Series PCI and PIT

Type [VDC]	PCI1628 U_{IN} 20 – 32	PIT1638 / PIT3638 U_{IN} 40 – 64	PIT1648 / PIT3648 U_{IN} 50 – 80	PIT1658 U_{IN} 80 – 160	PIT1678 U_{IN} 160-320	Type of combined	
						static switch	man. Bypass
Output Power	500 VA	400 VA / 500 VA	400 VA / 500 VA	500 VA	500 VA	SS1508	MS

Type [VDC]	PCI3628 U_{IN} 20 – 32	PCI3638 U_{IN} 40 – 64	PCI3648 U_{IN} 50 – 80	PIT3658 U_{IN} 80 – 160	PIT3678 U_{IN} 160-320	Type of combined	
						static switch	man. Bypass
Output Power	1000 VA	1200 VA	1200 VA	1000 VA	1000 VA	SS3508	MS

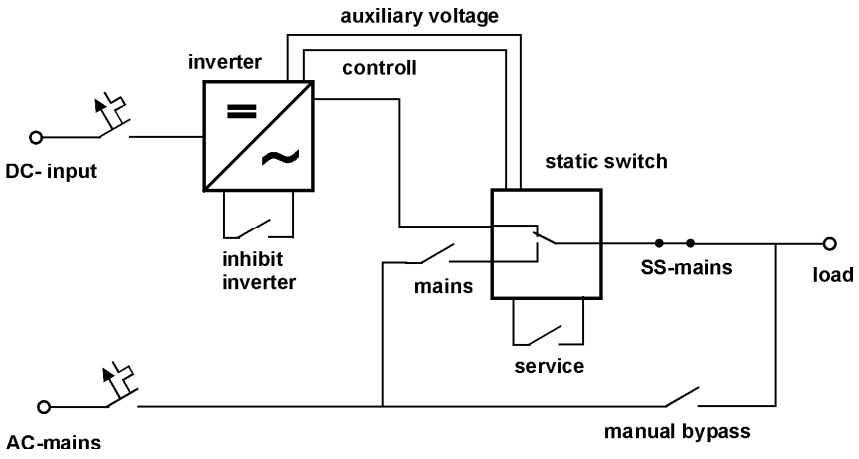
19“- rack (BGT)

PCI3638-SS-MS-BGT

19“- rack for wall mount (BGW)

PCI3638-SS-MS-BGW

Schematic diagram



Type designation example for:
- Inverter PCI3638 with static switch (SS) and manual bypass (MS) installed in a 19“- norm rack

PCI3638-SS-MS-BGT

Technical data

Inverter

Input

Voltage	s. tabulation on top
Input fuse	external required[1)]
Ripple allowed	5% rms
EMC- Surges	acc. EN 61000-4-5 gradient 3
EMC- Bursts	acc. EN 61000-4-4 gradient 3
Softstart	0,5s typ.
Ripple feed back	<2 mV psochometrical CISPR
RFI	acc. EN 55011

Output

Voltage	230VAC single phase, sinusoidal (115VAC, 240VAC possible)
Voltage range	210 - 240VAC adjustable, front panel trimmer
Regulation	static±2% dynamic±5% / 2ms 0<->100% load step
Frequency	50 Hz ±0,1% crystal stabilized (60Hz, 400Hz on request)
Power	s. tabulation on top
Over load	100% for 1s
Inrush current limiting	NTC's optional
Distortion	< 5% at cosφ 1
Crest factor	3 permitted
Power factor	0,8 ind.to 0,9 cap. permitted
Over load-/ short circuit prot.	electronic
RFI	acc. EN 55011 class A

Indicators, Alarm

LED - Indicator	green = operation
External Alarm	potential free change over contact with 30VDC / 2A for alarm: output voltage <200VAC

Control elements

Inhibit	external, remote ON / OFF
Output voltage	trimmer on front panel

Static Switch

General

Voltage	230VAC, 50Hz ±2Hz
Switch over times	- Line to Inverter ≤ 4msin line priority operation, max. time includes line failure analyses - Inverter to Line ≤ 4msin inverter priority operation, max. time includes line failure analyses
Times for switch back	- Inverter to Line≤ 4msin line priority operation - Line to Inverter≤ 4msin inverter priority operation
Switch over level	0,8 < U_{mains} <1,15
Surge	5x I_{NOM} for 1 s
Output	short circuit proof
Relais contacts	U_{max} = 250V, I_{max} = 3A

Control elements

Status indicators	green LED' s for:
Line operation	load is supplied by the line voltage
Inverter operation	load is supplied by the inverter
Inverter synchronous	Inverter synchronous with line frequency, independent if line or inverter priority operation
Alarm or fault indicators	red LED's for:
Line- over voltage	- Line voltage > U_{NOM} +15%
Line- low voltage	- Line voltage < U_{NOM} -20%
Inverter- over voltage	- Inverter voltage >U_N +15%
Inverter- low voltage	- Inverter voltage < U_N -20%
Summary alarm	Line or inverter voltage out of tolerance - Active inhibit - Output current static switch to high - Int. auxiliary voltage low - Static switch fault

Manual switch

Switch Position 0	output disconnected:
Switch Position 1 (no permanent position)	mains is connected to the load via the static switch SS
Switch Position 2 (normal operation)	inverter is activated and connected. The function "service mains" is inactive and the static switch SS goes into normal operation. The inverter is synchronised with the mains by the static switch If the inverter output goes out of the tolerance, then the load is automatically connected to the mains with nearly no interruption.
Switch Position 3 (no permanent position)	in this position the mains is connected to the load via the static switch SS and simultaneously the manual bypass MS is activated.
Switch Position 4 (manual bypass)	in this position mains is connected to the load via the manual bypass MS. All the mains potentials to the static switch SS are disconnected. The inverter IT is blocked by the internal inhibit input. The output voltage is zero and only the auxiliary voltage and the control circuitry of the static switch SS are activated (hot stand-by).

General

Construction	Inverter (42TE) and static switch (21TE) are pluggable mounted, the manual switch is fix installed
Option BGT	19“- norm rack Dimensions19“ (483mmW) x 6U (266mmH) x max. 340mmD Connectionterminals on rear side
Option BGW	19“- rack for wall mount Dimensions481mmW x 6U (266mmH) x max. 340mmD Connectionterminals on bottom side
Environmental	
Operating temperature	-10 °C to +45 °C
Storage temperature	-30 °C to +70 °C
Relative humidity	75 %, without condensation
Cooling	unhindered natural convection
Mechanical protection	IP20
Efficiency	app. 85%
EMC	acc. EN 61000-6-4 / EN 61000-6-2
Isolation	Input / Output 3500VDC for 1 min. Input / Output / Case 2100VDC for 1 min.

[1)] Value of input fuses (extern required):

Type	**PCI1628**	**PIT1638 / PIT3638**	**PIT1648 / PIT3648**	**PIT1658**	**PIT1678**
ext. Fuse	63AT	50AT / 50AT	35AT / 35AT	16AT	10AT
Type	**PCI3628**	**PCI3638**	**PCI3648**	**PIT3658**	**PIT3678**
ext. Fuse	125AT	50AT	35AT	25AT	12AT

General Description

PCI- Series

Figure 1 shows the connection of a DC/DC converter with a switch-mode inverter.

The DC/DC converter transforms the normally low battery voltage to the high intermediate circuit voltage at the input of the inverter and provides the required electrical isolation between the AC-output and the battery. The inter-mediate circuit voltage must be higher than the value peak of the output voltage of the inverter and is thus fixed to approximately 400V at a requested output voltage of 220 / 240V.

Figure 1

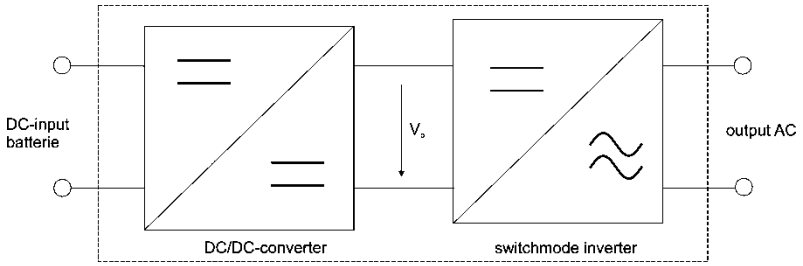
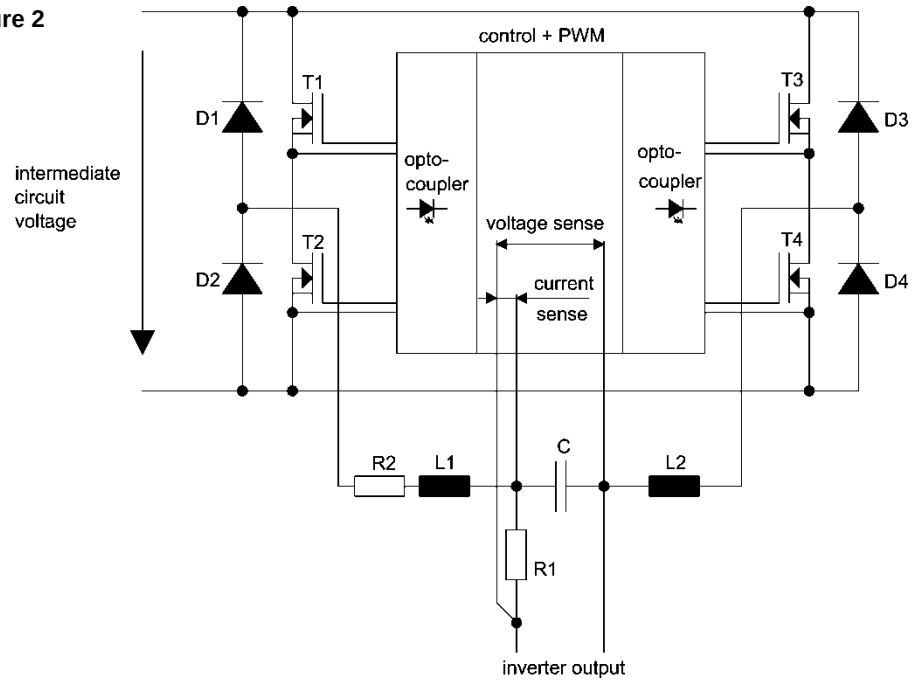


Figure 2 shows the circuit of the inverter:

The intermediate circuit voltage (DC-input voltage) is transformed by the power transistors T1-T4 with the parallel inverse diodes D1-D4 in a pulse-width square-wave voltage. The choke with the windings LI and LII integrates this voltage, and at the capacitor C there is a sinusoidal output voltage. The power transistors are controlled by opto-coupler, making sure, that not both transistors of one branch are switched on at the same time by the control pulses. The output voltage is connected via sense leads to the control circuit and controls after a comparison with a reference the control pulses for the power transistors. The voltage drop of the output current at shunt R1 is also supplied to the control circuit and serves for current limiting.

Figure 2



General Description

PIT- Series

Figure 1 shows the connection of a switchmode inverter and a transformer.

Figure 1

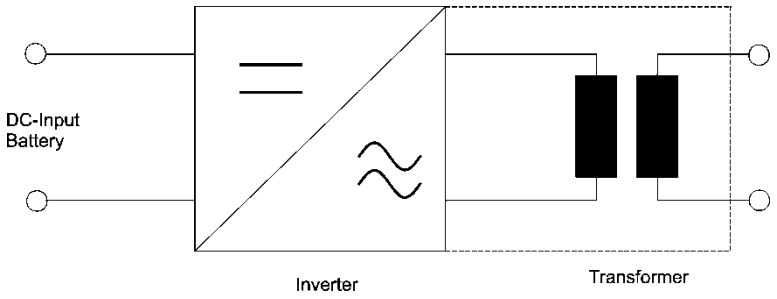


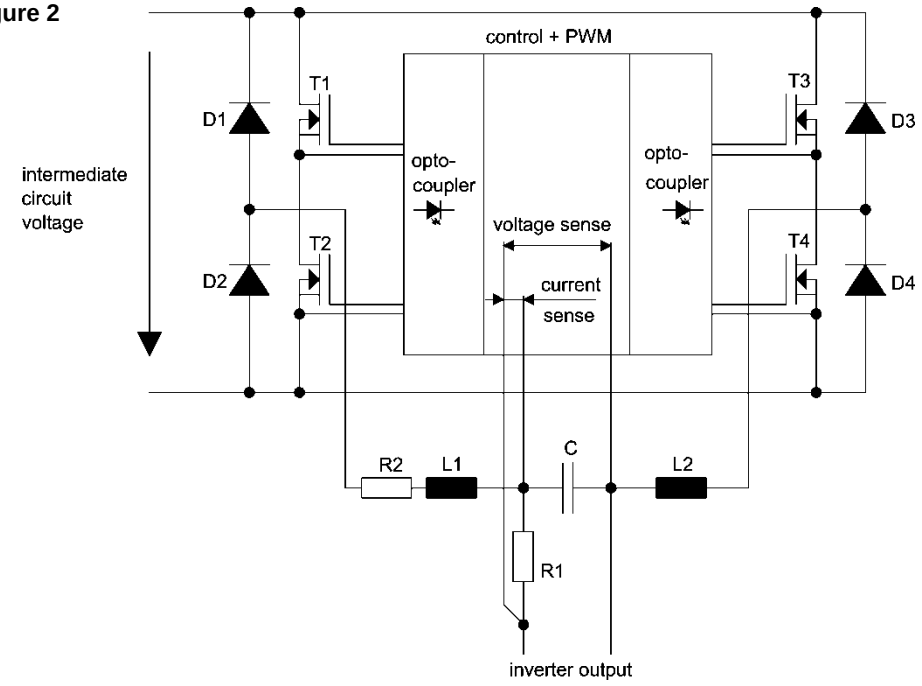
Figure 2 shows the circuit of the inverter:

The intermediate circuit voltage (DC-input voltage) is transformed by the power transistor T1-T4 with the parallel inverse diodes D1-D4 in a pulse - width square-wave voltage. The choke with the windings L1 and L2 integrates this voltage, and at the capacitor C there is a sinusoidal output voltage.

The power transistors are controlled by the opto-coupler, making sure, that not both transistors of one branch are switched on at the same time by the control pulses. The output voltage is connected via sense leads to the control circuit and controls, after a comparison with a reference, the control pulses for the power transistors. The voltage drop of the output current at shunt R1 is also supplied to the control circuit and serves for current limiting.

Alternating voltage at the output of the inverter is transformed by means of a transformer to the requested output voltage with galvanic isolation.

Figure 2



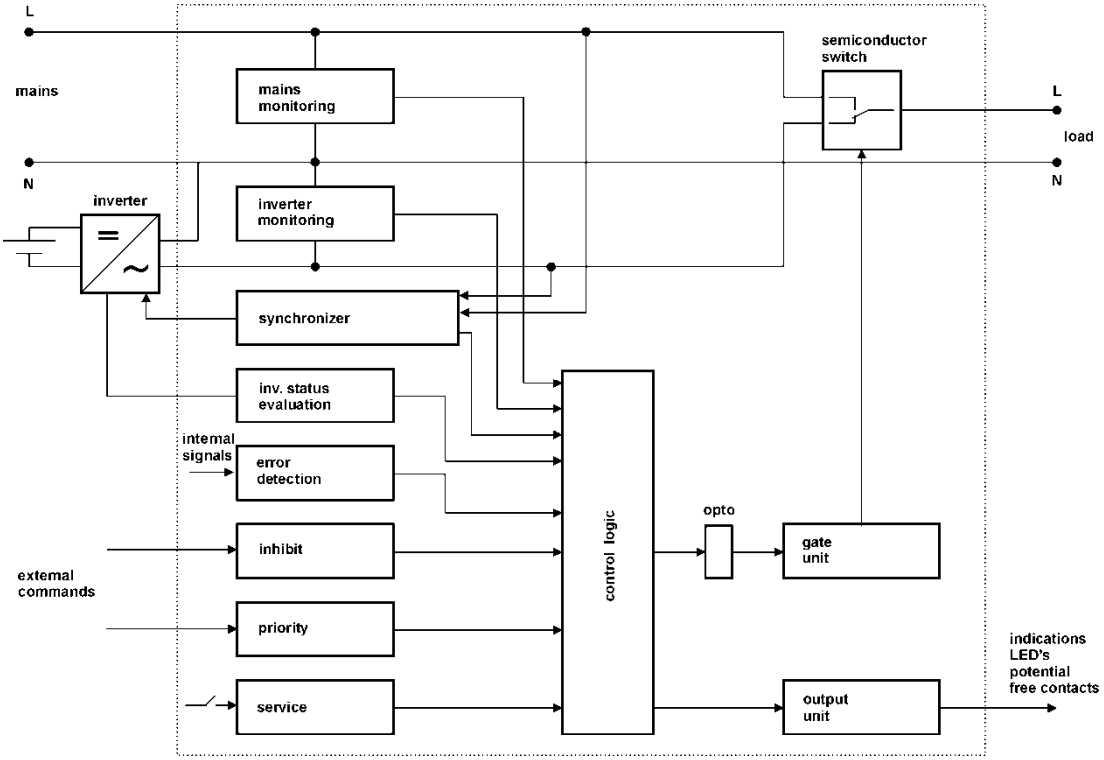
General Description

Static Switch

The static switch transfers the AC supply to the load from the inverter or mains. It synchronizes the inverter to the mains frequency when mains voltage is present.
To achieve logically correct operation, the static switch monitors and evaluates:

- under- and over voltage of the mains
- under- and over voltage of the inverter
- short circuit at the output
- present mode of operation
- faults

To adapt the static switch to different requirements, it is possible to externally select (via an contact) priority for mains- or inverter operation, and the static switch can be turned off via another contact to disconnect the load. LED's and potential-free contacts indicate the mode of operation.
When priority for mains operation is selected and the mains voltage is present, the load is supplied from the mains. When mains failure occurs, the static switch transfers the load to the inverter which now runs at its own frequency. Upon return of the mains, the inverter is automatically synchronized to the mains again and the output load is transferred back to the mains without an interruption. When the priority for inverter operation is selected the inverter normally supplies the load and synchronised to the mains. If the sensing circuit detects a failure of the inverter output it transfers the load to the mains.



General Description

Manual bypass (manual switch)
Please s. technical data