MAKING MODERN LIVING POSSIBLE

MLX Inverter Series
The Power of Forward Thinking

MLX 60 kVA

www.danfoss.com/solar

True Cost Optimisation for

The MLX marks the entrance of a new era in PV system thinking.
With innovative, intelligent system engineering, the MLX concept combines the clear advantages of a decentralized layout with central inverter thinking, representing the best of both worlds.

The MLX concept is an attractive, scalable concept for medium to large ground-based - and rooftop applications that optimises overall plant efficiency and total cost of ownership by placing focus on the entire PV system over its full lifetime, from installation to servicing.

World class specifications

- 1000 V_{DC} , 150 A_{DC} and a layout factor of up to 1.4 for flexible PV layouts
- 60 kVA in a 75 kg, IP65 enclosure for both indoor and outdoor mounting
- Superior efficiency of 98.6 %
- Global mechanics, both metric and imperial systems supported
- Full grid management compliance

Unmatched ability to monitor and control

- Self-configuring inverter data network
- Single point of access for seamless system integration
- Local requirement settings
- Database & data aggregation
- Easy device replacement
- Up to 2.5 MW per MLX Inverter Manager

Ground breaking system thinking

Take advantage of the world class specifications and layout freedom of the MLX inverter with separate DC combiner to create systems that internally exploit all the advantages of a string system and from the outside resemble a central system, with the MLX Inverter Manager as a single point of access for all grid control and communication.

World's highest power density

A 60 kVA inverter at 75 kg is unmatched in the market. The compact design of the MLX inverter requires little space, reduces site preparation work, eases installation and reduces preventative maintenance.

Reduce on-site preparation work and cabling

Pre-install inverter mounting plates and string combiner racks on PV sub-racks for faster on-site installation. Utilise the placement freedom of the external string combiner to optimize cabling, take advantage of the fact that no AC combiners are needed and get a superior balance of system.

Single point of access

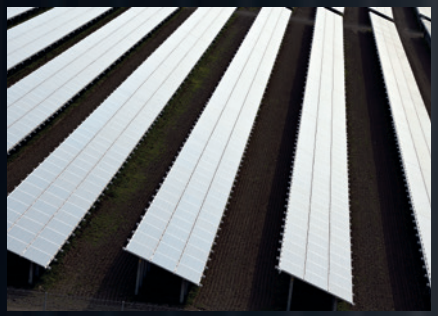
The MLX Inverter Manager handles all inverter communication, data aggregation and plant control. Use this single point of access to control and communicate with up to 42 inverters (2.5 MW) in one system. Use the accompanying PC tool (LCS-Tool) for easy commissioning and fast service.

Seamless integration

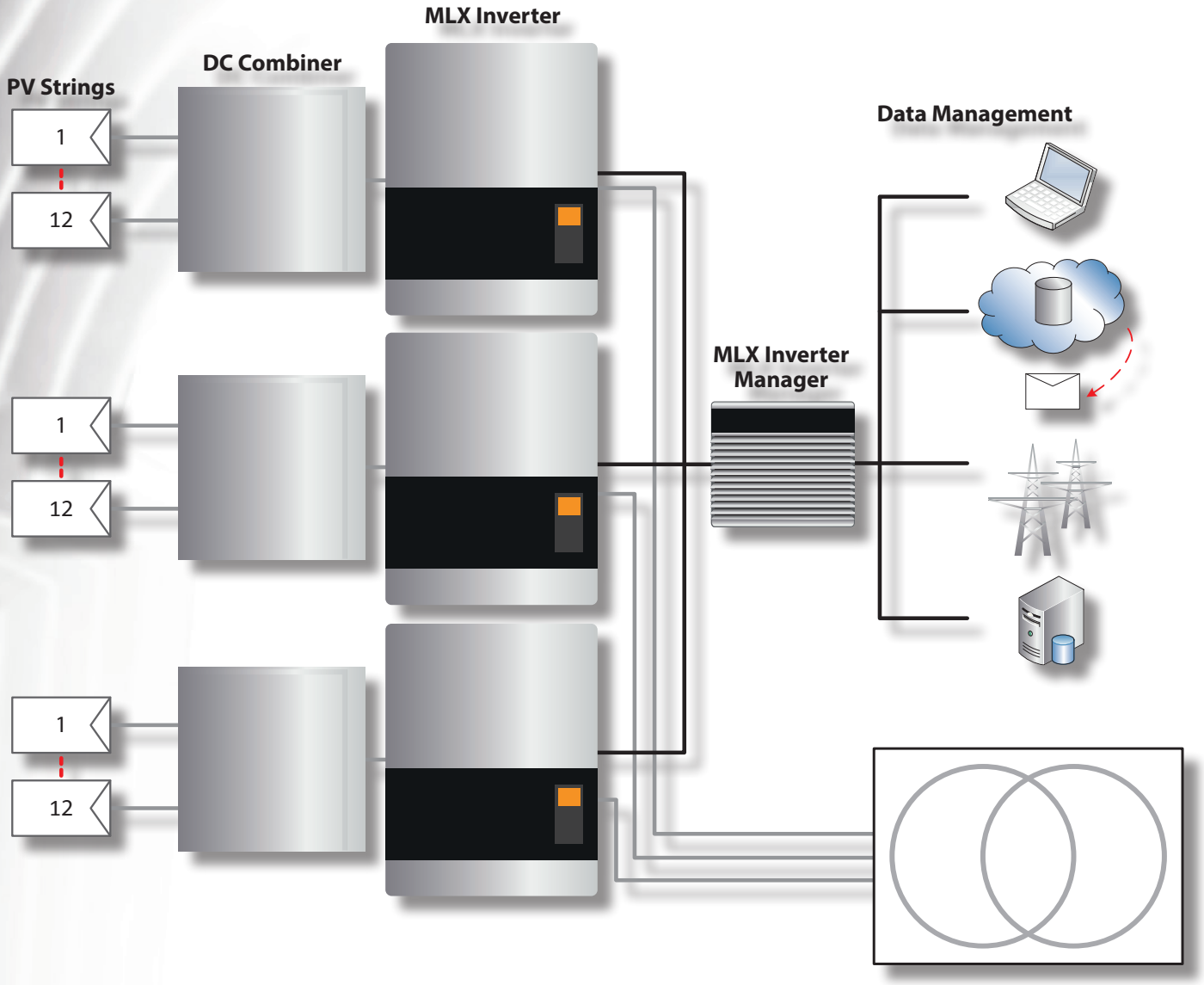
Based on the open protocol Modbus TCP and SunSpec Alliance Communication profile the MLX Inverter Manager facilitates seamless integration into existing monitoring systems as well as easy upload to external data warehouse services. The MLX Inverter Manager also governs all exchanges of grid management commands from the utility company.

High uptime at no extra cost

The compact, easy-to-handle MLX inverter is quickly replaced and reconfigured, minimizing downtime. No maintenance contract is required to guarantee high uptime – standard service and warranty conditions apply, regardless of system size.



PV Systems of the Future



New era in PV system thinking

Experience the power of:

- An extremely compact inverter
- An intelligent inverter manager
- An external string combiner

By separating these components it has been possible to create an inverter where power is increased and layout flexibility maintained – while keeping the weight so low that it is still simple to install – retaining the advantages of a decentralised solution. The MLX Inverter Manager provides a single point of access to the entire system, for easy system management. The MLX inverter is a truly global platform. All local adaptations are made in the DC combiner and the MLX Inverter Manager.

This new MLX concept gives ideal scalability and allows you to build your entire system in blocks of standard off-the-shelf components resulting in significant cost reductions.

Preliminary. Subject to change without notice

MLX Inverter Series	
AC	
Rated apparent power [1]	60 kVA
Rated active power [2]	60 kW
Reactive power range [1]	0-36 kVAr
Rated grid voltage (voltage range)	3P+PE / 400-480 V (+/- 10%)
Grounding schemes supported	TT, TN
Rated current AC	3x87 A
Maximum current AC	3x87 A
AC current distortion (THD at rated output power)	< 5%
Power factor - default	> 0.99 at rated power
Power factor – regulated	0.8 over-excited, 0.8 under-excited
Stand-by power consumption (communication only)	3 W
Nominal grid frequency (range)	50/60 Hz (± 10%)
DC	
Input voltage range	565 V - 1000 V @ 400 Vac 680 V - 1000 V @ 480 Vac
Rated voltage DC	630 V @ 400 Vac 710 V @ 480 Vac
MPP voltage range - rated power	570-800 V @ 400 Vac 685-800 V @ 480 Vac
Maximum voltage DC	1000 V
Minimum on-grid power	100 W
Rated DC current	110 A
Max PV array short circuit rating	150 A
MPP tracker/ Input per MPPT	1/1 (external string-combining)
Efficiency	
Max. efficiency	98.6%
EU/ CEC efficiency at $V_{dc,r}$	98.0%/ 98.0%
MPPT efficiency, static	99.9%

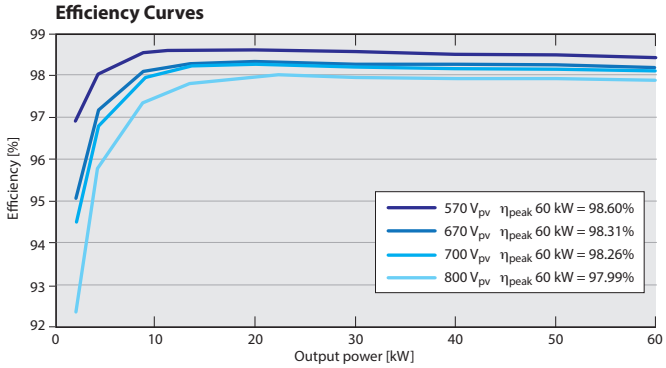
MLX Inverter Series	
Other	
Dimensions (H,W,D)	740×570×300 mm
Weight	75 Kg [3]
Enclosure rating	IP65
Acoustic noise level	55 dB(A)
Operating temperature range	-25...60 °C (de-rating above 45 °C)
Relative humidity	95 % (non-condensing)
Storage temperature	-25...60 °C
Maximum operating altitude	2000 m above sea level
Environmental class according to IEC 60721-3-4	4K4H/4Z4/4B2/4S3/4M2/4C2
Cooling concept	Forced
Ancillary Services	
Active power	Via MLX Inverter Manager
Reactive power	Via MLX Inverter Manager
Interfaces	Via MLX Inverter Manager
Options	DC load switch
RCD compatibility[4]	Type B, 600 mA
Safety	
Approvals and certificates	See www.danfoss.com/solar -> downloads
Electrical Safety	IEC 62109-1/IEC 62109-2 (Class I, grounded – communication Class II, PELV), UL1741 – w. Non-Isolated EPS Interactive PV Inverters, IEEE 1547
Functional Safety	Islanding detection/ loss of mains – active frequency shift, Voltage and frequency surveillance, DC content of AC current surveillance, Insulation resistance surveillance, Residual current monitoring, UL1998
EMC	CISPR 11 Class B

[1] At rated grid voltage | [2] At rated grid voltage, Cos(phi) = 1| [3] Depending on installed options | [4] Depending on local regulations

MLX Inverter Manager	
Power supply	
Input voltage	9-36 Vdc
AC power supply	1 phase, 115/230 Vac, 50/60 Hz 3 phase, 400/480 Vac, 50/60 Hz
Power consumption	<20 W
Enclosure	
Dimensions HxWxD	160×125×49 mm
Weight	940 g
Enclosure rating	IP21
Mounting	DIN rail or wall
Operational temperature range	-40 to +85 °C
Relative humidity	5-95 % (non condensing)
Cooling concept	Convection
Other	
User interface	LCS Tool for PC
Sensor interfaces	RS-485 for Sunspec Aliance compliant Weatherstations

MLX Inverter Manager	
Ancillary Services	
Active power	Fixed limit, set point curves, remotely controlled
Reactive power	Constant, set point curves, remotely controlled
Interface for inverter network	1 Ethernet port (RJ45)
Interface for external network	1 Ethernet port (RJ45) Modbus TCP, SunSpec Alliance
Interface for remote control	6 × DI, Modbus TCP
Standards	
Approvals and certificates	See www.danfoss.com/solar -> downloads
Safety	UL 508, UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1
EMC	EN 55022 Class A, EN 61000-3-2 Class D, EN 61000-3-3, EN55024, FCC Part 15 Sub-part B Class A

Efficiency Curves



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