

## Modbus Mapping, iRC/CProg/TinyCtrl V13

Commonplace Robotics GmbH  
Mapping Version 2

**Read only access**  
**Read/write access**

Category	1 Bit coils					Notes
	Address	Count	Access	Action Type	Description	
I/O	200	299	100	RO/RW	Gsig	
	300	363	64	RO/RW	DOut	
	364	427	64	RO	DIn	

### Software Info

### Statistics

Category	16 Bit input registers (read only)					Notes	
	Address	Count	Type	Precision	Description		
I/O	207	210	4	Bitfield	DIn		
	0	1	uint16				
	1	1	uint16				
	2	1	uint16				
	3	1	uint16				
	4	5	2	uint32	Uptime complete		
	6	7	2	uint32	Uptime last		
	8	9	2	uint32	Uptime enabled		
	10	11	2	uint32	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	
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 - Motor overheat		
	28	1	RO		Module error - Drive 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 - Collision 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	read: Is Connected, edge toggles: Connect / Disconnect	Connect/Disconnect only CProg/iRC	
	51	1	RW	rising edge	read: Shutdown computer (power off)		
	52	1	RW	rising edge	Reset		
	53	1	RO/RW	rising edge	read: Is Enabled, edge toggles: Enable / Disable	TinyCtrl: Enable implies reset true if opMode=standard	
	54	1	RO		If operating okay		
Referencing	60	1	RO/RW	rising edge	read: Is referenced, edge: reference all		
	61	66	6	RO/RW	read: IsRefId, edge: reference robot joint	Since V13-040, must be ref'd and enabled	
	67	69	2	RO/RW	read: IsRefExt, edge: reference external joint		
	70	72	3	RO/RW	read: IsRefGrip, edge: reference gripper joint		
	73	74	2	RO/RW	read: 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 point		
	104	1	RW	rising edge	Start MoveTo point relative		
	105	1	RW	rising edge	Start MoveTo platform pos	not implemented	
	106	2	RW	rising edge	Start MoveTo platform pos+ori	not implemented	
Program	120	1	RO		Is robot program loaded		
	121	1	RO		Is logic program loaded		
	122	1	RO/RW	rising edge	read: Is program running, edge: start program		
	123	1	RO/RW	rising edge	read: Is program paused, edge: pause program		
	124	1	RO/RW	rising edge	read: Is program not running (end not paused), edge: stop program		
Program selection	130	1	RW	rising edge	Next directory entry	only TinyCtrl	
	131	1	RW	rising edge	Previous directory entry	only TinyCtrl	
	132	2	RO		Is directory entry a file? (Does not validate content)	only TinyCtrl	
	331	1	uint16		Count of entries in current directory	only TinyCtrl	
	332	1	uint16		Name of the selected directory entry	only TinyCtrl	
	333	364	32	string	Name of the selected directory entry	Up to 64 ASCII characters, only TinyCtrl	
	262	1	uint16		Loaded robot programs count		
	263	1	int16		Current robot program number		
	264	1	uint16		Count of commands in current program		
	265	1	int16		Current command number		
	266	1	enum		Reason for last program stop/pause		
	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	
	332	1	uint16		Number of the selected directory entry	0-7; if current dir is not the base dir entry 0 is ".", only TinyCtrl	
	333	364	32	string			
	130	135	6	int32	0.01mm	Target position cartesian	
	136	141	6	int16	0.01*	Target orientation cartesian	
	142	153	12	int32	0.01 units	Target position robot joints	
	154	159	6	int32	0.01 units	Target position external axis	
	160	165	6	int32	0.01 units	Current position gripper joints	
	170	177	4	int32	0.01mm	Target position platform cartesian	
	178	179	2	int32	0.01*	Target orientation platform cartesian	
	180	1	int16	0.1% / 0.1mm/s	Velocity for MoveTo	not implemented	
	181	186	6	int32	0.1unit/s	Target velocities external axes in velocity mode	not implemented
	187	1	uint16	0.01%	Override	default 500 (50% or 50mm/s)	
	188	1	enum		Jog mode	Joint=0, CartBase=1, CartTool=2, Platform=3, invalid=0xffff	
	260	1	enum		Program RunState	NotRunning=0, Running=1, Paused=2	
	261	1	enum		Replay Mode	Single=0, Repeat=1, Step=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	

133 1 RW rising edge Load selected program / open selected directory  
only TinyCtrl  
134 1 RW rising edge Go to base directory (.../Data/programs)

365 396 32 string

Name of the current directory

Up to 64 ASCII characters, only TinyCtrl

135 1 RW rising edge Unload robot program

136 1 RW rising edge Unload logic program

Teach programming

140 1 RW rising edge Save program  
only CPProg/IRC  
141 1 RW rising edge Remove last command (from main program)  
only CPProg/IRC  
142 1 RW rising edge Add joint command (current position, MoveTo velocity)  
only CPProg/IRC  
143 1 RW rising edge Add linear command (current position, MoveTo velocity)

400 431 32 string

Info/error/message short (same as shown on teach pendant)

Up to 64 ASCII characters

Info message

Program variables

440 455 16 int16  
456 711 256 int16 0.1 mm / 0.1\*

Readable number variables mb\_num\_r1 - mb\_num\_r16

1 register per variable, value is rounded to next integer  
16 registers per variable: see enum conversion type

440 455 16 int16  
456 711 256 int16 0.1 mm / 0.1\*

Writable number variables mb\_num\_w1 - mb\_num\_w16  
Writable position variables mb\_pos\_r1 - mb\_pos\_r16

1 register per variable, value is rounded to next integer  
16 registers per variable: see enum conversion type



