SITI
SPA

SOCIETÀ ITALIANA TRASMISSIONI INDUSTRIALI

®

Motoinverter SITI TRONIC

EN **OPERATING MANUAL**

04.2006

We, at SITI S.p.A., would like to thank you for the confidence shown in choosing our products. Our dedication to quality and innovation has allowed us to develop highly efficient motoinverter able to fulfil even the most demanding requirements.

If, in case of any doubt, please do not hesitate to contact our Customer Service Department or Service centers for more detailed information.

MANUFACTURER'S DATA

SITI SPA

SOCIETÀ ITALIANA TRASMISSIONI INDUSTRIALI

®

GEARBOXES
GEARED MOTORS
SPEED VARIATORS
A.C./D.C. ELECTRIC MOTORS
FLEXIBLE COUPLINGS

HEADQUARTER

Via G. Di Vittorio, 4
40050 Monteveglio - BO - Italy
Tel. +39/051/6714811
Fax. +39/051/6714858
E-mail: siti.spa@interbusiness.it
WebSite: www.sitiriduttori.it

SITI

TABLE OF CONTENTS

SITI

USE OF THE MOTOINVERTER

1. Safety notes

1.1. Explanation of symbols and notes

Work safety symbol

You will find this symbol next to all work safety notes in this instruction manual if there is a risk of injury or death for persons involved. Pay attention to these notes and observe particular caution in such cases. Also pass on all work safety instructions to other users.
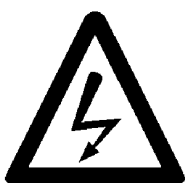
Voltage warning

This symbol is shown wherever particular caution is necessary owing to occurring or applied voltages (e.g. DC voltages up to 800 V) and where special precautionary measures have to be taken. The inverter must always be isolated from the mains when working on it.

Caution note

ATTENTION!

This note is shown in all parts of this instruction manual to which particular attention must be paid to ensure that the guidelines, specifications, notes and the correct sequence of work are obeyed to prevent damage or destruction of the inverter and/or systems.

1.2. General safety notes

> **You must read and observe the instruction manual and safety notes before commencing assembly and commissioning work!**

Besides paying attention to the notes given in this instruction manual, also observe the generally valid safety and accident prevention regulations!

The inverters must always be isolated from the mains voltage before all work on the electrical or mechanical parts of the system.

Installation, maintenance and repair work must only be carried out by instructed, technically suitable and qualified personnel.

Conversions or changes carried out on or in the inverter and its components and accessories without express authority render all warranty claims null and void.

The components of the power section and specific elements of the control section are connected to the voltage mains when the inverter is connected to the mains voltage.

Touching these components involves mortal danger!

Isolate the inverter from the mains before removing the front panel or the housing (e.g. by removing or deactivating on-site fuses or by deactivating a master switch isolating all poles etc.).

ATTENTION!

After switching off the mains voltage, wait **for at least 5 minutes** before beginning work on or in the inverter (the DC voltage in the DC link capacitors must first of all discharge through discharge resistors). **DC voltages of up to 800 V are possible.**

In the event of malfunctions, the discharge time of 5 minutes may be exceeded **substantially.**

The inverter contains protective facilities that deactivate it in the event of malfunctions, as the result of which the motor is de-energized and comes to a standstill (so-called "coasting" of the motor is possible depending on the flywheel or the type of drive involved). Standstill of the motor can, however, also be produced by mechanical blockage. Voltage fluctuations, and particularly mains power failures may also lead to deactivation. In certain circumstances the drive may start up automatically once the cause of the fault has been remedied. As the result of this, certain systems may be damaged or destroyed and there may be a risk for operators working on the system. **For such operating cases, the user must take precautions to reliably prevent automatic starting of the motor.** For example, this can be done by using a speed monitor that deactivates the power supply to the inverter if the motor should come to an unscheduled standstill.

The motor may stop during operation due to a disabling protection circuit operation or by loss of the control signal. Resetting these systems can result in the motor restarting. If automatic starting of the motor must be prevented to protect operating personnel, interlocks must be provided to isolate the mains supply to the inverter.

The inverter must always be earthed when operated.

Measuring instruments must only be connected and disconnected after removing the power supply.

The responsible operating personnel must read, understand and observe the instruction manual.

We draw attention to the fact that no liability can be assumed for damage and malfunctions resulting from failure to observe the instruction manual.

Technical data and illustrations given in this operating manual may be amended to comply with modifications of the units which may be made to improve their functions.

2. Use of the motoinverter

The application of the inverter described in this operating manual exclusively serves the purpose of continuously variable speed control of three-phase motors.

The inverter are designed for installation in a switch gear cabinet and for permanent connection.

The operator of the system is solely liable for damage resulting from improper use of the inverter.

The operator of the system is responsible for obeying the operating, maintenance and repair conditions.

Only personnel informed about the functions and hazards of the inverter may be employed for the purposes of operation, maintenance and repair.

Only items expressly approved by SITI (e.g. mains filters and chokes etc.) may be used as accessories.

The installer of the system is liable for any damage resulting from the use of accessories that have not been approved expressly by SITI. Please consult us in the event of uncertainty.

Before you continue reading, please check whether technical amendments are attached in the annex to this operating manual!

---

3. Introduction

The present operating manual contains specifications, installation instructions and troubleshooting procedures for SITI inverters.

The information in this manual must be known before installation of the inverter in order to guarantee fault-free installation and thus maximum performance.

SITI

4. Technical data

	Inverter		0,37 kW	0,55 kW	0,75 kW	1,1 kW	1,5 kW		
Inverter output data	Motor power	kW	0,37	0,55	0,75	1,1	1,5		
	Output power	kVA	0,8	1,0	1,6	1,8	2,9		
	Rated device current	A	1,1	1,5	2,0	2,8	3,7		
	Overload capacity	%	200% × 180 s (+/-15%)						
	Output voltage	V	$3 \times 0...U_{IN}$						
	Output frequency	Hz	0...99 Hz						
	Electrical efficiency	%	>95%						
	Operating mode		4-quadrant operation (with braking-chopper)						
Mains input	Mains voltage	V	3 × 380...460V, (-15% +10%)						
	Mains frequency	Hz	40...70 Hz						
Control data	Modulation method		PWM						
	Open-loop control		0...10 V DC External potentiometer (4K7) RS485						
	Frequency resolution	Hz	8 Bit on Fmax						
	Acceleration/ deceleration time	Sec.	0.1...1000 sec.						
	Maximum frequency	Hz	0...99 Hz						
	Minimum frequency		0...Fmax						
	DC brake		Standard						
Protective functions	Undervoltage trip level	V	280V AC / 395V DC						
	Overvoltage trip level	V	537 V AC / 760V DC						
	Short circuit		Electronic						
	Overcurrent		Electronic						
	Overtemperature		Monitoring of heat sink temperature						
Ambient condition	Ambient temperature	°C	From −5 °C to 45 °C						
	Storage temperature	°C	From −20 °C to 60 °C						
	Humidity	%	<90% RH, non-condensing						
	Degree of protection	IP	IP 55						

5. Dimensional data MOTOINVERTER
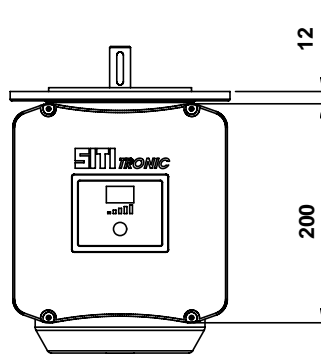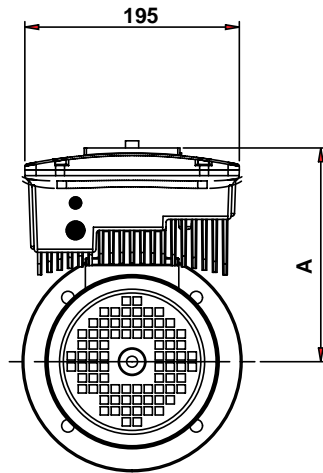
MOTOR SIZE	A (mm)
71	190
80	205
90	205

6. Installation example

6.1 Installation examples
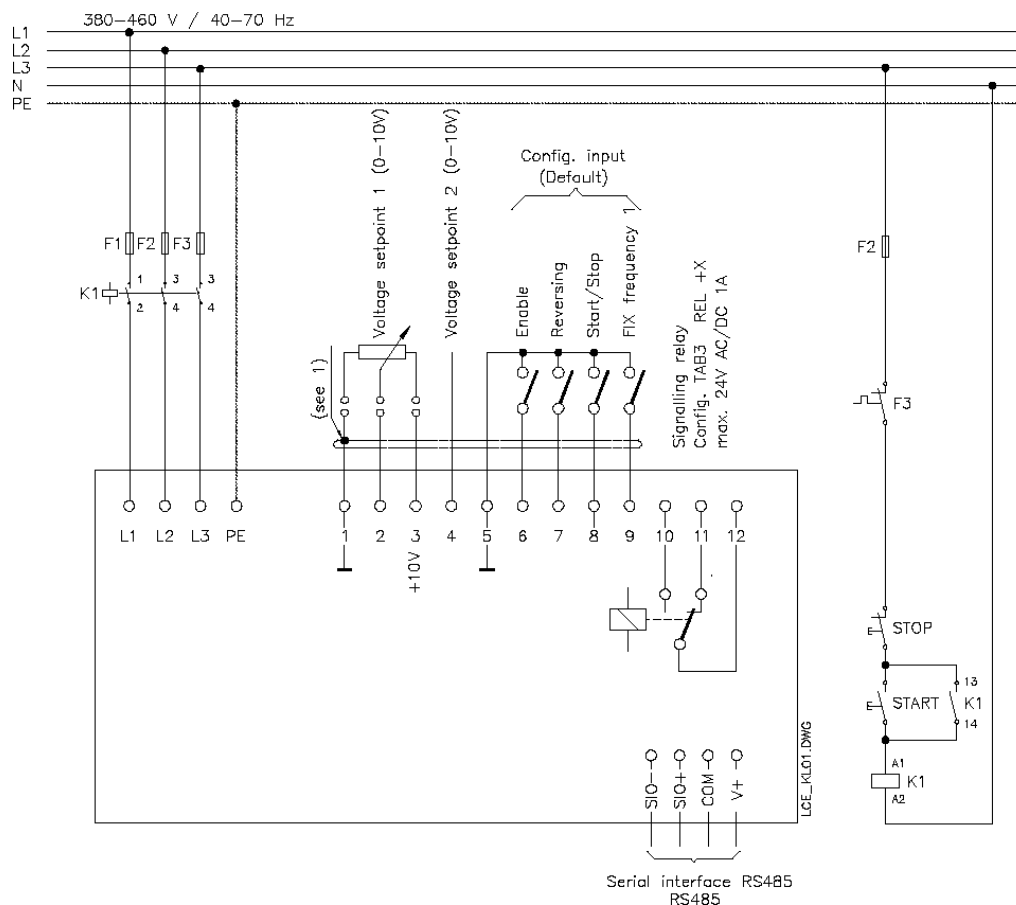
1) The GND terminals (1 and 5) are floating and serve, among other things, as the reference potential for shielded cables of the control inputs. This potential must be grounded directly either at the control side (PLC or similar) or at the inverter (PE to one of the terminals 1 or 5).

The terminal assignment shown in this drawing refers to the setting "Active LOW".

7. Installation

7.1. Installation

If the inverter has to be installed in a different position, external cooling is required for full capacity utilization.

SITI motoinverters are generally designed so that they can be operated at ambient temperatures from –5 °C to +45 °C and at a relative humidity of up to 90%.

Formation of condensation must be avoided!

Please contact   SITI   if the above values are exceeded. A heat build-up at the inverter during operation must be prevented. The internal air circulation may possibly be insufficient if the unit is installed in a control cabinet with a small volume.

The units should never be installed in the proximity of corrosive or flammable gases, conductive dust or large magnetic and electric fields.

The inverter should be installed in a location that is largely free of dust, steam and vibrations.

Operation of the units in the presence of abrasive dust, steam, condensate, oil mist or air containing salt will reduce their useful life.

Pay close attention during installation to ensuring that no objects (such as drilling swarf, wire or anything else) fall into the unit. Otherwise a device fault cannot be excluded, even after longer periods of operation.

7.2. Mains power connection

To guarantee lasting operating safety and reliability, the inverter must be connected expertly in accordance with the valid electric standards. Attention must be paid to good insulation from earth potential on the power terminals.

Connect an AC mains power supply with a rated voltage between 220V and 240V or a three phase mains power supply with a rated voltage between 380V and 460V (40..70Hz) to the mains power connection terminals L1, N or L1,L2,L3 and PE respectively. (TN-C System)

L1 (phase) – N	220...240V	40...70 Hz;	PE = Ground
L1, L2, L3 (phases)	380...460V	40...70 Hz;	PE = Ground

Ensure a voltage balance to earth when feeding in the mains power through an isolating transformer (star point earthed) or use the vector group "DY5" in the case of single-phase inverter power supply.

The inverter must always be earthed.

SITI

Frequency inverters must not be connected via a residual-current-operated circuit-breaker as the sole protective measure!

The single exception below permits connection of a frequency inverter via a residual-current-operated circuit-breaker as the sole protective measure :
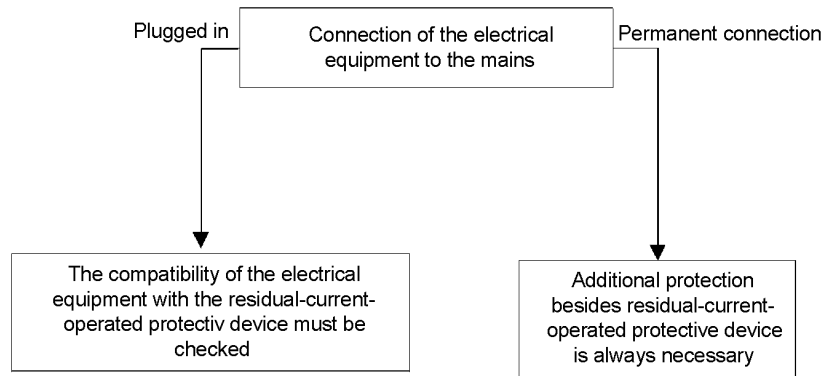
Installation of a residual-current-operated circuit-breaker of the newest design **for frequency inverters up to 2,9 kVA(input voltage 1x230V) with MOBILE connection.**This residual-current-operated circuit-breaker must be suitable for alternating and pulsating DC leakage current. Residual-current-operated circuit-breakers of this type bear the symbol ⌐⌐⌐.

Reliable tripping of the residual-current-operated circuit-breaker is not ensured in the case of frequency inverters up to 4 kVA (input voltage 3x400V) with MOBILE connection; an additional protective measure must be used for this reason. Also see the diagramm below.

In the case of frequency inverters with PERMANENT connection (input voltage 1x230V and 3x400V), another protective measure must always be used in addition to the residual-current-operated protective device. Also see the diagramm below.

The protective function of the residual-current-operated circuit-breaker is no longer ensured due to leakage currents from interface suppression capacitors in the inverter and DC-components in the fault current. All devices connected to this residual-current-operated circuit-breaker (and person touching them) are no longer protected in the event of a fault.

Plugged in	Connection of the electrical equipment to the mains	Permanent connection

| The compatibility of the electrical equipment with the residual-current-operated protectiv device must be checked | | Additional protection besides residual-current-operated protective device is always necessary |

The pluggable terminal strips on the inverter (power connection terminals) must not be plugged or removed when alive (DIN VDE 0160/pr EN50178).

The inverter will be destroyed if the mains feeder is confused with the motor cable.

The DC link capacitors must be reformed if the inverter you wish to connect has been out of operation more than a year. To do this, connect the inverter to voltage for approx. 30 minutes.The inverter should not be loaded by connected motors during forming.

7.3. Interference suppression measures/EMC (electromagnetic compatibility)

Electrical/electronic devices are capable of influencing or disturbing each other through connecting cables or other metallic connections. Electromagnetic compatibility consists of the factors interference resistance and interference emission. **Correct installation of the inverter in conjunction with any possible local interference suppression measures has a crucial effect on minimizing or suppressing mutual interference.**

The following note refer to a mains power supply that is **not** "contaminated" by high frequency interference. Other measures may be necessary to reduce or suppress interference if the mains voltage is "contaminated". No generally valid recommendations can be given in such cases. Please consult SITI if all recommended interference suppression measures should not produce the desired result.

The following points must be observed if radio interference suppression is to be realized in accordance with EN 55011, EN 55014 and EN 50081-1 :

- Line-side connection of a mains filter and a output choke (the mains filter and output choke are not contained in the scope of delivery).
- Lay the motor cable so that it is shielded.
- Lay the control cable so that it is shielded.
- Observe the general measures for radio interference suppression (also refer to the whole chapter "Interference suppression measures/EMC (electromagnetic compatibility)".

- When connecting the shield to cables leading further, the cross section of the shield should not be tapered.
- Lay motor, mains power and signal cables separately and, as far away from each other as possible and separately.
- When using a mains filter, place it at the shortest possible distance from the inverter to be able to connect both devices by means of short connecting cables.
- When using an output choke (option), place it in the **direct proximity** of the inverter and connect it with the inverter using a screened cable which is earthed at both ends.
- Shielded signal cables should be laid at a minimum distance of 10 cm from power cables running parallel. A separate earthed metal cable duct is advisable for such signal cables. If signal cables intersect with a power cable, they should do so at an angle of 90°.
- We recommend that control cables with a length of more than 1 m be twisted or laid in a screened configuration and earthed at both sides.

Other loads connected to the mains may produce voltage spikes that may interfere with functioning of the inverter or may even damage it. Chokes or main filters can be used on the mains side to protect the inverter against voltage spikes (resulting from switching large loads to the mains, for example). Such chokes and filters are available as accessories.

If inverters are operated in a switchgear or in their close proximity (e.g. in one common control cabinet) in connection with the same power mains, we recommend the following precautionary measures to suppress interference in the switchgear:

- Wire the coils of contactors, switchgear devices and relay combinations with RC elements or with free-wheeling diodes.
- Use shielded cables for external control and measuring cables.
- Lay disturbing cables (e.g. power and contactor control circuits) separately and at a distance from the control cables.

7.4. Mains back-up fuses

External upstream fuses are required to protect the cables and the unit itself. The fuses must be dimensioned so as to permit starting up and normal operation of motors. To guarantee this, we recommend using the following fusible links:

Mains input 3x400V						
COMPACT 0,37 kW	COMPACT 0,55 kW	COMPACT 0,75 kW	COMPACT 1,1 kW	COMPACT 1,5 kW		
2 A time lag	4 A time lag	4 A time lag	6 A time lag	6 A time lag		

7.5. Series autotransformer

A series autotransformer is dimensioned as follows (guide value):

Rated inverter output $\times$ 2 = Transformer output in kVA.

Attention must be paid to the voltage increases in no-load condition when using isolating transformers.

7.6. Controls terminals X1

TERM.	FUNCTION	DESCRIPTION
1	GROUND (GND)	Ground
2	AN1	Analogic input 1 (0 - 10 V dc)
3	+10V	Supply voltage, potentiometer 10V dc
4	AN 2	Analogic input 2 (0 - 10 V dc)
5	GND	Ground
6	In 1 (enable)	Configurable digital input 1
7	In 2 (reversing)	Configurable digital input 2
8	In 3 (start stop)	Configurable digital input 3
9	In 4 (fix frequency 1)	Configurable digital input 4
10	Relè NO	Relai switch normally open
11	Relè NC	Relai switch normally closed
12	Relè COM	Common relai switch

N.B.: NPN digital Input logics (operating when closed towards GND).

7.7. Terminal box for serial connection RS 485 X7

TERM.	FUNCTION	DESCRIPTION
1	SIO -	Serial input LOW
2	SIO +	Serial input HIGH
3	Ground (GND)	Ground
4	+ 5 V	Power supply (for SITI options only)
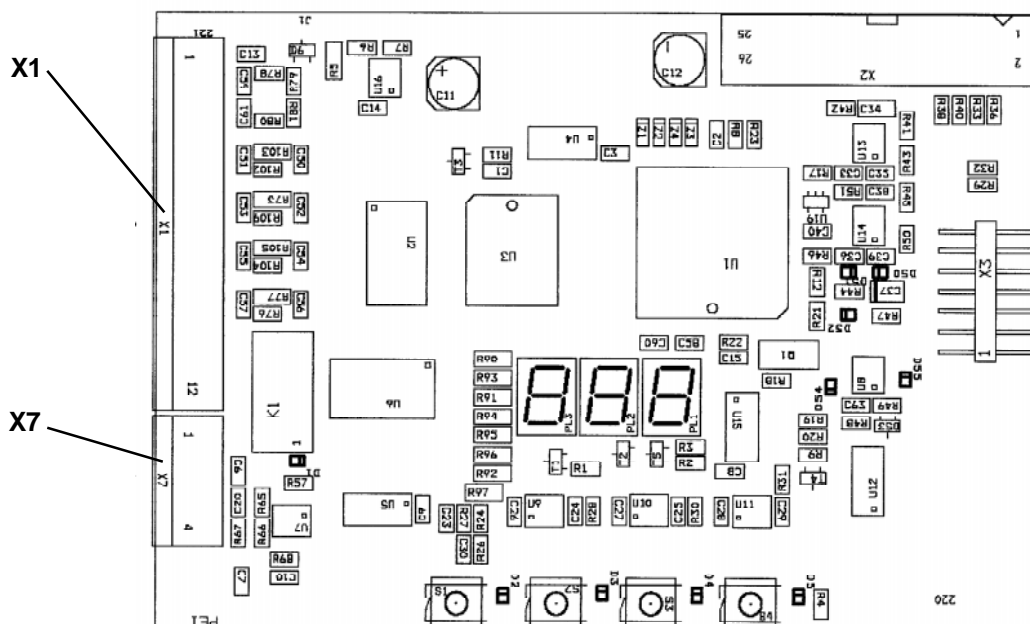
7.8. Power terminals

TERM.	FUNCTION	DESCRIPTION
L1	3-phase mains power supply connection	3x380... 460 Vac (-15% + 10%)
L2		
L3		
PE	Main ground connection	

L1 / L2 / L3

PE
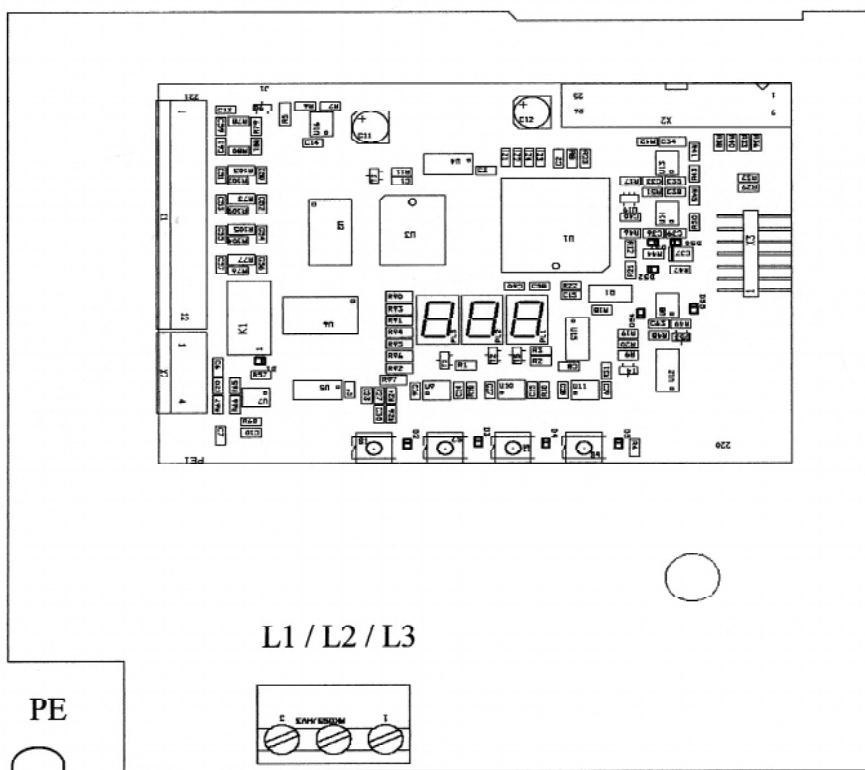
8. Commissioning and settings

8.1. General information

The following points must be observed before commissioning:

- Corresponding of the mains voltage with the rated input voltage of the inverter.
- Check that the motor has the correct type of connection (star connection, delta connection).
- Check the cabling.
- Check the mechanical characteristics of the driven system.
- Observe all safety regulations.

8.2. Adaption to operation

The ramp-up and ramp-down times must be adapted to the acceleration capacity of the three-phase motor and the inverter. If the acceleration time is too short, the motor demands more current from the inverter than the latter can provide. This may lead to the inverter being switched off (current limit or peak current).

It is possible to limit the maximum output frequency attainable with the setpoint potentiometer by means of the maximum frequency function. Normally, the output frequency is 50 Hz. The field weakening and the related torque-drop must be included in planning for output frequencies higher than 50 Hz.

Using the minimum frequency function, it is possible to set the minimum output frequency which is the lower limit for setpoint input via the setpoint potentiometer or external setpoint.

9. Display

A two-digit LED-display provides all necessary status-information to the user, such as inverter status messages or information about faults and errors.

9.1. Status- and fault- messages

`00` - `99` Output frequency in Hz.

`UU` The mains has been reached the Undervoltage Limit.

`uE` Undervoltage has been detected in the link (>400msec). Right away the voltage is normalized, the motor starts after 2,5 sec. from zero frequency.

`UU` The voltage in the link has reached the overvoltage value.

`cc` The output current has almost reached the type-specfic limit.

`CC` The output current has exceeded the type-specific limit.

`tt` The heat sink temperature is too high.

`--` No Enable, terminal open (Digital input config. to ENABLE).

`P-` Save parameters.

`St.` Inverter stopped on power up. Possible causes :
>   -AUTOSTART-function disabled
>   -after any KEY-operation
>   -default parameters loaded

The inverter starts after actuating the ENABLE-input.

`to` Serial interface error (SIO-Timeout).

`dc` DC brake is activated.

9.2. Error messages

If an Error occurs, please call the tecnical assistance.

`1E` EEPROM error

`3E` EPROM error

`5E` RAM error

`6E` Watchdog error

`7E` Clock error

`8E` Program error

## 9.3. Status messages during the use of the KEY (option)

`d1` Data transfer fom **KEY to inverter.**

`d2` Data transfer from **KEY to inverter** was done successfully.

`U1` Data transfer from **inverter to KEY.**

`U2` Data transfer from **inverter to KEY** wasn't done successfully.

`E1` Displays blinking : an error occured during the data transfer from KEY to inverter.

`E2` Displays blinking : an error occured during the data transfer from inverter to KEY.

10. KEY (Option)

The KEY is a device that allows the user to read, save and load the parameters of the inverter using the serial interface. This is an easy and fast way to transfer customized parameter sets between inverters of the same type.
Please note : The KEY-function of the telecomander RC works in a different way. See the RC-manual for details. The display-messages are the same in both cases.

10.1. The parameter transfer from KEY to inverter (KEY→→)

- Connect the KEY to the serial interface with the inverter **powered off.**
- Turn on the inverter.
- The display shows ⌷d1⌷ and counts up from 0 to 99.
- The display shows ⌷d2⌷ if the data was transfered succsesfully.
- The display shows ⌷E1⌷ if any errors occured during data transfer.
- Dissonnect the KEY. A Software-Reset will be executed. The inverter starts with the new parameters after actuating the ENABLE-terminal.

10.2. The parameter transfer from inverter to KEY (→→KEY)

- Connect the KEY to the serial interface with the inverter **powered on.**
- The display shows ⌷U1⌷ and counts down from 99 to 0.
- The display shows ⌷U2⌷ if the data was transfered succsesfully.
- The display shows ⌷E2⌷ if any errors occured during data transfer.
- Dissonnect the KEY. A Software-Reset will be executed. The inverter starts after actuating the ENABLE-terminal.

10.3. KEY - Errors:

If any error occurs during KEY-operation the display shows ⌷E1⌷ or ⌷E2⌷ blinking intermittently with:

⌷A⌷ Transfer error (Handshake).

⌷u⌷ The parameter set in the KEY is not compatible to the installed software.

⌷c⌷ Transfer error (CRC - Error).

⌷t⌷ Transfer error (TIME - OUT).

⌷L⌷ KEY is write protected (security switch in LOCK-position).

11. Faults and remedies

The inverter is equipped with error-detection- and error-signalling-facilities.

The on-board signalling relay can be configured to signalize the event of a fault.

Fault	Possible cause	Fault remedy
Motor is not running	No mains voltage	Check mains voltage.
	ENABLE or START/STOP missing	The motor starts only when both signals are active and whit a setpoint different from 0.
	Setpoint missing	Check setpoint at terminal 8 or 28.
	Unit not properly connected	Check all power and control wirings.
	Motor stall	Release any overload on the motor.
	Internal inverter fault	Send unit for repair.
Motor speed too low	"Fmax" is set too low	Increase "Fmax".
	Setpoint not sufficient (terminal 8)	Verify the input signal level.
	Motor running with slip	Increase acceleration time or reduce "Fmax".
Inverter output current too high	U/f ratio incorrect	change the U/f ratio or reduce "Fmax".
Acceleration overcurrent	Starting torque too high	Reduce starting torque.
	Acceleration ramp time too short	Increase acceleration ramp time.
	Motor running with slip	Increase acceleration ramp time.
Overvoltage on DC-Bus	Mains voltage too high	Check input line voltage.
	Voltage peaks caused by switching large loads on the line	Reduce current surges and voltage trancients on the line.
	Braking operation	Increase deceleration time or use external braking chopper.
Heat sink overtemperature	Inverter overloaded	Check temperature in the cabinet. Verify the proper sizing of the inverter for the application.

SITI

SOFTWARE

SITI

1. Operating functions

1.1. Control panel

Keys	Description
[S]	Function interrogation forward.
[P]+[▼]	Function interrogation back.
[S] 1 sec.	a) Jump back to the first function of the function table or sub-menu. b) Jump out of the table or sub-menu (starting from the first function of the function table or sub-menu).
[▲]	Increments the parameter value of the selected function. To increase the speed at which scrolling through the value range takes place, keep **INC** depressed and briefly press **DEC**.
[▼]	Reduces the parameter value of the selected function. To increase the speed at which scrolling through the value range takes place, keep **DEC** depressed and briefly press **INC.**
[P]+[S]	Permits access to a sub-menu or a parameter table.
[P]+[▲]	Help function: A Help text can be called for each function. A key change from **INC** to **DEC** with depressed **SHIFT** key inverts the text scroll-direction of the help text.

1.2. Parameter saving

Changing the parameters setting in the menu, these will become active after they will be saved. This procedure is automatic going forward in the menu and is indicated with "P-" on the inverter display or with "SAVE" on the remote controller display.
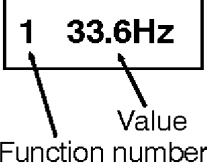
1.3. Help - function and language - select

When pressing SHIFT and INC, on the display appears a scrolling Help-text concerning the currently active function. Releasing INC and pressing DEC while holding SHIFT inverts the text scroll - direction. The Help-text-language may be choosed in TAB3, function [Deutsch, English, Italiano], pushing the **INC** or **DEC** key.

N.B:

Transfering the parameters with KEY (or with the KEY function of the remote control RC), the adapted language is trasferred like any parameter. Recall the factory settings, the impased language remains unchanged.

1.4. Inverter status

Message	Description
OFF	No **ENABLE,** terminals 5-6 open.
STOP	If the AUTOSTART function is deactivated, the inverter is stopped after switching on (see TAB3, SUB XPAR, function SW1 =OFF), after the utilisation of KEY and after the recall of factory settings. Activate **ENABLE** to start the inverter.
1 33.6Hz Value Function number	Display of current actual values or changeable parameters (the first number indicates the function number and the 2.nd number the value of the respective parameter).
COMPACT	Indication during the automatic saving of the recalled factory settings.
DC_BRAKE	DC brake is activated.

1.5. Warnings

Message	Description
undervol	The mains has been reached the Undervoltage Limit. The current ramp is stopped and then continued when the link voltage increases again.
overload	The output current has almost reached the type-specific limit value.

1.6. Operating error messages

Message	Description	See
UNDERVOL	Undervoltage has been detected in the link.	1)
OVERVOLT	The voltage in the link has reached the overvoltage value.	2)
OVERLOAD	The output current has exceeded the type-specific limit value.	2)
OVERTEMP	The heat sink temperature is too high.	2)

1) Inverter stopped. Automatic error reset as soon as the link voltage rises above the undervoltage value.
2) Inverter stopped. If the AUTORESET function is activated (see TAB3, SUB XPAR, funct. SW2), a reset is possible by setting the **START/STOP** input or the **ENABLE** input or by setting the setpoint to zero.

2. Programming MOTOINVERTER

2.1. Program structure

1 xx.xHz	SUB TAB2	2 xx%	3 (*)	4 (*)	5 (*)	6 (*)	7 50.0Hz	8 5%	8+ 0%
Motor frequency indication 38	38	Motor voltage indication in % 38	Maximum frequency 38	Minimum frequency 38	Acceler. time ramp 1 39	Deceler. time ramp 1 39	U/f – ratio 39	BOOST 39	Dynamic BOOST 40

TAB2	SUB TAB3	SUB ILIMIT	CLIP 1	FILTER 2	AO 0%	SUB LOG
42	43	43	Clipping 44	Speed reference filter 44	Fine tuning output frequency 44	45

L1 1	L2 2	L3 3	L4 7
Input1 (Enable) 45	Input2 (Revers.) 45	Input3 (Start/St.) 45	Input4 (Preset freq.1) 45

WAIT 400	Tf+ 20%	Max 500%	dU 30%	df 80%
Waiting time 43	Accel.time extension factor 43	Upper lim. accel.time 43	Outp.volt. reduction factor 43	Outp.freq. reduction factor 44

TAB3	SUB DIAG	SUB XPAR	REL –5	R_Sel 0	ENGLISH
45	46	46	Relay output config. 47	Ramp set sel. 47	HELP – Language 47

SW1 ON	SW2 ON
Autostart function 46	Error reset config. 46

SOLL xx	ANA xx	Port E	Port A	Error 1	Error 2	Error 3	Software:	00000:00
Speed reference signal term.2 46	Speed reference signal term.4 46	Status PORT E 46	Status PORT A 46	Last error 46	2.nd error 46	1.st error 46	Software release 46	Operating hours counter 46

8- 20%	9 2.0s	U 50.0Hz	u 10.0Hz	SUB FFIX	SUB FEXC	DC 15%	E 6.0s	F 6.0s	DEFAULT
U/f – ratio reduction	Static torque	Frequency threshold1	Frequency threshold2			DC brake voltage	Acceler. time ramp 2	Deceler. time ramp 2	Recall factory settings
40	40	40	40	41	41	41	42	42	42

a 0.0Hz	b 0.0Hz
Skip band 1 Lower lim.	Skip band 2 Lower lim.
41	41

A 0.0Hz	B 0.0Hz
Skip band 1 Upper lim.	Skip band 2 Upper lim.
41	41

X1 0	X2 0	X3 0	X4 0
Enable (External)	Reversing (External)	Start/St. (External)	4Bit Fmax Mode (disable)
45	45	45	45

A +5Hz	B +10Hz	C +15Hz	D +20Hz
Preset frequency FFIX1	Preset frequency FFIX2	Preset frequency FFIX3	Preset frequency FFIX4
41	41	41	41

Press SELECT key

Press SHIFT + SELECT keys simultaneously

Function designation

Function description

See page
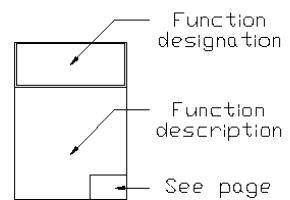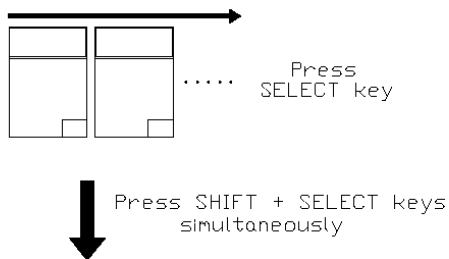
2.2. Program level TAB1

1 33.6Hz **Function 1: Indication of the output frequency**	**TAB1**
The standard display of function 1 shows the inverter operating frequency in Hertz.	

SUB TAB2 **Enter program level table 2**	**TAB1**
The program level functions in TAB2 allows to configure analog and digital inputs. To enter program level TAB2 press both **SHIFT** and **SELECT** simultaneously.	

2 78% **Function 2: Motor voltage display**	**TAB1**
Setting function 2, the display shows the inverter output voltage in percent of the line input voltage.	

3 50.0Hz **Function 3: Maximum output frequency**	**TAB1**
This parameter defines the maximum frequency that the inverter will deliver to the motor **ATTENTION!** *Ensure that the maximum frequency cannot damage the motor or equipment and result in personal injury.*	Range: 6...99Hz (6...320Hz*) Default: 50 Hz *) Softw. CP-HF-0xx

4 0.0Hz **Function 4: Minimum output frequency**	**TAB1**
This parameter defines the minimum output frequency with the Speed reference signal at zero.	Range: 0...Fmax Default: 0 Hz

5 3.5s Function 5: Acceleration time ramp 1	**TAB1**
This parameter sets the time to accelerate the motor from 0 to 50 Hz. Use the following formula to determine the proper time for other frequencies: $$Tx = 50 * \frac{TACC}{FEND}$$ T_X: Time to set. T_{ACC}: Acceleration time. F_{END}: End frequency. Ramp selection is controlled by the configured control input. (See TAB2, SUB LOG and TAB3, R_Sel)	Range: 0.1...1000 Default: 3.5 sec.

6 3.5s Function 6: Deceleration time ramp 1	**TAB1**
This parameter sets the time to decelerate the motor from 50 to 0 Hz. Use the following formula to determine the proper time for other frequencies: $$Tx = 50 * \frac{TDEC}{FEND}$$ T_X: Time to set. T_{DEC}: Deceleration time. F_{END}: End frequency. Ramp selection is controlled by the configured control input. (See TAB2, SUB LOG and TAB3, R_Sel)	Range: 0.1...1000 Default: 3.5 sec.

7 50.0Hz Function 7: Voltage/frequency ratio	**TAB1**
Sets the frequency (knee-point frequency) at which the maximum inverter output voltage is reached. **ATTENTION!** *An incorrect setting of this parameter may lead to the damage of the motor.*	Range: 30...320Hz (30...640Hz*) Default: 50Hz *) Softw. CP-HF-0xx

8 5% Function 8: BOOST	**TAB1**
This parameter defines the amount of boost added at low speed to increase the initial motor torque. Values are in percent (%) of the line input voltage. **ATTENTION!** *Care must by exercised with this adjustment as too much boost may cause excessive heating.*	Range: 0...25% Default: 5%

`8+    0%` Function 8+: Dynamic BOOST	TAB1
This parameter may be programmed to provide additional torque boost during acceleration. Values are in percent (%) of the line input voltage.	Range: 0...50% Default: 0%

`8−   20%` Function 8−: U/f ratio reduction during deceleration	TAB1
This parameter defines the motor voltage reduction during deceleration to compensate the increase of the DC bus voltage in the reverse regenerative mode. Values are in % of the line input voltage.	Range: 0...20% Default: 20%

`9        2.0s` Function 9: Static torque time	TAB1
This parameter defines the holding brake activation time at zero speed. The amount of DC-Voltage applied to the motor windings is controlled by TAB1, func. 8 (BOOST). To configure the holding brake for continous operation at zero speed, set the parameter value to its maximum (25 sec.). "LOCK" in the display indicates the activated continuous operation mode. In this case, the motor can be isolated only by deactivating the ENABLE input. **ATTENTION!** *If the holding brake is used for long time or with high DC-Voltage, excessive motor heating may result.*	Range: 0...25...LOCK Default: 2 sec.

`U  50.0Hz` Function U: Frequency threshold FX1	TAB1
This parameter is used to program a frequency threshold FX1. The output REL can be used to signal that this preselected frequency has been reached or exceeded. See TAB3, function REL for details of configuration of these output.	Range: 0...Fmax Default: 50 Hz

`u  10.0Hz` Function u: Frequency threshold FX2	TAB1
This parameter is used to program a frequency threshold FX1. The output REL can be used to signal that this preselected frequency has been reached or exceeded. Refer to TAB3, function REL for details of configuration of these output.	Range: 0...Fmax Default: 10.0 Hz

	TAB1
SUB FFIX	**SUB FFIX**
Submenu preset frequencies	

The parameters of this submenu are used to set the four preset speeds. The sign of the parameter value defines the rotating sense of the motor (**+** forward; **-** reverse).

In order to permit control of the direction of rotation of the preset frequencies via terminal, it is necessary to deactivate the sign + or − by simultaneously pressing the keys **INC** and **DEC** after setting the desired value.

A +5Hz	**Function A:**	**Preset frequency FFIX1**	(Default: +5 Hz)	
B +10Hz	**Function B:**	**Preset frequency FFIX2**	(Default: +10 Hz)	Range: -99..0..+99 (-320..0..+320*)
C +15Hz	**Function C:**	**Preset frequency FFIX3**	(Default: +15 Hz)	
D +20Hz	**Function D:**	**Preset frequency FFIX4**	(Default: +20 Hz)	*) Softw. CP-HF-0xx

	TAB1
SUB FEXC	
Submenu skip frequencies	

The parameters of this submenu are used to set two different skip frequency bands.
A skip band is set by programming an upper and a lower limit for this band. Skip bands may be programmed to avoid certain mechanical resonances in the drive system. If upper and lower limits for a Skip band are equal, this band will be deactivated.
The setting is done programming a lower and an upper limit for each frequency range.

a 0.0Hz	**Function a:**	**Skip-band 1**	Lower limit	Range: 0...99Hz (0...320Hz*)
A 0.0Hz	**Function A:**	**Skip-band 1**	Upper limit	Default: 0Hz
b 0.0Hz	**Function b:**	**Skip-band 2**	Lower limit	
B 0.0Hz	**Function B:**	**Skip-band 2**	Upper limit	*) Softw. CP-HF-0xx

	TAB1
DC 15%	
Function DC: DC brake voltage	

This parameter controls the amount of DC voltage applied to the motor windings during activation of the DC-brake.
The DC brake is activated when the impased value is higher zero. To respect the impased deceleration times set this parameter to zero.

Range: 0...50%

Default: 15%

ATTENTION! *If a long DC-brake time is programmed, excessive motor heating may result.*

E 6.0s **Function E: Acceleration time ramp 2**		**TAB1**

This parameter sets the time to accelerate the motor from 0 to 50 Hz.
Use the following formula to determine the proper time for other frequencies:
 	
$$Tx=50*\frac{TACC}{FEND}$$
 	
    T_X: Time to set.
    T_{ACC}:   Acceleration time.
    F_{END}:   End frequency.
 	
Ramp selection is controlled by the configurated control input.
(See TAB2, SUB LOG and TAB3, R_Sel)
		Range: 0.1...1000
		
		Default: 6.0 sec.

F 6.0s **Function F: Deceleration time ramp 2**		**TAB1**

This parameter sets the time to decelerate the motor from 50 to 0 Hz.
Use the following formula to determine the proper time for other frequencies:
 	
$$Tx=50*\frac{TDEC}{FEND}$$
 	
    T_X: Time to set.
    T_{DEC}:   Deceleration time.
    F_{END}:   End frequency.
 	
Ramp selection is controlled by the configurated control input.
(See TAB2, SUB LOG and TAB3, R_Sel)
		Range: 0.1...1000
		
		Default: 6.0 sec.

DEFAULT **Recall factory settings**		**TAB1**
The original factory settings for all parameters can be restored by pressing both **INC** and **DEC** simultaneously for 5 sec. **ATTENTION!** *The recall of default parameter values can change the drive system caracteristics subtiantially.*		

2.3. Program level TAB2

TABLE 2 **Program level table 2**		**TAB2**
The program level functions in TAB2 allows to configure analog and digital inputs.		

SUB TAB3 Enter program level table 3	**TAB2**
The program level functions in TAB3 allows to configure the outputs, to access the diagnostic utilities and to program extended parameters. To enter program level TAB3 press both **SHIFT** and **SELECT** simultaneously.	

SUB ILIMIT Submenu Output current measurement	**TAB2**
If an overload occurs, the inverter tries to reduce the output current by reducing output voltage and frequency and by extending the acceleration ramp. This is repeated until the output current returns below the current limit. From this moment on, the motor will be accelerated after a programmable wait time with the extended acceleration time.	

WAIT 400 Function WAIT: Wait time after overload	**TAB2** **SUB ILIMIT**
After the output current returns below the current limit, the inverter waits the for the time (in msec.) entered in this function before continuing to accelerate the motor with the extended acceleration ramp.	Range: 100...800ms Default: 400ms

Tf+ 20% Function Tf+: Acceleration time extension factor	**TAB2** **SUB ILIMIT**
If an overload is detected, the inverter extends the acceleration ramp by the factor Tf+. This is repeated until the output current returns below the current limit. A maximum limit for the acceleration time can be programmed. After the preset speed is reached, the acceleration time is reset to its nominal value.	Range: 1...100% Default: 20%

Max 500% Function Max: Upper limit for the acceleration time	**TAB2** **SUB ILIMIT**
The acceleration time can be extended up to the percentage of the nominal acceleration time (Tab1, func.5) programmed with this function. 100%...the acceleration time is not extended 500%...the acceleration time can be extended up to 5 times the nominal acceleration time.	Range: 100...1000 Default: 500%

dU 30% Function dU: Output voltage reduction factor	**TAB2** **SUB ILIMIT**
If an overload is detected, the inverter reduces the output voltage by the factor dU. This is repeated until the output current returns below the current limit.	Range: 0...100% Default: 30%

df 80% Function df: Output frequency reduction factor	**TAB2 SUB ILIMIT**
If an overload is detected, the inverter reduces the output frequency by the factor df. This is repeated until the output current returns below the current limit.	Range: 0...100% Default: 80%

CLIP 1 Function CLIP: Clipping of speed reference signal	**TAB2**
This parameter allows to cut the speed reference signal at lowest frequencies in order to reduce the effect of noise on the speed reference line A speed reference signal below the limit as defined by the fellowing formula is cut to zero. $$\text{Limit} = N * \frac{Fmax}{512} \qquad N.... \text{ CLIP parameter value}$$	Range: 0...8 Default: 1

FILTER 2 Function FILTER: Speed reference filter	**TAB2**
The speed reference signal can be filtered by a digital filter. The line constant of the filter is set by this parameter.	Range: 0...6 Default: 2

AO 0% Function AO: Fine tuning output frequency	**TAB2**
The output frequency can be modified with an analog signal (0...10V) applied at the analog input 2 (terminal 4). In this way is possible a fine tuning of the impased f_{nom} rating frequency. This parameter defines the maximum limit in percent of the $(f_{max} - f_{min})$ impased value. Regulation field: $V_{term.\,4} = 0...5...10V$: → $[f_{nom} - AO \times (f_{max} - f_{min})]...f_{nom}...[f_{nom} + AO \times (f_{max} - f_{min})]$ Example: $AO = 10\%$; $f_{max} = 50Hz$; $f_{min} = 10Hz$ speed reference = 5V → $f_{nom} = 25Hz$ $V_{term.\,4} = 0V$ → $f_{out} = 21Hz$ $V_{term.\,4} = 5V$ → $f_{out} = 25Hz$ $V_{term.\,4} = 10V$ → $f_{out} = 29Hz$.	Range: 0...100% Default: 0%

SUB LOG Submenu logic levels of digital inputs	TAB2 SUB LOG
4 configurable inputs. **L1 1** **Input 1** Default =1 **ENABLE** **L2 2** **Input 2** Default =2 **REVERSING** **L3 3** **Input 3** Default =3 **START/STOP** **L4 7** **Input 4** Default =7 **PRESET FREQUENCY1**	0 = Disactivated 1 = ENABLE 2 = REVERSING 3 = START/STOP 4 = Second set of ramp 5 = Start CW 6 = Start CCW 7 = Preset freq. 1 8 = Preset freq. 2 9 = Preset freq. 3 10 = Preset freq. 4
You con activeted the input **ENABLE, REVERSING, START/STOP** and **4Bit Fmax Mode** with the Software. **X1 0** Input **ENABLE** Default =0 (external) **X2 0** Input **REVERSING** Default =0 (external) **X3 0** Input **START/STOP** Default =0 (external) **X4 0** Input **4Bit Fmax Mode** Default =0 (disable) Activating the 4Bit Fmax Mode, the inverter output frequencies can be imposed by the L1, L2, L3 and L4 buttons in binary mode. The units are fmax/15. Examples: L1 L2 L3 L4 0 0 1 0 = 2 → output frequency = 2 x (fmax/15) 1 0 0 0 = 8 → output frequency = 8 x (fmax/15) 1 1 1 1 =15 → output frequency =15 x (fmax/15) The motor rotationsense can be imposed by the X2 (0 or 1) parameter.	Range: 0 (external) 1 (internal)

2.4. Program level TAB3

TABLE 3 Program level table 3	TAB3
The program level functions in TAB3 allows to configure the outputs, to access the diagnostic utilities and to program extended parameters.	

SUB DIAG	Submenu DIAGNOSTICS	TAB3
		SUB DIAG

SOLL	Indication of the speed reference signal at term. 2 (dig. 8 bit 0...255)	
ANA	Indication of the speed reference signal at term. 4 (dig. 8 bit 0...255)	
PortE	Status of port E (function for service error diagnosis only)	
PortA	Status of port A (function for service error diagnosis only)	
Error1	Last error	
Error2	2.nd error	
Error3	1.st error	
Software:	Display of the installed software version. The name, release number and creation date of the inverter software are displayed.	
XXXXX:XX	Operating hours counter	

Hours   Minutes

SUB XPAR	Submenu Extended parameters	TAB3

Setting of two extended inverter parameters.

To enter the submenu press both **SHIFT** and **SELECT** simultaneously.

SW1 ON	Function SW1: Autostart	TAB3
		SUB XPAR

This function defines the start condition for line start (POWER-ON).

  ON: With this setting, the inverter will turn on when the line power is applied and the **ENABLE** and **START/STOP**-command is present.

  OFF: Line start lockout. The inverter will not start upon application of the line power. **START/STOP** or **ENABLE** must be opened, then closed to start the drive.

Range: ON, OFF

Default: ON

SW2 ON	Function SW2: Error reset	TAB3
		SUB XPAR

This function defines how the drive can be resetted after an error (except hardware errors).

  ON: To reset the drive open and then close **START/STOP** or **ENABLE** or set the speed reference signal to zero. (This works only when f-min = 0 and with no preset frequency selected).

  OFF: To reset the drive execute a Soft - Reset or POWER ON - Reset.

Range: ON, OFF

Default: ON

REL -5 Function REL: Relay output configuration (term. 10, 11, 12)	**TAB3**
This function defines the condition which will cause the auxiliary relay to operate. It may be programmed for one of 6 conditions. The sign defines if the relay closes or opens at condition. sign: **+** relay closed at condition. **-** relay open at condition. code: **0**: FX1 reached (TAB1, function U). **1**: FX2 reached (TAB1, function u). **2**: Motor has reached setpoint frequency (ramp reached). **3**: Motor frequency = 0 Hz. **4**: Motor frequency = 0 Hz. Signal after end of static torque (see TAB1, funct. 9). **5**: Indication of ERRORS or ENABLE. **6**: Indication of ERRORS	Range: −6...0...+6 Default: −5

R_Sel 0 Function R_Sel: Activation of the 2.nd set of ramp time	**TAB3**

0: Manual ramp selection via the configured terminal (See TAB2, SUB XPAR).
 	
1: Automatic ramp selection: Automatic switchover to the second ramp set
      occurs when FX2 (TAB1, function u) is reached.
 	
2: Automatic ramp selection when FX2 (TAB1, function u) is reached or manual
      ramp selection via the configured terminal (see TAB2, SUB XPAR).
 	
3: CW rotation: ramp set 1 active.
    CCW rotation: ramp set 2 active.
 	
4: CW rotation: ramp set 1 active.
    CCW rotation: ramp set 2 active
    or manual ramp selection via the configured terminal (See TAB2, SUB XPAR).
	Range: 0...4
	
	Default: 0

ENGLISH Select HELP - Language	**TAB3**

With the key **INC** and **DEC**, you can select the desired HELP - language.	Range: DEUTSCH
	           ITALIANO
	           ENGLISH

2.5. Standard programs

Program for 4 poles self-ventilated motor

PARAMETER	VALUE
MAXIMUM FREQUENCY	90 Hz
MINIMUM FREQUENCY	20 Hz
ACCELERATION TIME RAMP 1	1,5 s
DECELERATION TIME RAMP 1	1,5 s

Program for 2 poles self-ventilated motor

PARAMETER	VALUE
MAXIMUM FREQUENCY	60 Hz
MINIMUM FREQUENCY	20 Hz
ACCELERATION TIME RAMP 1	3 s
DECELERATION TIME RAMP 1	3 s

Program for 4 poles servo-ventilated motor

PARAMETER	VALUE
MAXIMUM FREQUENCY	90 Hz
MINIMUM FREQUENCY	5 Hz
ACCELERATION TIME RAMP 1	1,5 s
DECELERATION TIME RAMP 1	1,5 s

Program for 2 poles servo-ventilated motor

PARAMETER	VALUE
MAXIMUM FREQUENCY	60 Hz
MINIMUM FREQUENCY	5 Hz
ACCELERATION TIME RAMP 1	3 s
DECELERATION TIME RAMP 1	3 s

SITI

REMOTE CONTROL RC
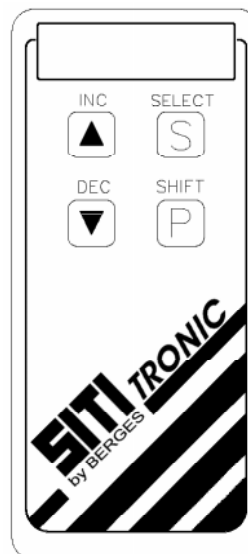
1. Functions

1.1. General

The telecomander RC allows to remote control up to 15 inverters connected on the same RS485 bus.

Any of these inverters can be selected individually.

After selection all functions of the inverter can be controlled by way of the telecomander keypad.

The telecomander permits also to read out, read in and save up to 32 different inverter parameter blocks.

1.2. Control panel

Keys	Description
[S]	Function interrogation forward.
[P] + [▼]	Function interrogation backward.
[S] 1 sec.	a) Jump back to the first function of the function table or sub-menu. b) Jump out of the table or sub-menu (starting from the first function of the function table or sub-menu).
[▲]	Increments the parameter value of the selected function. To increase the speed at which scrolling through the value range takes place, keep **INC** depressed and briefly press **DEC**.
[▼]	Reduces the parameter value of the selected function. To increase the speed at which scrolling through the value range takes place, keep **DEC** depressed and briefly press **INC.**
[S] + [P]	Permits access to a sub-menu or a parameter table.
[P] + [▲]	Help function: A Help text can be called for each function. A key change from **INC** to **DEC** with depressed **SHIFT** key causes a change in the direction of the running help text.
[S] + [▲] + [▼]	Configuration-menu of the telecomander. It isn't possible to execute a software reset of the inverter with the telecomander.
[P] + [S]	Function "AI" : Inverter-menu. Function "AS" : SIO-inverter-adress.

2. Installation
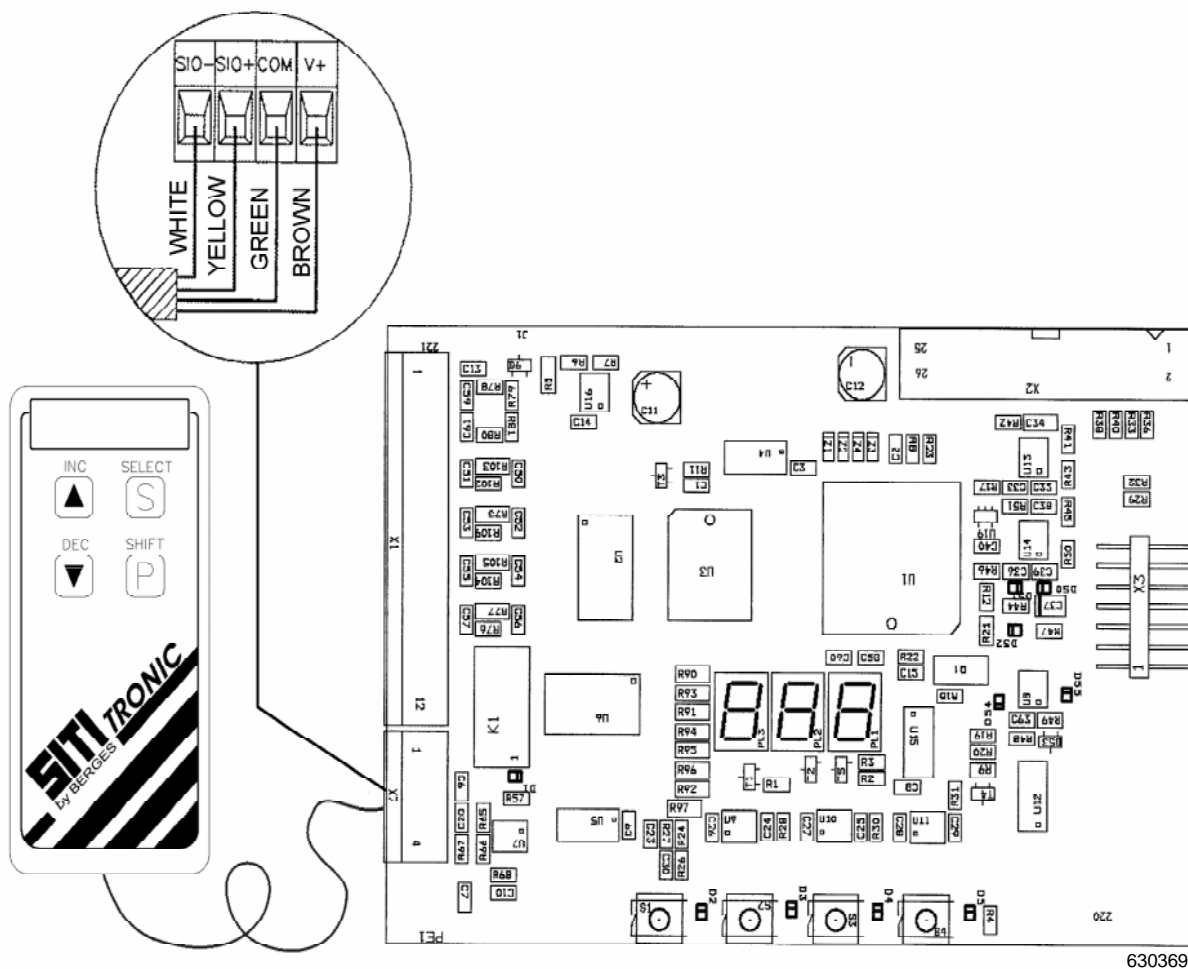
630369

Caution: Disable all inverters on the RS485-Bus before connecting the telecomander RC.

Any inverter connected to the same RS485-Bus must be programmed with a unique device address (1-15). The device address can be selected in two ways:

1) Disconnect the inverter from the RS485-Bus and connect the telecomander RC to the inverter. Set the desired SIO-address by using the function AS (configuration menu).

2) The SIO - address can be set directly on the inverter with the function SIO in TAB2.

3. Status-messages

3.1. Status-messages of the configuration-menu

Message	Description
SIO__CRC	RS485 - connection fault. **Information:** there may be two inverters with the same SIO-adress.
xx .ON xx .OFF	The leading point indicates that the selected condition becomes active only after saving the parameter-value (execute SAVE??). (xx ... AST or LOCK)
Display flashes	Connection between telecomander and inverter is interrupted.

SITI

3.2. Status-messages key-menu

Message	Description
CrcError	Data block fault
CRC_Add	Data adress fault
Time_Out	Connection interrupted. Data transfer fault.
KEY	Parameter block locked
KeyFault	Incompatibility between type of the selected parameter block and type of inverter software.
I__Fault	No connection between telecomander and inverter.
SAVE_xxx	Load parameter block from the inverter into the telecomander memory.
LOAD_xxx	Load parameter block from the telecomander memory into the inverter.
I_SAVED	Parameter block saved correctly into the telecomander memory.
I_LOADED	Parameter block saved correctly into the inverter.
KEY <=<=	**Caution:** Selected parameter block in the telecomander memory will be overwritten with the actual inverter-parameters.
KEY =>=>	**Caution:** Inverter parameters will be overwritten with the selected parameter block.

3.3. Status-messages of the inverter-menu

Message	Description
SIO_CRC	RS485 - connection fault. **Information:** there may be two inverters with the same SIO-adress
SioError	Connection interrupted. If possible the connection will be resumed. After returning in the configuration-menu the display flashes.

4. Programming

4.1. Program-structure

CONFIGURATION-MENU:

AI	As	SUB TEL	SUB KEY	SAVE??
Active Inverter	Change Adress [SHI+SEL]			Save param.

[SELECT+INC+DEC] -> Access to the CONFIGURATION-MENU

[SHIFT+SELECT] In funct. AI -> Access to the INVERTER-MENU

Refered to the active inverter (selected in function AI)
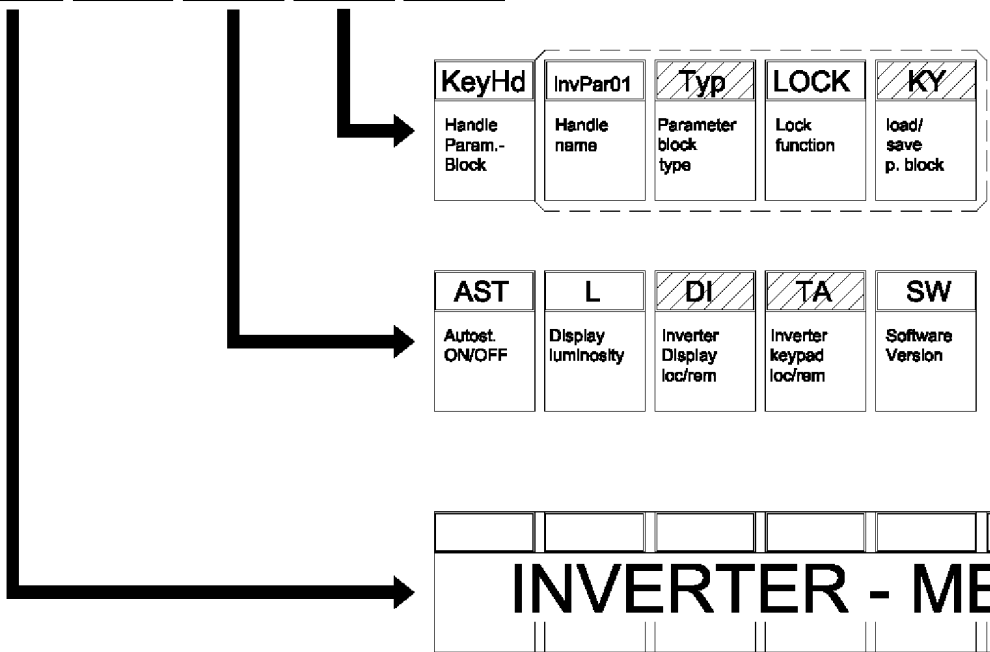
KeyHd	InvPar01	Typ	LOCK	KY
Handle Param.-Block	Handle name	Parameter block type	Lock function	load/ save p. block

AST	L	DI	TA	SW
Autost. ON/OFF	Display luminosity	Inverter Display loc/rem	Inverter keypad loc/rem	Software Version

INVERTER - MENU

TA xx Function TA: Keypad - locking	**SUB TEL**
Deactivates the keypad of the selected inverter. If the function is switched to "loc" it is possible to use the telecomander- and the inverter-keys.	Range: loc - rem
	Default: loc

Software Function Software: Displays the software - version	**SUB TEL**
Displays the installed telecomander software version. The name, release number and creation date of the telecomander software are displayed.	

SUB KEY SUB KEY: KEY Functions	**SUB KEY**
KEY submenu. SUB KEY is called by pressing **SHIFT** und **SELECT** simultaneously.	

KeyHd Function KeyHd: Parameter block handle	**SUB KEY**
Select a stored parameterblock. Up to 32 different parameter blocks can be saved into the telecomander memory. The following functions refer to the selected parameter block.	Range: 1 - 32

InvParxx Function InvPar: Parameter block name	**SUB KEY**
Set a name (8 char. max.) for the selected parameterblock. After pressing SHIFT a a flashing cursor appears. Select the desired character by pressing **INC** or **DEC**. Pressing **SHIFT** stores the selected character and moves to the next position. In this function its possible to select a KEY-Parameter-Block by pressing the **INC** or **DEC** key. (If the Character-Select-Funktion is not active) For disactivating the Character-Select-Function press the **SHIFT**-Key until the flashing cursor disappears.	Default: InvParxx

Typ: xxx Function Typ: Parameter block type	**SUB KEY**
Displays the type identifier of the selected parameter block. Different types of inverter software have different types of parameter blocks. The selected parameter block can be transferred to the inverter only if its type is compatible with the type of inverter software (identical type identifier). To display the type identifier of the inverter software press **INC** or **DEC** (the type identifier is displayed with a leading point).	

LOCK xx Function LOCK: Lock overwriting	**SUB KEY**
By activating the LOCK function, the selected parameter block can be protected from overwriting. If the telecomander memory is hardware protected, the LOCK function can not be disabled.	Range: ON - OFF
	Default: OFF

KEYMENU Function KEYMENU: Load and save KEY-parameters	**SUB KEY**
After selecting KEYMENU the telecomander acts as a programming key. To transfer a parameter block from the inverter to the telecomander press **INC**. The parameterblock is stored in the selected memory location. To transfer a parameter block from the telecomander to the inverter press **DEC**.	

SAVE?? Function SAVE??: Save changes	
The parameter values of the configuration menu are stored as non-volatile values in the EEPROM by simultaneously pressing **INC** and **DEC**.	

SITI

Notes

Notes

SITI SPA

SOCIETÀ ITALIANA TRASMISSIONI INDUSTRIALI

®

RIDUTTORI	GEARBOXES
MOTORIDUTTORI	GEARED MOTORS
VARIATORI CONTINUI	SPEED VARIATORS
MOTORI ELETTRICI C.A./C.C.	A.C./D.C. ELECTRIC MOTORS
GIUNTI ELASTICI	FLEXIBLE COUPLINGS

SEDE e STABILIMENTO
HEADQUARTER

Via G. Di Vittorio, 4
40050 Monteveglio - BO - Italy
Tel. +39/051/6714811
Fax. +39/051/6714858
E-mail: info@sitiriduttori.it
            commitalia@sitiriduttori.it
            export@sitiriduttori.it
WebSite: www.sitiriduttori.it