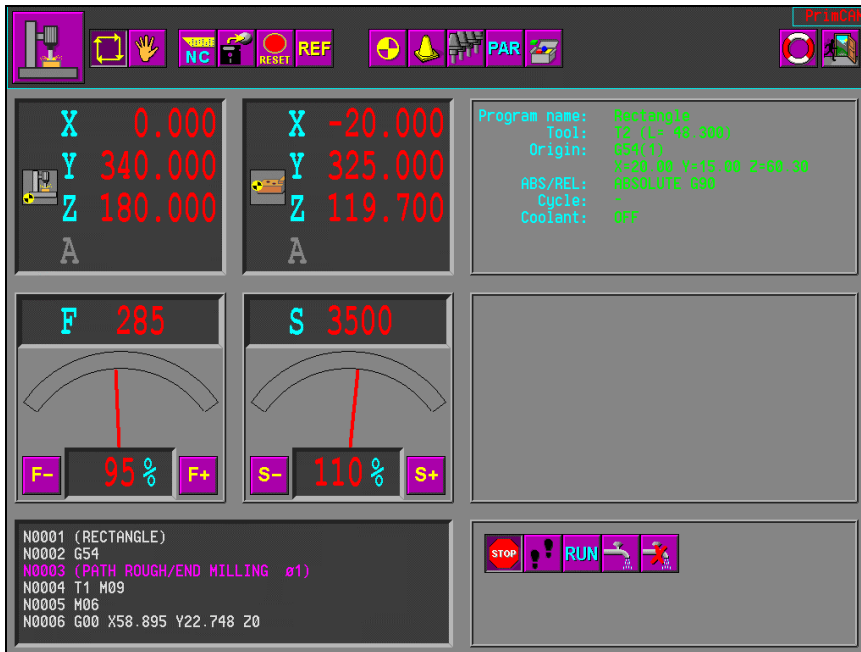


PrimCNC



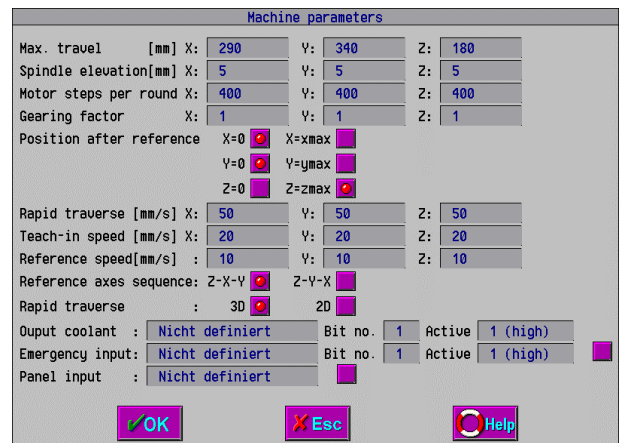
- Reads DIN/ISO and controls the motors
- Milling, drilling, engraving, dispensing
- 3D line interpolation
- 2D circle interpolation
- I/O functions
- control of spindle motor
- context sensitive help system
- for Windows 95, 98, NT, 2000 und XP

PrimCNC is a supplementary program for the PrimCAM CAD/CAM/NC programming package, but it can also be used alone. PrimCNC reads DIN/ISO code and provides an interface to various stepper and servo motor controllers. Its additional features increase the capabilities of the controllers by commands like Z height compensation, surface measurement, tool length measurement and drilling cycles. PrimCNC can also control automatic tool changing units.

Simple motor controllers get features of highly developed CNC controllers. Basically a small machine can be applied to build up a complete "Mini CNC machining center". PrimCNC is particularly interesting for training centers. A very cost effective CNC machining center is provided. Operator mistakes are unlikely to cause damage.

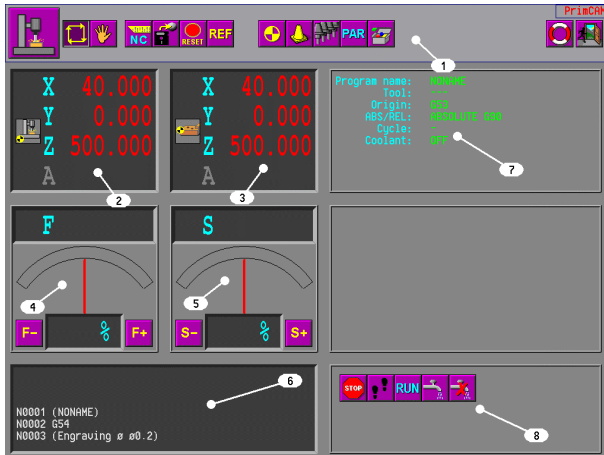
Key features

- support of up to 8 axes
- support of rotary axes
- automatic tool length measurement and compensation
- automatic spindle control
- automatic coolant and suction control
- origin management
- manual movement of axes by keyboard or mouse
- single step mode
- Inputs for start, stop, step, emergency stop, synchronisation with external processes
- Outputs for coolant, vacuum cleaner, tool changer ...
- Adjustment of various system parameters like maximum travel, rapid traverse, axis direction, inputs and outputs, gearing factor



User interface

The following picture shows the graphical user interface



- (1) Icons to select CNC functions.
- (2) Absolute machine coordinates.
- (3) Relative machine coordinates.
- (4) Feed display and correction.
- (5) Spindle speed display and correction.
- (6) NC code window showing the DIN/ISO codes currently processed
- (7) Display of the machine status.
- (8) Selection of functions for automatic mode

Supported controllers

PrimCNC supports CNC controllers of different manufacturers.

- Isel controllers
 - Isel 4.0/5.0 (C142...)
 - Isel IMC4 (MBP, CPM and GFM machines)
 - Isel MPK3 mikrostep carte
 - Isel UPMV4/12 servo controller
- MovTec PCSM-300
- Pulse/direction output to parallel cards (Pulse and direction bits are output at the same time. This must be supported by the stepper motor card)
- Systec MCM servo and stepper controllers
- Knickmeier I332 servo and stepper cards
- vhf CNC750

Setting origins

- Up to 6 origins can be set (G54-G59).
- Operation of the machine in steps of 1, 1/10, 1/100 mm and continuously to set origins.

Automatic tool length measurement

The length measurement device consists of a precise end switch, which is activated when the tool moves in Z direction. This way the exact tool length can be measured. The length measurement device is screwed to the operation area of the machine.

Control of spindle, coolant and vacuum cleaner

- integrated control and automatic setting of spindle speed (RPM) with various spindle motors:
 - 8 Bit digital (speed, direction, start and stop bit)
 - Isel ISM300 (parallel port)
 - Isel FC1.2 (parallel port)
 - Isel FC1200 (serial 20mA port)
 - Isel FC1200-is (serial RS232 port)
 - Kavo EWL 4444
 - Knickmeier DC3
- Possibility to switch on/off non RPM controlled milling motors via relay.
- automatic delay till the spindle has reached its final rpm
- Fully automatic on/off control of cooling water, vacuum cleaner etc.

Automatic tool changer

- Support of tool changing units for stepping and servo motor controllers.
- Up to 24 automatic and 1 manual tool changing positions.
- User configurable macros for tool changing operations

Machine cycles

- Support for drilling, peck, high speed peck, and surface measurement cycles
- Parameters of cycles similar to those used in big CNC machining centers

Surface measurement

- Engravings to surfaces that are not plane
- Measurement points can be defined by PrimCAM and are manually selectable in the drawing

User panel

There is a hand operating unit available. It is connected to the parallel port of the computer and has the functions start, stop, stepwise mode and emergency stop.

Supported G and M function codes

G functions

G00	Rapid traverse
G01	Move in feed mode
G02	Arc clockwise
G03	Arc counterclockwise
G04	Delay function
G17	circle plane XY
G18	circle plane ZX
G19	circle plane YZ
G28	Move to reference position
G53	Select absolute machine coordinates
G54	Select workpiece origin 1
G55	Select workpiece origin 2
G56	Select workpiece origin 3
G57	Select workpiece origin 4
G58	Select workpiece origin 5
G59	Select workpiece origin 6
G73	Drill cycle high speed peck
G76	Drill cycle ream
G79	Surface measurement cycle
G80	Cancel cycle
G81	Drill cycle feed/rapid traverse
G82	Drill cycle feed/rapid traverse with delay
G83	Drill cycle peck
G84	Tapping cycle
G85	Drill cycle feed/feed

M-Funktionen

M00	Program stop
M02	Program end: reset to line 1
M03	Spindle on (CW)
M04	Spindle on (CCW)
M05	Spindle off
M06	Tool change
M08	Coolant on
M09	Coolant off
M13	Spindle (CW) and coolant on
M14	Spindle (CCW) and coolant on
M28	Move to reference position
M30	Program end: coolant off, spindle off, drive to tool change point, reset to line 1
M35	Tracing pin is next tool

M100-M163 set outputs
M200-M263 read inputs

Modules

There are different expansion modules available together with PrimCAM.

- Laser module for laser cutting, welding, engraving with support for lasers from Fisba, Haas, Lasag
- dispensing module with delay time for on and off

Hardware requirements

- IBM compatible PC with processor 486 or higher
- 16 MB RAM
- 20 MB harddisk space
- Operating system Windows 95, 98, NT, 2000 or XP
- Graphics card with a resolution of 1024x768 points, 256 colors (at least 1MB memory)

Planned enhancements

- Interface to other servo and stepper controllers

Demo version

Under www.primusdata.com, you can download further information, manuals and the program. Without hardlock, it runs in demo mode with the following restrictions:

- NC programs that exceed about 50 lines are not processed