

read only access
 read/write access

Type explanation
 rising edge action will be executed on rising edge. Note: Some coils are overlaid with a readable state value, you are not able to read the last written value there.
 bool action will be enabled on writing 1 and disabled on writing 0
 string 2 characters per register, end marked by 0 byte unless all bytes are used
 int32 1st register contains lower bytes, 2nd contains upper byte

1 Bit coils

Category	Address First	Address Last	Count	Access	Action Type	Description	Notes
I/O	200	299	100	RO/RW		Gsig	
	300	363	64	RO/RW		DOut	
	364	427	64	RO		Din	
Software Info							
Statistics							
Configuration Info	10		1	RO		Has robot axis	
	11		1	RO		Has external axis	
	12		1	RO		Has gripper axis	
	13		1	RO		Has platform axis	
	14		1	RO		Has I/O module	
Error and State Info	20		1	RO		Module - No error	Combined error codes of all joints
	21		1	RO		Module error - Temperature	
	22		1	RO		Module error - Estop / Low voltage	
	23		1	RO		Module error - Motor not enabled	
	24		1	RO		Module error - Communication	
	25		1	RO		Module error - Position lag	
	26		1	RO		Module error - Encoder error	
	27		1	RO		Module error - Overcurrent	
	28		1	RO		Module error - Driver error	
	29		1	RO		Module error - Bus dead	
	30		1	RO		Module error - Module dead	
	31	36	6	RO		Module error - reserved for future use	
	37		1	RO		Kinematics - No error	More details in register Kinematics - Error code
	38		1	RO		Kinematics - Joint limit min	
	39		1	RO		Kinematics - Joint limit max	
	40		1	RO		Kinematics - Center singularity	
	41		1	RO		Kinematics - Out of Reach	
	42		1	RO		Kinematics - Wrist singularity	
	43		1	RO		Kinematics - Virtual box reached	
	44		1	RO		Kinematics - Motion not allowed	
	45	49	5	RO		Kinematics - reserved for future use	
Connection etc.	50		1	RO/RW	rising edge	Is Connected / Connect / Disconnect	Connect/Disconnect only CPRog/IRC
	51		1	RW	rising edge	Shutdown computer (power off)	
	52		1	RW	rising edge	Reset	
	53		1	RO/RW	rising edge	Is Enabled / Enable / Disable	TinyCtrl: Enable implies reset
	54		1	RO		Is operating okay	true if opMode=standard
Referencing	60		1	RO/RW	rising edge	Is referenced / reference all	
	61	66	6	RO/RW	rising edge	IsRefd / reference robot joint	
	67	69	3	RO/RW	rising edge	IsRefd / reference external joint	
	70	72	3	RO/RW	rising edge	IsRefd / reference gripper joint	
	73		1	RW	rising edge	Set all joints to zero	
Position + Motion	100		1	RW	rising edge	Start MoveTo cart	
	101		1	RW	rising edge	Start MoveTo cart relative base	
	102		1	RW	rising edge	Start MoveTo cart relative tool	
	103		1	RW	rising edge	Start MoveTo joint	
	104		1	RW	rising edge	Start MoveTo joint relative	
	105		1	RW	rising edge	Start MoveTo platform pos	not implemented
	106		1	RW	rising edge	Start MoveTo platform posori	not implemented
	130	135	6	int32	0.01mm	Current position cartesian	
	136	141	6	int32	0.01°	Current orientation cartesian	
	142	153	12	int32	0.01 units	Current position robot joints	
	154	159	6	int32	0.01 units	Current position external axis	
	160	165	6	int32	0.01 units	Current position gripper joints	
	174	177	4	int32	0.01mm	Current position platform cartesian	only CPRog/IRC
	178	179	2	int32	0.01°	Current orientation platform cartesian	only CPRog/IRC
	180		1	int16	0.1% / 0.1mm/s	Velocity for MoveTo	Not implemented
	181	186	6	int32	0.1um/s	Target velocities external axes in velocity mode	default 500 (50% or 50mm/s)
	187		1	uint16	0.01%	Override	
	188		1	enum		Jog mode	Joint=0, CartBase=1, CartTool=2, Plattform=3, invalid=0xffff
	260		1	enum		Program RunState	NotRunning=0, Running=1, Paused=2
	261		1	enum		Replay Mode	Single=0, Repeat=1, Step=2, Fast=3 (not used)
Program	110		1	RO		Zero Torque mode (teach by hand) available	
	111		1	RO/RW	bool	Zero Torque mode (teach by hand) is enabled / enable	Requires reset after disable
	112		1	RO		Is Moving	Program running, MoveTo or jog
	120		1	RO		Is robot program loaded	
	121		1	RO		Is logic program loaded	
	122		1	RO/RW	rising edge	Is program running / start program	
	123		1	RO/RW	rising edge	Is program paused / pause program	
	124		1	RO/RW	rising edge	Is program not running (and not paused) / stop program	
Program selection	130		1	RW	rising edge	Next directory entry	only TinyCtrl

16 Bit input registers (read only)

Address First	Address Last	Count	Type	Precision	Description	Notes
0	3	4	Bitfield		Din	
0		1	uint16		Software ID	CPRog=902, TinyCtrl=980
1		1	uint16		Software version major	e.g. 12
2		1	uint16		Software version minor	e.g. 6
3		1	uint16		Modbus Mapping Version	See top left corner of this document
4	5	2	uint32	minutes	Uptime complete	
6	7	2	uint32	minutes	Uptime last	
8	9	2	uint32	minutes	Uptime enabled	
10	11	2	uint32	minutes	Uptime motion	
12		1	uint16		Program starts	
13		1	uint16	0.1ms	Cycle time target	
14		1	uint16	0.1ms	Cycle time max (last 50 cycles)	
15		1	uint16	0.01Hz	Cycle frequency (average)	
16		1	uint16	0.01%	Work load	TC: Load of kinematics loop, CPRog/IRC: Load of entire application
20		1	uint16		Count of robot joints	0-6
21		1	uint16		Count of external axes	0-3
22		1	uint16		Count of gripper joints	0-3
23		1	uint16		Count of platform axes	0-4
24		1	uint16		Count of I/O modules	0-3
25	30	6	Bitfield		Module error codes of robot axis	Error codes of each axis
31	33	3	Bitfield		Module error codes of external axis	
34	36	3	Bitfield		Module error codes of gripper axis	
37	40	4	Bitfield		Module error codes of platform axis	
41	43	3	Bitfield		Module error codes of I/O modules	
44	49	6	int16	0.1°C	Temperatures of robot joint electronics	
50	52	3	int16	0.1°C	Temperatures of external axis electronics	not implemented
53	55	3	int16	0.1°C	Temperatures of gripper joint electronics	not implemented
56	59	4	int16	0.1°C	Temperatures of platform axis electronics	not implemented
60	65	6	int16	0.1°C	Temperatures of robot joint motors	not implemented
66	68	3	int16	0.1°C	Temperatures of external axis motors	not implemented
69	71	3	int16	0.1°C	Temperatures of gripper joints motors	not implemented
72	75	4	int16	0.1°C	Temperatures of platform axis motors	not implemented
76	81	6	uint16	mA	Currents of robot joints	
82	84	3	uint16	mA	Currents of external axes	
85	87	3	uint16	mA	Currents of gripper joints	
88	91	4	uint16	mA	Currents of platform axis	
92		1	uint16	0.01V	Voltage	
93		1	uint16	mA	Current total	
94		1	uint16	0.1%	Battery charge	only CPRog/IRC
95		1	enum		Kinematics - Error code	
96		1	enum		Operation mode	Standard=0, serious fail=1, CAN bridge=2; only TinyCtrl

16 Bit holding registers (read + write access)

Address First	Address Last	Count	Type	Precision	Description	Notes
200	206	7	Bitfield		Gsig	
207	210	4	Bitfield		DOut	
260		1	enum		Program RunState	NotRunning=0, Running=1, Paused=2
261		1	enum		Replay Mode	Single=0, Repeat=1, Step=2, Fast=3 (not used)
267	298	32	string		Name of loaded robot program / load robot program	Up to 64 ASCII characters
299	330	32	string		Name of loaded logic program / load logic program	Up to 64 ASCII characters

