

# **PV INVERTER** Three-Phase / M30A\_230

## Features

- Natural cooling design
- Toggle latch design and fast installation design
- Wireless (SUB\_1G / Wi-Fi) communication and APP quick commission
- Fuseless design
- 3 MPP Trackers
- IV curve scanning, night time reactive power and anti-PID function

C NELTA

- IP66 and lightweight
- Built in DC switch, SPD and string monitoring function

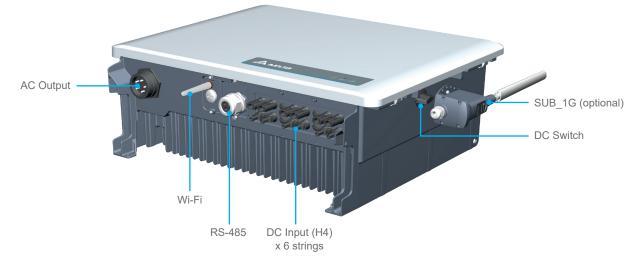
#### www.deltaww.com

#### **Product Overview**

Delta M30A\_230 is able to reach 98.6% peak efficiency, 98.2% Euro-efficiency over converting PV energy. 3 sets of MPP allows more flexibility when PV arrays are facing different directions while minimizing energy losses and maximizing higher yields.



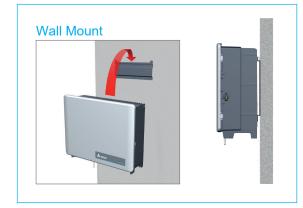
## **Form Factor**



## Dimensions



#### **Installation Guide**



#### **APP & Cloud**

Only need one Wi-fi router to enjoy Delta cloud service.









#### MyDeltaSolar Cloud



#### **Fast Installation**

Delta M30A\_230 with the H4 fast connects which allows easy plug in during installation. The toggle latch design saves considerable time for maintenance and minimizes the risk of water intrusion.



#### **Specifications**

Definition     Into V       Max input Voltage Range     200 · 1000 V       MPP Voltage Range (Full Power) <sup>11</sup> 480 - 900 V       Start Voltage     250 V       Mominal DC Voltage     600 V       Max input Current     Each MPPT 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-in       Stare Protection     Type II SPD       AC Output     Connection Type       AC Output     S04 A       Output Rower     38 WA       Max Output Current     50 A       Output Rower     39 W/Q 40°C : 38 W/Q 35°C       Nominal AC Voltage     39th 230 / 4000 Y or A       Operating Voltage Range     60% to 130% of Nominal AC Voltage       Operating Voltage Range     60% to 130% of Nominal AC Voltage       Operating Voltage Range     80 K% do 120 Se to 120	Model Number	M30A_230
Operating Voltage Range     200 - 1000 V       MPP Voltage Range (Full Power) <sup>11</sup> 480 - 900 V       Nominal DC Voltage     600 V       Nominal DC Voltage     600 V       Max Input Current     Each MPPT: 30, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Bull-in       Surge Protection     Type II SPD       AC Output     Contput       Max. Output Power     33 kVA       Max. Output Power     30 kW@ 40°C; 33 kW@ 35°C       Nominal AC Voltage Range     50 A       Output Power     30 kW@ 40°C; 33 kW@ 35°C       Nominal AC Voltage Range     50 A       Output Power     30 kW@ 40°C; 33 kW@ 35°C       Nominal AC Voltage Range     50 A       Output Power     30 kW@ 40°C; 33 kW@ 35°C       Nominal AC Voltage Range     50 A (60 Hz ± 5 Hz       Power Factor (Adjustable)     0.8 lead - 0.8 lag       Surge Protection     Type II SPD       TH-D     < 3%	DC Input	
MPP Voltage Range (Full Power) <sup>10</sup> 480 - 900 V       Start Voltage     > 250 V       Max Input Current     Each MPPT: 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-       Surge Protection     Type II SPD       AC Output     50 A       Max. Output Power     30 k/W @ 40°C; 33 k/W @ 35°C       Nominal AC Voltage     30 k/W @ 40°C; 33 k/W @ 35°C       Operating Voltage Range     50 / 60 H2 ± 5 H2       Power Factor (Adjustable)     68 lead - 0.6 lag       Surge Protection     Type II SPD       T.H.D     <3%	Max Input Voltage	1100 V
MPP Voltage Range (Full Power) <sup>10</sup> 480 - 900 V       Start Voltage     > 250 V       Max Input Current     Each MPPT: 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-       Surge Protection     Type II SPD       AC Output     50 A       Max. Output Power     30 k/W @ 40°C; 33 k/W @ 35°C       Nominal AC Voltage     30 k/W @ 40°C; 33 k/W @ 35°C       Operating Voltage Range     50 / 60 H2 ± 5 H2       Power Factor (Adjustable)     68 lead - 0.6 lag       Surge Protection     Type II SPD       T.H.D     <3%	Operating Voltage Range	200 - 1000 V
Start Voltage     > 250 V       Nominal DC Voltage     600 V       Max Input Current     Each MPPT: 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Builtin       Surge Protection     Type II SPD       AC Output		480 - 900 V
Max Input Current     Each MPPT: 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-In       Surge Protection     Type II SPD       AC Output		> 250 V
Max Input Current     Each MPPT: 30 A, Total: 72 A       MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-In       Surge Protection     Type II SPD       AC Output	Nominal DC Voltage	600 V
MPP Tracker     3       Connection Type     2 pairs / MPPT, Amphenol H4 DC Connector       DC Switch     Built-in       Surge Protection     Type II SPD       AC Output     SA       Max. Output Power     30 kW @ 40°C : 33 kW @ 35°C       Output Power     30 kW @ 40°C : 33 kW @ 35°C       Nominal AC Voltage     3Ph 230 / 400 V or A       Operating Trequency Range     50 / 60 Hz ± 5 Hz       Power Factor (Adjustable)     0.8 lead - 0.8 lag       Surge Protection     Type II SPD       T.H.D     < 3%	Max Input Current	Each MPPT: 30 A, Total: 72 A
DC Switch     Built-In       Surge Protection     Type II SPD       AC Output     Max. Output Power     33 kVA       Max. Output Power     33 kVA     Max. Output Power     30 kW @ 40°C; 33 kW @ 35°C       Output Power     30 kW @ 40°C; 33 kW @ 35°C     Mominal AC Voltage     Stressee       Operating Voltage Range     80% to 130% of Nominal AC Voltage     Mominal AC Voltage     Mominal AC Voltage       Operating Voltage Range     60 / 60 Hz ± 5 Hz     Power Factor (Adjustable)     0.8 lead - 0.8 lag       Surge Protection     Type II SPD     T     THD     <3%	MPP Tracker	3
DC Switch     Built-In       Surge Protection     Type II SPD       AC Output     Max. Output Power     33 kVA       Max. Output Power     33 kVA     Max. Output Power     30 kW @ 40°C; 33 kW @ 35°C       Output Power     30 kW @ 40°C; 33 kW @ 35°C     Mominal AC Voltage     Stressee       Operating Voltage Range     80% to 130% of Nominal AC Voltage     Mominal AC Voltage     Mominal AC Voltage       Operating Voltage Range     60 / 60 Hz ± 5 Hz     Power Factor (Adjustable)     0.8 lead - 0.8 lag       Surge Protection     Type II SPD     T     THD     <3%	Connection Type	2 pairs / MPPT, Amphenol H4 DC Connector
AC Output   A     Max. Output Power   33 kVA     Max. Output Current   50 A     Output Power   30 kW @ 40°C ; 33 kW @ 35°C     Nominal AC Voltage   3Ph 230 / 400V Y or Δ     Operating Voltage Range   80% to 130% of Nominal AC Voltage     Operating Frequency Range   50 / 60 Hz ± 5 Hz     Power Factor (Adjustable)   0.8 lead - 0.8 lag     Surge Protection   Type II SPD     T.H.D   < 3%		
AC OutputMax. Output Power33 kVAMax. Output Current50 AOutput Power30 kW @ 40°C ; 33 kW @ 35°CNominal AC Voltage3Ph 230 / 400V Y or $\Delta$ Operating Voltage Range80% to 130% of Nominal AC VoltageOperating Voltage Range60 / 60 Hz ± 5 HzPower Factor (Adjustable)0.8 lead - 0.8 lagSurge ProtectionType II SPDT.H.D< 3%	Surge Protection	Type II SPD
Max. Output Power     33 kVA       Max. Output Current     50 A       Output Power     30 kW @ 40°C; 33 kW @ 35°C       Nominal AC Voltage     3Ph 230 / 400V Y or A       Operating Voltage Range     80% to 130% of Nominal AC Voltage       Operating Voltage Range     60% to 130% of Nominal AC Voltage       Operating Frequency Range     50 / 60 Hz ± 5 Hz       Power Factor (Adjustable)     0.8 lead - 0.8 lag       Surge Protection     Type II SPD       TH D     63%       AC Connection Type     Plug Type, Cable Size 16 - 25 mm²       Night Time Consumption <sup>20</sup> <2 W	AC Output	
Max. Output Current50 AOutput Power30 kW @ 40°C; 33 kW @ 35°CNominal AC Voltage3Ph 230 / 400°Y or $\Delta$ Operating Voltage Range80% to 130% of Nominal AC VoltageOperating Frequency Range0.8 lead - 0.8 lagPower Factor (Adjustable)0.8 lead - 0.8 lagSurge ProtectionType II SPDT.H.D<3%		33 kVA
Output Power $30 \text{ kW} @ 40^\circ \text{C}$ ; $33 \text{ kW} @ 35^\circ \text{C}$ Nominal AC Voltage $3Ph 230 / 400V \text{ Y or } \Delta$ Operating Voltage Range $80\%$ to $130\%$ of Nominal AC VoltageOperating Frequency Range $50 / 60 \text{ H} \pm \text{s} \text{ H} \Xi$ Power Factor (Adjustable) $0.8 \text{ lead} \cdot 0.8 \text{ lag}$ Surge ProtectionType II SPDT.H.D $< 3\%$ AC Connection TypePlug Type, Cable Size 16 - 25 mm²Night Time Consumption <sup>2)</sup> $< 2 \text{ W}$ Efficiency $= 0.86\%$ Euro Efficiency $98.6\%$ Euro Efficiency $98.2\%$ Information $= 0.25\%$ Communication PortRS-485 / Wi-Fi (optional: SUB_1G)DispalyLED (Grid, Alarm, Comm.)Certification $= 0.25\%$ (Not-Fi (optional: SUB_1G)DispalyLEC 62109-1/-2 CNS 15382 VDE-AR-N 41105 EN/IEC 61000-6-1/-2 [IEC 622902 CNS 15426-1/-2 VDE-AR-N 41105 EN/IEC 61000-6-3/-4Central DataVight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range $-25$ to +60°C (derating > 40°C)Protection LevelIP66Operating Temp. Range $-25$ to +60°C (derating > 40°C)Protection LevelIP66Operating ElevationNatural CoolingNoise $45.9  dBA @ 1m, Amb25°C$ Dimension (W x H x D) $651 \times 520 \times 220  mm$		50 A
Nominal AC Voltage $3Ph 230 / 400V Y \text{ or } \Delta$ Operating Voltage Range $80\%$ to 130% of Nominal AC VoltageOperating Frequency Range $50 / 60 Hz \pm 5 Hz$ Power Factor (Adjustable) $0.8 lead - 0.8 lag$ Surge ProtectionType II SPDT.H. D $3\%$ AC Connection TypePlug Type, Cable Size 16 - 25 mm²Night Time Consumption $2^{2}$ $< 2 W$ EfficiencyPeak Efficiency $98.6\%$ Euro Efficiency $98.2\%$ Information $Communication Port$ Communication PortRS-485 / Wi-FI (optional: SUB_1G)DispatyLED (Grid, Alarm, Comm.)Certification $Efficiency$ ProtectionAc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detectionForeating FrequencyNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Effevation $< 250 + 60^{\circ}C$ (derating $> 40^{\circ}C$ )Protection LevelIP66Operating Elevation $< 4000 m$ CoolingNatural CoolingNoise $45.9 dBA @ 1m, Amb25^{\circ}C$ Dimension (W x H x D) $651 \times 520 \times 220 mm$		30 kW @ 40°C ; 33 kW @ 35°C
Operating Voltage Range80% to 130% of Nominal AC VoltageOperating Frequency Range $50 / 60 \text{ Hz} \pm 5 \text{ Hz}$ Power Factor (Adjustable) $0.8 \text{ lead} - 0.8 \text{ lag}$ Surge ProtectionType II SPDT.H.D $< 3\%$ AC Connection TypePlug Type, Cable Size 16 - 25 mm²Night Time Consumption?) $< 2 W$ Efficiency98.6%Peak Efficiency98.2%InformationImage: Communication PortCommunication PortRS-485 / Wi-Fi (optional: SUB_1G)DispalyLED (cird, Alarm, Comm.)CertificationIEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-1/-2 IEC 62920 CNS 15426-1/-2 VDE-AR-N 4110 EN/IEC 61000-6-3/-4Central DataNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range $-25$ to +60°C (derating > 40°C)Protection LevelIP66Operating Elevation $< 4000 \text{ m}$ CoolingNatural CoolingNoise $45.9$ dBA @im, Amb25°CDimension (W x H x D)Sit x 520 x 220 mm		
Operating Frequency Range50 / 60 Hz ± 5 HzPower Factor (Adjustable)0.8 lead - 0.8 lagSurge ProtectionType II SPDT.H.D< 3%		80% to 130% of Nominal AC Voltage
Power Factor (Adjustable)0.8 lead - 0.8 lagSurge ProtectionType II SPDT.H.D< 3%		50 / 60 Hz ± 5 Hz
Surge ProtectionType II SPDT.H.D< 3%		0.8 lead - 0.8 lag
T.H.D   < 3%		Type II SPD
Night Time Consumption <sup>2)</sup> < 2 W		
Night Time Consumption <sup>2)</sup> < 2 W	AC Connection Type	Plug Type, Cable Size 16 - 25 mm <sup>2</sup>
Peak Efficiency     98.6%       Euro Efficiency     98.2%       Information     Communication Port     RS-485 / Wi-Fi (optional: SUB_1G)       Dispaly     LED (Grid, Alarm, Comm.)       Certification     Ele C 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-1/-2 IEC 62920 CNS 15426-1/-2 VDE-AR-N 4110 EN/IEC 61000-6-3/-4       General Data     Protection     Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection       Features     Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power       Operating Temp. Range     -25 to +60°C (derating > 40°C)       Protection Level     IP66       Operating Elevation     < 4000 m	Night Time Consumption <sup>2)</sup>	
Euro Efficiency   98.2%     Information   RS-485 / Wi-Fi (optional: SUB_1G)     Dispaly   LED (Grid, Alarm, comm.)     Certification   IEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-1/-2 IEC 62920 CNS 15426-1/-2 VDE-AR-N 4110 EN/IEC 61000-6-3/-4     General Data   IEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-3/-4     Protection   Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection     Features   Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power     Operating Temp. Range   -25 to +60°C (derating > 40°C)     Protection Level   IP66     Operating Elevation   Natural Cooling     Noise   45.9 dBA @1m, Amb25°C     Dimension (W x H x D)   651 x 520 x 220 mm	Efficiency	
Euro Efficiency   98.2%     Information   RS-485 / Wi-Fi (optional: SUB_1G)     Dispaly   LED (Grid, Alarm, comm.)     Certification   IEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-1/-2 IEC 62920 CNS 15426-1/-2 VDE-AR-N 4110 EN/IEC 61000-6-3/-4     General Data   IEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-3/-4     Protection   Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection     Features   Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power     Operating Temp. Range   -25 to +60°C (derating > 40°C)     Protection Level   IP66     Operating Elevation   Natural Cooling     Noise   45.9 dBA @1m, Amb25°C     Dimension (W x H x D)   651 x 520 x 220 mm	Peak Efficiency	98.6%
Communication Port     RS-485 / Wi-Fi (optional: SUB_1G)       Dispaly     LED (Grid, Alarm, Comm.)       Certification     IEC 62109-1/-2 IEC 62920     CNS 15382 CNS 15426-1/-2     VDE-AR-N 4105 VDE-AR-N 4110     EN/IEC 61000-6-1/-2 EN/IEC 61000-6-3/-4       General Data     V     Envire C 61000-6-3/-4     Common C Features     Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power       Protection Level     Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power     -25 to +60°C (derating > 40°C)       Protection Level     IP66     -25 to +60°C (derating > 40°C)     -25 to +60°C (derating > 40°C)       Operating Elevation     < 4000 m	Euro Efficiency	98.2%
Dispaly   LED (Grid, Alarm, Comm.)     Certification   IEC 62109-1/-2 CNS 15382 VDE-AR-N 4105 EN/IEC 61000-6-1/-2 IEC 62920 CNS 15426-1/-2 VDE-AR-N 4110 EN/IEC 61000-6-3/-4     General Data   Protection     Protection   Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection     Features   Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power     Operating Temp. Range   -25 to +60°C (derating > 40°C)     Protection Level   IP66     Operating Elevation   < 4000 m	Information	
CertificationIEC 62109-1/-2 IEC 62920CNS 15382 CNS 15426-1/-2VDE-AR-N 4105 VDE-AR-N 4110EN/IEC 61000-6-1/-2 EN/IEC 61000-6-3/-4General DataProtectionArc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection FeaturesNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range-25 to +60°C (derating > 40°C)Protection LevelIP66Operating Elevation< 4000 m	Communication Port	RS-485 / Wi-Fi (optional: SUB_1G)
IEC 62109-1/-2 IEC 62920CNS 15382 CNS 15426-1/-2VDE-AR-N 4105 VDE-AR-N 4110EN/IEC 61000-6-1/-2 EN/IEC 61000-6-3/-4General DataProtectionArc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detectionFeaturesNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range-25 to +60°C (derating > 40°C)Protection LevelIP66Operating Elevation< 4000 mCoolingNatural CoolingNoise45.9 dBA @1m, Amb25°CDimension (W x H x D)EXT 20 x 220 mm	Dispaly	LED (Grid, Alarm, Comm.)
IEC 62920   CNS 15426-1/-2   VDE-AR-N 4110   EN/IEC 61000-6-3/-4     General Data   Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection     Protection   Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection     Features   Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power     Operating Temp. Range   -25 to +60°C (derating > 40°C)     Protection Level   IP66     Operating Elevation   < 4000 m     Cooling   Natural Cooling     Noise   45.9 dBA@1m, Amb25°C     Dimension (W x H x D)   651 x 520 x 220 mm	Certification	
ProtectionArc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detectionFeaturesNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range-25 to +60°C (derating > 40°C)Protection LevelIP66Operating Elevation< 4000 mCoolingNatural CoolingNoise45.9 dBA@1m, Amb25°CDimension (W x H x D)651 x 520 x 220 mm		
FeaturesNight time Anti-PID, String current monitoring, IV curve scanning, Night time reactive powerOperating Temp. Range-25 to +60°C (derating > 40°C)Protection LevelIP66Operating Elevation< 4000 m	General Data	
Operating Temp. Range   -25 to +60°C (derating > 40°C)     Protection Level   IP66     Operating Elevation   < 4000 m	Protection	Arc fault detection, DC reverse polarity detection, Leakage current protection, Insulation resistance detection
Protection Level IP66   Operating Elevation < 4000 m	Features	Night time Anti-PID, String current monitoring, IV curve scanning, Night time reactive power
Operating Elevation < 4000 m	Operating Temp. Range	-25 to +60°C (derating > 40°C)
Cooling Natural Cooling   Noise 45.9 dBA @1m, Amb25°C   Dimension (W x H x D) 651 x 520 x 220 mm	Protection Level	IP66
Noise     45.9 dBA @1m, Amb25°C       Dimension (W x H x D)     651 x 520 x 220 mm	Operating Elevation	< 4000 m
Dimension (W x H x D) 651 x 520 x 220 mm	Cooling	Natural Cooling
	Noise	45.9 dBA @1m, Amb25°C
Weight 42 kg	Dimension (W x H x D)	651 x 520 x 220 mm
	Weight	42 kg

1) 30 kW

2) Night time consumption with standby communication

\*All specifications are subject to change without prior notice



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