

UR 1 T2O State : T (Robot) -> O (PLC) - Robot state and safety mode (32 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group Data type (.udt file)
0	Controller major version (uint)								Controller minor version (uint)								Reserved								Robot UR_T2O_Robot								
32	Robot mode (uint)								Real time machine seconds (uint)								Real time machine milliseconds (uint)																
64	Real time machine minutes (uint)								Real time machine hours (uint)								Real time machine days (uint)																
96	Robot current (float) [A]																																
128	PW	PR	TB	PB	Reserved																												
160	Speed slider fraction (float)																																
192	Safety mode (uint)								Reserved																								Safety UR_T2O_Safety
224	NO	RD	PS	RC	SS	SES	RES	ES	VL	FT	ST	Reserved																					

UR 2 T2O IO : T (Robot) -> O (PLC) - I/Os of control box and tool (68 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group Data type (.udt file)			
256	Standard digital inputs							Configurable digital inputs							Standard digital outputs							Configurable digital outputs							I/Os UR_T2O_IOs							
288	Analog I/O Types							Reserved																												
320	Standard analog input 0 (float) [A or V]																																			
352	Standard analog input 1 (float) [A or V]																																			
384	Standard analog output 0 (float) [A or V]																																			
416	Standard analog output 1 (float) [A or V]																																			
448	I/O current (float) [A]																																			
480	Euromap67 input bits																																			
512	Euromap67 output bits																																			
544	Euromap67 24V voltage (float) [V]																																			
576	Euromap67 24V current (float) [A]																																			
608	Tool mode (uint)							Reserved																												
640	TDI	Reserved						TDO	Reserved						TAIT	Reserved																				Tool UR_T2O_Tool
672	Tool analog input 0 (float) [A or V]																																			
704	Tool analog input 1 (float) [A or V]																																			
736	Tool output voltage (float) [V]																																			
768	Tool current (float) [A]																																			

UR 3 T20 Joints: T (Robot) -> O (PLC) - Joint states (104 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group
800														Joint 0 position (float) [rad]														Joints					
832														Joint 1 position (float) [rad]																			
864														Joint 2 position (float) [rad]																			
896														Joint 3 position (float) [rad]																			
928														Joint 4 position (float) [rad]																			
960														Joint 5 position (float) [rad]																			
992														Joint 0 velocity (float) [rad/s]																			
1024														Joint 1 velocity (float) [rad/s]																			
1056														Joint 2 velocity (float) [rad/s]																			
1088														Joint 3 velocity (float) [rad/s]																			
1120														Joint 4 velocity (float) [rad/s]																			
1152														Joint 5 velocity (float) [rad/s]																			
1184														Joint 0 current (float) [A]																			
1216														Joint 1 current (float) [A]																			
1248														Joint 2 current (float) [A]																			
1280														Joint 3 current (float) [A]																			
1312														Joint 4 current (float) [A]																			
1344														Joint 5 current (float) [A]																			
1376														Joint 0 temperature (float) [°C]																			
1408														Joint 1 temperature (float) [°C]																			
1440														Joint 2 temperature (float) [°C]																			
1472														Joint 3 temperature (float) [°C]																			
1504														Joint 4 temperature (float) [°C]																			
1536														Joint 5 temperature (float) [°C]																			
1568	Joint 0 mode (uint)				Joint 1 mode (uint)				Joint 2 mode (uint)				Joint 3 mode (uint)																				
1600	Joint 4 mode (uint)				Joint 5 mode (uint)								Reserved																				

UR 5 T20 BitRegisters : T (Robot) -> O (PLC) - General purpose bit registers (8 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group
2240														Bit output registers 0 - 31														Bit registers					
2272														Bit output registers 32 - 63																			

UR 6 T2O IntRegisters : T (Robot) -> O (PLC) - General purpose int registers (96 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group
2304														Int output register 0 (int)														Int registers					
2336														Int output register 1 (int)																			
2368														Int output register 2 (int)																			
2400														Int output register 3 (int)																			
2432														Int output register 4 (int)																			
2464														Int output register 5 (int)																			
2496														Int output register 6 (int)																			
2528														Int output register 7 (int)																			
2560														Int output register 8 (int)																			
2592														Int output register 9 (int)																			
2624														Int output register 10 (int)																			
2656														Int output register 11 (int)																			
2688														Int output register 12 (int)																			
2720														Int output register 13 (int)																			
2752														Int output register 14 (int)																			
2784														Int output register 15 (int)																			
2816														Int output register 16 (int)																			
2848														Int output register 17 (int)																			
2880														Int output register 18 (int)																			
2912														Int output register 19 (int)																			
2944														Int output register 20 (int)																			
2976														Int output register 21 (int)																			
3008														Int output register 22 (int)																			
3040														Int output register 23 (int)																			

UR 8 O2T Robot IO : O (PLC) -> T (Robot) - Speed slider and electrical outputs (24 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group Data type (.udt file)
0	SSM																															Reserved	
32	Speed slider fraction (float)																														Robot UR_O2T_Robot		
64	Standard digital output mask							Configurable digital output mask							Standard digital outputs							Configurable digital outputs							Outputs UR_O2T_IOs				
96	AOM			Reserved				AOT			Reserved				TDOM			Reserved				TDO			Reserved								
128	Standard analog output 0 (float) [0..1]																																
160	Standard analog output 1 (float) [0..1]																																

UR 9 O2T Reg1 : O (PLC) -> T (Robot) - General Purpose registers (100 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group Data type (.udt file)
192	Bit input registers 0 - 31																Bit registers																
224	Int input register 0 (int)																Int registers <i>UR_O2T_ints</i>																
256	Int input register 1 (int)																																
288	Int input register 2 (int)																																
320	Int input register 3 (int)																																
352	Int input register 4 (int)																																
384	Int input register 5 (int)																																
416	Int input register 6 (int)																																
448	Int input register 7 (int)																																
480	Int input register 8 (int)																																
512	Int input register 9 (int)																																
544	Int input register 10 (int)																																
576	Int input register 11 (int)																																
608	Float input register 0 (float)																Float registers <i>UR_O2T_floats</i>																
640	Float input register 1 (float)																																
672	Float input register 2 (float)																																
704	Float input register 3 (float)																																
736	Float input register 4 (float)																																
768	Float input register 5 (float)																																
800	Float input register 6 (float)																																
832	Float input register 7 (float)																																
864	Float input register 8 (float)																																
896	Float input register 9 (float)																																
928	Float input register 10 (float)																																
960	Float input register 11 (float)																																

UR 10 O2T Reg2 : O (PLC) -> T (Robot) - General Purpose registers (100 bytes)

Bit	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	Group Data type (.udt file)
992	Bit input registers 32 - 63																												Bit registers				
1024	Int input register 12 (int)																												Int registers <i>UR_O2T_ints</i>				
1056	Int input register 13 (int)																																
1088	Int input register 14 (int)																																
1120	Int input register 15 (int)																																
1152	Int input register 16 (int)																																
1184	Int input register 17 (int)																																
1216	Int input register 18 (int)																																
1248	Int input register 19 (int)																																
1280	Int input register 20 (int)																																
1312	Int input register 21 (int)																																
1344	Int input register 22 (int)																																
1376	Int input register 23 (int)																																
1408	Float input register 12 (float)																												Float registers <i>UR_O2T_floats</i>				
1440	Float input register 13 (float)																																
1472	Float input register 14 (float)																																
1504	Float input register 15 (float)																																
1536	Float input register 16 (float)																																
1568	Float input register 17 (float)																																
1600	Float input register 18 (float)																																
1632	Float input register 19 (float)																																
1664	Float input register 20 (float)																																
1696	Float input register 21 (float)																																
1728	Float input register 22 (float)																																
1760	Float input register 23 (float)																																

AOM	Analog output mask
AOT	Analog output types
ES	Is emergency stopped
FT	Is fault
NO	Is normal mode
PB	Is power button pressed
PR	Is program running
PS	Is protective stopped
PW	Is power on
RC	Is recovery mode
RD	Is reduced mode
RES	Is robot emergency stopped
SES	Is system emergency stopped
SS	Is safeguard stopped
SSM	Speed slider fraction mask
ST	Is stopped due to safety
TAIT	Tool analog input types
TB	Is teach button pressed
TDI	Tool digital inputs
TDO	Tool digital outputs
TDOM	Tool digital output mask
VL	Is violation