0 V to +3 V	100 $\mu$ V	2 % $\pm$ 20 mV		
GPIO 1 to 10	pin 6 to pin 9, pin 18 to pin 21, pin 10, pin 23	-5 V to +10 V	100 $\mu$ V	2 % $\pm$ 50 mV		
<b>Current measurement</b> Current values are valid for GPIO voltages -5 V to +8 V		source shunt resistor	current range	resolution	accuracy <sup>1</sup>	repeatability
RFFE port 1 and 2, VIO, DATA and CLK, GPIO 1 to 8	pin 6 to pin 9, pin 18 to pin 21	10 $\Omega$	-20 mA to +20 mA	10 $\mu$ A	2 % $\pm$ 200 $\mu$ A	< 100 $\mu$ A
		100 $\Omega$	-2 mA to +2 mA	1 $\mu$ A	2 % $\pm$ 20 $\mu$ A	< 10 $\mu$ A
		1 k $\Omega$	-200 $\mu$ A to +200 $\mu$ A	100 nA	3 % $\pm$ 3 $\mu$ A	< 1 $\mu$ A
		10 k $\Omega$	-20 $\mu$ A to +20 $\mu$ A	10 nA	5 % $\pm$ 500 nA	< 100 nA
		100 k $\Omega$	-2 $\mu$ A to +2 $\mu$ A	1 nA	5 % $\pm$ 50 nA	< 10 nA
GPIO 9 and 10	pin 10 and 23		-100 mA to +100 mA	10 $\mu$ A	3 % $\pm$ 3 mA	< 100 $\mu$ A

<b>Trigger</b>	TRIG 1/TRIG 2	BNC connector
	trigger level	TTL level, 3.3 V tolerant

<b>General data</b>		
Temperature range		
Operating temperature range		0 °C to +50 °C
	with R&S®TRG45A external power supply	0 °C to +40 °C
Permissible temperature range		-10 °C to +55 °C
Storage temperature range		-10 °C to +70 °C
Damp heat		+25 °C/+55 °C, cycl. 95 %
Short dew		-5 °C/+25 °C
Transport above sea level		4500 m
Operation above sea level		2000 m
Calibration interval		1 year
EMC	emission	in line with CISPR 11/EN 55011 group 1 class A (for a shielded test setup); instrument complies with the emission requirements stipulated by EN 55011 and EN 61326-1 class A; this means that the instrument is suitable for use in industrial environments
	immunity	in line with EMC Directive 2014/30/EU including: IEC/EN 61326-1 (immunity test requirement for industrial environment, EN 61326 table 2), IEC/EN 61326-2-1, IEC/EN 61000-3-2, IEC/EN 61000-3-3
Electrical safety		in line with IEC 61010-1, EN 61010-1 and UL 61010-1, CAN/CSA-C22.2 No.61010-1
Power supply		100 V to 240 V AC, 1.05 A to 0.55 A, 47 Hz to 63 Hz, safety class I in line with VDE 411
Power consumption		< 25 VA
International safety approvals		VDE, CSA (US), CE conformity mark
Dimensions	W x H x D	170 mm x 55 mm x 230 mm (6.7 in x 2.2 in x 9.1 in)
Weight	with accessories	2.0 kg (4.4 lb)
	without accessories	1.1 kg (2.4 lb)

<sup>1</sup> x %  $\pm$  y is to be understood as x % of reading  $\pm$  y.

## Ordering information

Designation	Type	Order No.
RFFE interface	R&S®ZN-Z15	1325.5905.02
RFFE interface, including voltage/current measurements with switchable source resistance	R&S®ZN-Z15	1325.5905.03
<b>Accessory</b>		
Direct control cable	R&S®ZN-B121	1323.9290.00
RFFE cable with adaptors	R&S®ZN-Z25	1334.3424.02

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R&S®ZN-Z15 RFFE Interface

Data without tolerance limits is not binding | Subject to change

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