

Converteam Brasil Ltda
Av. Alvares Cabral, 1345
Bairro Lourdes, Belo Horizonte
Minas Gerais, 30170-001 - Brazil
Tel: +55 31 3330 5800
Fax: +55 31 3330 5895

Converteam GmbH
Culemeyerstrasse 1,
12277 Berlin - Germany
Tel: +49 (0)30 7622 - 0
Fax: +49 (0)30 7622 2109

Converteam Inc.
610 Epsilon Drive
Pittsburgh, PA 15238 - USA
Tel: +1 412 967 0765
Fax: +1 412 967 7660

Converteam India Private Ltd.
Unit No 1003, Tower B, 10th Floor
Millennium Plaza, sector 27
Gurgaon, 122 002 Haryana - India
Tel. +91 124 4200190
Fax +91 124 4200194

Converteam Ltd.
Boughton Road
Rugby, Warwickshire CV21 1BU - UK
Tel: +44 (0)1788 563 563
Fax: +44 (0)1788 560 767

**Converteam Power Conversion
(Shanghai) Co. Ltd.**
Building 4, No. 333, Lane 2888,
Huaning Road, Minhang District
201109 Shanghai - China
Tel: +86 21 6442 1666 ext 8000
Fax: +86 21 6442 2653

Converteam SAS
1, Square John H. Patterson
91345 Massy Cedex - France
Tel: +33 (0)1 77 31 20 00
Fax: +33 (0)1 60 19 64 95

Conwac
1244, Heping Avenue - Qingshan District
430081 Wuhan, Hubei - China
Tel: +86 27 86804708
Fax: +86 27 86314470

www.converteam.com

© Converteam - 2007. Publication D. 8023gb-07.07/00. The Converteam logo and any alternative version thereof are trademarks and service marks of Converteam. The other names mentioned, registered or not, are the property of their respective companies. This information is given as a guideline only and may be changed without prior notice.



LV7000
Variable Speed AC Drives

AC Variable Speed Drives for Low Voltage Applications

LV7000 Series – the drive to power your business

Converteam's professional, committed and innovative personal has a long field experience and a wide expertise in various applications and services. This is why we have the skills to offer robust AC drives solutions to all your needs. We offer a complete power range from 0,25 kW to 2000 kW, with global sales, engineering support and service network. Our drives can substantially improve the quality and efficiency of your process or production.



LV7000 drives are compact and user-friendly, and compared to constant speed solutions they can save up to 50% in your energy consumption.

Your partner to power your business

Converteam is an engineering company providing customized solutions and systems converting electrical energy into productive performance. These solutions are built around three core components: rotating machines, variable speed drives, automation and process controls. Our scope covers consulting, design, manufacturing, system integration, installation, commissioning and a broad range of services. Our worldwide team remains fully committed to your needs.

Modular design

The key design feature is the software and hardware modularity. Two types of control are available – the standard sensor-less vector control and the closed loop flux vector control for more demanding applications. The LV7000 family comprises compact and high performance drives. LV7000-1 is a space-saving compact drive whereas the LV7000-2 and 3 is a high-performance drive combined with powerful support for various software applications.

In addition to the standard I/O in the basic drive, there is room for option cards with more I/O, field-bus cards or additional application specific hardware. The option cards can be used in all three drive types: one option card in the LV7000-1 to expand the basic drive, and up to five option cards in the LV7000-2 and 3 to create the necessary configuration for your application.

Easy-to-use

The drives are easy to program and use via the keypad. The keypad can easily be removed for hand held use or door mounting. The LV7000-1 has a detachable, seven-segment LCD keypad without memory capabilities. It is used to communicate with the drive, set parameters and for monitoring. The LV7000-2 and 3 have a detachable, alpha-numeric keypad with built-in memory. In addition it can be used to copy parameters between different drives and storage of the active parameters for future use.

Power and Voltage Range

LV7000-1	208 - 240 V / 380 - 500 V 1AC / 3AC	0.25 - 1.5 kW/0.37 - 30 kW
LV7000-2	208-240 V / 380-500V 3AC	0.37-30 kW / 0.75-200 kW
		525-690 V; 2.2-200 kW (2000 kW)
LV7000-3	same range as LV7000-2	

LV7000 drives cover a wide power range

Compact Drive LV7000-1 Power Range up to 30 kW

High Performance Drive LV7000 Power Range up to 2000kW

LV7000-1 Series – the space-saving drive for general-purpose applications

The compact size and flexible installation options make the LV7000-1 suitable for installations where space is at a premium. The small MF2 and MF3 frames can be mounted using a DIN rail either at the back or at the side of the drive; the larger MF4-MF6 frames are wall mounted.

The drives are easy to program and use. Parameter setting is done either via the seven-segment LCD panel or via a PC and the NCDrive software. An adapter for PC programming is available.

The LV7000-1 builds on the modular design concept. The drive can be delivered with or without the panel, with or without option cards and in different enclosure classes, IP20 for the small MF2 and MF3 frames, IP21 and IP54 for the larger MF4-MF6 frames.

The LV7000-1 incorporates an integrated RS485 (Modbus) connector. Most of the option cards for the LV7000-2/LV7000-3 range can be used with the LV7000-1, specifically I/O expansion and field-bus cards.



Features

- Steady state speed error < 1%
- Low torque ripple
- High immunity to resonance vibrations
- Starting torque > 200%, depending on motor and drive sizing
- Suitable for multi-motor applications

Multi-control application as standard

The LV7000-1 includes an easy-to-use and flexible multi-control application. The need for parameter adjustments is kept to a minimum, thanks to well-defined default settings. All I/Os can be programmed. The versatile features include full motor protection, flying start function, sleep function and a PID controller, with the possibility to control 3+1 pumps (PFC).

The bookshelf design, the enclosure options and EMC classes offer an optimal solution for all operating environments.

LV7000-2 Series – the easy-to-use standard industry drive

The LV7000-2 is designed to be a standard, easy-to-use drive with a wide application area. It is based on an advanced sensorless vector control concept, which gives a very good motor control under all circumstances. An automatic torque maximizer feature is available, ensuring that all loads can be started reliably. It also includes an automatic energy saving feature, which optimizes the motor flux as a function of motor load and speed. The basic drive operation is also suitable for multi-motor applications.

Features

- Steady state speed error < 1%
- Low torque ripple
- High immunity to resonance vibrations
- Starting torque > 200%, depending on motor and drive sizing
- Suitable for multi-motor applications
- High-speed applications (up to 7200 Hz) possible



LV7000-3 Series – the drive for highest speed and torque demands

The LV7000-3 is used in all cases where a very high precision of speed and torque under all circumstances are required. Equipped with high processing power, the LV7000-3 can use information from an encoder or a resolver in order to provide very precise motor control. Sensorless vector and normal U/f control are also supported. Typical applications requiring high performance are: master-slave drives, positioning applications, winder tension control, and synchronization.

Features

- Speed error < 0.01%, depending on the encoder
- Incremental or absolute encoder support
- Encoder voltages of 5 V (RS422), 15 V or 24 V, depending on the option card
- Full torque control at all speeds, including zero
- Torque accuracy < 2%; < 5% down to zero speed
- Starting torque > 200%, depending on motor and drive sizing
- Full capability for master/slave configurations
- Integrated data logger for system analysis
- Fast multiple drive monitoring with PC
- High-speed bus (12 Mbit/s) for fast inter-drive communication
- High-speed applications possible

All in One Software Package for LV7000-2 and LV7000-3

LV7000-4 Pre-Engineered Standard Packaged Drive

All Convertteam LV7000-2 and LV7000-3 drives are delivered with the All in One application package, a selection of pre-installed applications. An application is a predefined set of parameters and functions, designed for a specific purpose.

When you choose the application that corresponds to your requirements, the drive will be easy to set up. All required parameters are available, but the parameters which are not needed in the specific application, will be hidden. For each application there is a start-up wizard that will guide you through the start-up process and parameter settings. The drive is also capable of identifying motor parameters, further easing the start-up.

All applications support fieldbuses. The application that best fits your needs can be chosen from the following:

Basic application

The basic application is the simplest of the available applications. It is intended for simple use where there is an external setpoint signal as well as external start/stop and direction commands. You need to set only a few motor and application dependent parameters.

Standard application

The standard application is intended for cases where the basic application is not sufficient. The main differences to the basic application are configurable I/O and fault operation.

Local/remote application

The local/remote application is designed for cases where the drive must be controlled from two different locations - typically a local one beside the motor and a remote one in the control room. The source of control is chosen by one digital I/O and is unambiguous at all times. All parameters relating to I/O functionality and general drive behavior are also available.

Multi-step speed control application

The multi-step speed control application is designed for cases where one to three digital inputs form a

control word defining the speed of the drive. Up to sixteen different speeds can be pre-programmed. This application is typically used in environments where the motor must step through a repeated cycle with several preset speeds, such as coordinated conveyors, simple machine tools, or simple positioning applications.

PID control application

The PID application includes an internal PID controller. This controller can be used to maintain some variable, typically pressure or temperature, at a desired setpoint. The variable is measured, and if there is a difference to the setpoint, the motor speed will change in order to bring the variable to the correct value. The PID controller can also be used with an external speed sensing device to create a simple closed loop speed control.

Multi-purpose control application

The multi-purpose application is the most flexible one. It gives you access to all parameters, all I/Os and gives you the possibility to create mathematical functions using one or more inputs.

Pump and fan control with autochange

This application is designed for multiple pumps or fans that are connected in parallel. The idea is to use only the number of pumps required to meet the demand, using the drive to control the speed of one pump/fan and to switch on and off the other parallel pumps/fans. The autochange function allows the working hours of the various pump to be balanced for equal wear.

Customized applications

We also offer a wide range of special applications for special purposes, for example elevators, cranes, compressors, positioning, or winders.

A range of standard packaged drives, based on the LV7000-3 high performance control, are ready for use and complete with hardware to meet the needs of most basic drive systems.

Compact and flexible

The LV7000-4 is a free-standing enclosure for the larger power frames. A large number of pre-designed options are available, typically input (fuses, switches, breakers), output (filters) devices or control options. It is compact and well tested, fully utilizing the modular approach of the drives. In the design process, all requirements related to flexibility, robustness, compactness and service-friendliness were taken into account, creating a solution suitable for any application.

User-friendly

The control unit is physically completely separated from the power module. It is mounted on a separate control compartment at an easily accessible height. The bracket also has space for additional control circuitry, such as relays, or contactors. The power input and output terminals have ample space for cable connection. Floor plates and 360 degree earthing clamps for cable shields are included in the standard delivery.

Fully tested

All LV7000-4 enclosures are designed with our long experience on enclosed high-power drives. Special care has been taken with temperature management, guaranteeing a long life for the enclosed drive. The EMC performance is also verified, leading to trouble-free operation in the industrial environment.

Service-friendly

The LV7000-4 has been designed to fully exploit the modular design of the high-power LV7000-3 drives. The power modules are mounted on extendable rails where needed. This allows easy servicing of the power module in case of need. The larger units consist of smaller phase modules, which can separately be taken out of the enclosure.

Easy ordering

The LV7000-4 can incorporate a variety of options such as input fuses, breakers, contactors, switches, and a selection of output filters (sine or du/dt). Each option is defined by adding an ordering code to the basic enclosure code, again creating a very modular system allowing you to define the exact drive you need.



Powerful Commissioning and Monitoring PC Tools

Major Features of LV7000 AC Variable Speed Drives

Let your PC talk to the drive

We offer a variety of PC tools for making the use of the Converteam AC drives as easy and convenient as possible. The tools are intended for tasks such as commissioning, monitoring and loading various applications. The PC is connected to the drive via the RS232.

Converteam NCDrive

The NCDrive is the commissioning and monitoring tool for the Converteam LV7000. It allows you to download and upload parameter sets between the drive and the PC, compare parameter sets, change the active application, save and print parameters and service reports to file or paper, control the drive, set references, operate the LV7000-3 data logger, and more.

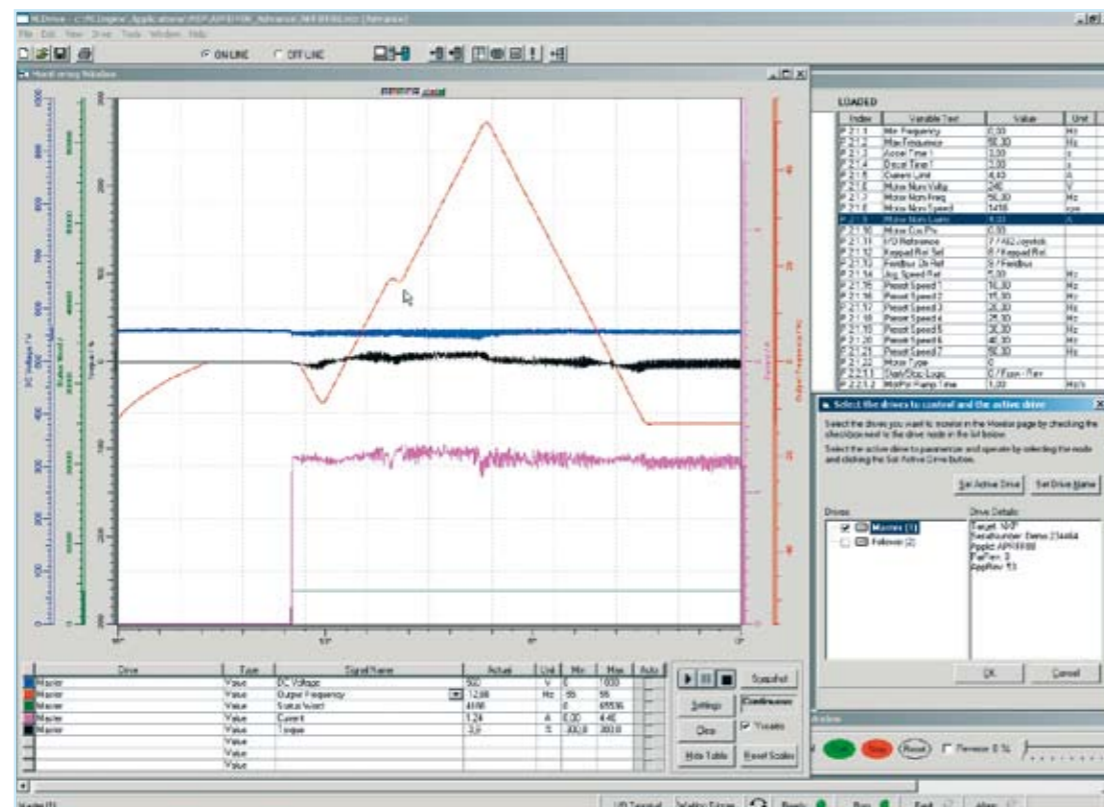
The NCDrive also allows you to monitor up to eight user-specified variables simultaneously on a graphical trend screen, and to save these on

your harddisk for later analysis. In the LV7000-3, it can also operate the data logger and communicate via CAN with up to 254 drives.

Converteam NCLoad

The NCLoad is a basic tool for downloading applications, system software and option card software into the LV7000 drive. The graphical user interface provides an easy point-and-click selection of applications to be downloaded. Mainly intended for use by service personnel, it is also freely available.

Graphical trend screen for simultaneously monitoring of user-specified variables.



Quality and reliability

- Each drive tested at maximum temperature and at full motor load prior to shipment
- All drives made of high-quality components for long lifetime
- Comprehensive run-time self-supervision and alarm system for enhanced reliability and safety

Customer support

- Our worldwide service network available 24 hours a day, 7 days a week
- Dedicated customer support hotline open 365 days a year
- Comprehensive documentation available in many languages

Full modularity

- Three control units (LV7000-1, LV7000-2, LV7000-3)
- Air-cooled power units
- Room for up to five I/O cards (LV7000-2, LV7000-3), one I/O card for LV7000-1
- Field-installable conversion kits
- Detachable, remote-operation keypads
- FR4-FR6 IP21-to-IP54 conversion kit

Easy installation and commissioning

- Quick and easy installation
- Start-up wizards for easy commissioning
- Compact size
- Motor parameter identification capability
- Versatile PC tools for loading, setting and comparing parameters
- Parameter transfers between drives and applications
- Slim, space-saving bookshelf design; side-by-side installation

User-friendly

- Smart preset parameters
- Common user interface for all power ratings
- The number of parameter settings can be kept to a minimum, thanks to the "All in One" application set

Environment-friendly

- Energy savings up to 50%
- Decreased mechanical stresses for the process
- Reduced noise levels

Versatile control and integration

- Single-drive and complex process control applications possible
- Unsurpassed flexibility in communication via multiple fieldbuses
- Dedicated inter-drive bus for coordinated drives
- Sophisticated, expandable I/O connections with quick terminals
- A large number of I/O cards available for different applications
- Control logic can be powered from an external supply
- "All in One" software package (LV7000-2, LV7000-3)
- Multi-control application (LV7000-1)
- Wide selection of application software available
- RS232C terminal for PC connection (NCLoad, NCDrive)

EMC

- Integrated RFI filter for 1st environment, restricted and unrestricted distribution (households, light industry) as well as 2nd environment (industry)
- Integrated AC choke for maximum protection and minimum harmonics
- Modifiable EMC levels

Make the Perfect Choice LV7000 Runs Your Motor



When making important decisions, you want to be sure and confident that your choice is right from the very beginning. Your choice of Convertteam guarantees that you can sustain and improve your competitive power.

To choose the right AC variable speed drive for your needs, the experienced Convertteam staff is pleased to assist you in making the right decision. We know there are several issues to consider. Therefore, we have the know-how and willingness to help you to concentrate on the essentials.

Dimensioning

The load conditions of your application and the ambient temperature are the two main factors that affect most on the correct rating for the drive.

- starting torque
- variable torque
- constant torque
- overloadability
- 40°C, 45°C and 50°C ambient temperatures
- physical size

Performance

The speed and torque accuracy as well as the response times needed for your application determine the type of control and the control mode to be used.

- U/f frequency control
- sensorless vector control
- closed-loop vector control
- static and dynamic accuracy of speed and torque

Standards

Installations must be designed and carried out according to the safety and other regulations. Compliance with standards ensures that the drive operates properly in the given environment as specified.

- emissions and immunity (EMC)
- RFI
- harmonic currents and voltages
- low-voltage directive
- machine directive
- degree of protection (IP classes)

Support

The production and other processes must run continuously without interruptions 24 hours a day, 7 days a week.

- technical support
- local and global presence
- 24/7 after sales and service
- commissioning
- diagnostics
- exchange units
- spare parts

Functionality

The application-specific requirements determine the number of inputs and outputs, control and monitoring principles, and the suitable software application.

- system integration
- control logic
- extendable I/O
- fieldbuses
- pump and fan control
- PID control
- parameter setting
- performance monitoring

Promptness

The ordered goods must be delivered at the scheduled time, especially in projects.

- production quality
- on-time delivery
- efficient logistics

Your partner to power your business

Based on decades of engineering and industrial experience, Convertteam engineers can design the exact configuration needed for each application, based on proven hardware and customized software to meet specific needs. Convertteam engineers work in close partnership with our customers on their projects. This kind of collaboration ensures a precise evaluation of every individual requirement to meet client expectations. Our worldwide team remains fully committed to your needs.