

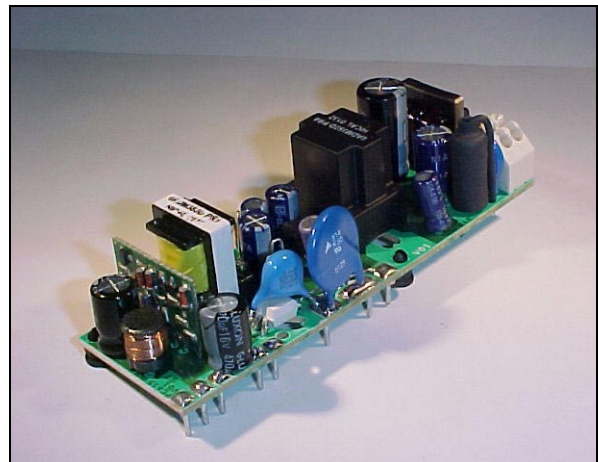
POWER MANAGEMENT MODULE FOR ISDN NT1

REV. 01

Type	V_i	V_o	I_o
COMBI/F3	195 to 253 V_{ac} and 28 to 115 V_{dc}	out 1:3.3V	100 mA
		out 2:40V	120 mA

FEATURE

- Uko INTERFACE (DC) and MAINS (AC) inputs to enable NPM (Normal Power Mode) and RPM (Restricted Power Mode) CONDITIONS
- INPUT FILTER TO MEET EMI requirements
- PEAK INPUT OVERVOLTAGE WITHSTANDING
- AC INPUT PROTECTION FUSE
- INPUTS TO OUTPUTS INSULATION
- 2 INSULATED OUTPUTS:
 - V_{o1} =3.3 V for NT1 logics
 - V_{o2} =40 V for "S" interface
- AUXILIARY LOGIC OUTPUT TTL-COMPATIBLE for LED & NPM/RPM MODE indication, share the same ground of V_{o1}
- AUXILIARY LOGIC OUTPUT TTL-COMPATIBLE for LED & NPM/RPM MODE indication, share the same ground of V_{o2}
- INTERNAL RELAY FUNCTION FOR V_{o2} POLARITY REVERSE
- "S" INTERFACE OUTPUT CHARACTERISTICS:
 - Peak output of 220 mA for 150 ms
 - Typical output power 4,5 W
 - Output filtering to meet ETSI requirements
 - Hold up time: 20 ms with 4,5 W output power
 - Continuous short circuit protection
 - Peak overvoltage withstand: 1KV for 10/700 us transversal
- U-INTERFACE ACCORDING TO ETR080
- S-INTERFACE ACCORDING TO ETS 300 012



ORDERING NUMBER: GS-COMBI/F3-3.3

- MTBF: 300 Kh, according to MIL HDBK 217-F
- Operating Temperature: -10 to +70°C

DESCRIPTION

The NT1 Power Management Module COMBI/F3 is a comprehensive solution for ISDN-NT1 (Network Termination Basic Access NTBA) equipment, combining both AC-DC and DC-DC functions.

The GS-COMBI/F3 provide the NTBA with all necessary supply voltages as well as control signals to operate in the different operating modes, typically the Normal Power Mode (NPM) and Restricted Power Mode (RPM).

Connected to the main, Input 1 (2 poles AC connector) is the AC input power to the COMBI/F3, source of the whole necessary power in normal operating mode, namely in NPM. Input 2 is the DC power source when in RPM, therefore to connect to the U-INTERFACE.

The device supply 3.3V (out 1) for logics and 40V (out 2) for the S interface both in Normal Power Mode (NPM) and in Restricted Power Mode (RPM).

RPM mode is the emergency condition that occurs if the mains (AC) input is not available. An internal "relay function" is available to reverse the 40 V output polarity. A third auxiliary output can be used for LEDs

COMBI/F3

driving and RPM/NPM mode acknowledge (Logic output), referred to 3.3 V output and a fourth auxiliary output can be used for LEDs driving and RPM/NPM mode acknowledge (Logic output), referred to 40 V.

The logics outputs become high (+3.3V) when in NPM condition.

The converter offers short-circuit protection on both outputs: particularly, short-circuit on 40V output doesn't affect the +3.3V output.

6000 V_{RMS} insulation voltage for 60 seconds (reinforced insulation) is provided among input 1 and all outputs. Same reinforced insulation is also provided between Input 1 and Input 2.

3000 V_{RMS} / 1 min. reinforced insulation is provided between Input 2 and 40 V output.

When in NPM mode (AC main supply), the module max. power consumption is <15 VA (apparent power).

Input 2 undervoltage lockout offers high impedance in order to have 10μA max input current when V_{i2} is <18 Volts.

The design of the module has been conducted using the following reference standards:

EN 60950, VDE0878 part 1 class B (EMC), EN55022 class B (emission), EN50 082-1 (immunity) ITU-T I.430, ETS 300 012 and ETR 080 and ETS300 047 (ISDN BASIC ACCESS, Safety and Protection); anyway, please note that no certification processes have been carried out on the module itself.

ELECTRICAL CHARACTERISTICS when in **NPM** ($T_{amb}=25^{\circ}\text{C}$, unless otherwise specified.)**NPM Standard Condoton:** $V_{in1}=195$ to $253 V_{rms}$ $V_{in2}=28$ to $115 V_d$

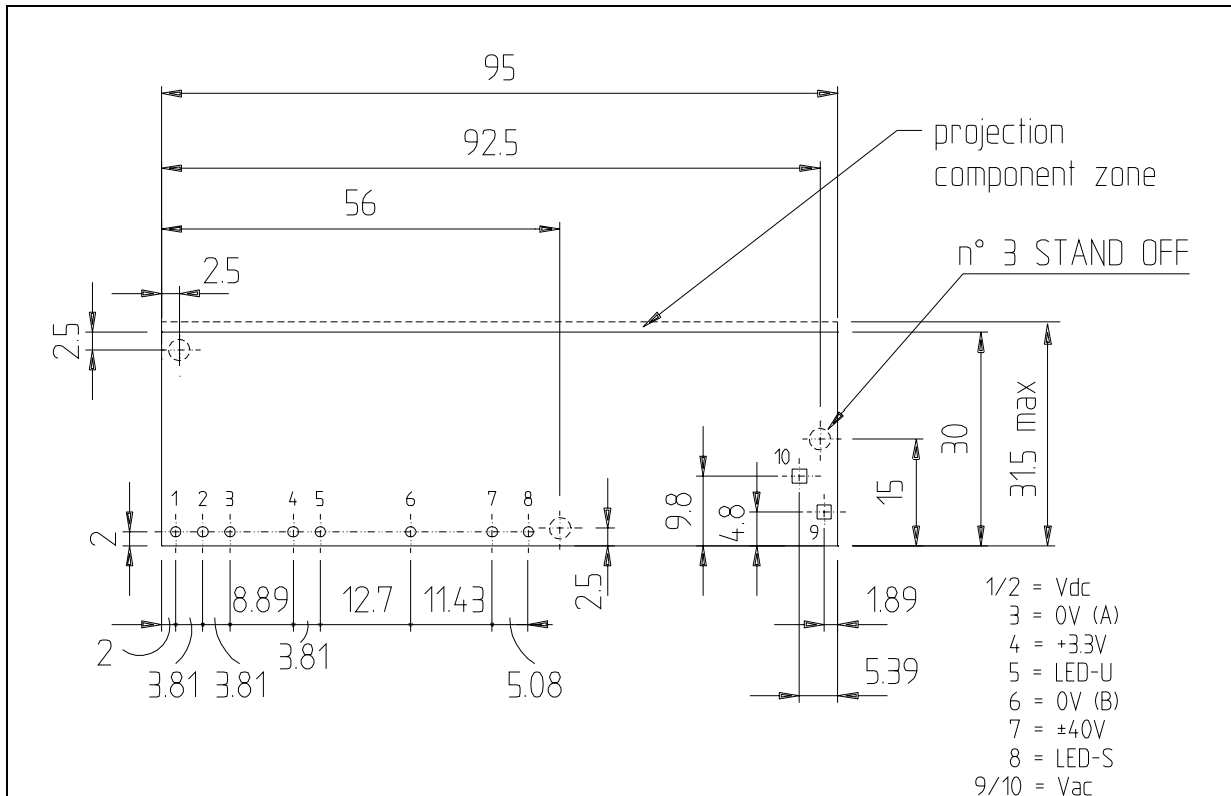
Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Unit
V_{i1}	Input Voltage 1		195		253	V_{RMS}
V_{i2}	Input Voltage 2	any polarity	28		115	V_{dc}
f_i	V_{i1} Input Frequency	$V_{i1} = 230 V_{RMS}$	43		56	Hz
V_{i1st}	Start up Input 1 voltage	Output parameters as per NPM Standard Conditions			185	V_{RMS}
V_{i2st}	Start up Input 2 voltage	Output parameters as per Standard Conditions			28	V_{dc}
V_{o1}	Output Voltage 1	Standard conditions	3.1	3.3	3.5	V
V_{o2}	Output Voltage 2	Standard conditions	36	40	42	V
V_{o3}	Output Voltage 3 LED "U"	Standard conditions, $I_{o3}=0.9$ to 3 mA	3.0	3.3	3.5	V
V_{o4}	Output Voltage 4	Standard conditions, $I_{o4}=1$ to 2 mA	2.0	3.0	3.5	V
V_{or1}	Output Ripple voltage 1	Standard conditions BW: 0-20 MHz			20	mV_{rms}
V_{o2}	Output Ripple voltage 2	Standard conditions BW: 0-20 MHz			100	mV_{rms}
I_{o1}	Output Current 1	Standard conditions	3		100	mA
I_{o2}	Output Current 2	Standard conditions	0		120	mA
I_{oc2}	Output Overcurrent 2	$t=150\text{ms}$, $V_{o1}=34$ to 42 V	180	220	260	mA
I_{o2sc}	Output 2 short circuit current	Continuous short circuit	100	150	200	mA
V_{i1th}	NPM => RPM mode V_{i1} threshold	Output parameters as per Standard Conditions			160	V_{rms}
T_{tr}	Transition time	transition NPM => RPM and vice versa			5	ms
V_{i1pk}	Input 1 Transient overvoltage	$t = 8/20$ us transversal	2			kV
V_{i2pk}	Input 2 Transient overvoltage	$t = 10/700$ us transversal	500			V
V_{o2pk}	Output 1 Transient overvoltage	$t = 10/700$ us transversal	1000			V
P_{i1r}	Input 1 Real Power	NPM standard conditions			9	W
P_{i1}	Input 1 Apparent Power	NPM standard conditions			15	VA
V_{ist}	Insulation Voltage, pulse	Inputs to V_{o2} output $t = 10/700$ us (pulse)	10			kV
th	Hold-up time	$V_{in} = 195 V_{RMS}$ $P_{out} 1:0$ to 340 mW $P_{out} 2:4.5$ W	20			ms

COMBI/F3

RPM Standard Condition: $V_{in1} < 100 V_{rms}$ $V_{in2} = 28 \text{ to } 115 V_{dc}$

V_1	Input Voltage 1		0		100	V_{rms}
V_{i2}	Input Voltage 2	any polarity	28		115	V_{dc}
V_{i2st}	Start Up Input 2 Voltage				28	V_{dc}
V_{o1}	Output Voltage 1	RPM Standard Conditions	3.1	3.3	3.5	V
V_{o2}	Output Voltage 2	RPM Standard Conditions	36	40	42	V
$V_{o3, 4}$	Output Voltage 3, 4	RPM Standard conditions, out 3, 4 load = 50 kOhm			0.5	V
V_{or1}	Output Ripple Voltage 1	RPM Standard Conditions BW:0-20 Mhz			20	mV_{rms}
V_{or2}	Output Ripple Voltage 2	RPM Standard Conditions BW:0-20 Mhz			100	mV_{rms}
I_{o1}	Output Current 1	RPM Standard Conditions	3		100	mA
I_{o2}	Output Current 2	RPM Standard Conditions	0		12.5	mA
I_{o2sc}	Output 2 short circuit current	Continuous short circuit	9		13.5	mA
V_{i1th}	RPM => NPM mode V_{i1} threshold				185	V_{RMS}
T_{rt}	Transition time	transition NPM => RPM and vice versa			5	ms
V_{i1pk}	Input 1 Transient overvoltage	$t = 8/20 \text{ us transversal}$	2.0			Kv
V_{i2pk}	Input 2 Transient overvoltage	$t = 10/700 \text{ us transversal}$	500			V
V_{o2pk}	Out 2 Transient overvoltage	$t = 10/700 \text{ us transversal}$	1000			V
V_{ist}	Insulation Voltage, pulse	Inputs to V_{o2} output $t = 10/700 \text{ us (pulse)}$	10			kV

Figure 1. NT1 Power Management Module TOP VIEW (dimensions in mm)

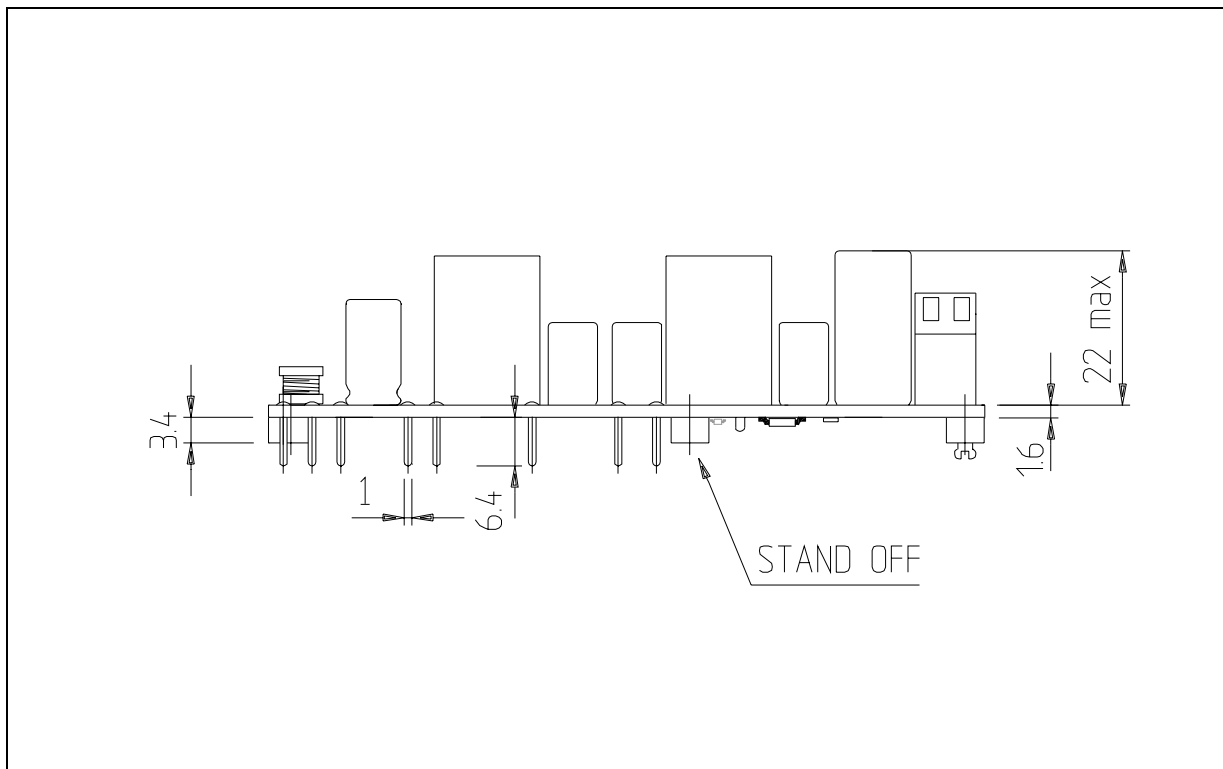


PIN CONFIGURATION

Input 1 (V_{in} 1: 230 Vac) apply to the WAGO Series connector bottom right in the TOP VIEW

Pin No	Function	Pin No	Function
1	V_{i2} Input Voltage 2 V_{DC}	5	V_{o3} Output Voltage 3 LED "U"
2	V_{i2} Input Voltage 2 V_{DC}	6	G_{NDB} GROUND PIN for V_{o2} and V_{o4}
3	G_{NDA} GROUND PIN for V_{o1} and V_{o3}	7	V_{o2} Output Voltage 2 $\pm 40 V$ "S"
4	V_{o1} Output Voltage 1 3.3 V_{DC}	8	V_{o4} Output Voltage 4 LED "S"

Figure 2. NT1 Power Management Module SIDE VIEW (dimensions in mm)



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