

# TECHNICAL DATA SHEET "INGENIO MAX XT"

## 900-1000-1200-1250-1500-1800-2100 kVA 3F<sub>(In)</sub>—3F<sub>(Out)</sub>

### GENERAL INFORMATION

POWER		kVA	900	1000	1200	1250	1500	1800	2100
UPS Type			ON LINE - Double conversion						
Nominal output power (PF = 1) <sup>(1)</sup>		kW	900	1000	1200	1250	1500	1800	2100
MPM module power (PF = 1) <sup>(1)</sup>		kW	300	250	300	250	300	300	300
AC/AC efficiency (VFI - ON LINE Double conversion) Nominal Green Conversion, Input Nominal Voltage and resistive load	@ >50% load	%	>96.0						
AC/AC efficiency (VFD ECO MODE - from 50% load)		%	99						
Heat dissipation in VFI mode (PF = 0.9)		kW	33.8	37.5	45	46.9	56.3	67.5	78.8
UPS operating temperature range		° C	0 ÷ 40						
BATTERY operating temperature range		° C	0 ÷ 25						
UPS storage temperature range		° C	-10 ÷ 70						
BATTERY storage temperature range		° C	-10 ÷ 60						
Relative humidity (non condensing)		%	< 95						
Altitude		m	< 1000 (Above sea level)						
Power derating for altitude > 1000 m			According to EN 62040-3 0.5% power derating every 100 m						
Ventilation			Forced						
Request cooling air volume (VFI)		m <sup>3</sup> /h	6900	8800	9200	11000	11500	13800	16100
Audible noise level (according to EN 62040-3)		dB	< 65 (Double conversion)						
Battery string (lead acid)		cells	360 - 372						
Protection degree			IP20						
Electromagnetic compatibility			According EN 62040-2 (CE marking)						
Safety			According to EN 62040-1						
Test and performance			According to EN 62040-3						
Paint			RAL 9005 (others options)						
Accessibility			Front and top access for service						
Installation			No rear or side gap required						

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-		28.02.2019			E	1	8
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<b>POWER</b>		<b>kVA</b>	<b>900</b>	<b>1000</b>	<b>1200</b>	<b>1250</b>	<b>1500</b>	<b>1800</b>	<b>2100</b>
No. of MPM power modules			3	4	4	5	5	6	7
No. of lateral distribution sections (optional)			2	2	2	3	3	3	4
MPM Power module dimensions	L	mm	880						
	P		970						
	H		2100						
Distribution section dimensions	L	mm	450						
	P		970						
	H		2100						
I/O module width	DB + DSB <sup>(2)</sup>	mm	800	800	800	800	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	CB + DSB <sup>(2)</sup>		800	800	800	800	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	DB + CSB <sup>(2)</sup>		800	800	800	800	1250	1650	1650
	CB + CSB <sup>(2)</sup>		800	800	800	800	1250	1650	1650
UPS width (without lateral distribution sections)	DB + DSB <sup>(2)</sup>	mm	3440	4320	4320	5200	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	CB + DSB <sup>(2)</sup>		3440	4320	4320	5200	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	DB + CSB <sup>(2)</sup>		3440	4320	4320	5200	5650	6930	7810
	CB + CSB <sup>(2)</sup>		3440	4320	4320	5200	5650	6930	7810
UPS depth			970	970	970	970	970	970	970
UPS height <sup>(3)</sup>			2100	2100	2100	2100	2100	2100	2100
Power module weight		kg	880						
I/O weight	DB + DSB <sup>(2)</sup>	kg	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	CB + DSB <sup>(2)</sup>		<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	DB + CSB <sup>(2)</sup>		690	700	750	750	850	1000	1200
	CB + CSB <sup>(2)</sup>		690	700	750	750	850	1000	1200
UPS weight (without batteries)	DB + DSB <sup>(2)</sup>	kg	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	CB + DSB <sup>(2)</sup>		<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>	<sup>(3)</sup>
	DB + CSB <sup>(2)</sup>		3390	4100	4350	5000	5350	6400	7500
	CB + CSB <sup>(2)</sup>		3390	4100	4350	5000	5350	6400	7500
Input/output terminal board			4 bar terminals for rectifier and bypass input (separate input lines) and output 3 bar terminals for battery connection Bottom cable entry Top entry on request (may impact dimensions)						
Transport			Forklift handling						
Storage and transport conditions			According to EN 62040-3						
Design standard			EN 62040-1 - EN62040-2 - EN62040-3 ISO 9001:2008 - ISO 14001						
Front operator panel			10" touch screen display						
SPDT contact interface (relay card)			Included						
Input ports for			REPO - MCB - OCB - BCB						
Serial communication interface			Standard: RS232 ModBus RTU su RS485						
Scalability			Up to 4.2 MW <sup>(4)</sup>						

(1) @40°C

(2) Battery and static bypass arrangement (standard configuration: common battery centralized static bypass ask Borri for others)

(3) Contact Borri for confirmation

(4) For other configurations ask Borri

DB: Distributed Battery

CB: Centralized Battery

DSB: Distributed Static Bypass

CSB: Centralized Static Bypass

## UPS INPUT: RECTIFIER AND BATTERY CHARGER

POWER		kVA	900	1000	1200	1250	1500	1800	2100
Input			Three-phase + Neutral						
Nominal input voltage		Vac	400						
Range		%	-20 / +15						
Input frequency (adjustable)		Hz	50 - 60						
Range		%	+/- 10						
Input power factor @ >50% load			> 0.99						
Input current THD (THDi) (@ nominal voltage and THDV < 0.5)	@ 25% load	%	< 7						
	@ 50% load		< 5						
	@ 75% load		< 3						
	@ 100% load		< 3						
Max input reactive power @ <10% load		kVAR	adjustable						
DC output voltage accuracy		%	+/- 1						
DC output voltage ripple		%	<1 (rms)						
Battery charger characteristic			IU (DIN 41773)						
Maximum recharging current (each module)		A	40						
- at nominal load									
- Max current with function DCM <sup>(5)</sup>			100						
AC-DC converter type			3 level PFC Combined SCR/IGBT (3LCSI)						
Input protection			Fuses						
Nominal current absorbed from mains (@ nominal load and fully charged battery)		A	1353	1504	1804	1879	2255	2706	3157
Maximum current absorbed from mains at minimum voltage (at rated load and max recharging current)		A	1497	1695	1995	2118	2494	2993	3492
Walk-in time		s	5 ÷ 30 (adjustable)						
Hold-off time		s	1 ÷ 300 (adjustable)						

<sup>(5)</sup> Dynamic Charging Mode (for info contact Borri)

## BATTERY

POWER		kVA	900	1000	1200	1250	1500	1800	2100
Battery standard type			VRLA (optional Li-Ion)						
Number of cells			360 - 372						
Floating voltage @ 25 °C	360 el.	Vdc	812						
	372 el.		840						
End of Discharge (EoD) voltage	360 el.	Vdc	620						
	372 el.		640						
Inverter input power (@ nominal load PF = 1, per each MPM module)		kW	306	255	306	255	306	306	306
Inverter input current (@ nominal load and minimum battery voltage, per each MPM module)		A	494	411	494	411	494	494	494
Battery protection		%	Fused switch box or other on request						
Battery test			Manual or automatic (programmable)						

## UPS OUTPUT: INVERTER

POWER		kVA	900	1000	1200	1250	1500	1800	2100
Inverter bridge			3 level PWM IGBT						
Nominal output apparent power PF = 1		kVA	900	1000	1200	1250	1500	1800	2100
Nominal output real power PF = 1 <sup>(1)</sup>		kW	900	1000	1200	1250	1500	1800	2100
DC/AC efficiency (of each power module)	@ >50% load	%	98						
Output			Three-phase + Neutral						
Nominal Output Voltage (adjustable)		Vac	380 - 400 - 415						
Output Voltage Stability									
- Static (balanced load)		%	+/- 1						
- Static (unbalanced load)		%	+/- 2						
- Dynamic (Step load 20%-100%-20%)		%	+/- 5						
- Output voltage recovery time after step load		ms	< 20						
- EN 62040-3 classification			VFI-SS-111						
Phase Angle Accuracy									
- Balanced load		°	+/- 1						
- Unbalanced load (100% - 0% - 0%)		°	+/- 2						
Output Frequency		Hz	50 - 60						
Output Frequency Stability									
- Synchro w/internal quartz oscillator (mains fault)		Hz	+/- 0.001						
- Synchro w/ mains		Hz	+/- 2 (other on request)						
- Slew rate		Hz/s	< 1						
Nominal output current (@ 400 Vac)		A	1304	1449	1739	1812	2174	2609	3043
Overload capability <sup>(1)</sup>	>100...125%	min	10						
	>125...150%	min	1						
Short circuit current (half cycle)		A	2608	2898	3478	3624	4348	5218	6086
Short circuit characteristics			Electronic current limitation at above values. Automatic stop after 5 seconds						
Output waveform			Sinusoidal						
Output harmonic distortion THDv									
- linear load		%	< 1						
- non linear load		%	< 5						
- EN 62040-3			Fully compliant						
Maximum crest factor			3 : 1						

<sup>(1)</sup> @ 40°C

## UPS OUTPUT: AUTOMATIC BYPASS

Automatic static bypass		Electronic thyristor switch (centralised configuration)
Input		3-phase + Neutral
Protection		Fuses
Nominal input voltage	Vac	380 - 400 - 415
Range (adjustable)	%	+/- 10
Nominal input frequency	Hz	50 - 60
Range (adjustable)	%	+/- 10
Transfer mode		No break
Transfer inverter --> automatic bypass (VFI)		In case of: - Static Switch test - Inverter Test - Inverter not operating - Battery end of discharge
Retransfer automatic bypass --> inverter (VFI)		Automatic Block on bypass after 6 transfers within 2 minutes, reset by front panel
Short circuit withstand	kA	Up to 100 <sup>(1)</sup>
Over load capability	%	125 continuous 1000 for 1 cycle
Manual bypass switch (optional)		- Electronically controlled - No break

<sup>(1)</sup> For info contact Borri

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## AVAILABLE CONFIGURATIONS

1. DISTRIBUTED BATTERY
2. CENTRALISED BATTERY(\*)
3. DISTRIBUTED STATIC BYPASS
4. CENTRALISED STATIC BYPASS (\*)

(\*) standard configuration

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## OPTION

1. OTHER COMMUNICATION PROTOCOL ON REQUEST (STANDARD: MODBUS ON SINGLE RS485)
2. TELESERVICE
3. AUTOMATIC CHARGING VOLTAGE ADJUSTMENT VS AMBIENT TEMPERATURE
4. ISOLATION TRANSFORMER
5. INTERNAL MANUAL BYPASS SWITCH
6. PEAK SHAVING CAPABILITY