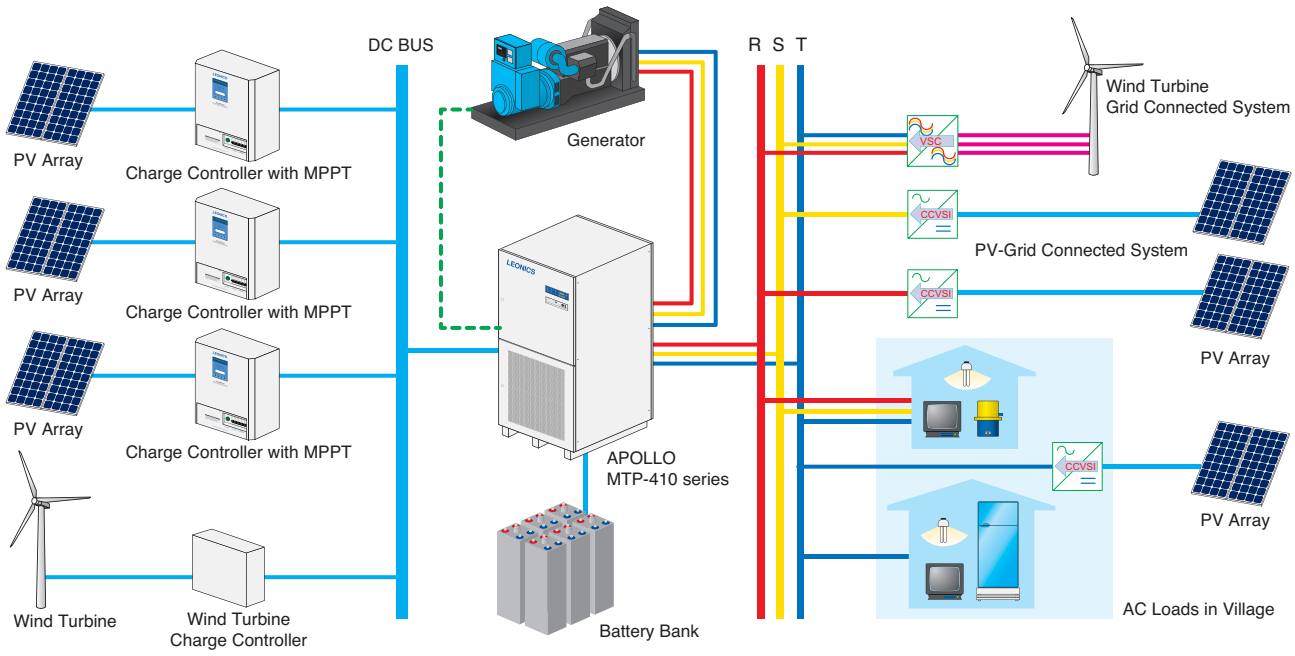
LEONICS®

APOLLO MTP-410

Three Phase Bidirectional Dual Mode Hybrid Inverter for Mini-grid System

- Three phase bidirectional inverter with built-in output transformer
- Low harmonic distortion (less than 3%)
- High efficiency > 95%
- High reliability design for remote area
- Seperate DC Bus for multiple source charging

- Capable to use with multiple renewable energy sources in both DC coupling and AC coupling such as solar panel, wind turbine generator and micro hydro generator
- Monitor energy available from the renewable energy (DC) sources and minimize the charging current from the diesel generator
- Automatic / Manual generator control
- Frequency shift energy management control
- Automatic battery equalization (option)
- Battery temperature compensation (option)
- Preset time schedule by System Command Unit (SCU) for automatic controlling the auxiliary power sources such as generators in mini-grid system (option)
- IP65 protection outdoor enclosure (option)
- Parallel operation (option)
- ISO 9001 and ISO 14001 certified factory



APOLLO MTP-410 series is a Three phase bidirectional dual mode hybrid inverter capable of functioning as a main supply power source as well as providing automatic control and management of a generator and battery bank. The inverter features very high efficiency in both charger and inverter modes with maximum efficiency of 95%. It is suitable for hybrid power system with supplement diesel generator in off-grid areas.

HYBRID POWER SYSTEM

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A5043 ISO 9001 LEONICS CO.,LTD. ISO 14001 EMS 01007/045

APOLLO MTP-410 series Three Phase Bidirectional Dual Mode Hybrid Inverter for Mini-Grid System

MODEL		MTP-412E	MTP-413E	MTP-412F	MTP-413F	MTP-414F	MTP-415F	MTP-416F	MTP-417F	MTP-418F	MTP-419F	MTP-4110F	MTP-4111H	MTP-4113H	MTP-4115H	MTP-4117H
RATED POWER		15 kW	25 kW	15 kW	25 kW	30 kW	45 kW	60 kW	75 kW	90 kW	100 kW	120 kW	150 kW	200 kW	250 kW	300 kW
BATTERY	Nominal Voltage	120 Vdc		240 Vdc									480 Vdc			
	Max. charging current	84 A	130 A	42 A	72 A	84 A	125 A	168 A	200 A	250 A	280 A	335 A	200 A	280 A	350 A	418 A
EXTERNAL DC CHARGER	Nominal voltage	120 Vdc		240 Vdc									480 Vdc			
	Maximum current	100 A	200 A	60 A	100 A	100 A	200 A	300 A	300 A	400 A	400 A	400 A	300 A	400 A	400 A	500 A
AC INPUT FROM GENERATOR	Recommended generator power	> 30 kW	> 50 kW	> 30 kW	> 50 kW	> 60 kW	> 90 kW	> 120 kW	> 150 kW	> 180 kW	> 200 kW	> 240 kW	> 300 kW	> 400 kW	> 500 kW	> 600 kW
	Voltage	380 / 400 / 415 Vac (L-L), 220 / 230 / 240 Vac (L-N) ± 10%														
	Phase	Three phase														
	Frequency	50 / 60 Hz ± 3 Hz														
	Automatic start / stop	Relay dry contact 10 A (2 sets of ACC contact for 2 generators)														
AC OUTPUT	Voltage	380 / 400 / 415 Vac (L-L), 220 / 230 / 240 Vac (L-N)														
	Voltage regulation	± 3% (steady load), < 7% at 100% step load within 0.1 sec.														
	Phase	Three phase														
	Frequency	50 / 60 Hz ± 0.1% (auto sensing)														
	Wave form	Pure sine wave														
	Total harmonic distortion	total < 3%														
	Max. surge current	200%														
ISOLATION	Galvanic isolation	yes														
EFFICIENCY	Inverter peak efficiency	> 94%					> 95%									
PROTECTION		Over current, Over load, Short circuit, Over temperature, Over voltage, Under voltage														
INDICATOR	LED	External Charging, Bypass, Generator Running, Generator Failure,Stand by/Run, Inverter, Charging, Load on Inverter, Overload, Low Battery, High temperature, Fault														
	LCD display	Inverter (voltage, current, frequency, power, reactive power), Generator (voltage, current, frequency, power, reactive power), Battery (voltage, current, state of charge(%), charging current), Heat sink temperature, Battery temperature (option), Equalization date, Today DC Inverter Energy (Input, output) Today AC Inverter Energy (input, output), Accumulated DC energy (input, output), Accumulated AC Energy (input, output), System status, Time, Date, Data Log														
AUDIABLE ALARM		Low battery, Inverter fault, High temperature														
COOLING		Automatic cooling fan														
ENVIRONMENT	Temperature	0 - 45˚C														
	Relative humidity	0 - 95 % (Non - condensing)														
DESIGN REGULATION	Standard	AS/NZ 3100:2002, IEC 61683 (for efficiency test)														
	Enclosure	IP65 (option)														
DIMENSION W x H x D (cm)	Control Unit	60 x 188 x 105						90 x 188 x 105		80 x 205 x 105				D1*	D2**	110 x 205 x 105
	Transformer Unit	-						-		120 x 205 x 105						110 x 205 x 105
WEIGHT (approx. in kg)	Control Unit	440	450	440	450	460	630	805	850	550	550	550	550	550	775	775	775
	Transformer Unit	-	-	-	-	-	-	-	-	850	880	935	1,200	1,320	1,220	1,300	1,500

D1* = 80 x 205 x 105 cm for control unit and 120 x 205 x 105 for transformer unit, D2** = 110 x 205 x 105 cm for control unit and transformer unit. Continuous product development is our commitment. In that manner, the above specifications may be changed without prior notice.

Authorized Distributor

LEO ELECTRONICS CO.,LTD.

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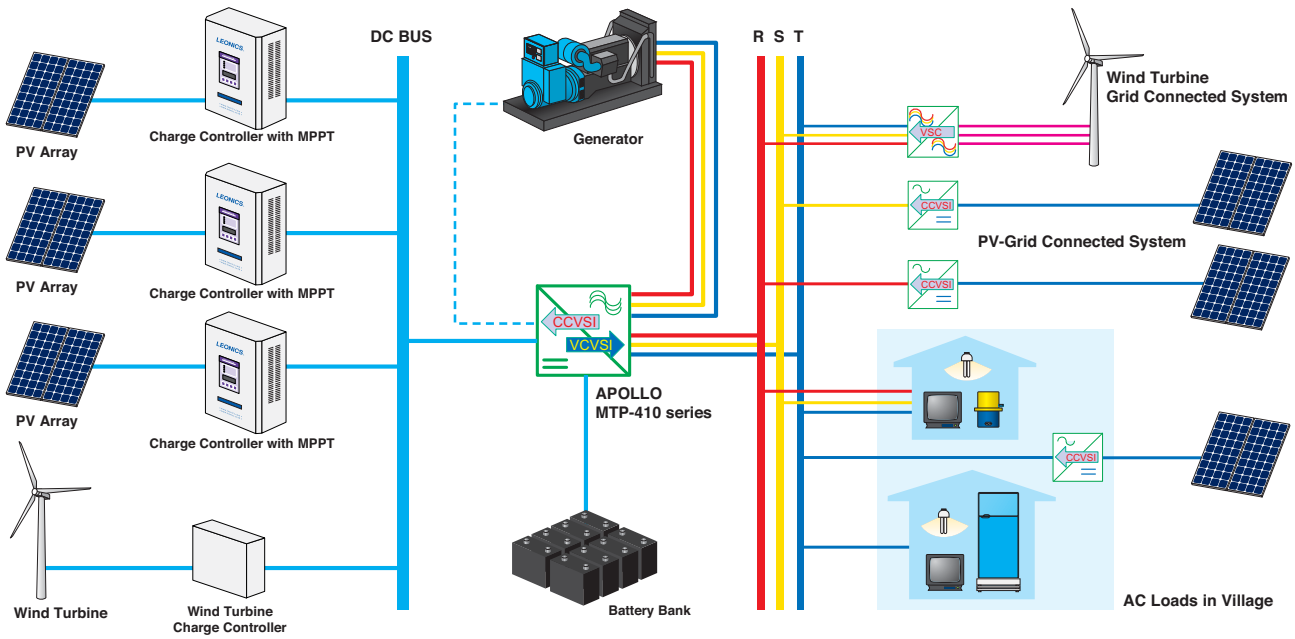
APOLLO MTP-410

THREE PHASE BIDIRECTIONAL DUAL MODE HYBRID INVERTER FOR MINI-GRID SYSTEM

- Three phase bidirectional inverter with built-in output transformer
- Low harmonic distortion (less than 4%)
- High efficiency more than 94%
- High reliability design for remote area

- Capable to use with multiple renewable energy sources in both DC coupling and AC coupling such as solar panel, wind turbine generator and micro hydro generator
- Seperate DC Bus for multiple source charging
- Monitor energy available from the renewable energy (DC) sources and minimize the charging current from the diesel generator.
- Automatic / Manual generator control
- DC external charge control
- Automatic battery equalization (option) to prevent battery capacity loss and prolong battery life
- Battery temperature compensation (option)
- Preset time schedule by System Command Unit (SCU) for automatic controlling the auxiliary power sources such as generators in mini-grid system (option)
- ISO 9001 and ISO 14001 certified factory



The APOLLO MTP-410 Series is a three phase bidirectional dual mode hybrid inverter capable of functioning as a main supply source as well as providing automatic control and management of a generator and a battery bank. The inverter features very high efficiency in both charger and inverter modes with maximum efficiency of 94%. It's suitable for supplement diesel generator in off-grid areas.

MINI-GRID SYSTEM WITH MTP-410 SERIES

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APOLLO MTP-410 series THREE PHASE BIDIRECTIONAL DUAL MODE HYBRID INVERTER FOR MINI-GRID SYSTEM

LEONICS CO.,LTD A5043 ISO 9001

ISO 14001
EMS 01007/045

SPECIFICATIONS

MODEL		MTP-412E	MTP-413E	MTP-414F	MTP-415F	MTP-416F	MTP-417G	MTP-418G	MTP-419G	MTP-4110G
RATED POWER		15 kW	25 kW	30 kW	45 kW	60 kW	75 kW	90 kW	100 kW	120 kW
BATTERY	Nominal Voltage	120 Vdc			240 Vdc			360 Vdc		
	Maximum charging current	84 A	130 A	84 A	125 A	168 A	140 A	168 A	186 A	220 A
EXTERNAL DC CHARGER	Nominal voltage	120 Vdc			240 Vdc			360 Vdc		
	Maximum current	100 A	200 A	100 A	200 A	200 A	200 A	250 A	250 A	300 A
	DC charge control	Relay dry contact 10 A (for over external charge protection)								
AC INPUT FROM GENERATOR	Recommended generator power rating	> 30 kW	> 50 kW	> 60 kW	> 90 kW	> 120 kW	> 150 kW	> 180 kW	> 200 kW	> 240 kW
	Voltage	380 / 400 / 415 Vac (L-L), 220 / 230 / 240 Vac (L-N) ± 10%								
	Phase	Three phase								
	Frequency	50 / 60 Hz ± 3 Hz								
	Automatic start/stop	Relay dry contact 10 A (ACC on and start pluse)								
AC OUTPUT	Voltage	380 / 400 / 415 Vac (L-L), 220 / 230 / 240 Vac (L-N)								
	Voltage regulation	± 3% (steady load), < 7% at 100% step load within 0.1 sec.								
	Phase	Three phase								
	Frequency	50 / 60 Hz ± 0.1% (auto sensing)								
	Wave form	Pure sine wave								
	Total harmonic distortion	total < 4%								
	Maximum surge current	200%								
ISOLATION	Galvanic isolation	yes								
EFFICIENCY	Inverter peak efficiency	94%								
PROTECTION		Over current, Over load, Short circuit, Over temperature, Over voltage, Under voltage								
INDICATOR	LED	Generator Running, Generator Failure, Stand by/Run, Inverter, Charging, Load on Inverter, Overload, Low Battery, High temperature, Fault								
	LCD display	Inverter voltage, Inverter current, Inverter frequency, Inverter power, Generator voltage, Generator current, Generator frequency, Generator power, Load voltage, Load current, Load power, Battery voltage, Battery current, Battery state of charge(%), Internal charging current, External DC charging current, Battery temperature (option), Equalizatiton Date, Today Energy (Inverter, Generator, Battery), Accumulated energy (Inverter, Generator, Battery), System status, Time, Date, Heat sink temperature, Data Log								
AUDIABLE ALARM		Low battery, Inverter fault, High temperature								
COOLING		Automatic cooling fan								
ENVIRONMENT	Temperature	0 - 45°C								
	Relative humidity	0 - 95 % (Non - condensing)								
DESIGN STANDARD		AS/NZ 3100:2002								
DIMENSION	Control Unit	60 x 188 x 105				90 x 188 x 105			80 x 205 x 105	
W x H x D (approx. in cm)	Transformer Unit	-				-			120 x 205 x 105	
WEIGHT	Control Unit	218	380	380	470	745	850	590	590	600
(approximate in kg.)	Transformer Unit	-	-	-	-	-	-	990	1,045	1,150

Authorized Distributor:

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LEO ELECTRONICS CO.,LTD.

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