




Certification Entity for Renewable Energies

| | | |
|---|--|---|
| Product Certificate Number | 10979-CER | |
| Applicant | INGETEAM POWER TECHNOLOGY, S.A. Av. Ciudad de la Innovación, 13, 31621 Navarra, España. | |
| Series/ | INGECON SUN POWER MAX inverters series | |
| Model/ | 275TL X220; 410TL X220; 550TL X220; 350TL X275; 520TL X275; 695TL X275; 380TL X300; 570TL X300; 760TL X300; 400TL X320; 605TL X320; 800TL X320; 440TL X345; 660TL X345; 880TL X345; 460TL X360; 690TL X360; 920TL X360; 500TL X400; 750TL X400; 1000TL X400; 535TL X420; 805TL X420; 1070TL X420 | 275TL M220; 410TL M220; 550TL M220; 350TL M275; 520TL M275; 695TL M275; 380TL M300; 570TL M300; 760TL M300; 400TL M320; 605TL M320; 800TL M320; 440TL M345; 660TL M345; 880TL M345; 460TL M360; 690TL M360; 920TL M360; 500TL M400; 750TL M400; 1000TL M400; 535TL M420; 805TL M420; 1070TL M420 |
| Type of generating unit | Photovoltaic Inverter | |
| Technical Data | See page 2 | |
| Network connection rule | <p>IEC 61000-6-2:2005. Electromagnetic compatibility (EMC) -- Part 6-2: Generic standards - Immunity for industrial environments.</p> <p>IEC 61000-6-4:2006. Electromagnetic compatibility (EMC) -- Part 6-4: Generic standards - Emission standard for industrial environments.</p> <p>IEC 61000-3-11: 2000. Electromagnetic compatibility (EMC) -- Part 3-11: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems - Equipment with rated current ≤ 75 A and subject to conditional connection.</p> <p>IEC 61000-3-12: 2011. Electromagnetic compatibility (EMC) - Part 3-12: Limits - Limits for harmonic currents produced by equipment connected to public low-voltage systems with input current > 16 A and ≤ 75 A per phase</p> <p>IEC 61000-6-1:2005. Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments.</p> | |
| <p>Having assessed the test reports numbers: 45557REM.001 performed by AT4 Wireless (EA accredited laboratory nº 51/LE 147), 12/31700508 and 11/31702370 performed by Applus (EA accredited laboratory nº 9/LE900, nº 9/LE894) and the certificate number 2613/0477/2-E2-CER performed by SGS (EA accredited 87/C-PR244). The laboratories were evaluated according the requirements of the EN ISO/IEC 17025:2005</p> <p>The above-mentioned generating units complies with the requirements of the above-mentioned standards.</p> <p>This certification is according the CERE internal process PET-CERE-09 based on the requirements of the EN ISO/IEC 17065:2012. For this certification process the conformity assesment activities was according Scheme Type 5 based on:</p> <ul style="list-style-type: none"> • Testing of production samples selected by CERE. • Audit of quality system according ISO 9001 with certificate number: 0.04.12231 issued by a certification body accredited according EN ISO/IEC 17021. • Inspection of the manufacturing process. <p>This certificate is valid until: 1st of June of 2018</p> | | |
| <p>Place, Date: Madrid 1st of June of 2015</p> <div style="text-align: right;">  Miguel Martínez Lavin Certification Manager </div> | | |



Certification Entity for Renewable Energies

| Model: | 380TL X300 | 570TL X300 | 760TL X300 | 400TL X320 | 605TL X320 | 800TL X320 |
|------------------------------------|--|--------------------------|--------------------------|-----------------------|--------------------------|--------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 388.6 - 497.1 kWp | 583 - 745.8 kWp | 777.3 - 994.4 kWp | 413.7 - 530.3 kWp | 620.6 - 795.5 kWp | 827.5 - 1,060.7 kWp |
| Voltage Range | 437 - 820 V | | | 468 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| N° inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 630 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 410A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 415.7 kVA / 382.4 kVA | 623.5 kVA / 573.7 kVA | 831.4 kVA / 764.9 kVA | 443.4 kVA / 407.9 kVA | 665.1 kVA / 611.9 kVA | 886.8 kVA / 815.9 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 300 V IT System | | | 320 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=415.7 kVA | Yes. Smax=623.5 kVA | Yes. Smax=831.4 kVA | Yes. Smax=443.4 kVA | Yes. Smax=665.1 kVA | Yes. Smax=886.8 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |



Certification Entity for Renewable Energies

| Model: | 440TL X345 | 660TL X345 | 880TL X345 | 460TL X360 | 690TL X360 | 920TL X360 |
|------------------------------------|--|--------------------------|--------------------------|-----------------------|--------------------------|--------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 445.8 - 571.7 kWp | 668.7 - 857.6 kWp | 891.6 - 1,143.5 kWp | 464.7 - 596.6 kWp | 697.1 - 894.9 kWp | 928.9 - 1,193.1 kWp |
| Voltage Range | 502 - 820 V | | | 524 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| N° inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 630 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 410A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 478 kVA / 439.8 kVA | 717.1 kVA / 659.7 kVA | 956.1 kVA / 879.6 kVA | 498.8 kVA / 458.9 kVA | 748.2 kVA / 688.4 kVA | 997.7 kVA / 917.8 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 345 V IT System | | | 360 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=478 kVA | Yes. Smax=717.1 kVA | Yes. Smax=956.1 kVA | Yes. Smax=498.8 kVA | Yes. Smax=748.2 kVA | Yes. Smax=997.7 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |



Certification Entity for Renewable Energies

| Model: | 500TL X400 | 750TL X400 | 1000TL X400 | 535TL X420 | 805TL X420 | 1070TL X420 |
|------------------------------------|--|--------------------------|---------------------------|---------------------|--------------------------|---------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 515.8 - 662.9 kWp | 773.7 - 994.4 kWp | 1,031.6 - 1,325.7 kWp | 541.1 - 696 kWp | 811.7 - 1,044 kWp | 1,082.3 - 1,392 kWp |
| Voltage Range | 578 - 820 V | | | 607 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| Nº inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 630 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 410A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 554.3 kVA / 509.9 kVA | 831.4 kVA / 764.9 kVA | 1,108.5 kVA / 1,019.8 kVA | 582 kVA / 535.4 kVA | 873 kVA / 803.1 kVA | 1,163.9 kVA / 1,070.8 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 400 V IT System | | | 420 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=554.3 kVA | Yes. Smax=831.4 kVA | Yes. Smax=1,108.5 kVA | Yes. Smax=582 kVA | Yes. Smax=873 kVA | Yes. Smax=1,163.9 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |



Certification Entity for Renewable Energies

| Model: | 380TL M300 | 570TL M300 | 760TL M300 | 400TL M320 | 605TL M320 | 800TL M320 |
|------------------------------------|--|--------------------------|--------------------------|----------------------|--------------------------|--------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 388.6 - 197.1 kWp | 583 - 745.8 kWp | 777.3 - 994.4 kWp | 413.7 - 530.3 kWp | 620.6 - 795.5 kWp | 827.5 - 1,060.7 kWp |
| Voltage Range | 437 - 820 V | | | 468 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| Nº inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 400 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 260A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 415.7 kVA / 382.4 kVA | 623.5 kVA / 573.7 kVA | 831.4 kVA / 764.9 kVA | 443.4 kVA / 407.9kVA | 665.1 kVA / 611.9 kVA | 886.8 kVA / 815.9 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 300 V IT System | | | 320 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=415.7 kVA | Yes. Smax=623.5 kVA | Yes. Smax=831.4 kVA | Yes. Smax=443.4 kVA | Yes. Smax=665.1 kVA | Yes. Smax=886.8 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection (for each power stage) | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |



Certification Entity for Renewable Energies

| Model: | 440TL M345 | 660TL M345 | 880TL M345 | 460TL X360 | 690TL X360 | 920TL X360 |
|------------------------------------|--|--------------------------|--------------------------|-----------------------|--------------------------|--------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 445.8 - 571.7 kWp | 668.7 - 857.6 kWp | 891.6 - 1,143.5 kWp | 464.7 - 596.6 kWp | 697.1 - 894.9 kWp | 929.4 - 1,193.1 kWp |
| Voltage Range | 502 - 820 V | | | 528 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| Nº inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 400 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 260A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 478 kVA / 439.8 kVA | 717.1 kVA / 659.7 kVA | 956.1 kVA / 879.6 kVA | 498.8 kVA / 458.9 kVA | 748.2 kVA / 688.4 kVA | 997.7 kVA / 917.8 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 345 V IT System | | | 360 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=478 kVA | Yes. Smax=717.1 kVA | Yes. Smax=956.1 kVA | Yes. Smax=498.8 kVA | Yes. Smax=748.2 kVA | Yes. Smax=997.7 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection (for each power stage) | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |

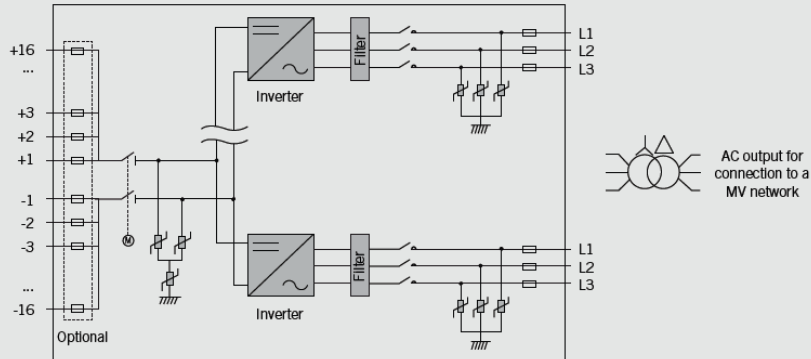


Certification Entity for Renewable Energies

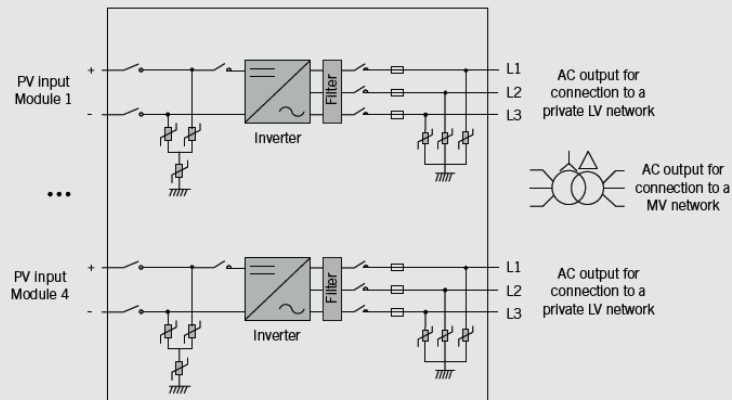
| Model: | 500TL M400 | 750TL M400 | 1000TL M400 | 535TL M420 | 805TL M420 | 1070TL M420 |
|------------------------------------|--|--------------------------|---------------------------|---------------------|--------------------------|---------------------------|
| Input (DC) | | | | | | |
| Recommended PV array power range | 515.8 - 662.9 kWp | 773.7 - 994.4 kWp | 1,031.6 - 1,325.7 kWp | 541.1 - 696 kWp | 811.7 - 1,044 kWp | 1,028.3 - 1,392 kWp |
| Voltage Range | 581 - 820 V | | | 611 - 820 V | | |
| Maximum Voltage | 1050 V | | | | | |
| Maximum Current | 900 A | 1,350 A | 1,800 A | 900 A | 1,350 A | 1,800 A |
| Nº inputs with fuse holders | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) | 8 | 12 (extendable up to 16) | 12 (extendable up to 16) |
| Fuse dimensions | 63 A / 1,000 V to 400 A / 1,000 V | | | | | |
| Type of Connection | Connection to cooper bars | | | | | |
| Number of Power Blocks | 2 | 3 | 4 | 2 | 3 | 4 |
| MPPT | 1 | | | | | |
| Max. Current at each point | From 40A to 260A for positive and negative poles | | | | | |
| Inputs Protection | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| DC switch | Yes, motorized DC switch | | | | | |
| Other Protections | Reverse polarity/insulation failure monitoring/Anti-islanding protection | | | | | |
| Output (AC) | | | | | | |
| Power 30°C/45°C | 554.3 kVA / 509.9 kVA | 831.4 kVA / 764.9 kVA | 1,108.5 kVA / 1,019.8 kVA | 582 kVA / 535.4 kVA | 873 kVA / 803.1 kVA | 1,163.9 kVA / 1,070.8 kVA |
| Current 30°C/45°C | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A | 800 A / 736 A | 1,200 A / 1,104 A | 1,600 A / 1,472 A |
| Rated Voltage | 400 V IT System | | | 420 V IT System | | |
| Frequency | 50Hz | | | | | |
| Phi Cosine | 1 | | | | | |
| Phi cosine adjustable | Yes. Smax=554.3 kVA | Yes. Smax=831.4 kVA | Yes. Smax=1,108.5 kVA | Yes. Smax=582 kVA | Yes. Smax=873 kVA | Yes. Smax=1,163.9 kVA |
| THD | <3% | | | | | |
| Output Protections | | | | | | |
| Overvoltage protections | Type 2 surge arresters | | | | | |
| AC breaker | Optional AC circuit breaker with door control, remote trip or motorized (only DCAC models) | | | | | |
| Anti-islanding protection | Yes, with Automatic disconnection (for each power stage) | | | | | |
| Other protections | AC short circuits and overloads | | | | | |
| General Information | | | | | | |
| Ambient Temperature | -20° C to +65°C | | | | | |
| Relative Humidity (non-condensing) | 0-95% | | | | | |
| Protection class | IP20/IP54 | | | | | |
| Cooling System | Air forced with temperature control (230V phase+neutral power supply) | | | | | |

Electrical Diagram of Ingecon Sun Power Max:

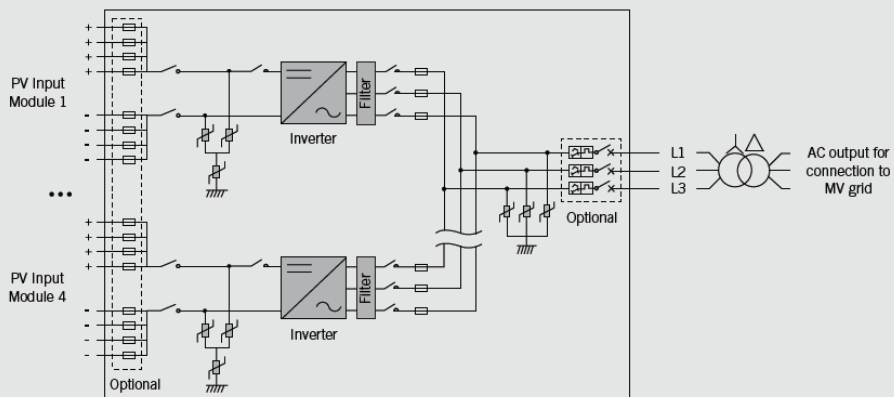
PowerMax X DC

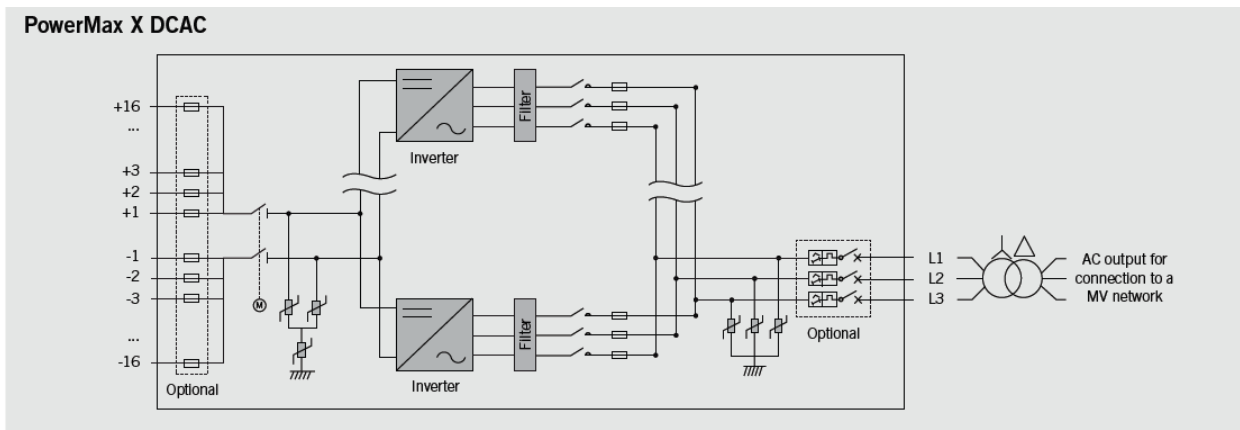


PowerMax M DC



PowerMax M DCAC





Manufacturer:

INGETEAM POWER TECHNOLOGY - Paneles
Pol. Ind. El Juncarillo, Nave 1
31293 Sesma (Navarra) - ESPAÑA

The sample selected to test was representative of the production.
The sample was selected in manufacture facilities.

On 13th of April of 2015

Sample Report Number:

10979-TM

The inspection of manufacturing process was performed in
manufacture facilities::

On 13th of April of 2015

Inspection Report Number:

CERE-C/Ingeteam Paneles