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If you find any misprint or error, please inform us. 4. We cannot in any way assume any responsibility whatsoever with regard to whatever consequences that may happen subsequent to the making of changes or alterations to this product. We also cannot in any way assume responsibility for whatever may result when this product is operated, or with regard to whatever results from making use of any explanatory documentation. For information about the parameter range, refer to Operation Manual for each device. CAMMGL II system is compatible with Roland DG Corporation plotters, cutting machines and modeling machines, and consists of two types of instructions sets, which are mode1 mode2 Includes two types oneletter instructions, and threeletter instructions headed by.These instructions function independently from one another, thus making for easy engraving.Consideration has been made for to ensure compatibility with DXYGL for plotters from Roland DG Corp.Includes two types twoletter instructions, and threeletter instructions headed by.Consideration has been made for to ensure compatibility with RDGL I for plotters from Roland DG Corp.Instruction Parameters Terminator M 5000, 5000 CR LF Delimiters omissible Delimiter Figure 11 Instruction mode1 instructions consist of one letter, or three letters beginning with!, and provide the CAMM2 with the information it needs to operate. The example in Figure 11 denotes that the tool is to be moved to the coordinates given after the instruction. Parameter Parameters supply the necessary coordinate values, characters, or other data that the instruction requires. The example in Figure 11 denotes that the tool is to be moved to the coordinates 5000, The meaning of the parameters will vary depending on the instruction. There are three types of instructions those that have no parameters, those that require parameters, and those that carry parameters which can be omitted.http://www.larben.cz/media/images/upload/florida-criminal-law-and-motor-vehicle-manual-2013.xml

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The permissible range for a parameter varies depending on the instruction. If a parameter is omitted with an instruction that permits this, the default values will be used. Certain instructions require that dummy parameters be supplied, even though they have no meaning. Delimiter Delimiters are used as separators between an instruction and a parameter, as well as between successive parameters. If an instruction is given without delimiters separating its parameters, the CAMM2 will not be able to recognize the individual parameters, when two or more parameters are run together. To prevent this, you need to supply delimiters. As the delimiter, you can use either a space or a comma. 13 10 Chapter1 You can omit the delimiter between an instruction and the first parameter since the CAMM2 will understand it, but you cannot omit delimiters between two or more parameters. Thus, instructions could be written in any of the following ways M M5000,5000 M Throughout this manual, however, the following format is shown in the interest of simplicity. M5000,5000 Terminator The terminator indicates the end of an instruction. It can be omitted only when another instruction immediately follows the first instruction. The terminator consists of the CR 0D 16 and LF 0A 16 characters. NOTE Be careful with the signs of parameters. If the location of the sign is improper, an error will be produced. Since the CAMM2 interprets space as a delimiter, it displays an error message because there appear to be three parameters. It then only accepts the first two parameters. If no terminator is sent, the CAMM2 may fail to operate. For example, if you send the data below, the unit cannot determine whether the final D 100,200 is D 100,200 or D

100,2008 until the last data is received. It continues waiting until the last data or terminator has been received. M 0,0 CR LF PD 1000,1000 CR LF M 500,700 CR LF D 100,200 The terminator conveys to the CAMM2 that a series of data is complete.

Sometimes there is no need to specifically include a terminator. If, for example, you type in line 1 below using IBM BASIC, the data in 2 will automatically be sent from the parallel port printer terminal. You can also assign parameters to variables. Refer to the operation manuals for your computer and software. 15 12 Chapter1 1.3 A BRIEF LOOK AT THE mode2 INSTRUCTIONS mode2 Instructions mode2 instructions can be divided into the following six categories. INITIALIZATION Instructions COORDINATE CONTROL Instructions TOOL CONTROL Instructions ENHANCED Instructions LABELING Instructions OUTPUT Instructions Set defaults, etc. Set scaling points, window, etc. Control tool speed, moves, engraving, etc. Provide a variety of additional engraving features Used to engrave characters Request output of data from the CAMM2 For actual engraving, the above instructions are combined to form a program Syntax of mode2 Instructions Each mode2 instruction can be divided into the following four parts. Instruction Parameters PA 5000, 5000; Delimiters Omission permitted Delimiter Omission not permitted Figure 12 Terminator Instruction mode2 instructions provide the CAMM2 with the settings it needs to operate. There are two types of instructions twoletter instructions and threeletter instructions that begin with!. They can be in either lower case or upper case letters. The example in Figure 12 denotes that the tool is to be moved to the coordinates specified by the parameters. Parameters Parameters supply the necessary coordinate values, characters, or other data that the instruction requires. The example in Figure 12 denotes that the tool is to be moved to the coordinates 5000, There are three types of instructions Instructions without parameters Instructions requiring parameters Instructions with omissible parameters Depending on the instruction, the meaning and range of the parameters will vary.

If a parameter is omitted with an instruction that permits this, the default values will be used. 16 13 Chapter1 Delimiter Delimiters are used as separators between an instruction and a parameter, as well as between successive parameters. For the delimiter, you can use either space or a comma. You can omit the delimiter between an instruction and the first parameter, but you cannot omit delimiters between two or more parameters. Thus, instructions could be written in any of the following ways PA; PA5000,5000; PA; Throughout this manual, however, the following format is shown in the interest of simplicity. PA5000,5000; Terminator A terminator indicates the end of an instruction. The terminator consists of a semicolon. However, since the LB and WD instructions will interpret a semicolon as a character, you need to use ETX 03 16 as a label terminator. For example, if you send the data below, the unit cannot determine whether the final PD 100,200 is PD 100,200 or PD 100,2008 until the last data is received. PU0,0;PD1000,1000;PU500,700;PD100,200 The terminator conveys to the CAMM2 that a series of data is complete. Refer to the operation manuals for your computer and software. 18 15 Chapter Instruction Overview 1. INITIALIZATION Instructions The DF and IN instructions cause any settings that have been modified feed rate, character size, etc. to be reverted to their default values. The IN instruction places the CAMM2 in the same status it is in when power is first turned on. It is usually good practice to execute these instructions before beginning to send data. By scaling you can set, as well as compress or expand, the coordinate units. The coordinate parameters of an instruction follow the machine coordinate system until you scale. After that, the CAMM2 performs the engraving in accord with the user coordinate system. Machine Coordinate System Machine coordinates are a system of coordinates determined mechanically for the CAMM2.

The origin point is fixed at a certain point on the CAMM2 this point varies from one model to another. The length of one unit in the machine coordinate system is fixed. For example, if one unit is 0.01 mm, then to obtain 1mm you should specify 100 units. Work Coordinate System The work

coordinate system has an origin point which can be moved as needed compared with the fixed origin point of the machine coordinate system. After power is turned on the work coordinate system origin point is set at the same position as the machine coordinate system. Coordinate system units are also the same as the machine coordinate system. User Coordinate System This coordinate system allows the user to set, relative to the machine coordinate system, any desired coordinate origin and coordinate units. Once user coordinates have been set, all subsequent coordinate parameters will comply with the user coordinate system. If you specify coordinates beyond the maximum parameter range, an error occurs. When setting user coordinates, you should ensure that the engraving area does not extend beyond the permissible parameter range. 19 16 Chapter1 Setting Scaling Points P1 and P2 Scaling points P1 and P2 form the reference points for scaling or setting user coordinates. P1 and P2 are set at the desired points, and scaling is performed by executing an SC instruction which establishes the coordinate values of each point. Remember that setting P1 and P2 is not enough to complete the scaling. The IP instruction is used to set P1 and P2. Here, the coordinate value parameters must be in work coordinates. Although the user coordinate system may be in effect at this point, such as when rescaling, these parameter values need to be in work coordinates. P24000,2500 Figure 13 If you set P1 only, P2 will automatically be set at the same distance as P1. The coordinate values for engraving performed thereafter will comply with this user coordinate system.

110 17 Chapter1 1,1 0,0 Figure 15 In this manner, through combining the IP and SC instructions to set the required coordinates for any desired position, the programming burden can be reduced considerably. Instructions to engrave outside the window do not produce an error, but any portions which extend outside the window will not be engraved. The default value for the window is equivalent to the maximum engraving area.Figure 16 window If an instruction directs that engraving is to be performed completely outside the window, nothing will be engraved. Figure 17 Input window instruction IW 111 18 Chapter1 3 TOOL CONTROL Instructions 31 Move Tool If the required engraving is relatively simple, tool instructions alone may be sufficient. Moves to 1000,2000 with the tool up. Moves to 4000,8000 with the tool down. Straight line engraving Absolute Coordinates vs. Relative Coordinates There are two ways of specifying coordinates as absolute coordinates, which express the coordinates as a distance from the origin 0,0; or as relative coordinates, which express the coordinates as the distance from the current tool position. Thus, subsequent coordinates need to be specified as relative coordinates. The tool position on line 30 is at 1000,2000. This means that to engrave up to absolute coordinates 4000,8000, you would send the relative coordinates 3000,6000, which is the distance from the current tool position. To return relative coordinates to absolute coordinates, the PA instruction must be sent. The only instructions in mode2 that result in a change between absolute or relative coordinates are PA and PR. Instructions other than PA and PR do not affect the coordinates. The coordinates are absolute when the machine is switched on. Engrave absolute instruction Engrave relative instruction Tool up instruction Tool down instruction PA PR PU PD 112 19 Chapter1 32 Set Tool Function The velocity select instruction is used to set the tool speed.

Velocity select instruction VS 4 ENHANCED ENGRAVING Instructions 41 Instructions that Enhance Engraving Although complicated graphics can be engraved using tool control instructions only, mode2 provides numerous instructions that are more convenient to use for complicated graphics. For example, when engraving a rectangle, you could send four engraving line instructions to create the individual sides of the rectangle. But you could also give a single edge rectangle instruction, EA, and obtain the same result. The availability of such instructions makes programming easier. Some of these instructions perform engraving, whereas others do not actually engrave anything, but establish the various settings needed for engraving. One example is the RA instruction, which is for filling in a rectangle. The filling pattern used by this instruction is set with the FT instruction. This means that you must first specify the pattern with the FT instruction which makes no cut, and then

send the RA instruction to perform the engraving. Edge rectangle absolute instruction Edge rectangle relative instruction Shade rectangle absolute instruction Shade rectangle relative instruction Circle instruction Arc absolute instruction Arc relative instruction Edge wedge instruction Shade wedge instruction Fill type instruction Tool diameter instruction Line type instruction Tick length instruction Xtick instruction Ytick instruction EA ER RA RR CI AA AR EW WG FT PT LT TL XT YT 5 LABELING Instructions 51 Engraving and Making Settings for Labels The LB instruction is used for label engraving. The ETX 03 16 above is the label terminator, and is supplied at the end of the label string to clear the label mode. If you omit the label terminator, the CAMM2 interprets subsequent instructions as part of the label string. To change the label terminator, use the DT instruction. The character sets used by the LB instruction are those specified by the CS, SS, CA and SA instructions.

The codes of engravable characters range from 21 16 through 7E 16. Otherwise, among the characters that cannot be engraved the control characters from 00 16 through 20 16 the following have a special role in engraving. All other control characters are ignored.Label instruction Absolute character size instruction Relative character size instruction Absolute direction instruction Relative direction instruction Character slant instruction Extra space instruction User defined character instruction Symbol mode instruction Define label terminator instruction Character chord angle instruction Character engrave instruction LB SI SR DI DR SL ES UC SM DT CC CP 52 Character Sets You can use the character sets offered by the CAMM2 to engrave text. With different character sets, the same character codes connected used to engrave different characters. This makes it possible to engrave character fonts in languages other than English. Specify two character sets beforehand as the standard and alternate character sets. Specify the standard set with the CS instruction, and the alternate set with the CA instruction. Specify character set numbers with the parameters that follow the instructions. The SS and SA instructions are used to select character sets you use. The SS instruction SS; or SI 0F 16 is used to select the standard set, and the SA instruction SA; or SO 0E 16 is used to select the alternate set. 114 21 Chapter1 This is summarized in the following schematic diagram. Standard charactor set SS or SI CS Character sets offered by the CAMM2 Charactor set actually used SA or SO Alternate charactor set CA Character sets offered by the CAMM2 Figure 19 This means that if you specify different character sets for the standard and alternate sets at the beginning of a program, you can then change between these character sets using the SS and SA instructions.

If you include SI 0F 16 or SO 0E 16 in the parameters for an LB instruction, two types of characters can be mixed and engraved using only one LB instruction. Specifies character set 7 as the alternate set. It is convenient since the length of a character string can precalculated. Variablespace font Character widths are variable to balance the spacing of a character string for a better look when engraved. This is like proportional pitch font. Vector font The curved portions of a character are expressed in cotinuation with many short straight lines. The shape of a character may be too simple for some purposes, but this is optimal for high speed engraving. Arc font The curved portions of a character are expressed with smooth curve lines. Although the engraving speed is relatively slower than that of the vector font, much better looking characters are engraved. 116 23 Chapter1 6 OUTPUT Instructions When an instruction requesting output is sent, the CAMM2 will ready the data for output to the computer. The output instruction is effective only when the CAMM2 is connected in serial. It then can output its status data to the computer. Output instructions are used when such status data from the CAMM2 is needed for engraving. Line 110 Sends the OP instruction, requesting output of the coordinate values of scaling points P1 and P2. Line 120 Reads the coordinate values for each point. Line 130 Displays the coordinate values on the computer. These instructions are a mode1 format but can also be used with the mode2 format. The terminator attached to the mode1 and mode2 common instructions differs depending on whether mode1 or mode2 is being used. If used with the mode 1 format the terminators are CR 0D 16 and LF 0A 16 . If used with the mode2

format the semicolon mark; is needed. The mode1 and mode2 common instructions are listed below. Spindle Motor Control Not Ready Set Z1 and Z2 Z Axis Rapid Traverse!MC!NR!PZ!

VZ 118 25 2 Chapter Chapter2 mode1 Instructions 21 26 Chapter2 H Home H PARAMETER None The H instruction moves the tool to the work coordinate origin 0,0 with tool up. If the parameters are within the range, but out of the engraving area, the tool stops at the boundary of the engraving area and goes to tool up status. In other words the tool only engraves within the effective engraving area. The tool will not carry out engraving outside of the effective area. An error occurs if no parameters, parameters out of the range, or only one parameter are keyed in. If an odd number of parameters are specified, they are executed one by one from the beginning. However, an error occurs in the last parameter. When the parameters are within the range, but out of the effective engraving area, the tool does not move. However, when the tool reenters the effective engraving area, it starts moving again. If only one parameter is keyed in, an error occurs. In addition if an odd number of parameters are specified, they are executed one by one from the beginning. However in the last parameter, if the parameters exceed the allowable range, an error occurs. All the coordinates are expressed in the value of relative coordinate, and any number of pair coordinates can be specified as variation in Xaxis coordinate, variation in Yaxis coordinate. However, an error is generated if the specified coordinate is an absolute coordinate value outside the parameter range. All the coordinates are relative coordinates. When the straight line engraving instructions D and I, the circle engraving instructions C, E and G instructions, the division line engraving instruction K and the hatching instruction T are used, line type and pitch become those that will be specified by the L and B instruction, respectively. Depending on the parameter p, the following 11 types of lines can be selected. Start position when parameter is a positive value.

P L5 L4 L3 L2 L1 L0 L1 L2 L3 L4 L5 l Figure B1 If a parameter greater than the length of the line to be engraved is specified, CAMM2 will engrave a solid line. When a negative parameter is specified with the L instruction, the pitch is adjusted so that an integer number of patterns enter the engraving interval. Therefore, the pitch will be slightly varied from the one specified. If parameters other than 0 or 1 are specified, an error occurs in this instruction. The parameter q specifies the spacing of ticks. The parameter r specifies the number of times the ticks are engraved. Any decimal fractions for the parameter r are discarded. The size of a character or symbol to be engraved can be changed using the S instruction. CAMM2 engraves from the lowerleft corner of a character taken as the current the tool position and moves tool onefull character to the right after execution. Any part out of the engraving area cannot be engraved. The part within the engraving area is engraved. The characters to be actually engraved are those in the character set that have been selected before the engraving. Parameters outside the allowable range are ignored and return to the previously indicated value. The size and spacing depend on the parameters and are as described below. Once set, the rotation angle remain in effect until it is reset again. Any decimal fractions are rounded up or down to the nearest integer. Any parameter out of the range is ignored and reset to the previous setting. After engraving, the tool does not move to the position of a next character as with the P instruction. The symbol size can be changed using the S instruction. The center coordinates x,y remain in effect until they are reset in user coordinates. If parameters out of the range are specified, they are ignored, and the previous coordinate values will remain in effect. If the A instruction has not been executed, the G instruction engraves circles or arcs based on the user s reference points.

Remember that at this point, the A instruction must have been executed. The parameter n can specify the angle of a division line, taking top of a circle 90 as 0% and one turn of a circle 360 as 100%. If the parameter n is positive or negative, n% angle is determined with respect to the clockwise or counterclockwise direction, respectively. The parameter l1 specifies the distance of a division line s or leader s endpoint from the centerpoint of a circle. The parameter l2 specifies the distance of a division line s or leader s startpoint from the centerpoint of a circle. The parameter n

selects a hatching pattern and rectangle type as shown below. The parameter d specifies the spacing of hatching.Values 1 through 4 correspond to four available hatching angles 0, 45, 90, 135 respectively. Any values below the decimal point are rounded off. Even in the case of a rectangle only, this parameter must be used as a dummy. 222 View more You can create a variety of lines single lines, multiple line segments with and without arcs, multiple parallel lines, and There are both low and highlevel graphics facilities. The lowlevel graphics facilities provide basic We provide a wide range Perimeter Perimeter The perimeter of a polygon, denoted by P, is the When someone gives me a small number of objects Principle and task The spring constant D is determined for different Information in regular type inside the boxes and all information outside SimpleBGC 32bit This program is uploaded to controller Descriptive Statistics Ch. 14 Acute Triangle Alternate Angles A triangle that has three acute angles.

Angles that are between parallel lines, Control Codes Control codes are onecharacter printer The altitude of a parallelogram is a line segment perpendicular to the base The aim is to present standard properties of lines and planes, CENTRONICS interface and Parallel Printer Port LPT The Parallel Port, well known as LPT from These fonts come Information might have been changed or added since this document The Japanese configuration printers support Working With Objects Nontext elements in a document are referred to as Objects Step 1 Locate the Touchpad. The Touchpad is used to navigate the cursor All rights reserved. C62DISO0806. AshlarVellum Graphite No matter how many Top, Getting Started Basic Tasks Customizing Workbench Description Glossary Index Dassault Systemes 199499. All rights reserved. Preface CATIA Version 5 Sketcher application makes We recommend designing Ex random 1D path speeding up and slowing down In order to describe motion you need to describe the following properties. I am putting this old version of my review for the first midterm review, place and time to be announced. Check for updates on the web site as to which sections A B C D E F Which two rectangles fit together, without overlapping, to make a square. and. International School of Madrid 1 2. Emily has Start a new file in the Part All rights reserved. ETS, the ETS logo, GRADUATE RECORD EXAMINATIONS, The OddRoot Property Equations involving variables are to be identities. 75. 6 76. 3 1 77. 1 If x is nonzero, the reciprocal of x is written as 1 x. For example, the reciprocal of 23 is written as 2 Which law of eponents can be used to simplify the last epression. Simplify it. P r 7. CD rollover. Ronnie invested P dollars in a year Mixed Numbers. Prime Factorization. Least Common Multiple. Surface Area and Volume of a Pyramid Learning Objectives Dimension a sketch. Apply constraints to A data plot must be set active before you can use the Data Selector All Rights Reserved.

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