

## Appendix A: EtherNet/IP Table

### Robot to Master Device (T2O)

#### TM\_1\_T2O\_RobotInfo (16 bytes)

Item Name	Starting Byte	Size	Data Type	Note
ControlBoxID	0	16 bytes	string	

#### TM\_2\_T2O\_SystemAndError (48 bytes)

Item Name	Starting Byte	Size	Data Type	Note
System_Temperature	16	4 bytes	float	Unit: Celsius
System_Voltage	20	4 bytes	float	Unit: Voltage
System_Current	24	4 bytes	float	Unit: Ampere
Control_Current	28	4 bytes	float	Unit: mA
End_Current	32	4 bytes	float	Unit: mA
Error_Code	36	4 bytes	byte[4]	
Error_Time_Year	40	4 bytes	uint	Format: [YYYY]
Error_Time_Month	44	1 byte	byte	Format: [MM]
Error_Time_Day	45	1 byte	byte	Format: [DD]
Error_Time_Hour	46	1 byte	byte	Format: [hh]
Error_Time_Minute	47	1 byte	byte	Format:[mm]
Error_Time_Second	48	1 byte	byte	Format:[ss]
T2O_SystemAndError_Reserved1	49	3 bytes	Reserved	
Current_Time_Year	52	4 bytes	uint	Format: [YYYY]
Current_Time_Month	56	1 byte	byte	Format: [MM]
Current_Time_Day	57	1 byte	byte	Format: [DD]
Current_Time_Hour	58	1 byte	byte	Format: [hh]
Current_Time_Minute	59	1 byte	byte	Format:[mm]
Current_Time_Second	60	1 byte	byte	Format:[ss]
RobotLink	61	1 byte	byte	Yes:1 No: 0
T2O_SystemAndError_Reserved2	62	2 bytes	Reserved	

#### TM\_3\_T2O\_RunSetting (32 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_AutoRun_ProjectName	64	20 bytes	string	
Project_Status	84	1 byte	byte	(bit0:isError,1:isPlay,2:isEdit,3:isPause,4:isPermission,5:SafetyIO(GuardA),6:E-Stop,7: RunSetting_Reserved)
RobotLight	85	1 byte	byte	0: Light off, when the emergency stop button is pressed.

				<p>1: Solid Red, fatal error.</p> <p>2: Flashing Red, Robot is initializing.</p> <p>3: Solid Blue, standby in Auto Mode.</p> <p>4: Flashing Blue, in Auto Mode.</p> <p>5: Solid Green, standby in Manual Mode.</p> <p>6: Flashing Green, in Manual Mode.</p> <p>9: Alternating Blue&amp;Red, Auto Mode error.</p> <p>10: Alternating Green&amp;Red, Manual Mode error.</p> <p>13. Alternating Purple&amp;Green, in Manual Mode (Safeguard Port B trigger).</p> <p>14. Alternating Purple&amp;Blue, in Auto Mode (Safeguard Port B trigger).</p> <p>17. Alternating White&amp;Green, in Manual Mode &amp; Reduced Space.</p> <p>18. Alternating White&amp;Blue, in Auto Mode &amp; Reduced Space.</p> <p>19. Flashing light blue, representing that it enters the Safe Startup Mode.</p>
StickSpeed	86	1 byte	byte	<p>Unit: %</p> <p>Project speed can only be written multiples of five (<math>5 \leq \text{Project Speed} \leq 100</math>)</p> <p>*Refer to safety manual for detail</p>
T2O_StickStatus	87	1 byte	byte	(bit0:PlayPause,1:Stop,2:Plus,3:Minus)
ManualAuto	88	1 byte	byte	A:1; M:2
T2O_CameraLight	89	1 byte	byte	Enable: 1 Disable: 0
T2O_RunSetting_Reserved	90	6 bytes	Reserved	

#### TM\_4\_T2O\_TCP

(68 bytes)

Item Name	Starting Byte	Size	Data Type	Note
Current_TCP_Value	96	24 bytes	float[6]	Unit: mm
Current_TCP_Mass	120	4 bytes	float	Unit: kg
Current_TCP_MOI	124	12 bytes	float[3]	Unit: mm-kg
Current_TCP_MCF	136	24 bytes	float[6]	Unit: mm
T2O_TCP_Reserved	160	4 bytes	Reserved	

#### TM\_5\_T2O\_Coordinate

(72 bytes)

Item Name	Starting Byte	Size	Data Type	Note
Current_Base_Value	164	24 bytes	float[6]	Unit: mm, deg
Coord_Joint	188	24 bytes	float[6]	Unit: degree

Coord_CurrBase_Tool	212	24 bytes	float[6]	Unit: mm, deg
---------------------	-----	----------	----------	---------------

**TM\_6\_T2O\_TCPForce** (40 bytes)

Item Name	Starting Byte	Size	Data Type	Note
TCP_Force	236	12 bytes	float[3]	Unit: N
TCP_Speed3D	248	4 bytes	float	Unit: mm/s
Joint_Torque	252	24 bytes	float[6]	Unit: mNm

**TM\_7\_T2O\_IO** (24 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_CtrlBox_DI	276	2 bytes	byte[2]	High: 1 Low: 0 ***
T2O_CtrlBox_DO	278	2 bytes	byte[2]	High: 1 Low: 0 ***
T2O_CtrlBox_AI	280	8 bytes	float[2]	Unit: Voltage
T2O_CtrlBox_AO	288	4 bytes	float	Unit: Voltage
T2O_EndModule_DI	292	1 byte	byte	High: 1 Low: 0 ***
T2O_EndModule_DO	293	1 byte	byte	High: 1 Low: 0 ***
T2O_IO_Reserved	294	2 bytes	Reserved	
T2O_EndModule_AI	296	4 bytes	float	Unit: Voltage

**TM\_8\_T2O\_RegisterBit** (8 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_Register_Bit	300	8 bytes	bool[64]**	

**TM\_9\_T2O\_RegisterInt** (60 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_Register_Int	308	60 bytes	int32[15]	

**TM\_10\_T2O\_RegisterFloat** (60 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_Register_Float	368	60 bytes	float[15]	

**TM\_11\_T2O\_SystemReserved** (64 bytes)

Item Name	Starting Byte	Size	Data Type	Note
T2O_SystemReserved	428	64 bytes	byte[64]	

## Master Device to Robot (O2T)

### TM\_1\_O2T\_RunSetting (88 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_StickStatus	0	1 byte	byte	(bit0:PlayPause, 1:Stop, 2:Plus, 3:Minus) *Refer to safety manual for detail.
O2T_CameraLightMask	1	1 byte	byte	Set: 1, Ignore: 0
O2T_CameraLight	2	1 byte	byte	Enable: 1 Disable: 0
O2T_AutoRun_ProjectName_Mask	3	1 byte	byte	Set: 1, Ignore: 0 *Auto Mode Only
O2T_AutoRun_ProjectName	4	20 bytes	string	*Auto Mode Only
O2T_RunSetting_Reserved	24	64 bytes	Reserved	

### TM\_2\_O2T\_IO (16 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_CtrlBox_DO_Mask	88	2 bytes	byte[2]	Set: 1, Ignore: 0 ***
O2T_CtrlBox_DO	90	2 bytes	byte[2]	High: 1 Low: 0 ***
O2T_EndModule_DO_Mask	92	1 byte	byte	Set: 1, Ignore: 0 ***
O2T_EndModule_DO	93	1 byte	byte	High: 1 Low: 0 ***
O2T_CtrlBox_AO_Mask	94	1 byte	byte	Set: 1, Ignore: 0
O2T_IO_Reserved1	95	1 byte	byte	
O2T_CtrlBox_AO	96	4 bytes	float	Unit: Voltage
O2T_IO_Reserved2	100	4 bytes	Reserved	

### TM\_3\_O2T\_RegisterBit (8 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_Register_Bit	104	8 bytes	bool[64]**	

### TM\_4\_O2T\_RegisterInt (60 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_Register_Int	112	60 bytes	int[15]	

### TM\_5\_O2T\_RegisterFloat (60 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_Register_Float	172	60 bytes	float[15]	

### TM\_6\_O2T\_SystemReserved (64 bytes)

Item Name	Starting Byte	Size	Data Type	Note
O2T_SystemReserved	232	64 bytes	byte[64]	

\*\* In TMflow, bool array data will be processed as byte array with the same array item number.  
Refer to Expression Editor manual for detail.

\*\*\* Independently set one channel with one bit.

### Appendix B: I/O Mapping Table

Description	PLC		Robot A		Robot B		Note
	Input	Output	Input	Output	Input	Output	
External Sensor	Local:1:I.Data.0 (Triggered = 1)			DO0		DO0	Without object=0 With object=1
Conveyor Start		Local:1:O.Data.6		DO4			Stop=0 Start=1
Conveyor Forward & Reverse		Local:1:O.Data.7		DO3			Forward=0 Reverse=1