

USERGUIDE

S900-II

Can and Axes Configuration

Version 2.0

Logo definitions :



Warning, risks



Sepro robotique inventions



What to do ?



Document evolutions



Handy hints



Example



Innovation or information concerning a particular software version

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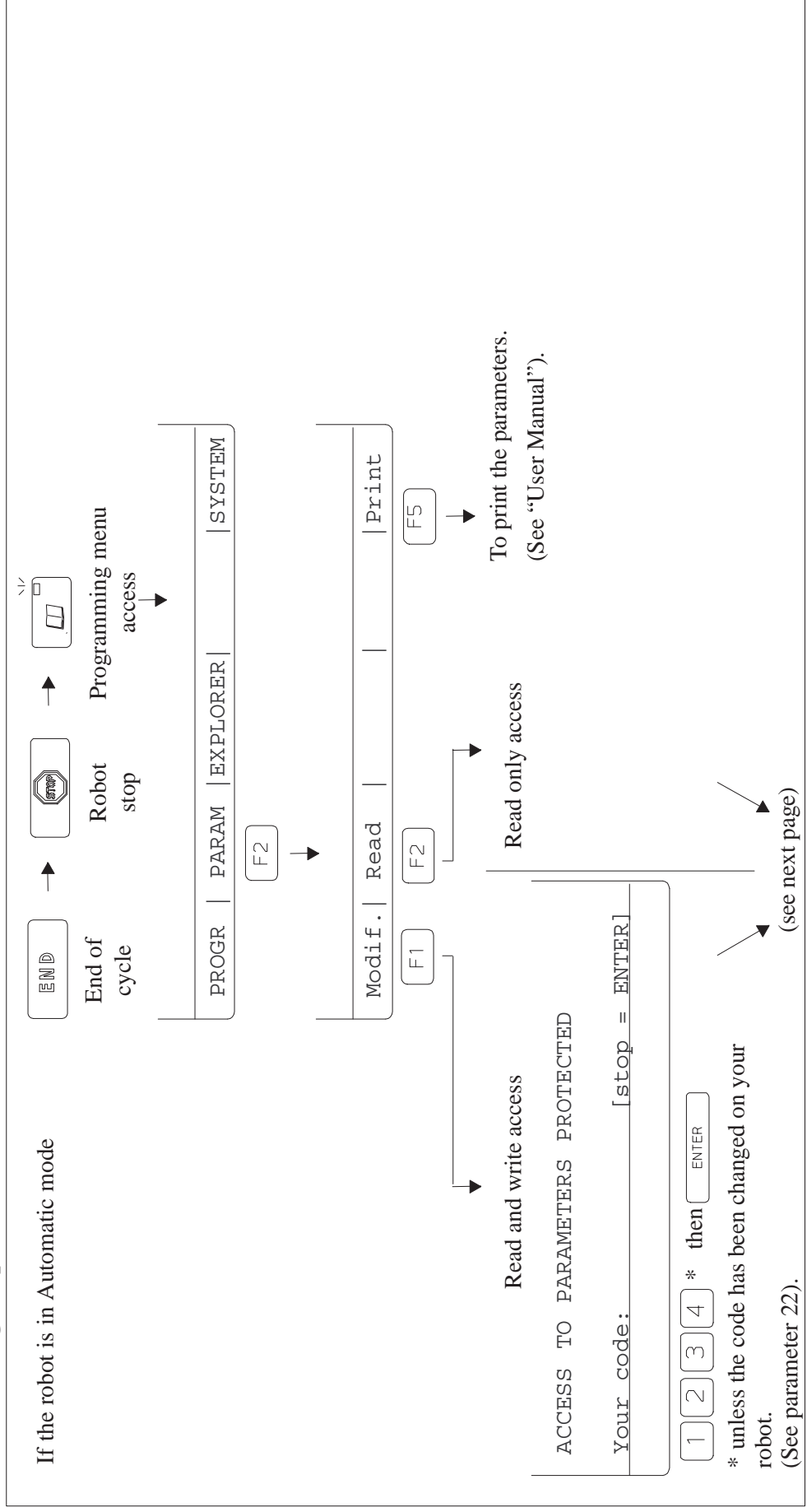
CHARACTERIZATION	General	X	Y	Z	B	C	Page / Manual
<u>ROBOT PARAMETERS</u> Basic configuration (communication, I/O, ...)	1 → 44 and 170 → 592	-	-	-	-	-	See Configuration S900–II
<u>CAN PARAMETERS</u> Management Node 1 Nodes 2 to 15	45 46 to 53 54 to 125	-	-	-	-	-	Page 6 Page 7 Page 9
<u>FLOPPY DISK DRIVE PARAMETERS</u>	126 → 131	-	-	-	-	-	Page 10
<u>AXES PARAMETERS</u> Rate of the axes boards General specific to braked asynchronous axes Geometric correction Point 1 Point 2 Point 3 Point 4 Proportional regulator servo–control (P) Predictive regulator servo–control (PFC) Measured axes Numeric (N1, N2) Analogue (A1, A2)	600, 604 - - - - - - - 1290 → 1314 1319 → 1338 702, 1110	- 610 → 648 615 → 617 619, 621 650 786 922 1058 656 → 659 724 662 → 740 - -	- 746 → 784 751 → 753 755, 757 652 788 924 1060 792 → 795 860 798 → 876 - -	- 882 → 920 887 → 889 892, 893 654 790 926 1062 928 → 931 996 934 → 1012 - -	- 1018 → 1056 1023 → 1025 1027, 1029 - - - - 1064 → 1067 1132 1070 → 1148 - -	- 1154 → 1192 1159 → 1101 1163, 1165 - - - - 1200 → 1203 1268 1206 → 1284 - -	Page 11 Pages 12 to 29 Page 15 Pages 17, 18 Page 30 Page 30 Page 30 Page 30 Page 31 Page 33 Page 35 Page 38
<u>EUROMAP 17 PARAMETERS</u>	1340 → 1354	-	-	-	-	-	Page 40

I - PARAMETER DEFINITION

The CAN and AXES parameters are used to characterize the CAN network bus and all the servo-control criteria for the 5 + 2 axes. The two types of servo-control are dealt with : the proportional standard and the “predictive PFC” option.

These parameters must only be modified by people who have followed a Sepro robotique specific training course.

I - 1. Accessing the parameters







PARAMETERS		LIMITS	
P_0001 = 000000	0000 <	000000002	
CMD_OPER			
PC/E17 IMM	Keys	Actions	I/O

Other means of direct access exist :

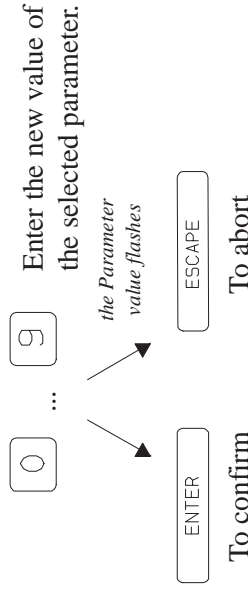
Keys on keyboard	Direct access to parameters for :
or	<i>1st pulse</i> : the X axis (Parameter 610) <i>2nd pulse</i> : the N1 axis (Parameter 1290)
or	<i>1st pulse</i> : the Y axis (Parameter 746) <i>2nd pulse</i> : the N2 axis (Parameter 1304)
or	<i>1st pulse</i> : the Z axis (Parameter 882) <i>2nd pulse</i> : the A1 axis (Parameter 1319)
, , ,	<i>1st pulse</i> : the B axis (Parameter 1018) <i>2nd pulse</i> : the A2 axis (Parameter 1331)
,	<i>1st pulse</i> : the C axis (Parameter 1154) <i>2nd pulse</i> : rate of axis board 1 (Parameter 600)

I – Parameter definition

Moving about in the parameters' list :

-  : To move back 10 parameters.
-  : To move forward 10 parameters.
-  : To move back one parameter (previous parameter).
-  : To move forward one parameter (following parameter).

I – 1. 1. Changing a parameter



If the value entered on the keyboard is between the min and max limits, the value is saved. Otherwise, the value is not validated and the “The value is out of range” message appears on the screen.

Quit the parameter setting mode by pressing once. If the parameters have been changed, the system displays : “Copying data to FLASHROM ...” for about 6 seconds.

I – 2. Parameter functions

The function of each parameter is described in the following pages.

The default value is only indicative and corresponds to the values automatically downloaded after a general reset. In this case, start again with the parameter file corresponding to your robot (see File S of the robot file or download the “PARAM” file of diskette 1 of set 1, from a compatible PC). See chapter I – 3. page 5.

I – 3. Saving and recovering the parameters

If the robot is equipped with the “floppy disk drive” option, it is possible to transfer the robot’s parameters to the PC and vice versa or on a diskette.

► PC

The parameters are saved and recovered using the Sepro AS900-II software. The use of this software is described in the on-line Help.

To save the parameters (robot → PC), the robot must be out of programming mode.

To recover the parameters (PC → robot), the robot must be out of programming mode and stopped.

1. “Select” or “Create” the robot if it does not exist.

Saving (Robot → PC)

2. In the “Communication” menu, choose “Read in a robot”.
3. In the file type, choose “Parameters”
4. At the end of the transfer, “Save the current file”.

Recovering (PC → Robot)

2. “Select a file”.
3. Choose “Parameters”
4. In the “Communication” menu, choose “Write in the robot”.
5. Enter the password (1234, if it has not been changed).
6. At the end of the transfer, power down the cabinet, then power up again so that the robot takes the new parameters into account.

► Floppy disk drive (option)

For the use of the floppy disk drive, see the “S900-II User Manual”.

II – THE CAN PARAMETERS



Do not modify the CAN parameters (45 -> 165) without the prior accord of Sepro robotique.

PARAMETER	Abbreviation	Description	Criterion	Corresponding value and function
45	CLASS_MASTER_CAN	Definition of the Master of the CAN network.	Management group according to the CAL DS 203 norm.	0 = No CAN network management 1 = Type 1* management 2 = Type 2* management 3 = Type 3* management 4 = Type 4* management
			Transmission speed	0 = 1 Mbit/s 10 = 500 kbit/s
The value of the parameter is the sum of the values selected for each of the Criteria.				
Default value :		Possible value : 0 -> 14	Interaction with other parameters : 46 -> 165	

* Definition of the type of Management

Type of Management	Network management	Fault management on the network	Reconfiguration via the network
0			
1	X		
2	X	X	
3	X		X
4	X	X	X

Parameters 46 to 53 define node 1. They are described in detail in the following pages.
The parameters of nodes 2 to 15 are identical. See their allocation in the table on page 9.

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
46	TYPE_NODE- CAN_1	Definition of the node on the CAN network.	0 → 9999	0 = Node does not exist 1 = Pendant 2 = Seupro “ON or OFF” Inputs and Outputs 10 = Input module – Philips DIOS inputs
	Default value : 1	Possible value : 0 → 9999	Interaction with other parameters :	
47	CLASS_NODE- CAN_1	Type of management of the CAN node.	0 → 4	0 = No node management 1 = Type 1* management 2 = Type 2* management 3 = Type 3* management 4 = Type 4* management
	Default value : 2	Possible value : 0 → 4	Interaction with other parameters :	
48	GUARD_TIME- CAN_1	Maximum refresh time on the CAN network in milliseconds (ms).	10 → 1000	Associated with parameter 49, it defines the maximum time allowed between 2 “time monitoring” messages on one node. maximum time = parameter 48 x parameter 49
	Default value : 150	Possible value : 10 → 1000	Interaction with other parameters : 49	

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II – The CAN parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
49	LIFE_TIME_CAN_1	Maximum refresh time on the CAN network (multiplier factor).	2 -> 9	Associated with parameter 48, it defines the maximum time allowed between 2 “time monitoring” messages on one node. maximum time = parameter 48 x parameter 49
	Default value :2	Possible value : 2 -> 9	Interaction with other parameters : 48	
50	TOPOLOGIE_CAN_1	Input – Output distribution on the CAN node.	0 -> 22222222	0 = not used 1 = 8 Inputs 2 = 8 Outputs
	Default value : 0	Possible value : 0 -> 22222222	Interaction with other parameters : 52–53	
52	NUM_BASE_IN_CAN_1	Basic number of the module inputs.	136 -> 248	Number of the first module input (block of 8 consecutive inputs).
	Default value : 136	Possible value : 136 -> 248	Interaction with other parameters : 50	
53	NUM_BASE_OUT_CAN_1	Basic number of the module outputs.	136 -> 248	Number of the first module output (block of 8 consecutive outputs).
	Default value : 136	Possible value : 136 -> 248	Interaction with other parameters : 50	

CAN node number	PARAMETER NUMBER									
	TYPE_NODE_CAN	CLASS_NODE_CAN	GUARD_TIME_CAN	LIFE_TIME_CAN	TOPOLOGIE_CAN	NUM_BASE_IN_CAN	NUM_BASE_OUT_CAN			
1	46	47	48	49	50	52	53			
2	54	55	56	57	58	60	61			
3	62	63	64	65	66	68	69			
4	70	71	72	73	74	76	77			
5	78	79	80	81	82	84	85			
6	86	87	88	89	90	92	93			
7	94	95	96	97	98	100	101			
8	102	103	104	105	106	108	109			
9	110	111	112	113	114	116	117			
10	118	119	120	121	122	124	125			

FLOPPY DISK DRIVE OPERATION

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
0126	TRK2TRKT	Track to track time in hexadecimal	0 → F	Reserved
	Default value : B	Possible value : 0 → 15	Interaction with other parameters :	
0127	PRECOMP	Precompensation	0 → 7	Reserved
	Default value : 0	Possible value : 0 → 7	Interaction with other parameters :	
0128	PRETRK	Precompensation track	0 → 79	Reserved
	Default value : 0	Possible value : 0 → 79	Interaction with other parameters :	
0129	HUT	Head unload time in hexadecimal	0 → 7F	Reserved
	Default value : 0	Possible value : 0 → 7F	Interaction with other parameters :	
0130	GPL1	Read / write gap	0 → FF	Reserved
	Default value : 1B	Possible value : 0 → FF	Interaction with other parameters :	
0131	GPL2	Formatting gap	0 → FF	Reserved
	Default value : 54	Possible value : 0 → FF	Interaction with other parameters :	

III – THE AXES' PARAMETERS

III – 1. Rate of the axes boards

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
600	CADENCE_1	Rate of the 3 axes board number 1 in milliseconds	5 → 15	Delay in ms between 2 processing interrupts for a same axis.
	Default value : 6	Possible value : 5 → 15	Interaction with other parameters :	
604	CADENCE_2	Rate of the 3 axes board number 2 in milliseconds	5 → 15	Delay in ms between 2 processing interrupts for a same axis.
	Default value : 6	Possible value : 5 → 15	Interaction with other parameters :	

III – The axes’ parameters

III – 2. The robot axes

III – 2. 1. General axes’ parameters

PARAMETER	Abbreviation	Description	Criterion	Corresponding value and function
610	TYP_AXE_X	Definition of the type of axis	Type of motorization	0 = Axis not installed.
746	TYP_AXE_Y			1 = Brushless.
882	TYP_AXE_Z		Type of initialization	2 = Asynchronous
1018	TYP_AXE_B			0 = Initialization on cam and Init pulse.
1154	TYP_AXE_C			16 = Initialization on cam only.
			Initialization forced when powered up	0 = If the axis is stopped when the robot is powered down, it relocates its position when powered up. 32 = The axis must be initialized each time the robot is powered up (it will not return to the position at the time it was powered down).
			Counting directions	0 = Counting increases. 64 = Counting decreases.
			Type of speed driver	<u>Asynchronous</u> : 0 = Speed reference +/- 10V and validation input. 128 = Speed reference 0 – 10V and + direction and – direction inputs.
				<u>Brushless</u> : 0 = Validation input only 128 = Validation input and speed or power supply reference selection input.
			Type of regulator	0 = Validation of proportional regulator (P) 256 = Validation of PFC predictive regulator (option)

			Type of control	0 = The axis is stopped by the brakes. 512 = The axis is stopped by the servo-control for the time defined by parameter 626.
			Type of tracking error control	0 = The tracking error is compared to a maximum value (Parameter 612) and a fault is generated if it is greater than this value. 1024 = The maximum value of the dynamic distance is calculated in real time according to the current speed of the axis and the maximum tolerance (Parameter 612). The test is then carried out as in the previous case.
			Releasing	0 = The axis cannot be freed. 2048 = The axis can be freed.
			Type of movement	0 = Linear axis. 4096 = Rotating axis.
The parameter value is the sum of the values selected by each of the Criteria.				
Default value :		Possible value : 0 → 65535		
0		Interaction with other parameters : 612, 626, 748, 762, 884, 898, 1020, 1034, 1156, 1170		
611	NUM_AXE_X	Output port associated with the axis	1 → 6	Defines the port attributed to the axis' commands. . 1 to 3 for the axes board 1 (1 = J6, 2 = J7, 3 = J8) . 4 to 6 for the axes board 2 (4 = J9, 5 = J10, 6 = J11)
747	NUM_AXE_Y			
883	NUM_AXE_Z			
1019	NUM_AXE_B			
1155	NUM_AXE_C			
Default value :		Possible value : 1 → 6		
1 → 6		Interaction with other parameters :		

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
612	TOL_AXE_X	Tracking error tolerance in 1/10 mm.	0 -> 9999	Maximum value of the tracking error. The tracking error is cyclically compared to this value and a fault is generated when it becomes larger. If the dynamic distance is used (see parameter 610 = 1024), the maximum value of the tracking error is calculated in real time depending on the current speed. The value of this parameter is the maximum tracking error authorized when the axis is moving at maximum speed.
748	TOL_AXE_Y			
884	TOL_AXE_Z			
1020	TOL_AXE_B			
1156	TOL_AXE_C			
	Default value : 3000	Possible value : 0 -> 9999	Interaction with other parameters : 610 , 746, 882, 1018, 1154	
613	TOL_ARRET_X	Regulation tolerance in 1/10 mm.	1 -> 300	If, after a delay defined in parameter 627, the axis' position error is greater than this tolerance, there is a regulation fault on the axis.
749	TOL_ARRET_Y			
885	TOL_ARRET_Z			
1021	TOL_ARRET_B			
1157	TOL_ARRET_C			
	Default value : 20	Possible value : 1 -> 300	Interaction with other parameters : 627 , 763, 899, 1035, 1171	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
614	TOLINIT_X	Initialization tolerance in 1/10 mm. Possible value : 0 → 600	0 → 600	Value of the window in which there is no discrepancy between the position read (counting) and the physical position of the axis. The counting validity control only occurs in Step by Step and Automatic modes when the axis passes over the initialization cam.
750	TOLINIT_Y			
886	TOLINIT_Z			
1022	TOLINIT_B			
1158	TOLINIT_C			
	Default value : 200			Interaction with other parameters :
615	ANTICIPP_X	Braking anticipation in + direction in 1/10 mm. THIS PARAMETER IS ONLY APPLICABLE FOR THE BRAKED ASYNCHRONOUS AXES. Possible value : 0 → 255	0 → 255	Value of the window (compared to the programmed position) in which the motor brake should be applied. This parameter is used to take into account the brake reaction time for movements in a positive direction (departure position less than the arrival position). This parameter adjusts itself automatically, during the robot's movements, according to the distances measured at the end of the path.
751	ANTICIPP_Y			
887	ANTICIPP_Z			
1023	ANTICIPP_B			
1159	ANTICIPP_C			
	Default value : 10			Interaction with other parameters : 617 , 753, 889, 1025, 1161

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III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
616	ANTICIPM_X	Braking anticipation in – direction in 1/10 mm. THIS PARAMETER IS ONLY APPLICABLE FOR THE BRAKED ASYNCHRONOUS AXES. Possible value : 0 → 255	0 → 255	Value of the window (compared to the programmed position) in which the motor brake should be applied. This parameter is used to take into account the brake reaction time for movements in a negative direction (departure position greater than arrival position). This parameter <u>adjusts itself automatically</u> , during the robot's movements, according to the distances measured at the end of the path.
752	ANTICIPM_Y			
888	ANTICIPM_Z			
1024	ANTICIPM_B			
1160	ANTICIPM_C			
	Default value : 10			Interaction with other parameters : 617 , 753, 889, 1025, 1161
617	ATCIP_X	Maximum braking anticipation in 1/10 mm. THIS PARAMETER IS ONLY APPLICABLE FOR THE BRAKED ASYNCHRONOUS AXES. Possible value : 0 → 255	0 → 255	Limit value of braking anticipations in a positive and negative direction (Parameters 615 and 616). The basic task is to monitor the braking anticipations which are automatically updated. When an anticipated value is greater than the value in this parameter, the message "W_00 : \$ – Braking faulty " warns the user that the brake must be adjusted.
753	ATCIP_Y			
889	ATCIP_Z			
1025	ATCIP_B			
1161	ATCIP_C			
	Default value : 250			Interaction with other parameters : 615–616 , 751–752, 887–888, 1023–1024, 1159–1160

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
618	DINV_MAX_X	Maximum movement in the opposite direction in 1/10 mm. Possible value : 1 → 300	1 → 300	Value of movement in the opposite direction to the command, beyond which the fault "D_46: \$ -MVT IN REVERSE DIRECTION" is displayed.
754	DINV_MAX_Y			
890	DINV_MAX_Z			
1026	DINV_MAX_B			
1162	DINV_MAX_C			
	Default value : 300			Interaction with other parameters :
619	ATCP_FM_X	End of movement anticipation value in 1/10 mm. THIS PARAMETER IS ONLY APPLICABLE FOR THE BRAKED ASYNCHRONOUS AXES. Possible value : 0 → 9999	0 → 9999	Value defining the difference between the real programmed position and the imaginary position aimed for by the movement manager. This parameter is used to compensate, to a certain extent, the follow-up errors due to the motor sliding and the behaviour of the speed driver.
755	AT_CP_FM_Y			
891	AT_CP_FM_Z			
1027	AT_CP_FM_B			
1163	AT_CP_FM_C			
	Default value : 50			Interaction with other parameters :

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III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
620	CONS_VM_X	Speed driver voltage for the maximum speed in millivolts (mV).	1000 -> 9999	Value of the speed driver voltage when the axis moves at its maximum speed (parameter 631).
756	CONS_VM_Y			
892	CONS_VM_Z			
1028	CONS_VM_B			
1164	CONS_VM_C			
	Default value : 9000	Possible value : 1000 -> 9999	Interaction with other parameters : 631 , 767, 903, 1039, 1175	
621	VMIN_X	Minimum speed allowed in millimetres per second (mm/s). THIS PARAMETER IS ONLY APPLICABLE FOR THE BRAKED ASYNCHRONOUS AXES.	1 -> 1000	Value of the minimum speed of the moving axis.
757	VMIN_Y			
893	VMIN_Z			
1029	VMIN_B			
1165	VMIN_C			
	Default value : 1	Possible value : 1 -> 1000	Interaction with other parameters :	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
622	VREG_X	Maximum speed in adjust mode in millimetres per second (mm/s).	1 → 1000	Value of the maximum movement speed in adjust mode. Used to limit the maximum speed in adjust mode.
758	VREG_Y			
894	VREG_Z			
1030	VREG_B			
1166	VREG_C			
Default value : 150		Possible value : 1 → 1000	Interaction with other parameters :	

623	AREG_X	Maximum acceleration in adjust mode in millimetres per square second (mm/s ²).	1 → 50000	Value of maximum acceleration in adjust mode. Used to limit maximum acceleration in adjust mode.
759	AREG_Y			
895	AREG_Z			
1031	AREG_B			
1167	AREG_C			
Default value : 500		Possible value : 1 → 50000	Interaction with other parameters :	

III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
624	TEMPS_V_X	Speed driver reaction time in milliseconds (ms). Possible value : 1 → 480	1 → 480	Defines the reaction time of the speed driver. Delay between the moment the command is given and when the speed driver is physically valid.
760	TEMPS_V_Y			
896	TEMPS_V_Z			
1032	TEMPS_V_B			
1168	TEMPS_V_C			
	Default value : 50			Interaction with other parameters :

625	TEMPS_F_X	Brake reaction time in milliseconds (ms). Possible value : 1 → 480	1 → 480	Defines the brake reaction time. Time between the moment the command is given and when the brake is physically applied.
761	TEMPS_F_Y			
897	TEMPS_F_Z			
1033	TEMPS_F_B			
1169	TEMPS_F_C			
	Default value : 50			Interaction with other parameters :

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
626	DUREE_A_X	Servo-control positioning length in milliseconds (ms). Possible value : 0 → 9999	0 → 9999	Defines the duration during which the axis can remain stationary using the servo-control system without the motor over-heating. Beyond this time, the brake blocks the axis.
762	DUREE_A_Y			
898	DUREE_A_Z			
1034	DUREE_A_B			
1170	DUREE_A_C			
	Default value : 5000			Interaction with other parameters : 610 , 746, 882, 1018, 1154
627	DELAI_B_X	Maximum delay before block error in milliseconds (ms). Possible value : 0 → 9999	0 → 9999	Defines the time during which an axis is considered immobile even though a reference input is generated. Beyond this delay, there will be a fault.
763	DELAI_B_Y			
899	DELAI_B_Z			
1035	DELAI_B_B			
1171	DELAI_B_C			
	Default value : 500			Interaction with other parameters : 613 , 749, 885, 1021, 1157

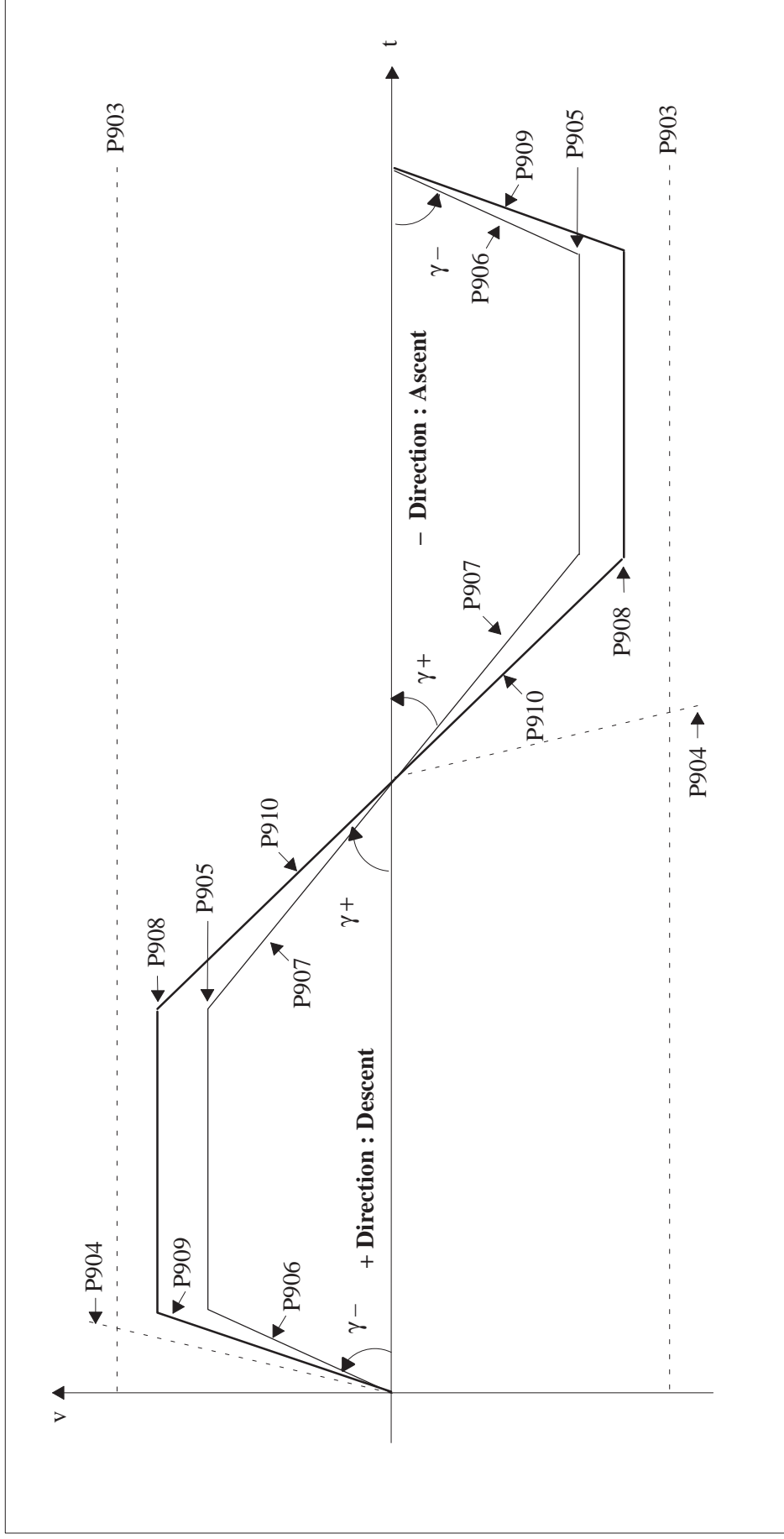
III – The axes’ parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
628	E_FORC_X	Forced slowing input number for an axis	0 → 128	Input at 0 to force the slowing down of the axis (moving to slow approach).
764	E_FORC_Y			
900	E_FORC_Z			
1036	E_FORC_B			
1172	E_FORC_C			
Default value : 128		Possible value : 0 → 128	Interaction with other parameters :	

629	E_FAPL_X	End of slow approach input number for an axis	0 → 128	Input = 0 to indicate "End of slow approach" for the axis with a slow approach.
765	E_FAPL_Y			
901	E_FAPL_Z			
1037	E_FAPL_B			
1173	E_FAPL_C			
Default value : 128		Possible value : 0 → 128	Interaction with other parameters : 443	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
630	V_APL_X	Slow approach maximum speed in millimetres per second (mm/s)	1 → 6000	Defines the maximum speed of the axis' slow approach.
766	V_APL_Y			
902	V_APL_Z			
1038	V_APL_B			
1174	V_APL_C			
	Default value : 300	Possible value : 1 → 6000	Interaction with other parameters :	

Example of a Z vertical movement graph



P903 represents parameter number 903

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
631	V_LIM_X	Axis' speed limit in millimetres per second (mm/s).	1 → 6000	Defines the speed limit for which parameter 620 has been set. Regulation is no longer possible beyond this speed.
767	V_LIM_Y			
903	V_LIM_Z			
1039	V_LIM_B			
1175	V_LIM_C			
	Default value : 4000	Possible value : 1 → 6000	Interaction with other parameters : 620 , 756, 892, 1028, 1164	

632	A_LIM_X	Axis' acceleration limit in millimetres per square second (mm/s ²).	1 → 50000	Defines the acceleration limit beyond which the speed driver goes into "voltage stop".
768	A_LIM_Y			
904	A_LIM_Z			
1040	A_LIM_B			
1176	A_LIM_C			
	Default value : 5000	Possible value : 1 → 50000	Interaction with other parameters :	

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III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
633	V_HP_X	Maximum speed outside the IMM in millimetres per second (mm/s). Possible value : 1 -> 6000	1 -> 6000	Defines the operating speed outside the machine axis.
769	V_HP_Y			
905	V_HP_Z			
1041	V_HP_B			
1177	V_HP_C			
	Default value : 4000	Interaction with other parameters :		
634	A_HP_P_X	Maximum acceleration outside the IMM in + direction in millimetres per square second (mm/s ²). Possible value : 1 -> 50000	1 -> 50000	Defines the maximum acceleration outside the machine axis in a + direction (- direction deceleration for a vertical axis).
770	A_HP_P_Y			
906	A_HP_P_Z			
1042	A_HP_P_B			
1178	A_HP_P_C			
	Default value : 5000	Interaction with other parameters :		
635	A_HP_M_X	Maximum acceleration outside the IMM in - direction in millimetres per square second (mm/s ²). Possible value : 1 -> 50000	1 -> 50000	Defines the maximum acceleration outside the machine axis in a - direction (+ direction deceleration for a vertical axis).
771	A_HP_M_Y			
907	A_HP_M_Z			
1043	A_HP_M_B			
1179	A_HP_M_C			
	Default value : 5000	Interaction with other parameters :		

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
636	V_DP_X	Maximum speed in the IMM in millimetres per second (mm/s).	1 → 6000	Defines the operating speed in the machine axis.
772	V_DP_Y			
908	V_DP_Z			
1044	V_DP_B			
1180	V_DP_C			
	Default value : 4000	Possible value : 1 → 6000	Interaction with other parameters :	
637	A_DP_P_X	Maximum acceleration in IMM Area in + direction in millimetres per square second (mm/s ²).	1 → 50000	Defines the maximum acceleration in the machine axis in a + direction (- direction deceleration for a vertical axis).
773	A_DP_P_Y			
909	A_DP_P_Z			
1045	A_DP_P_B			
1181	A_DP_P_C			
	Default value : 5000	Possible value : 1 → 50000	Interaction with other parameters :	
638	A_DP_M_X	Maximum acceleration in IMM Area in - direction in millimetres per square second (mm/s ²).	1 → 50000	Defines the maximum acceleration in the machine axis in a - direction (+ direction deceleration for a vertical axis).
774	A_DP_M_Y			
910	A_DP_M_Z			
1046	A_DP_M_B			
1182	A_DP_M_C			
	Default value : 5000	Possible value : 1 → 50000	Interaction with other parameters :	

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III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
640	CONVERS_X	Encoder pulse conversion coefficient in millimetres.	1 -> 25000	Associated with parameter 642, it defines the conversion factor between the metric units and the encoder pulses. It corresponds to the total number of encoder pulses received by the axes board for a movement of 100 mm (number of pulses taking into account the 4 encoder paths A, /A, B et /B).
776	CONVERS_Y			
912	CONVERS_Z			
1048	CONVERS_B			
1184	CONVERS_C			
	Default value : 3183	Possible value : 1 -> 25000	Interaction with other parameters : 642 , 778, 914, 1050, 1186	

642	KPULSES_X	Conversion multiplier factor.	1 -> 10000	The complement of parameter 640, it is the multiplier coefficient of the pulse conversion factor in millimetres. Conversion factor = parameter 642 * parameter 640 / 100.
778	KPULSES_Y			
914	KPULSES_Z			
1050	KPULSES_B			
1186	KPULSES_C			
	Default value : 100	Possible value : 1 -> 10000	Interaction with other parameters : 640 , 776, 912, 1048, 1184	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
644	VALINIT_X	Initialization value in 1/10 mm.	1 → 999999	Value corresponding to the axis' initialization position. This value can be entered using the keyboard (as long as you know the exact value of the initialization position) or entered automatically in the “calibration” mode. See File I.4.3.
780	VALINIT_Y			
916	VALINIT_Z			
1052	VALINIT_B			
1188	VALINIT_C			
	Default value : 2000	Possible value : 1 → 999999	Interaction with other parameters :	
646	LIMAX_X	Maximum movement limit in 1/10 mm.	1 → 999999	Value of the axis' maximum limit.
782	LIMAX_Y			
918	LIMAX_Z			
1054	LIMAX_B			
1190	LIMAX_C			
	Default value : 999999	Possible value : 1 → 999999	Interaction with other parameters :	
648	LIMIN_X	Minimum movement limit in 1/10 mm.	1 → 999999	Value of the axis' minimum limit.
784	LIMIN_Y			
920	LIMIN_Z			
1056	LIMIN_B			
1192	LIMIN_C			
	Default value : 1	Possible value : 1 → 999999	Interaction with other parameters :	

III – The axes’ parameters

III – 2. 2. Geometric correction parameters


PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
650 652 654	CORR_X_P1	Coordinates of point 1 for the geometric correction in 1/10 mm. Possible value : 0 -> 999999	0 -> 999999	0 indicates “no correction”.
	CORR_Y_P1			
	CORR_Z_P1			
	Default value : 0		Interaction with other parameters : 786 -> 790, 922 -> 926, 1058 -> 1062 See the “Geometric correction” manual.	
786 788 790	CORR_X_P2	Coordinates of point 2 for the geometric correction in 1/10 mm. Possible value : 0 -> 999999	0 -> 999999	0 indicates “no correction”.
	CORR_Y_P2			
	CORR_Z_P2			
	Default value : 0		Interaction with other parameters : 650 -> 654, 922 -> 926, 1058 -> 1062 See the “Geometric correction” manual.	
922 924 926	CORR_X_P3	Coordinates of point 3 for the geometric correction in 1/10 mm. Possible value : 0 -> 999999	0 -> 999999	0 indicates “no correction”.
	CORR_Y_P3			
	CORR_Z_P3			
	Default value : 0		Interaction with other parameters : 650 -> 654, 786 -> 790, 1058 -> 1062 See the “Geometric correction” manual.	
1058 1060 1062	CORR_X_P4	Coordinates of point 4 for the geometric correction in 1/10 mm. Possible value : 0 -> 999999	0 -> 999999	0 indicates “no correction”.
	CORR_Y_P4			
	CORR_Z_P4			
	Default value : 0		Interaction with other parameters : 650 -> 654, 786 -> 790, 922 -> 926 See the “Geometric correction” manual.	

III – 2. 3. Proportional regulator parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
656	SENS_X	Motor rotation direction.	0	Reference input x I
792	SENS_Y			
928	SENS_Z			
1064	SENS_B		1	Reference input x -I
1200	SENS_C			
Defines the direction of the reference input sent to the speed driver.				
Default value :		Possible value : 0 → 1	Interaction with other parameters :	
1				
657	COEFF_AV_X	Speed anticipation coefficient.	0 → 9999	Value of the proportional coefficient of the calculated speed injected into the regulating loop, for a regulator of the following form : $K \times \text{Gap} + K_v \times \text{calculated speed}$
793	COEFF_AV_Y			
929	COEFF_AV_Z			
1065	COEFF_AV_B			
1201	COEFF_AV_C			
Default value :		Possible value : 0 → 9999	Interaction with other parameters :	
0				

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III – The axes' parameters

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
658	PROPOR_X	Regulator proportional term.	0 -> 9999	Value of proportional term of P-type regulator.
794	PROPOR_Y			
930	PROPOR_Z			
1066	PROPOR_B			
1202	PROPOR_C			
	Default value : 30	Possible value : 0 -> 9999	Interaction with other parameters : 659 , 795, 931, 1067, 1203	
659	FPROPOR_X	Proportional term scale factor.	1 -> 10000	Sets the scale of the proportional term (parameter 658) in order to improve the servo-control regulation. The real value of the proportional term is parameter 658 / parameter 659.
795	FPROPOR_Y			
931	FPROPOR_Z			
1067	FPROPOR_B			
1203	FPROPOR_C			
	Default value : 1000	Possible value : 1 -> 10000	Interaction with other parameters : 658 , 794, 930, 1066, 1202	
724	CONS_VMAX_X	Reference input for the maximum speed (for proportional regulator).	1000 -> 9999	 Parameter is generated and modified automatically.
860	CONS_VMAX_Y			
996	CONS_VMAX_Z			
1132	CONS_VMAX_B			
1268	CONS_VMAX_C			
	Default value : _	Possible value : 1000 -> 9999	Interaction with other parameters :	

III – 2. 4. PFC predictive regulator parameters

Abbreviation	Description	X	Y	Z	B	C
V_GAIN	Gain value of position control loop.	662	798	934	1070	1206
ACCOST	Arrival anticipation in seconds.	664	800	936	1072	1208
VCONTR	Speed constraint in metres per second (m/s).	666	802	938	1074	1210
ACONTR	Acceleration constraints in metres per square second (m/s ²).	668	804	940	1076	1212
K0	K0 Coefficient (to update model).	670	806	942	1078	1214
K1	K1 Coefficient (to update model).	672	808	944	1080	1216
K2	K2 Coefficient (to update model).	674	810	946	1082	1218
K3	K3 Coefficient (to update model).	676	812	948	1084	1220
KD0	KD0 Coefficient (to update model).	678	814	950	1086	1222
KD1	KD1 Coefficient (to update model).	680	816	952	1088	1224
KD2	KD2 Coefficient (to update model).	682	818	954	1090	1226
KD3	KD3 Coefficient (to update model).	684	820	956	1092	1228
FM_00	FM Matrix (0,0)	686	822	958	1094	1230
FM_01	FM Matrix (0,1)	688	824	960	1096	1232
FM_02	FM Matrix (0,2)	690	826	962	1098	1234
FM_10	FM Matrix (1,0)	692	828	964	1100	1236
FM_11	FM Matrix (1,1)	694	830	966	1102	1238
FM_12	FM Matrix (1,2)	696	832	968	1104	1240
FM_20	FM Matrix (2,0)	698	834	970	1106	1242
FM_21	FM Matrix (2,1)	700	836	972	1108	1244
FM_22	FM Matrix (2,2)	702*	838	974	1110*	1246

* parameters also used for the analogue measured axes (see page 39).

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III – The axes’ parameters

Abbreviation	Description	X	Y	Z	B	C
GM_00	GM matrix (0.0)	704	840	976	1112	1248
GM_01	GM matrix (0.1)	706	842	978	1114	1250
GM_02	GM matrix (0.2)	708	844	980	1116	1252
CM_00	CM matrix (0.0)	710	846	982	1118	1254
CM_01	CM matrix (0.1)	712	848	984	1120	1256
CM_02	CM matrix (0.2)	714	850	986	1122	1258
FMD_00	FMD matrix (0.0)	716	852	988	1124	1260
FMD_01	FMD matrix (0.1)	718	854	990	1126	1262
FMD_02	FMD matrix (0.2)	720	856	992	1128	1264
FMD_10	FMD matrix (1.0)	722	858	994	1130	1266
GMD_00	GMD matrix (0.0)	724*	860*	996*	1132*	1268*
GMD_01	GMD matrix (0.1)	726	862	998	1134	1270
CMD_00	CMD matrix (0.0)	728	864	1000	1136	1272
CMD_01	CMD matrix (0.1)	730	866	1002	1138	1274
VX_00	VX matrix (0.0)	732	868	1004	1140	1276
VX_01	VX matrix (0.1)	734	870	1006	1142	1278
VX_02	VX matrix (0.2)	736	872	1008	1144	1280
VXD_00	VXD matrix (0.0)	738	874	1010	1146	1282
VXD_01	VXD matrix (0.1)	740	876	1012	1148	1284

* parameters also used for the proportional regulator (see page 32).

III – 3. The measured axes

III – 3. 1. Numeric measured axes’ parameters

See the “Mould chasing” manual for more details.

PARAMETER	Abbreviation	Description	Criterion	Corresponding value and function
1290 1304	TYP_AXE_N1	Definition of the type of numeric axis followed.	Type of measurement	0 = No numeric axis. 1 = Position measurement.
	TYP_AXE_N2		Direction of measurement	0 = Counting increases. 4 = Counting decreases
			Type of axis	0 = no initialization, no modulo. 8 = no initialization, modulo. 16 = with initialization, no modulo. 24 = with initialization, modulo
			Type of initialization	0 = Initialization on cam and Init pulse. 32 = Initialization on cam only.
The value of the parameter is the sum of the values selected for each of the Criteria.				
	Default value :	Possible value : 0 → 65535	Interaction with other parameters :	
	0			

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1291 1305	NUM_AXE_N1	Output port associated with the axis	1 → 6	Number of the output port associated with the measured axis. . 1 to 3 for axes board 1 (1 = J6, 2 = J7, 3 = J8) . 4 to 6 for axes board 2 (4 = J9, 5 = J10, 6 = J11)
	NUM_AXE_N2			
	Default value :	Possible value : 1 → 6	Interaction with other parameters : 611, 747, 883, 1019, 1155	
	0			

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PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1292 1306	MODULO_N1 MODULO_N2	Modulo value in 1/10 mm.	1 -> 999999	This parameter is used to associate a known and finite value to a defined position. <i>Example</i> : 2000 encoder pulses are required for a cyclic system to return to its “zero point”. In this case, you would choose : 1 – a 2000 modulo 2 – to declare the type of modulo axis (parameter 1291).
	Default value : 0	Possible value : 1 -> 999999	Interaction with other parameters : 1291 , 1305	
1294 1308	VALINIT_N1 VALINIT_N2	Initialization value in 1/10 mm.	1 -> 999999	Absolution position corresponding to : 1 – Leading edge of an initialization cam (initialization by cam only) 2 – Conjunction of the signals from the initialization cam and the encoder's Init. pulse (initialization by cam and Init. pulse)
	Default value : 0	Possible value : 1 -> 999999	Interaction with other parameters : 1291 , 1305	This value is only used if the axis has been declared as being measured with initialization (Parameter 1291)
1296 1310	CONVERS_N1 CONVERS_N2	Encoder pulse conversion coefficient in millimetres.	1 -> 25000	Associated with parameter 1298, it defines the conversion factor between the metric units and the encoder pulses.
	Default value : 0	Possible value : 1 -> 25000	Interaction with other parameters : 1298 , 1312	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1298 1312	KPULSES_N1 KPULSES_N2	Conversion multiplier factor.	1 → 10000	A complement of parameter 1296, it is the multiplier coefficient of the conversion coefficient. Conversion factor = parameter 1298 * parameter 1296 / 100
	Default value : 0	Possible value : 1 → 10000	Interaction with other parameters : 1296, 1310	
1300 1314	TOLER_N1 TOLER_N2	Speed tolerance	1 → 6000	In the case of speed monitoring, the value of the window in which the “following” axis is considered as locked onto the measured axis.
	Default value : 0	Possible value : 1 → 6000	Interaction with other parameters :	

III – 3. 2. Analogue measured axes parameters

PARAMETER	Abbreviation	Description	Criterion	Corresponding value and function
1319 1331	TYP_AXE_A1 TYP_AXE_A2	Definition of the type of analogue axis followed.	Measurement type	0 = No analogue axis. 1 = Position measurement. 2 = Speed measurement.
			Measurement direction	0 = Counting increases. 256 = Counting decreases
			Bipolarity of analogue symbol	Not used, leave at 0.
The value of the parameter is the sum of the values selected for each of the Criteria.				
Default value : 0 -> 65535				
Interaction with other parameters :				

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1320 1332	CONVERS_A1 CONVERS_A2	Conversion coefficient of the voltage received in millimetres.	1 -> 25000	Value that represents the variation in mm/mVolts of the axes’ board’s analogue input for a movement of 100 mm of the measured axis. d = total distance covered in mm Δv = input voltage variation on 3 axes board in mV. This parameter equals $\Delta v * 100 / d$
	Default value : 0	Possible value : 1 -> 25000	Interaction with other parameters : 1322-1324 , 1334-1336	

1322 1334	KPULSES_A1 KPULSES_A2	Conversion multiplier factor.	1 -> 10000	Value used to readjust the value of parameter 1320 when it exceeds 25 000. Conversion factor applied = parameter 1320 * parameter 1322 / 100
	Default value : 0	Possible value : 1 -> 10000	Interaction with other parameters : 1320-1324 , 1332-1336	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1324 1336	OFFSET_A1 OFFSET_A2	Analogue value offset.	-99999 → +99999	Signed value which allows you to : 1 – adjust the value displayed by A1 (A2) with respect to the position of the measured analogue axis. 2 – make sure that the A1 (A2) value is always positive whatever the position of the measured analogue axis. Value displayed = [(measurement * measurement direction) + parameter 1324 * 10 ⁵ J / [parameter 1320 * parameter 1322]
	Default value : 0	Possible value : -99999 → +99999	Interaction with other parameters 1319 → 1322, 1331 → 1334	
1326 1338	TOLER_A1 TOLER_A2	Speed tolerance.	1 → 6000	In the case of speed monitoring, the value of the window in which the “following” axis will be considered as locked onto the measured axis.
	Default value : 0	Possible value : 1 → 6000	Interaction with other parameters	
702 1110	A1 A2	Analogue reference input filter.	1 → 100	Value of the analogue reference input filter. The higher it is, the more the reference input is filtered. Beware ; when you increase it, the reply is reduced. You are advised to start at 1 which indicates no filtering.
	Default value : 1	Possible value : 1 → 100	Interaction with other parameters	

This parameter is only valid for the axes board’s analogue axis.

IV – The Euromap 17 parameters



IV – THE EUROMAP 17 PARAMETERS

These parameters are used to configure the new Euromap 17 functionalities. For their use, see the Euromap 17 manual.

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1340	MOULD_ORG_POS	Mould's original position	0 → 99999.9	Interaction with other parameters
	Default value : 0	Possible value : 0 → 99999.9	Interaction with other parameters	

1342	MOULD_SENS_POS	Mould position direction	0 → 1	Interaction with other parameters
	Default value : 0	Possible value : 0 → 1	Interaction with other parameters	

1343	MOULD_CONV_POS	Conversion coefficient	0 → 25000	Interaction with other parameters
	Default value : 1	Possible value : 0 → 25000	Interaction with other parameters	

1344	MOULD_K_POS	Conversion corrective factor	0 → 10000	Interaction with other parameters
	Default value : 1	Possible value : 0 → 10000	Interaction with other parameters	

PARAMETER	Abbreviation	Description	Parameter value	Corresponding function
1350	EJECT_ORG_POS	Ejector's original position	0 → 99999.9	Interaction with other parameters
	Default value :	Possible value : 0 → 99999.9	0	
1352	EJECT_SENS_POS	Ejector position direction	0 → 1	Interaction with other parameters
	Default value :	Possible value : 0 → 1	0	
1353	EJECT_CONV_POS	Conversion coefficient	0 → 25000	Interaction with other parameters
	Default value :	Possible value : 0 → 25000	1	
1354	EJECT_K_POS	Conversion corrective factor	0 → 10000	Interaction with other parameters
	Default value :	Possible value : 0 → 10000	1	

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- Check the troubleshooting guide of this manual for a solution.
- Thoroughly examine the instruction manual(s) for associated equipment, especially controls. Each manual may have its own troubleshooting guide to help you.
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