프로텍 4P EFEM I/O Version History

No	Version	Color	Description	Date	Remark
0	프로텍_4Port_EFEM_IO_Map_R00		Preliminary	2024.09.30	JKSung
1	프로텍_4Port_EFEM_IO_Map_R01		Ionizer On Off 수정(OUTPUT)	2024.10.18	JKSung
2					
3					
4					
5					
6					
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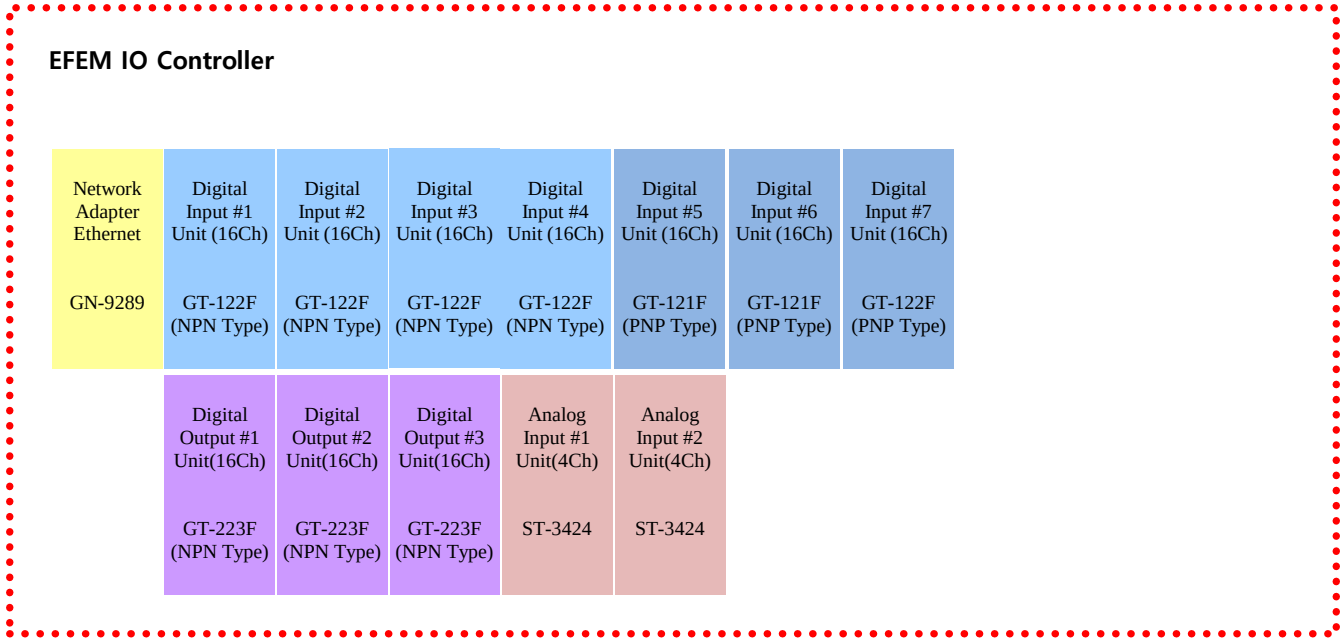
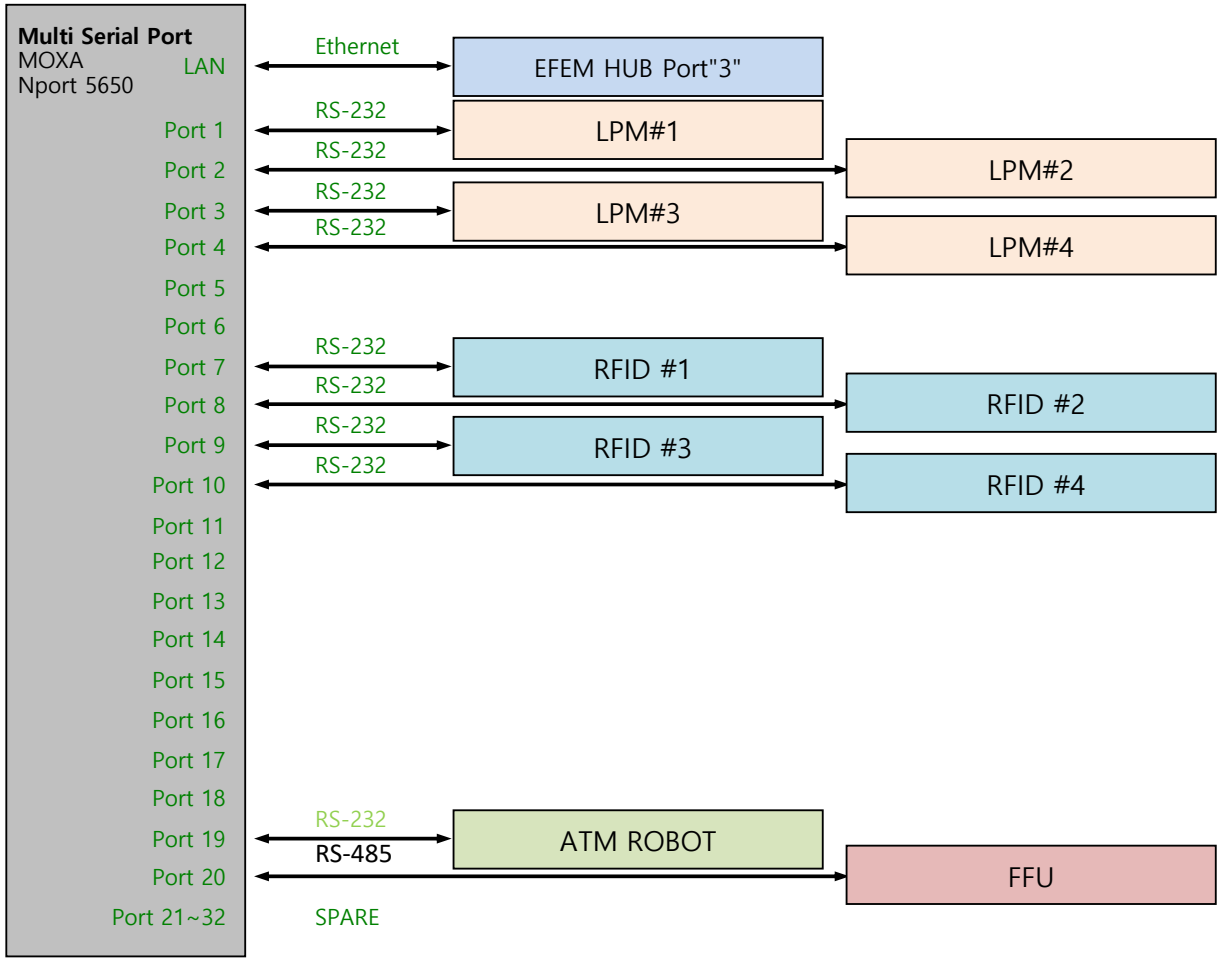
10					
11					
12					
13					

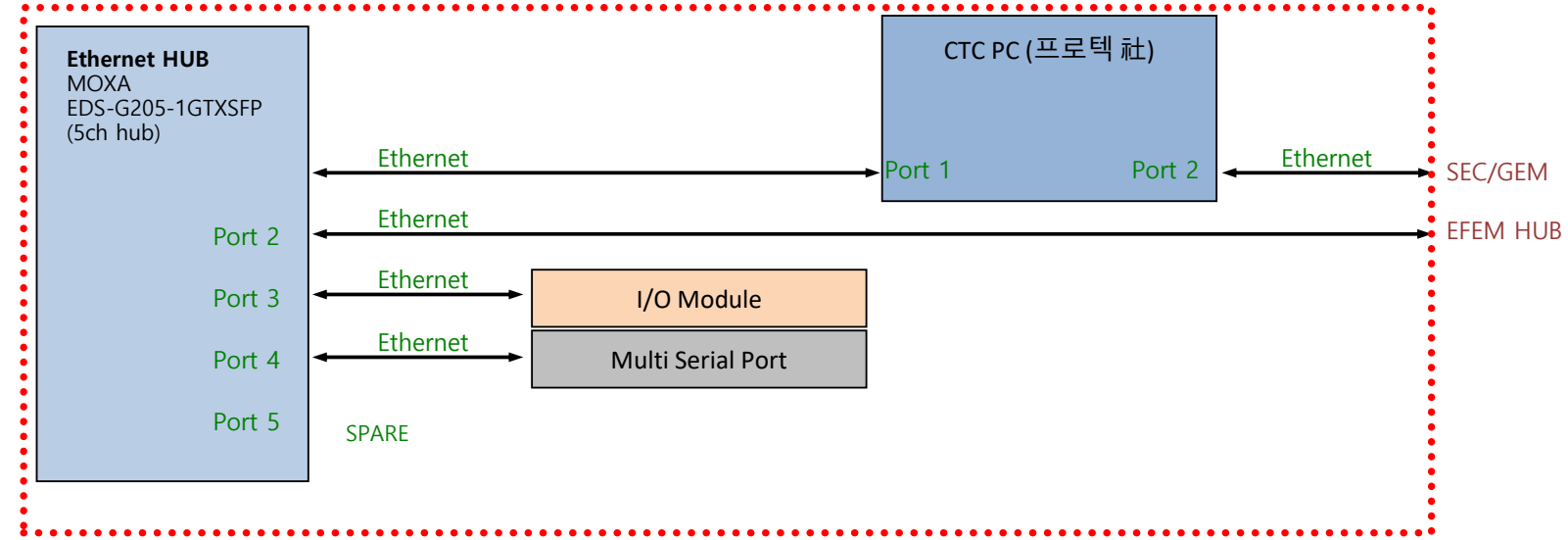
프로텍 4P EFEM IO Controller Configuration



프로텍 4P EFEM Communication Block Diagram



프로텍 4P EFEM Communication Block Diagram



프로텍 4P EFEM I/O Memory Map

1. Crevis Module

Number	Area		Allocated Bystes	Size	Module	Mod Bus IP	Remark
1	Digital Input	Digital Input	00~13	14 Bytes (112 Points)	GN-9289	192.168.100.100	
	Digital Output	Digital Output	00~05	6 Bytes (48 Points)			
	Analog Input	Analog Input	14~29	16 Bytes (4ch+4ch)			

프로텍 4P EFEM Digital Input

Area	Devicenet No.		Description	Status		I/O No.	Module	Remark
Digital Input	Input Byte 0	Bit 0	OHT1 PIO Valid	0:None	1:Valid	DI00.00	DIM#1 (GT-122F) NPN	
		Bit 1	OHT1 PIO CS_0	0:None	1:CS_0	DI00.01		
		Bit 2	OHT1 PIO CS_1	0:None	1:CS_1	DI00.02		
		Bit 3	OHT1 In4(N/U)	0:None	1:AM_AVBL	DI00.03		
		Bit 4	OHT1 PIO TR_Request	0:None	1:TR_REQ	DI00.04		
		Bit 5	OHT1 PIO Busy	0:None	1:Busy	DI00.05		
		Bit 6	OHT1 PIO Completed	0:None	1:COMPT	DI00.06		
		Bit 7	OHT1 PIO Continue	0:None	1:CONT	DI00.07		
	Input Byte1	Bit 0	OHT2 PIO Valid	0:None	1:Valid	DI01.00		
		Bit 1	OHT2 PIO CS_0	0:None	1:CS_0	DI01.01		
		Bit 2	OHT2 PIO CS_1	0:None	1:CS_1	DI01.02		
		Bit 3	OHT2 In4(N/U)	0:None	1:AM_AVBL	DI01.03		
		Bit 4	OHT2 PIO TR_Request	0:None	1:TR_REQ	DI01.04		
		Bit 5	OHT2 PIO Busy	0:None	1:Busy	DI01.05		
		Bit 6	OHT2 PIO Completed	0:None	1:COMPT	DI01.06		
		Bit 7	OHT2 PIO Continue	0:None	1:CONT	DI01.07		
	Input Byte 2	Bit 0	OHT3 PIO Valid	0:None	1:Valid	DI02.00	DIM#2 (GT-122F) NPN	
		Bit 1	OHT3 PIO CS_0	0:None	1:CS_0	DI02.01		
		Bit 2	OHT3 PIO CS_1	0:None	1:CS_1	DI02.02		
		Bit 3	OHT3 In4(N/U)	0:None	1:AM_AVBL	DI02.03		
		Bit 4	OHT3 PIO TR_Request	0:None	1:TR_REQ	DI02.04		
		Bit 5	OHT3 PIO Busy	0:None	1:Busy	DI02.05		
		Bit 6	OHT3 PIO Completed	0:None	1:COMPT	DI02.06		
		Bit 7	OHT3 PIO Continue	0:None	1:CONT	DI02.07		
	Input Byte 3	Bit 0	OHT4 PIO Valid	0:None	1:Valid	DI03.00		
		Bit 1	OHT4 PIO CS_0	0:None	1:CS_0	DI03.01		
		Bit 2	OHT4 PIO CS_1	0:None	1:CS_1	DI03.02		
		Bit 3	OHT4 In4(N/U)	0:None	1:AM_AVBL	DI03.03		
		Bit 4	OHT4 PIO TR_Request	0:None	1:TR_REQ	DI03.04		
		Bit 5	OHT4 PIO Busy	0:None	1:Busy	DI03.05		
		Bit 6	OHT4 PIO Completed	0:None	1:COMPT	DI03.06		
		Bit 7	OHT4 PIO Continue	0:None	1:CONT	DI03.07		
	Input Byte 4	Bit 0	LPM 1 Run	0:Ready	1:Busy	DI04.00	DIM#3 (GT-122F) NPN	
		Bit 1	LPM 1 Open	0:Closed	1:Opened	DI04.01		
		Bit 2	LPM 1 Placement Status	0:Off	1:On	DI04.02		
		Bit 3	LPM 1 Present Status	0:Off	1:On	DI04.03		
		Bit 4	LPM 2 Run	0:Ready	1:Busy	DI04.04		
		Bit 5	LPM 2 Open	0:Closed	1:Opened	DI04.05		
		Bit 6	LPM 2 Placement Status	0:Off	1:On	DI04.06		
		Bit 7	LPM 2 Present Status	0:Off	1:On	DI04.07		
	Input Byte 5	Bit 0	LPM 3 Run	0:Ready	1:Busy	DI05.00		
		Bit 1	LPM 3 Open	0:Closed	1:Opened	DI05.01		
		Bit 2	LPM 3 Placement Status	0:Off	1:On	DI05.02		
		Bit 3	LPM 3 Present Status	0:Off	1:On	DI05.03		
		Bit 4	LPM 4 Run	0:Ready	1:Busy	DI05.04		
		Bit 5	LPM 4 Open	0:Closed	1:Opened	DI05.05		
		Bit 6	LPM 4 Placement Status	0:Off	1:On	DI05.06		
		Bit 7	LPM 4 Present Status	0:Off	1:On	DI05.07		

프로텍 4P EFEM Digital Input

Area	Devicenet No.		Description	Status		I/O No.	Module	Remark
Digital Input	Input Byte 6	Bit 0	EFEM Power Box FAN Status	0:Alarm	1:Normal	DI06.00	DIM#4 (GT-122F) NPN	
		Bit 1	EFEM IO Box FAN Status	0:Alarm	1:Normal	DI06.01		
		Bit 2	FFU Alarm	0:Alarm	1:Normal	DI06.02		
		Bit 3	Ionizer#1(LPM1,2) Alarm Status	0:Alarm	1:Normal	DI06.03		
		Bit 4	Ionizer#2(LPM3,4) Alarm Status	0:Alarm	1:Normal	DI06.04		
		Bit 5	Ionizer#3(EQ) Alarm Status	0:Alarm	1:Normal	DI06.05		
		Bit 6	EFEM Main CDA Pressure Switch	0:Alarm	1:Normal	DI06.06		압력 설정값 이하면 "0:Alarm"
		Bit 7	EFEM Main Vaccum Pressure Switch	0:Alarm	1:Normal	DI06.07		압력 설정값 이하면 "0:Alarm"
	Input Byte 7	Bit 0	Robot CDA Pressure Switch	0:Alarm	1:Normal	DI07.00		압력 설정값 이하면 "0:Alarm"
		Bit 1	Ionizer CDA Pressure Switch	0:Alarm	1:Normal	DI07.01		압력 설정값 이하면 "0:Alarm"
		Bit 2	Ionizer#1(LPM1,2) Flow Meter	0:Alarm	1:Normal	DI07.02		압력 설정값 이하면 "0:Alarm"
		Bit 3	Ionizer#2(LPM3,4) Flow Meter	0:Alarm	1:Normal	DI07.03		압력 설정값 이하면 "0:Alarm"
		Bit 4	Ionizer#3(EQ) Flow Meter	0:Alarm	1:Normal	DI07.04		압력 설정값 이하면 "0:Alarm"
		Bit 5	Spare(Alaog Unit 검용)			DI07.05		
		Bit 6	Spare			DI07.06		
		Bit 7	Spare			DI07.07		
	Input Byte 8	Bit 0	Robot Retract-Station1(LPM#1-12")	0:Extended	1:Retracted	DI08.00	DIM#5 (GT-121F) PNP	
		Bit 1	Robot Retract-Station2(LPM#2-12")	0:Extended	1:Retracted	DI08.01		
		Bit 2	Robot Retract-Station3(LPM#3-8")	0:Extended	1:Retracted	DI08.02		
		Bit 3	Robot Retract-Station4(LPM#4-8")	0:Extended	1:Retracted	DI08.03		
		Bit 4	Robot Retract-Station5(EQ1-8" Place)	0:Extended	1:Retracted	DI08.04		EFEM->PM(EQ1) Handshake, Output DO05.00 추가 접점
		Bit 5	Robot Retract-Station6(EQ1-8" Pick)	0:Extended	1:Retracted	DI08.05		EFEM->PM(EQ1) Handshake, Output DO05.01 추가 접점
		Bit 6	Robot Retract-Station7(EQ1-12" Place)	0:Extended	1:Retracted	DI08.06		EFEM->PM(EQ1) Handshake, Output DO05.02 추가 접점
		Bit 7	Robot Retract-Station8(EQ1-12" Pick)	0:Extended	1:Retracted	DI08.07		EFEM->PM(EQ1) Handshake, Output DO05.03 추가 접점
	Input Byte 9	Bit 0	Robot Retract-Station9(EQ2-12" Place)	0:Extended	1:Retracted	DI09.00		EFEM->PM(EQ2) Handshake, Output DO05.04 추가 접점
		Bit 1	Robot Retract-Station10(EQ2-12" Pick)	0:Extended	1:Retracted	DI09.01		EFEM->PM(EQ2) Handshake, Output DO05.05 추가 접점
		Bit 2	Robot Lower Arm Retract	0:Unkown	1:Retracted	DI09.02		
		Bit 3	Robot Upper Arm Retract	0:Unkown	1:Retracted	DI09.03		
		Bit 4	Robot Mode	0:Manual	1:Remote	DI09.04		
		Bit 5	Robot Initialize Complete	0:Unkown	1:Initialized	DI09.05		
		Bit 6	Robot Busy Status	0:Busy	1:Ready	DI09.06		
		Bit 7	Robot Alarm Status	0:Alarm	1:Normal	DI09.07		
	Input Byte 10	Bit 0	Robot Wafer On Arm Lower	0:Unkown	1:Presence	DI10.00	DIM#6 (GT-121F) PNP	
		Bit 1	Robot Wafer On Arm Upper	0:Unkown	1:Presence	DI10.01		
		Bit 2	Robot Controller Fan Alarm	0:Alarm	1:Normal	DI10.02		
		Bit 3	Robot Servo On/OFF Status	0:Off	1:On	DI10.03		
		Bit 4	EFEM EMS Status	0:EMS	1:Normal	DI10.04		
		Bit 5	Protection Bar	0:Alarm	1:Normal	DI10.05		
		Bit 6	EFEM Door Close	0:Opend	1:Closed	DI10.06		Opend 시 자동운전 금지.
		Bit 7	Auto/Manual Mode	0:Manual	1:Auto	DI10.07		Manual Mode 시 자동운전 금지.
	Input Byte 11	Bit 0	Fire Detector	0:Alarm	1:Normal	DI11.00		
		Bit 1	Spare			DI11.01		
		Bit 2	Spare			DI11.02		
		Bit 3	Spare			DI11.03		
		Bit 4	Spare			DI11.04		
		Bit 5	Spare			DI11.05		
		Bit 6	Spare			DI11.06		
		Bit 7	Spare			DI11.07		

프로텍 4P EFEM Digital Input

Area	Devicenet No.		Description	Status		I/O No.	Module	Remark
Digital Input	Input Byte 12	Bit 0	EQ1-8" Place Ready	0:Unkown	1:Ready	DI12.00	DIM#7 (GT-121F) PNP	"1:Ready"일때 EQ1-8" Place으로 Extend 가능.
		Bit 1	EQ1-8" Pick Ready	0:Unkown	1:Ready	DI12.01		"1:Ready"일때 EQ1-8" Pick으로 Extend 가능.
		Bit 2	EQ1-12" Place Ready	0:Unkown	1:Ready	DI12.02		"1:Ready"일때 EQ1-12" Place으로 Extend 가능.
		Bit 3	EQ1-12" Pick Ready	0:Unkown	1:Ready	DI12.03		"1:Ready"일때 EQ1-12" Pick으로 Extend 가능.
		Bit 4	EQ2-12" Place Ready	0:Unkown	1:Ready	DI12.04		"1:Ready"일때 EQ2-12" Place으로 Extend 가능.
		Bit 5	EQ2-12" Pick Ready	0:Unkown	1:Ready	DI12.05		"1:Ready"일때 EQ2-12" Pick으로 Extend 가능.
		Bit 6	EQ1-8" Place HandShake	0:Unkown	1:Ready	DI12.06		
		Bit 7	EQ1-8" Pick HandShake	0:Unkown	1:Ready	DI12.07		
	Input Byte 13	Bit 0	EQ1-12" Place HandShake	0:Unkown	1:Ready	DI13.00		
		Bit 1	EQ1-12" Pick HandShake	0:Unkown	1:Ready	DI13.01		
		Bit 2	EQ2-12" Place HandShake	0:Unkown	1:Ready	DI13.02		
		Bit 3	EQ2-12" Pick HandShake	0:Unkown	1:Ready	DI13.03		
		Bit 4	Spare			DI13.04		
		Bit 5	Spare			DI13.05		
		Bit 6	Spare			DI13.06		
		Bit 7	Spare			DI13.07		

프로텍 4P EFEM Analog Input

Area	Modbus No.		Description	Status		Data(Hex)	Module	Remark
Analog Input Module #1	Input Byte 14~15	Ch1	EFEM Main CDA Pressure Switch	0.6~5V	−0.1 ~ 1.000MPa	H 0000~ H 0FFF	AIM#1 (GT-3424)	
	Input Byte 16~17	Ch2	EFEM Main Vacuum Pressure Switch	1~5V	0.0 ~ −101.0kPa	H 0000~ H 0FFF		
	Input Byte 18~19	Ch3	Robot CDA Pressure Switch	0.6~5V	−0.1 ~ 1.000MPa	H 0000~ H 0FFF		
	Input Byte 20~21	Ch4	Ionizer Pressure Switch	0.6~5V	−0.1 ~ 1.000MPa	H 0000~ H 0FFF		
Analog Input Module #2	Input Byte 22~23	Ch1	Ionizer#1(LPM1,2,3) Flow Meter	1~5V	2~200L/min	H 0000~ H 0FFF	AIM#2 (GT-3424)	
	Input Byte 24~25	Ch2	Ionizer#2(LPM4,5,6) Flow Meter	1~5V	2~200L/min	H 0000~ H 0FFF		
	Input Byte 26~27	Ch3	Ionizer#3(EQ1,2)Flow Meter	1~5V	2~200L/min	H 0000~ H 0FFF		
	Input Byte 28~29	Ch4				H 0000~ H 0FFF		

프로텍 4P EFEM Output

Area	Devicenet No.		Description	Status		I/O No.	Module	Remark
Digital Output	Output Byte 0	Bit 0	OHT1 PIO L_Req	0:False	1:True	DO00.00	DOM#1 (ST-221F) NPN	
		Bit 1	OHT1 PIO U_Req	0:False	1:True	DO00.01		
		Bit 2	OHT1 Out3(N/U)	0:False	1:True	DO00.02		
		Bit 3	OHT1 PIO Ready	0:False	1:True	DO00.03		
		Bit 4	OHT1 Out5(N/U)	0:False	1:True	DO00.04		
		Bit 5	OHT1 Out6(N/U)	0:False	1:True	DO00.05		
		Bit 6	OHT1 PIO HO_Avbl	0:False	1:True	DO00.06		
		Bit 7	OHT1 PIO ES	0:False	1:True	DO00.07		
	Output Byte 1	Bit 0	OHT2 PIO L_Req	0:False	1:True	DO01.00		
		Bit 1	OHT2 PIO U_Req	0:False	1:True	DO01.01		
		Bit 2	OHT2 Out3(N/U)	0:False	1:True	DO01.02		
		Bit 3	OHT2 PIO Ready	0:False	1:True	DO01.03		
		Bit 4	OHT2 Out5(N/U)	0:False	1:True	DO01.04		
		Bit 5	OHT2 Out6(N/U)	0:False	1:True	DO01.05		
		Bit 6	OHT2 PIO HO_Avbl	0:False	1:True	DO01.06		
		Bit 7	OHT2 PIO ES	0:False	1:True	DO01.07		
	Output Byte 2	Bit 0	OHT3 PIO L_Req	0:False	1:True	DO02.00	DOM#2 (ST-221F) NPN	
		Bit 1	OHT3 PIO U_Req	0:False	1:True	DO02.01		
		Bit 2	OHT3 Out3(N/U)	0:False	1:True	DO02.02		
		Bit 3	OHT3 PIO Ready	0:False	1:True	DO02.03		
		Bit 4	OHT3 Out5(N/U)	0:False	1:True	DO02.04		
		Bit 5	OHT3 Out6(N/U)	0:False	1:True	DO02.05		
		Bit 6	OHT3 PIO HO_Avbl	0:False	1:True	DO02.06		
		Bit 7	OHT3 PIO ES	0:False	1:True	DO02.07		
	Output Byte 3	Bit 0	OHT4 PIO L_Req	0:False	1:True	DO03.00		
		Bit 1	OHT4 PIO U_Req	0:False	1:True	DO03.01		
		Bit 2	OHT4 Out3(N/U)	0:False	1:True	DO03.02		
		Bit 3	OHT4 PIO Ready	0:False	1:True	DO03.03		
		Bit 4	OHT4 Out5(N/U)	0:False	1:True	DO03.04		
		Bit 5	OHT4 Out6(N/U)	0:False	1:True	DO03.05		
		Bit 6	OHT4 PIO HO_Avbl	0:False	1:True	DO03.06		
		Bit 7	OHT4 PIO ES	0:False	1:True	DO03.07		
	Output Byte 4	Bit 0	Ionizer#1(LPM1,2) On/Off	0:On	1:Off	DO04.00	DOM#3 (ST-221F) NPN	
		Bit 1	Ionizer#2(LPM3,4) On/Off	0:On	1:Off	DO04.01		
		Bit 2	Ionizer#3(EQ) On/Off	0:On	1:Off	DO04.02		
		Bit 3	Signal Tower(Red)	0:Off	1:On	DO04.03		
		Bit 4	Signal Tower(Yellow)	0:Off	1:On	DO04.04		
		Bit 5	Signal Tower(Green)	0:On	1:Off	DO04.05		
		Bit 6	Signal Tower(Buzzer)	0:On	1:Off	DO04.06		
		Bit 7	EFEM Door Open/Close	0:Close	1:Open	DO04.07		1:On'시 양쪽 Door Open
	Output Byte 5	Bit 0	ATM Robot Handshake(EQ1-8" Place)	0:Extended	1:Retracted	DO05.00		
		Bit 1	ATM Robot Handshake(EQ1-8" Pick)	0:Extended	1:Retracted	DO05.01		
		Bit 2	ATM Robot Handshake(EQ1-12" Place)	0:Extended	1:Retracted	DO05.02		
		Bit 3	ATM Robot Handshake(EQ1-12" Pick)	0:Extended	1:Retracted	DO05.03		
		Bit 4	ATM Robot Handshake(EQ2-12" Place)	0:Extended	1:Retracted	DO05.04		
		Bit 5	ATM Robot Handshake(EQ2-12" Pick)	0:Extended	1:Retracted	DO05.05		
		Bit 6	Ionizer CDA Valve	0:Off	1:On	DO05.06		Off시 CDA 차단
		Bit 7	Spare			DO05.07		

프로텍 4P EFEM Safety Interlock

1. ATM Robot Extend

Interlock I/O		Related I/O		Status(1: Apply)		Cause	Interlock	Remark
Description	I/O Bit	Description	I/O Bit					
ATM Robot Extend Enable -LPM1 12"		LPM 1 Open	DI04.01	0:Closed	1:Opened	LPM1이 Open되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -LPM2 12"		LPM 2 Open	DI04.05	0:Closed	1:Opened	LPM2이 Open되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -LPM3 8"		LPM 3 Open	DI05.01	0:Closed	1:Opened	LPM3이 Open되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -LPM4 8"		LPM 4 Open	DI05.05	0:Closed	1:Opened	LPM4이 Open되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ1 8" Place		EQ1-8" Place Ready	DI12.00	0:Unkown	1:Ready	EQ1-8" Place가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ1 8" Pick		EQ1-8" Pick Ready	DI12.01	0:Unkown	1:Ready	EQ1-8" Pick가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ1 12" Place		EQ1-12" Place Ready	DI12.02	0:Unkown	1:Ready	EQ1-12" Place가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ1 12" Pick		EQ1-12" Pick Ready	DI12.03	0:Unkown	1:Ready	EQ1-12" Pick가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ2 12" Place		EQ2-12" Place Ready	DI12.04	0:Unkown	1:Ready	EQ2-12" Place가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	
ATM Robot Extend Enable -EQ2 12" Pick		EQ2-12" Pick Ready	DI12.05	0:Unkown	1:Ready	EQ2-12" Pick가 Ready 되지 않은 상태에서 ATM Robot이 Extend하려고 할 경우	ATM Robot이 Extend되지 않고 Alarm 발생.	

프로텍 4P EFEM Safety Interlock

2. ATM Robot Interlock

Interlock I/O		Related I/O		Status(1: Apply)		Cause	Interlock	Remark
Description	I/O Bit	Description	I/O Bit					
ATM Robot Interlock	DI17.04	EFEM Door Close		0:Opened	1:Closed	EFEM Door가 Unlock 또는 Open 될 경우	ATM Robot Servo Off	

3. LPM Interlock

Interlock I/O		Related I/O		Status(1: Apply)		Cause	Interlock	Remark
Description	I/O Bit	Description	I/O Bit					
LPM#1 Load & Unload	DI08.00	ATM Robot Retract-Station1(LPM#1)		0:Extended	1:Retracted	ATM Robot이 LPM#1으로 Retract 아닌 경우	Load 및 Unload가 되지 않음	
	DI10.06	EFEM Door Close		0:Extended	1:Retracted	EFEM Door가 Unlock 또는 Open 될 경우		
LPM#2 Load & Unload	DI08.01	ATM Robot Retract-Station1(LPM#2)		0:Extended	1:Retracted	ATM Robot이 LPM#2으로 Retract 아닌 경우	Load 및 Unload가 되지 않음	
	DI10.06	EFEM Door Close		0:Extended	1:Retracted	EFEM Door가 Unlock 또는 Open 될 경우		
LPM#3 Load & Unload	DI08.02	ATM Robot Retract-Station1(LPM#3)		0:Extended	1:Retracted	ATM Robot이 LPM#3으로 Retract 아닌 경우	Load 및 Unload가 되지 않음	
	DI10.06	EFEM Door Close		0:Extended	1:Retracted	EFEM Door가 Unlock 또는 Open 될 경우		
LPM#4 Load & Unload	DI08.03	ATM Robot Retract-Station1(LPM#4)		0:Extended	1:Retracted	ATM Robot이 LPM#4으로 Retract 아닌 경우	Load 및 Unload가 되지 않음	
	DI10.06	EFEM Door Close		0:Extended	1:Retracted	EFEM Door가 Unlock 또는 Open 될 경우		

4. Protection Bar

Interlock I/O		Related I/O		Status(1: Apply)		Cause	Interlock	Remark
Description	I/O Bit	Description	I/O Bit					
Protection Bar Interlock	DI10.05	Protection Bar		0:Alarm	1:Normal	Protection Bar가 올라가서 Alarm인 상태	OHT1, OHT2, OHT3, OHT4 PIO ES Signal Off	

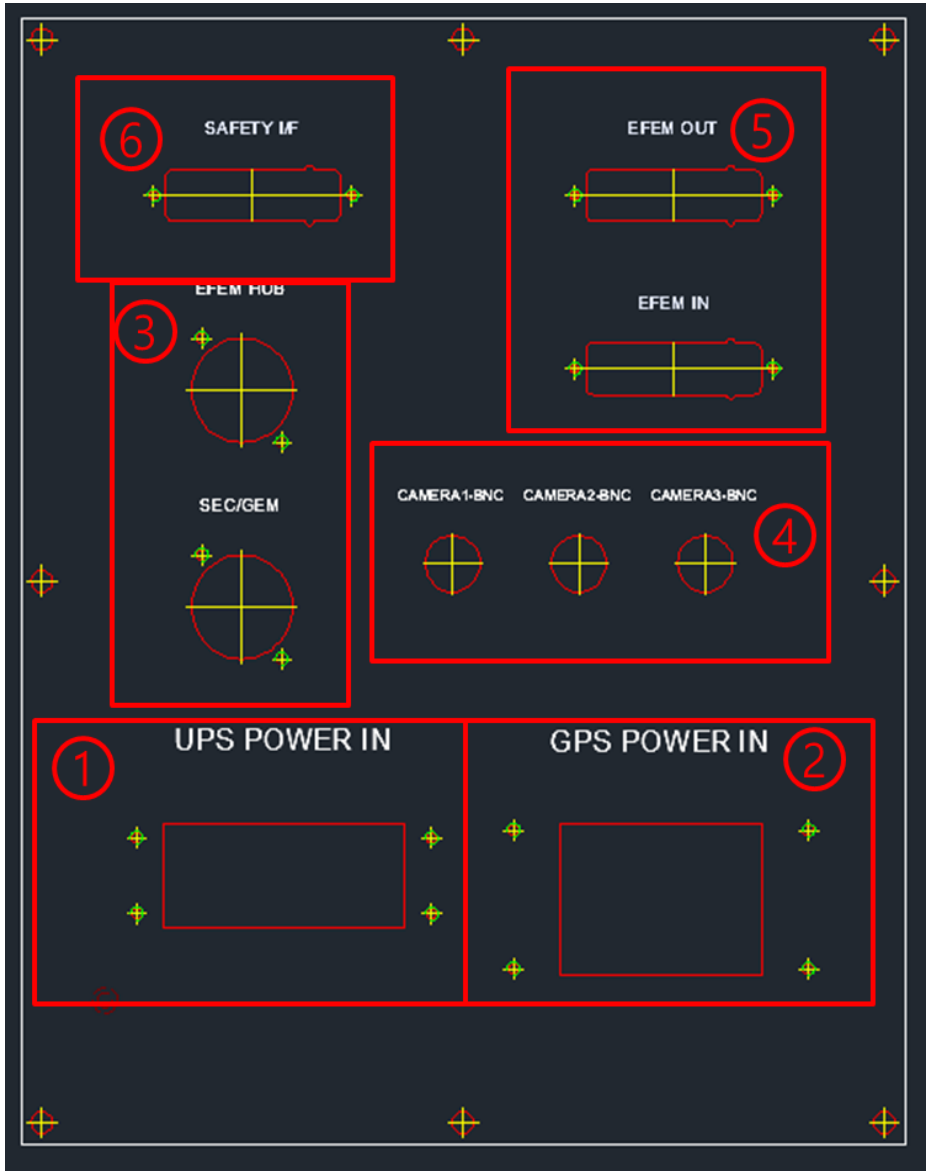
프로텍 4P EFEM Communicaton

1. Serial Multi Port

Module	Port	Serial	Description	Baud Rate	Maker	COM Port	Remark
Multi Serial Port NPORT 6650-32 Moxa	Port1	RS-232	LPM_#1	9600, None, 8, 2		COM11	
	Port2	RS-232	LPM_#2	9600, None, 8, 2		COM12	
	Port3	RS-232	LPM_#3	9600, None, 8, 2		COM13	
	Port4	RS-232	LPM_#4	9600, None, 8, 2		COM14	
	Port5	RS-232	Spare			COM15	
	Port6	RS-232	Spare			COM16	
	Port7	RS-232	RFID #1	19200, Even, 8, 1		COM17	
	Port8	RS-232	RFID #2	19200, Even, 8, 1		COM18	
	Port9	RS-232	RFID #3	19200, Even, 8, 1		COM19	
	Port10	RS-232	RFID #4	19200, Even, 8, 1		COM20	
	Port11	RS-232	Spare			COM21	
	Port12	RS-232	Spare			COM22	
	Port13	RS-232	Spare			COM23	
	Port14	RS-232	Spare			COM24	
	Port15	RS-232	Spare			COM25	
	Port16	RS-232	Spare			COM26	
	Port17	RS-232	Spare			COM27	
	Port18	RS-232	Spare			COM28	
	Port19	RS-232	ATM Robot	9600, None, 8, 1		COM29	
	Port20	RS-485	FFU	9600, None, 8, 1		COM30	
	Port21~32	RS-232/RS-485	Spare				

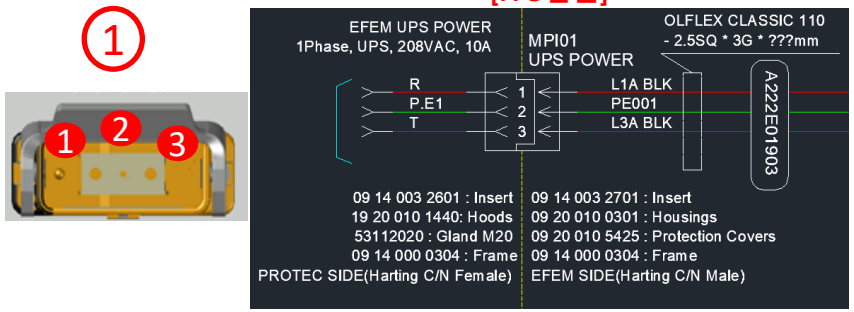
2. Ethernet (HUB)

Description	Port	IP Address	Subnet	Gateway	Remark
CTC (프로텍 社)	LAN1	192.168.100.150	확인 필요	N/A	
I/O Module (Crevis GN-9289)	LAN2	192.168.100.100	확인 필요	N/A	
Multi Serial Port	LAN3	192.168.100.110	확인 필요	N/A	
N/A					
N/A					
N/A					


6
SAFETY I/F
EFEM OUT
5
EFEM HUB
3
EFEM IN
SEC/GEM
CAMERA1-BNC
CAMERA2-BNC
CAMERA3-BNC
4
1
UPS POWER IN
GPS POWER IN
2

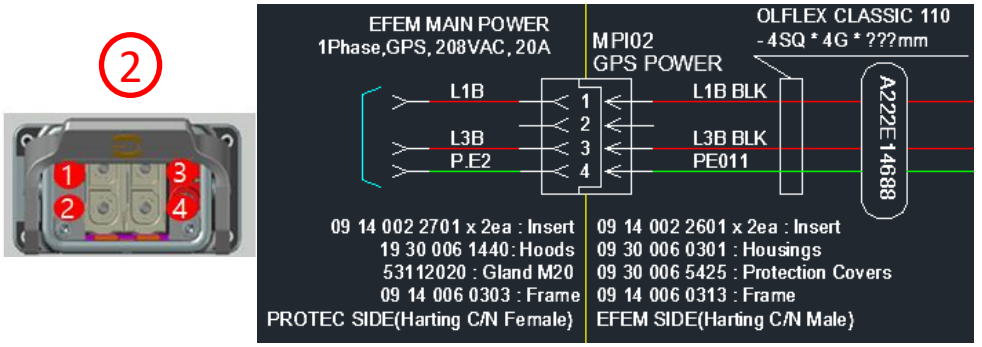
[UPS Power]

[FFU전원]



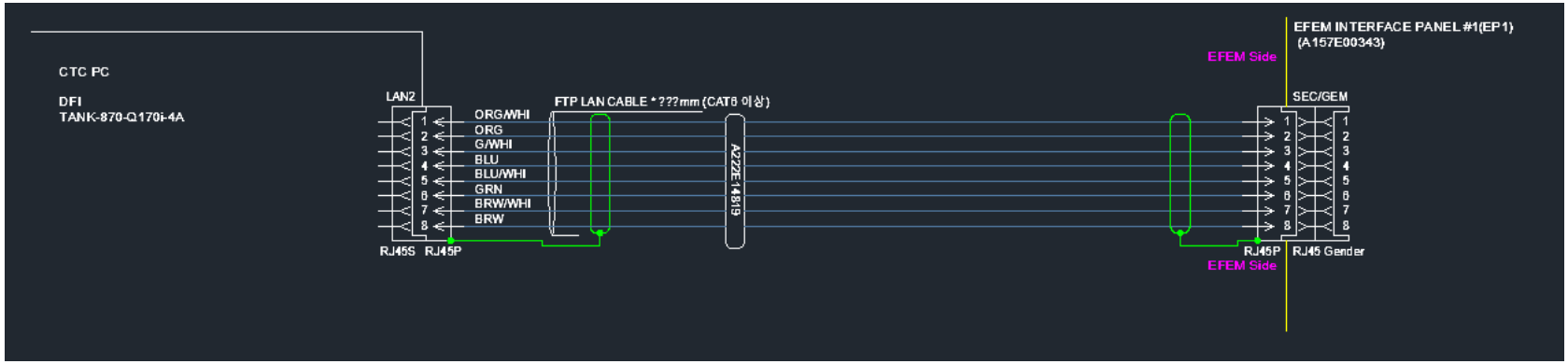
- Cable Side Connector는 싸이맥스에서 제공.
- 설비 반입시 동봉.
- 전원 사양 : 1Phase AC 220V 10A (10A ELCB 적용)

[GPS Power]

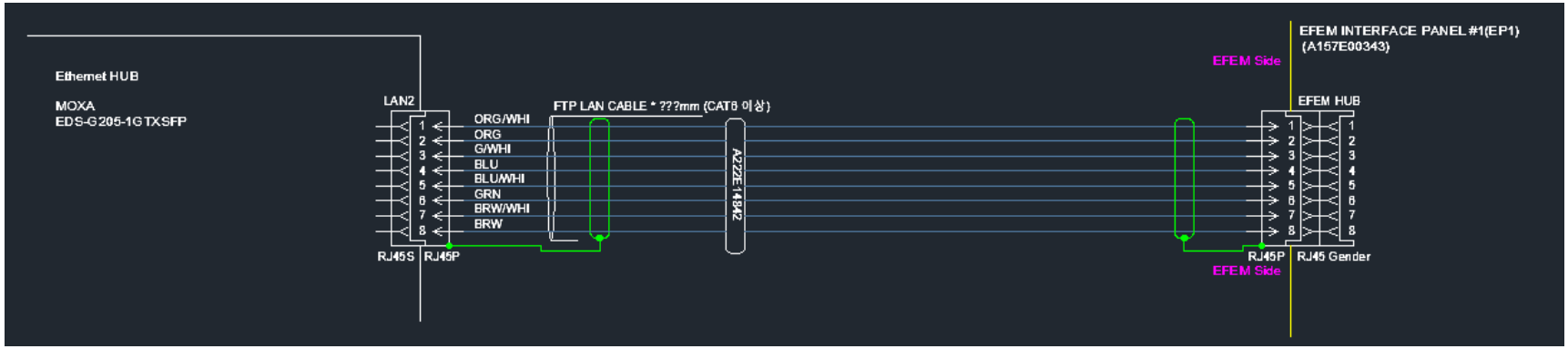


- Cable Side Connector는 싸이맥스에서 제공.
- 설비 반입시 동봉.
- 전원 사양 : 1Phase AC208V 30A (20A ELCB 적용)

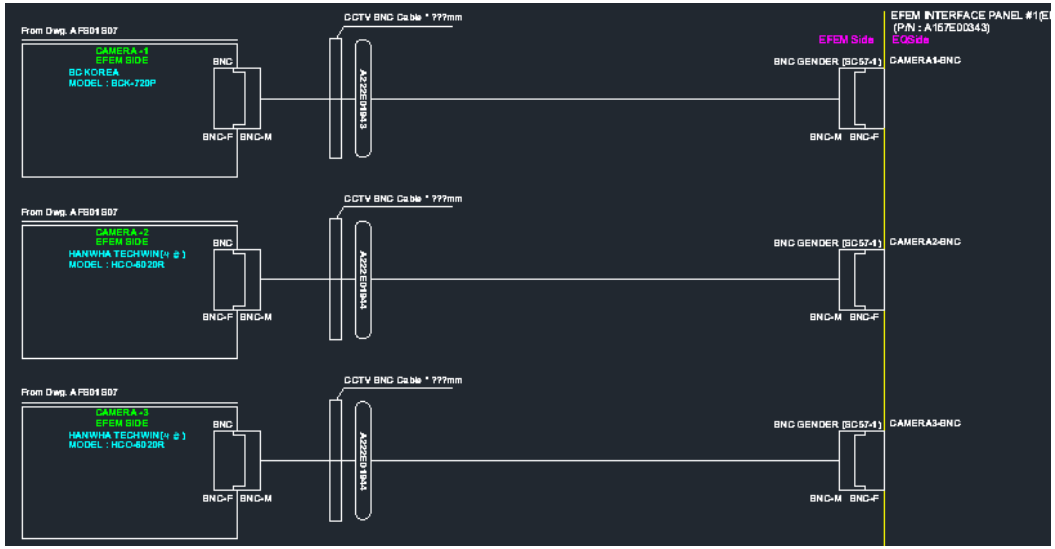
③ [SEC/GEM]



[EFEM HUB]



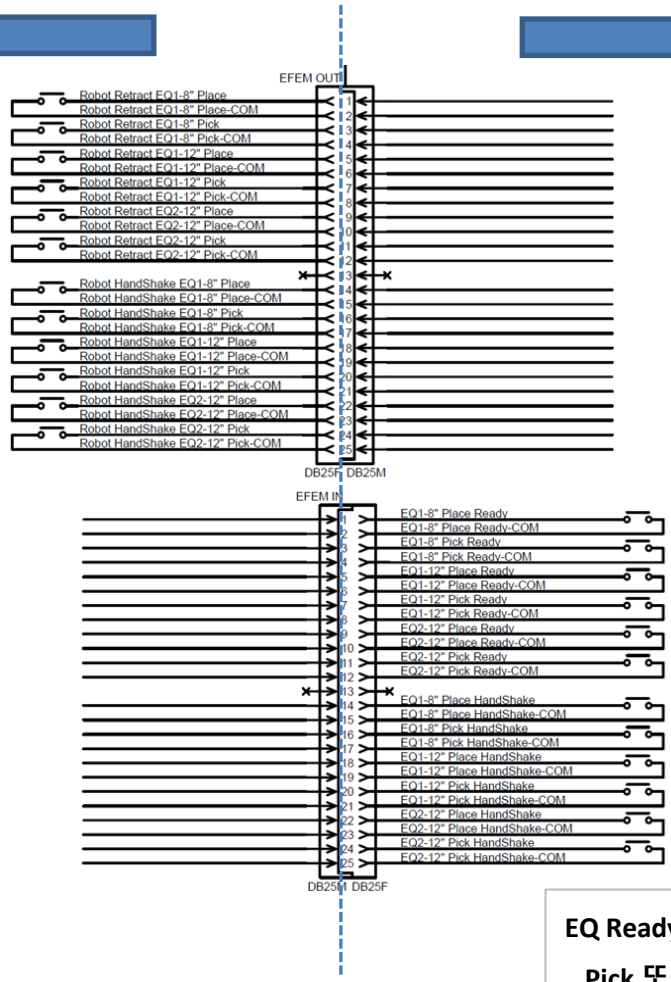
④ [CAMERA BNC]
[*규격품 사용]



ATM Robot Retract = Robot Arm이 해당
Stage 로 Extend 하지 않은 상태.

Interface Panel

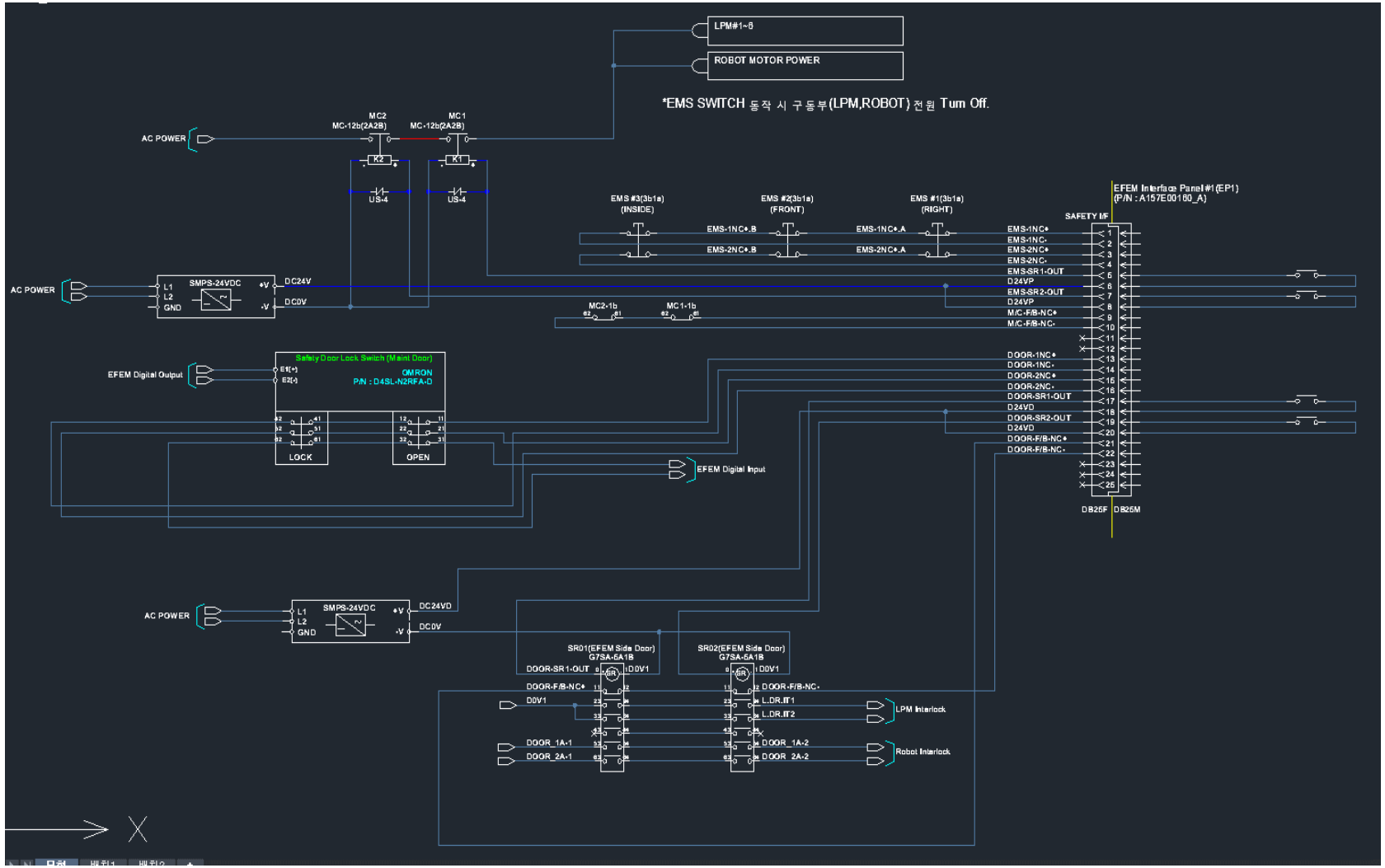
⑤ **EFEM SIDE** ← → **EQ SIDE**



Connector EFEM측 사양
EFEM OUT: D-sub 25P Female
EFEM IN: D-sub 25P Male

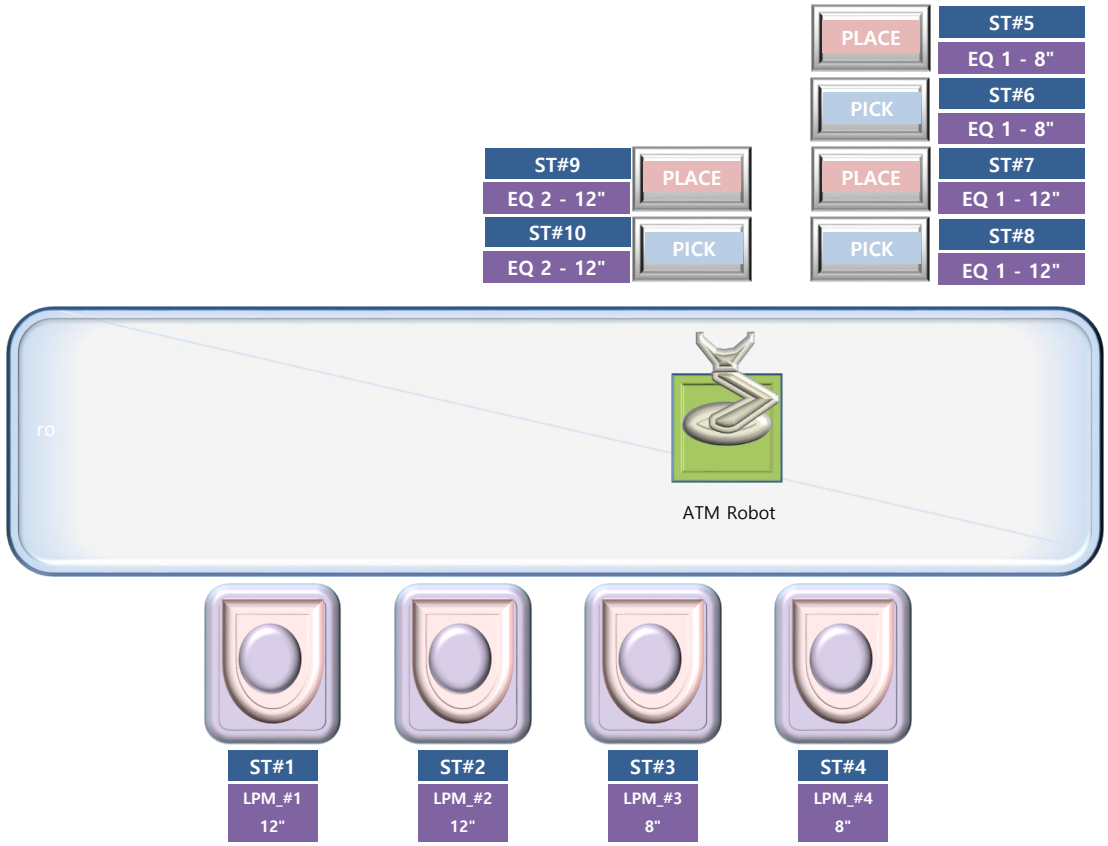
EQ Ready = Robot 이 해당 EQ Stage로
Pick 또는 Place 가능한 상태.

⑥ [SAFETY I/F]



EMS Reset & Door Reset은 프로텍 Safety PLC 에서 제어

프로텍 4P EFEM Robot Station



Station Definition

Station	EFEM
ST#1	LPM#1-12"
ST#2	LPM#2-12"
ST#3	LPM#3-8"
ST#4	LPM#4-8"
ST#5	EQ1-8" Place
ST#6	EQ1-8" Pick
ST#7	EQ1-12" Place
ST#8	EQ1-12" Pick
ST#9	EQ2-12" Place
ST#10	EQ2-12" Pick