REGISTER ADDRESS

R=Read, W=Write

Address	Pre 3.0	3.0	3.1	R	W	
0	x	x	x	*		Inputs, bits 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
1	x	x	x	*	*	Outputs, bits 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
2	x	x	x		*	SetOutputsBitsMask 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
3	x	x	x		*	ClearOutputsBitsMask 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
4	x	x	x	*		Analog input 0 (0-65535)
5	x	x	x	*	*	Analog input 0 domain e {0=current[mA], 1=voltage[mV]}
6	x	x	x	*		Analog input 1 (0-65535)
7	x	x	x	*	*	Analog input 1 domain e {0=current[mA], 1=voltage[mV]}
8	x	x	x	*		Analog input 2 (tool) (0-65535)
9	x	x	x	*	*	Analog input 2 (tool) domain e {0=current[mA], 1=voltage[mV]}
10	x	x	x	*		Analog input 3 (tool) (0-65535)
11	x	x	x	*	*	Analog input 3 (tool) range e {0=current[mA], 1=voltage[mV]}
16	x	x	x	*	*	Analog output 0 output (0-65535)
17	x	x	x	*	*	Analog output 0 output domain e {0=current[mA], 1=voltage[mV]}
18	x	x	x	*	*	Analog output 1 output (0-65535)
19	x	x	x	*	*	Analog output 1 output domain {0=current[mA], 1=voltage[mV]}
20	x	x	x	*	*	Tool output voltage (V) e {0V, 12V, 24V}
21	x	x	x	*		Tool digital input bits
22	x	x	x	*	*	Tool digital output bits
24	x	x	x	*		Euromap67 input bits (0-15)
25	x	x	x	*		Euromap67 input bits (16-32)
26	x	x	x	*		Euromap67 output bits (0-15) (read only!)
27	x	x	x	*		Euromap67 output bits (16-32) (read only!)
28	x	x	x	*		Euromap 24V voltage
29	x	x	x	*		Euromap 24V current
30	-	x	x	*		Configurable inputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
31	-	x	x	*	*	Configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
32	-	x	x		*	Bit mask configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
33	-	x	x		*	Clear configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
34-127	x	x	x			Reserved for future system variables
128-255	x	x	x	*	*	General purpose 16 bit registers
256-	x	x	x	*		Robot state
512-	x	x	x	*		Reserved
768-	x	x	x	*		Tool states
1024-	x	x	x	*		Reserved
2048-	x	x	-	*		RT Machine control
Robot state						
256	x	x	x			Controller version high nuber
257	x	x	x			Controller version low number
258	x	x	x			Robot mode:
						CB3 and 3.1: Disconnected=0, Confirm_safety=1, Booting=2, Power_off=3, Power_on=4, Idle=5, Backdrive=6, Running=7
						CB2: No_controller=-1, Running=0, Freedrive=1,Ready=2, Initializing=3, Security_stoppde=4, Emergency_stopped=5, Fault=6, Not_connected=8, Shoutdown=9
260	x	x	x			isPowerOnRobot
261	x	x	x			isSecurityStopped

262	x	x	x			isEmergencyStopped
263	x	x	x			isTeachButtonPressed
264	x	x	x			isPowerPuttonPressed
265	x	x	x			isSafetySignalSuchThatWeShouldStop
270	x	x	x			Base joint angle (in mrad)
271	x	x	x			Shoulder joint angle (in mrad)
272	x	x	x			Elbow joint angle (in mrad)
273	x	x	x			Wrist1 joint angle (in mrad)
274	x	x	x			Wrist2 joint angle (in mrad)
275	x	x	x			Wrist3 joint angle (in mrad)
280	x	x	x			Base joint angle velocity (in mrad/s)
281	x	x	x			Shoulder joint angle velocity (in mrad/s)
282	x	x	x			Elbow joint angle velocity (in mrad/s)
283	x	x	x			Wrist1 joint angle velocity (in mrad/s)
284	x	x	x			Wrist2 joint angle velocity (in mrad/s)
285	x	x				Wrist3 joint angle velocity (in mrad/s)
290	x	x	x			Base joint current (in mA)
291	x	x	x			Shoulder joint current (in mA)
292	x	x	x			Elbow joint current (in mA)
293	x	x	x			Wrist1 joint current (in mA)
294	x	x	x			Wrist2 joint current (in mA)
295	x	x	x			Wrist3 joint current (in mA)
300	x	x	x			Base joint temperature (in C)
301	x	x	x			Shoulder joint temperature (in C)
302	x	x	x			Elbow joint temperature (in C)
303	x	x	x			Wrist1 joint temperature (in C)
304	x	x	x			Wrist2 joint temperature (in C)
305	x	x	x			Wrist3 joint temperature (in C)
Joint modes From version 1.7						
310	x	x	x			Base joint mode
311	x	x	x			Shoulder joint mode
312	x	x	x			Elbow joint mode
313	x	x	x			Wrist1 joint mode
314	x	x	x			Wrist2 joint mode
315	x	x	x			Wrist3 joint mode
						List of Joint Modes:
						JOINT_SHUTTING_DOWN_MODE = 236;
						JOINT_PART_D_CALIBRATION_MODE = 237;
						JOINT_BACKDRIVE_MODE = 238;
						JOINT_POWER_OFF_MODE = 239;
						JOINT_NOT_RESPONDING_MODE = 245;
						JOINT_MOTOR_INITIALISATION_MODE = 246;
						JOINT_BOOTING_MODE = 247;
						JOINT_PART_D_CALIBRATION_ERROR_MODE = 248;
						JOINT_BOOTLOADER_MODE = 249;
						JOINT_CALIBRATION_MODE = 250;

						JOINT_FAULT_MODE = 252;
						JOINT_RUNNING_MODE = 253;
						JOINT_IDLE_MODE = 255;
320	-	-	x			Base joint revolution count (number of full turns, typically 0 or 1)
321	-	-	x			Shoulder joint revolution count
322	-	-	x			Elbow joint revolution count
323	-	-	x			Wrist1 joint revolution count
324	-	-	x			Wrist2 joint revolution count
325	-	-	x			Wrist3 joint revolution count
TCP						
400	x	x	x			TCP-x in tenth of mm (in base frame)
401	x	x	x			TCP-y in tenth of mm (in base frame)
402	x	x	x			TCP-z in tenth of mm (in base frame)
403	x	x	x			TCP-rx in mrad (in base frame)
404	x	x	x			TCP-ry in mrad (in base frame)
405	x	x	x			TCP-rz in mrad (in base frame)
410	x	x	x			TCP-x speed in mm/s (in base frame)
411	x	x	x			TCP-y speed in mm/s (in base frame)
412	x	x	x			TCP-z speed in mm/s (in base frame)
413	x	x	x			TCP-rx speed in mrad/s (in base frame)
414	x	x	x			TCP-ry speed in mrad/s (in base frame)
415	x	x	x			TCP-rz speed in mrad/s (in base frame)
420	x	x	x			TCP-x offset in mm (in tool frame)
421	x	x	x			TCP-y offset in mm (in tool frame)
422	x	x	x			TCP-z offset in mm (in tool frame)
423	x	x	x			TCP-rx offset in mrad (in tool frame)
424	x	x	x			TCP-ry offset in mrad (in tool frame)
425	x	x	x			TCP-rz offset in mrad (in tool frame)
450	x	x	x			Robot current (in mA)
451	x	x	x			I/O current (in mA)
768	x	x	x			Tool state
769	x	x	x			Tool temperature (in C)
770	x	x	x			Tool current (in mA)
GUI state						
1024	x	x	x			Reserved
RTMachine						
2048	x	x	-		*	Split time (latches the actual time to the registers 2049-2053) calculates the time from last time the controller was restarted
2049	x	x	-	*		Milliseconds
2050	x	x	-	*		Seconds
2051	x	x	-	*		Minutes
2052	x	x	-	*		Hours
2053	x	x	-	*		Days

COIL ADDRESS						
Address	**Pre 3.0**	**3.0**	**3.1**	**R**	**W**	
0-15	x	x	x	*		Inputs, bits 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
16-31	x	x	x	*	*	Outputs, bits 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
32-47	x	x	x		*	SetOutputsBitsMask 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
48-63	x	x	x		*	ClearOutputsBitsMask 0-15 [BBBBBBBBTTxxxxxx] x=undef, T=tool, B=box
64-79	x	x	x	*		Euromap67 input bits (0-15)
80-95	x	x	x	*		Euromap67 input bits (16-32)
96-111	x	x	x	*		Euromap67 output bits (0-15) (read only!)
112-127	x	x	x	*		Euromap67 output bits (16-32) (read only!)
128-135	x	x	x	*		Configurable inputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
136-143	x	x	x	*	*	Configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
144-151	x	x	x		*	Bit mask configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
152-159	x	x	x		*	Clear configurable outputs, bits [BBBBBBBBxxxxxxxx] x=undef, T=tool, B=box
260	x	x	x	*		isPowerOnRobot
261	x	x	x	*		isProtectiveStopped
262	x	x	x	*		isEmergencyStopped
263	x	x	x	*		isTeachButtonPressed
264	x	x	x	*		isPowerPuttonPressed
265	x	x	x	*		isSafetySignalSuchThatWeShouldStop