



Technical Data

On-Line UPS-system MLT C 10 - 20

On-Line UPS-system in double conversion technology according to IEC / EN 62040-3 (VFI-SS-111) with sinusoidal output voltage in each operation mode, LCD display, RS232 interface, USB connection, alarm contacts, emergency stop function, 2 slots for communication cards, shutdown-software for Windows NT/2000/XP/2003/ Vista, Novell und Linux system software.

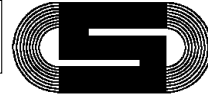
Optionally up to 6 systems may be switched in parallel.

The operation modes on-line, line-interactive, smart active or emergency supply (Standby) can be adjusted with the means of the display.

Energy storage: Double-layer capacitors. Suitable for short-term buffering. Maintenance free and very temperature-independent



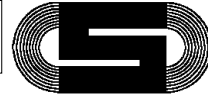
model	MLT C 10	MLT C 12	MLT C 15	MLT C 20
nominal rating in kVA	10	12	15	20
nominal rating in kW	9	10,8	13,5	18
back-up time in minutes with capacitors set 100-9P				
100 % load	13	10	9	7
50% load	26	20	17	13
input				
number of phases	3 + N			
nominal voltage	380 / 400 / 415 V			
tolerance of input voltage by 100% load	± 20% (320 – 480 V at 400 V nominal voltage)			
tolerance of input voltage by 50% load	- 40% / +20% (240 – 480 V at 400 V nominal voltage)			
nominal frequency	50 or 60 Hz automatic recognition			
tolerance of frequency	± 20% 40 – 72 Hz			
nominal input current [3-phase]	15	17	22	29
maximum inrush current [3-phase]	20	24	29	38
inrush current	< In (Softstart)			
power factor (cos φ)	≥ 0,99			
harmonical distortion (THDI)	≤ 3 %			



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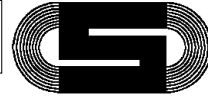
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„Hold-Up time“ back-up time without switching on double-layer capacitor – no interruption of the output voltage occurs	20 ms			
output				
number of phases	3 + N			
nominal voltage	380 / 400 / 415 V			
wave form of output voltage	Sinus			
tolerance of output voltage [static]	± 1%			
tolerance of output voltage [dynamic] (load impact 0 to 100%)	± 3%			
voltage reset after dynamic variation	< 10ms			
voltage distortion at linear load	≤ 1%			
voltage distortion at non-linear load	≤ 3%			
nominal frequency	50 or 60 Hz			
tolerance of frequency at nominal operation	±2 % (adjustable from ± 1% to ± 5%)			
rate of frequency adjustment	2 Hz / second			
tolerance of frequency at battery operation	50 or 60 Hz ± 0,01%			
crest factor by nominal rating (I_{max}/I_{rms})	3 : 1			
short-circuit current	1,5 x In for 0,5 sec			
efficiency				
system at 100% load	≥ 93,5 %		≥ 94 %	
power loss in kW	0,63	0,75	0,86	1,15
effectiveness in Line-Interaktiv operation				
load 100%	98 %			
overload				
inverter by power factor (cos φ) 0,8	115 %: endless 125 % for 10 minutes 150 % for 1 minute 168 % for 5 seconds > 168 % for 0,5 seconds			
inverter by power factor (cos φ) 0,9	110 % for 10 minutes 133 % for 1 minute 150 % for 5 seconds > 150 % for 2 seconds			



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Bypass (static)				
nominal rating in kVA	10	12	15	20
nominal voltage	380 / 400 / 415 V			
number of phases	3 + N			
accepted voltage range	180 till 264 V			
Range of input frequency	± 5 % (selectable from ± 1 % to ± 10 %)			
bypass overload	110 % endless 133 % for 60 minutes 150 % for 10 minutes > 150 % for 2 seconds			
Bypass (manuell)				
Manual button to carry out maintenance work at the UPS without interrupting the power supply to the load.	yes			
Double-layer capacitor				
nominal voltage	2 x 300 V			
number of U-cells	2 x 120			
nominal capacity per cell	360 F	360 F	360 F	360 F
configuration	connection in series			
type	EDLC			
type of recharge	temperature compensated recharge			
charge current by rated load	6 A			
charging time	10 minutes			
LCD display				
big graphic LCD display	information, meseared values, operation- and alarm status can be displayed in five different languages. The last 960 messages are stored.			
LED display				
icons with LED's for	<ul style="list-style-type: none"> - mains operation - buffer operation - load on bypass - standby / alarm - ECO-modus 			
Operational elements				
power switch / fuses	<ul style="list-style-type: none"> - mains input (SWIN) - output inverter (SWOUT) - Manual Bypass (SWMB) - capacitor safety disconnecter 			
buttons for LCD display	4 buttons for fast access on data			



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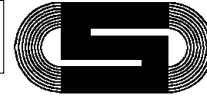
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interfaces				
Sub-D 9 Pin female connector	RS232 interfaces			
USB-female connector	Serial interfaces			
Sub-D 15 Pin female connector	potential-free alarm interface for: <ul style="list-style-type: none"> - mains failure (changer) - low battery (changer) - system on bypass (changer) - auxiliary supply (12V/100mA) for long distance signal - input for long distance signal (Stop inverter) - input for long distance signal (Stop UPS) 			
2 Slots	2 slots for communication cards			
Emergency Stop	clamps			

connections				
minimum diameter, dimension in mm ²				
input L1, L2, L3	2,5	4	4	6
input N	4	6	6	10
input PE	4	6	6	10
output L1, L2, L3	2,5	4	4	6
output N	4	6	6	10
output PE	4	6	6	10
energy storage +/-	4	6	6	10
energy storage N	4	6	6	10
energy storage PE	4	6	6	10
Size of the clamps in mm ²	10	10	10	10
Low heat device socket with 10 A	2 x IEC 320			

protection	
protections	<ul style="list-style-type: none"> - overload of energy storage - overload of inverter (peak value) - voltage of inverter out of the tolerance range - short-circuit - high temperature - failure by-pass
surge voltage stability	IEC 801-5 6 KV 1.2 / 50 μsec; 3 KA 8/20 μsec
vibration stability	< 2 g

norms	
safety	EN 62040-1-1; EEC regulation 73/23/EEC; 93/68/EEC
EMV / RFI	EN 62040-2 cl A; regulation 2004/108/EEC, 93/68/EEC and 89/336/EEC
operation requirements	EN 62040 – 3 VFI-SS-111



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environmental conditions				
operation temperature	0 till 40 °C			
maximum relative humidity	95 % (without condensation)			
maximum installation height	till 1000 m at nominal load (-1% für each 100 meters above 1000 m) - max. 4000 m			
cooling	forced air circulation (load-dependent arranged)			
noise in 1m distance (depending on load and temperature)	≤ 48		≤ 52	

cabinet	
material	Sheet steal
colour	RAL 7016 (Anthrazitgrey)
protection class	IP 20
the rear side of the system must at least have a distance to the wall of 40 cm	

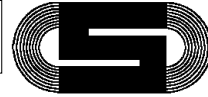
dimensions	
dimensions HxBxT in mm	1320 x 440 x 850

weight				
weight UPS-system without capacitor	80	82	90	95
weight UPS-system with capacitor	125	127	135	140

Included in delivery	
guide in German	yes
RS232 connection cable	Yes
Shutdown-Software for Windows NT / 2000 / 2003 / XP, Novell and Linux.	yes

Options

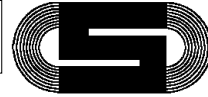
MLT with output transformer	MLT 10-COT	MLT 12-COT	MLT 15-COT	MLT 20-COT
Separation transformer is built in the cabinet, instead of the internal batteries for the galvanical separation from the mains.	X			
Weight of the UPS with output transformer in kg	145	165	190	215



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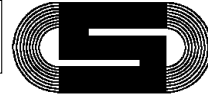
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Optionen				
external service by-pass				
manual by-pass switches the load from the inverter to the mains power supply without interrupting the output power supply in case of maintenance.				
dimension (H x B x T) in mm	400 x 300 x 210			
Weight	20 kg			
Parallel connection				
	Up to 6 UPS-systems with the same rating can be switched in parallel to increase the safety or to increase the rating.			
SNMP Interfacebox				
for direkt connection to a network	X			
Software				
network version of PowerShield3 Shutdown-Software for Windows NT/2000/2003/XP, Vista, Novell, UNIX and Linux system software.	X			
RS232 Multiplexer				
Multicom 352 Interface-card for the duplication of the existing interfaces	X			
MODBUS / JBUS connection				
Multicom 302 Interface-card for the connection at MODBUS / JBUS	X			
ProfiBUS Converter				
ProfiBUS Converter The connection is realized on Multicom 301 or 302, which is also needed additionally	X			
Relais card				
Multicom 382 Interface card with relay outputs (3A / 230V DC) and emergency Stop connection	X			



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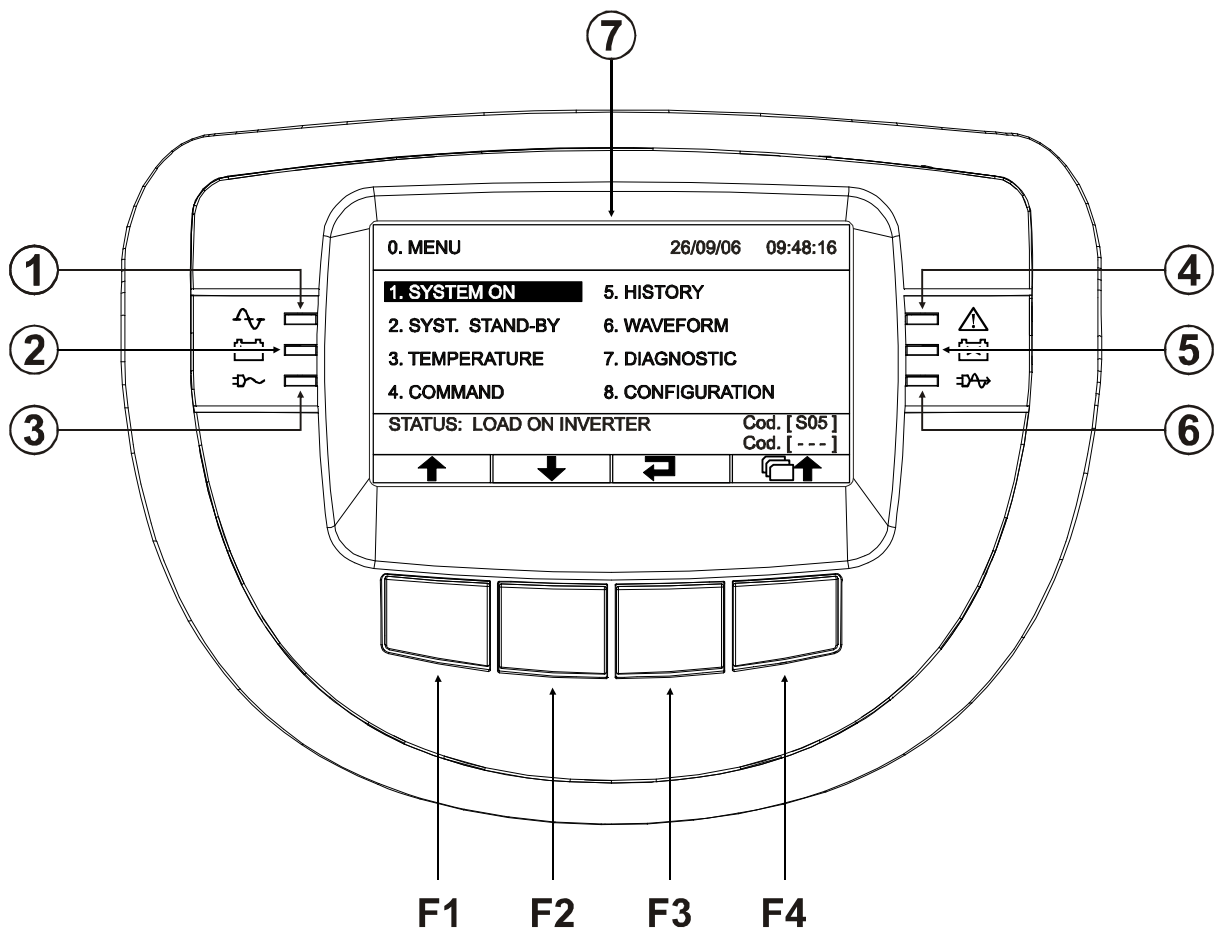
model	MLT 10	MLT 12	MLT 15	MLT 20
options				
Remote display				
Multi Panel: Remote display with a graphical screen			X	
Multi I/O				
8 programmable relay outputs 8 digital/analogue inputs (0 to 5V DC) 1 RS232 interface to the UPS system 1 RS232 interface for control 1 RS232/RS485 interface for control			X	
AS/400				
Cable set for the connection at AS/400 systems			X	



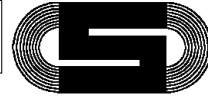
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indication- and control panel



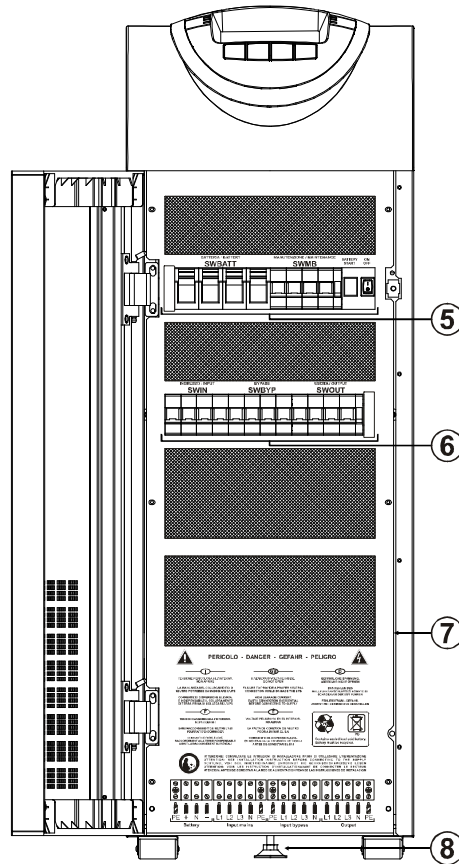
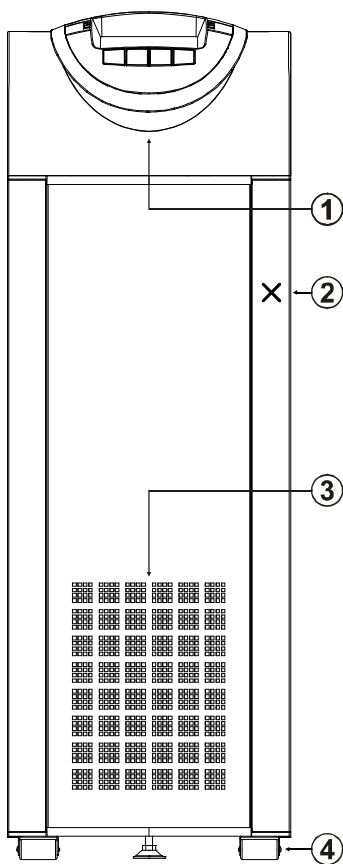
- | | |
|------------------------|-------------------|
| ① LED mains operation | ⑤ no function |
| ② LED buffer operation | ⑥ LED ECO-mode |
| ③ LED load on bypass | ⑦ picture-display |
| ④ LED standby / alarm | |



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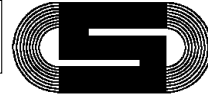
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front elevation



- ① Panel with graphic display
- ② Front door (press it to open the door and loosen the part which is signed with a **X**)
- ③ Ventilation grill
- ④ Rolls to forward the UPS

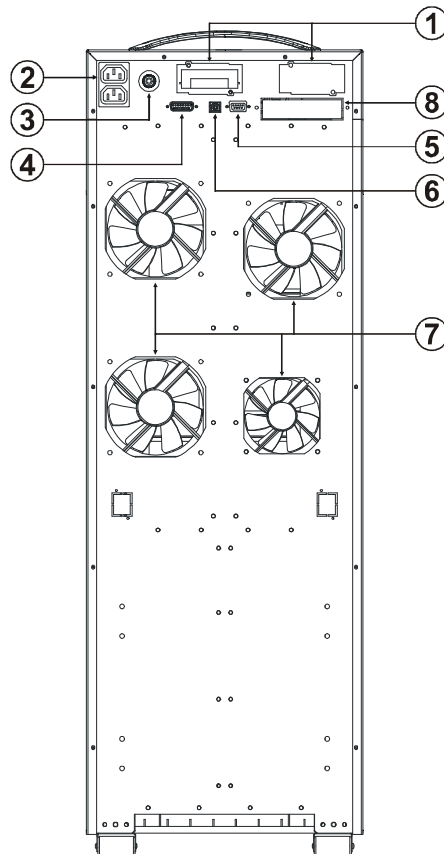
- ⑤ From left:
Separation switch, Battery safety fuse, manual bypass switch, button for start with battery (COLD START) /Mainswitch 1/0
- ⑥ From left:
Input switch / separated Bypass- switch (option) / output switch
- ⑦ Protective cover for the terminals with ventilation grill
- ⑧ Brake food



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Rear side



- | | |
|--|---|
| ① Slot for additional communication cards | ⑤ RS232 interface |
| ② IEC output sockets (Powershare)
(on both sockets together max. 10A) | ⑥ USB connection |
| ③ Thermal protection output sockets
Powershare (manual reset) | ⑦ Cooling ventilation |
| ④ Contact interface | ⑧ Reserved for the parallel connection card
(option) |