



CREADIS Inc.

3505 Lake Lynda Drive, Suite 200
US-32817 Florida
USA



GE APPLIANCES
a Haier company



GE Appliances, a Haier company

Appliance Park – AP2 2E
KY 40225 Louisville
USA

Company / customer

Project number

Project description

GE Appliances, a Haier company

62173

Control System Programming for Gas Water Heater Validation

Project name

GE Appliances Water Heater Validation

Responsible for project

Marcin Baniak

Last EPLAN version used

2.9.4

Manufacturing date

2021

Type

Electrical/Pneumatic

Place of installation

USA

Power supply

Input lead

Control voltage

Created on

13/04/2021

Edit date

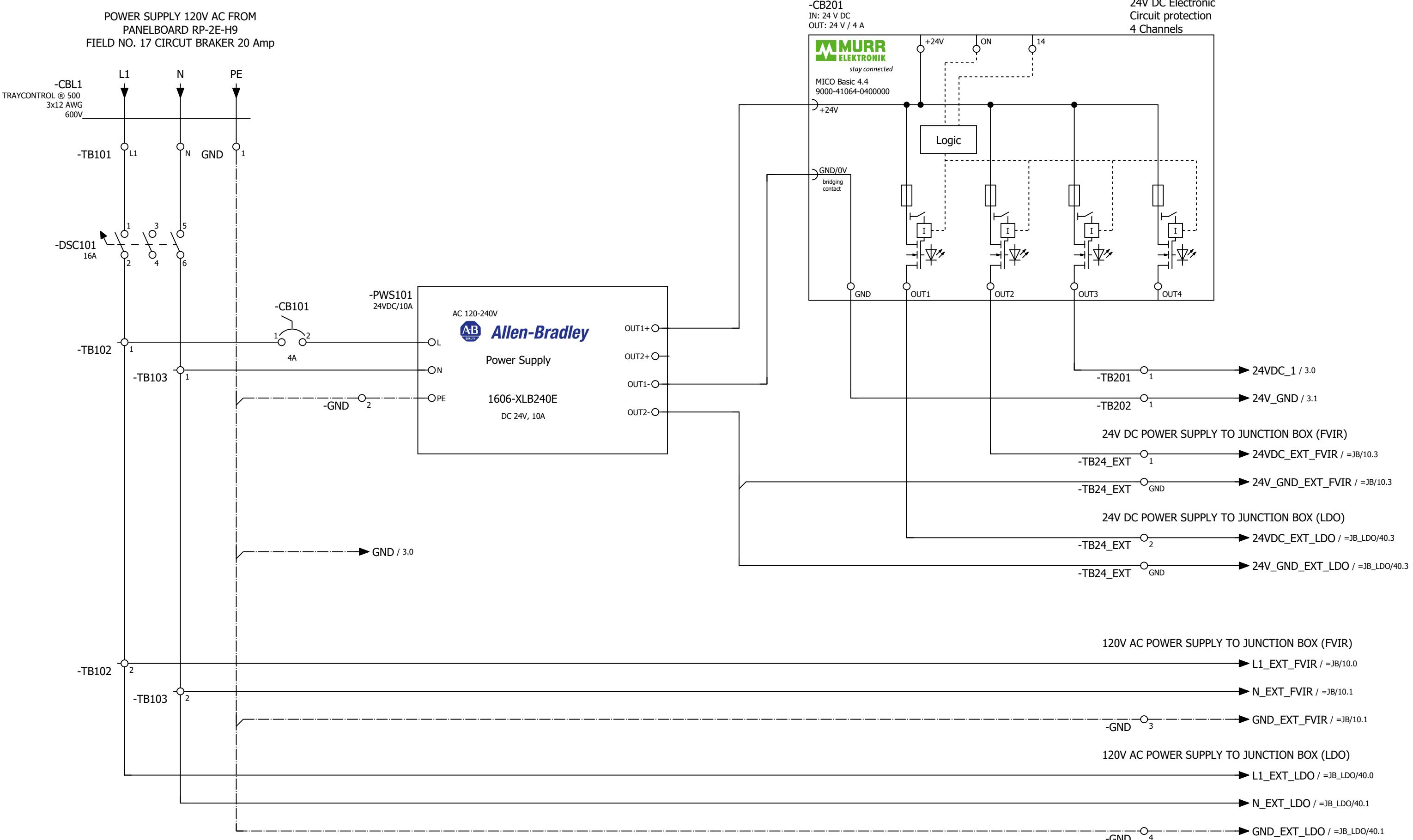
21/02/2022

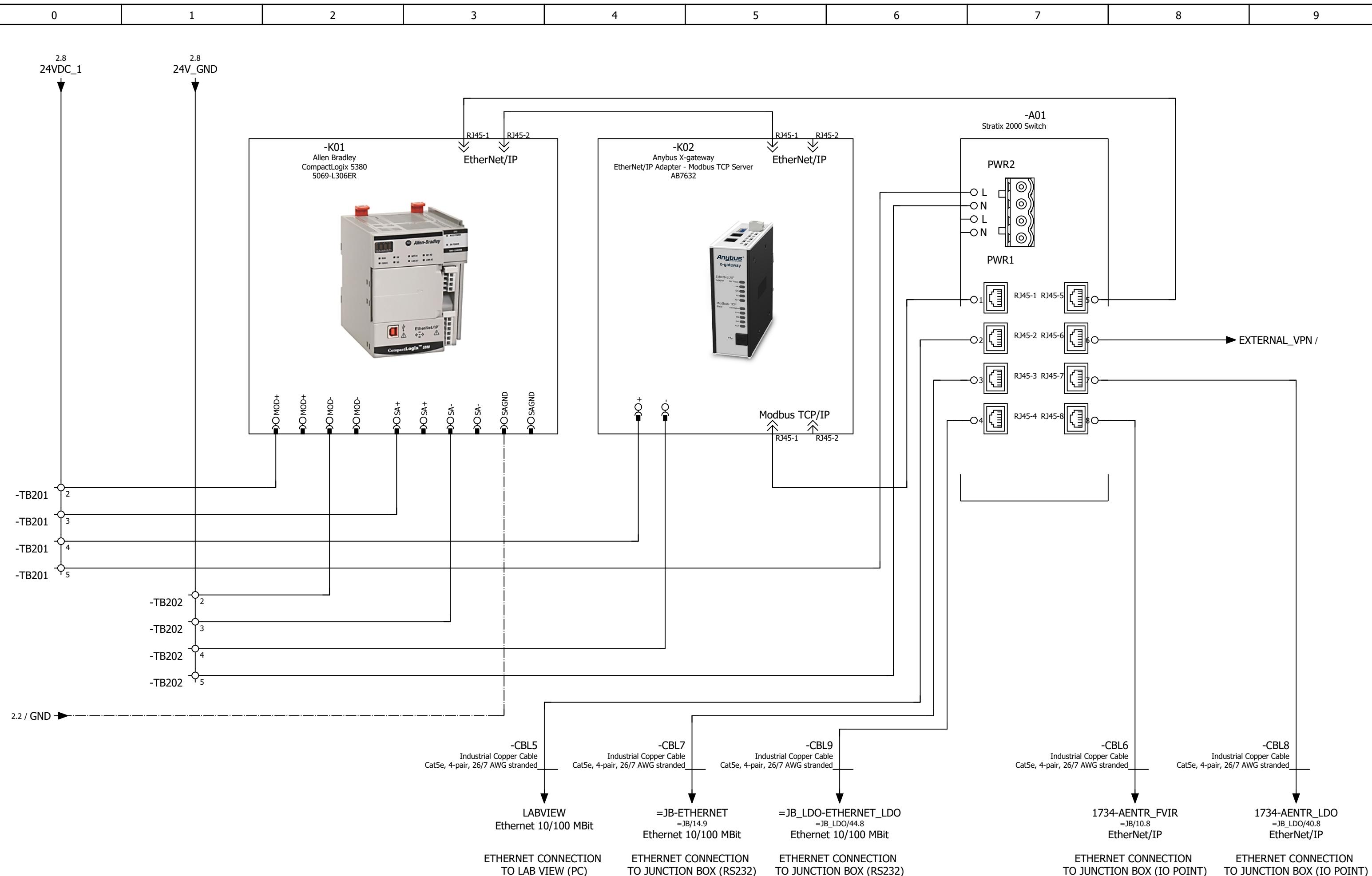
by marcin.baniak

Number of pages

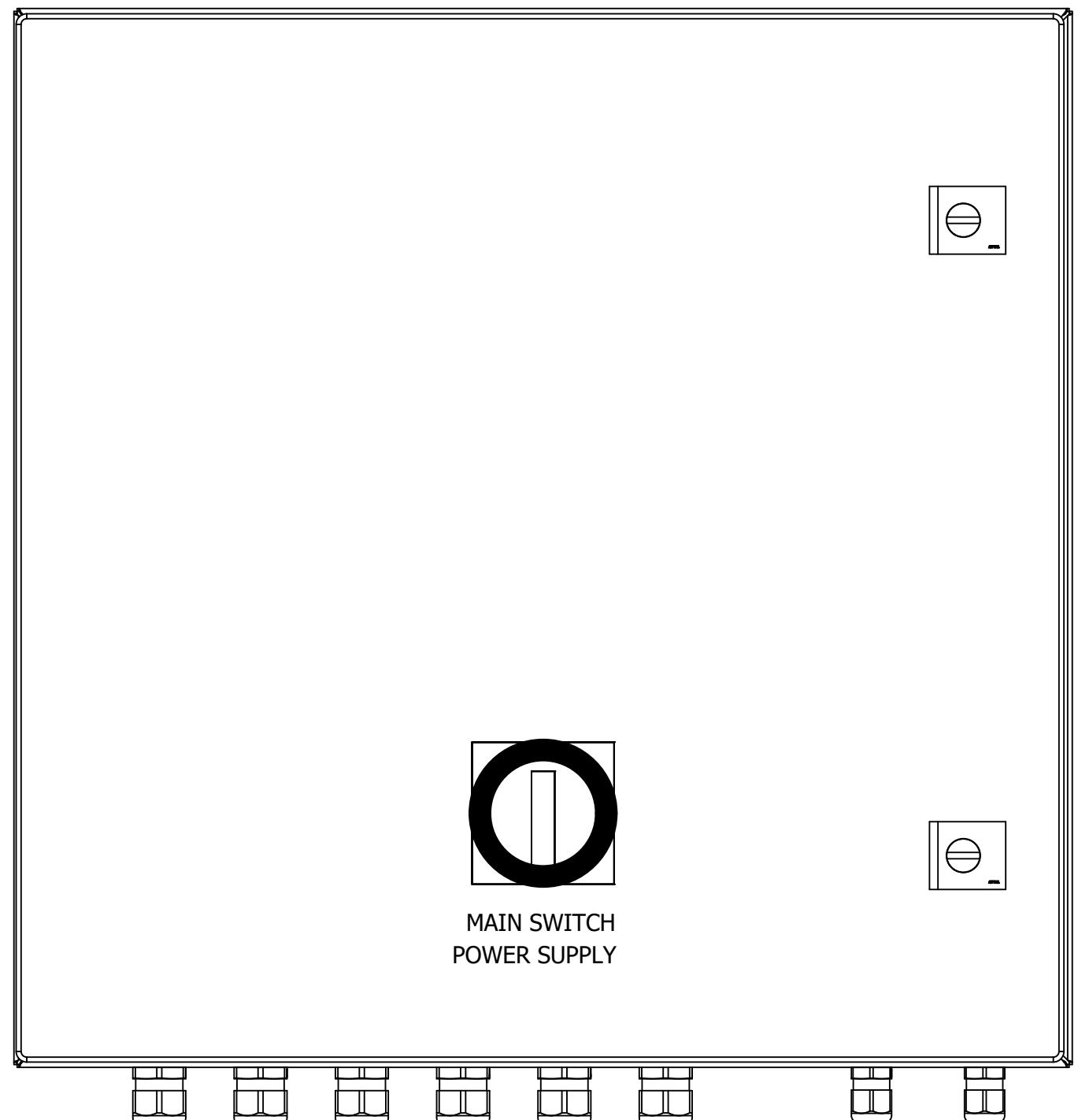
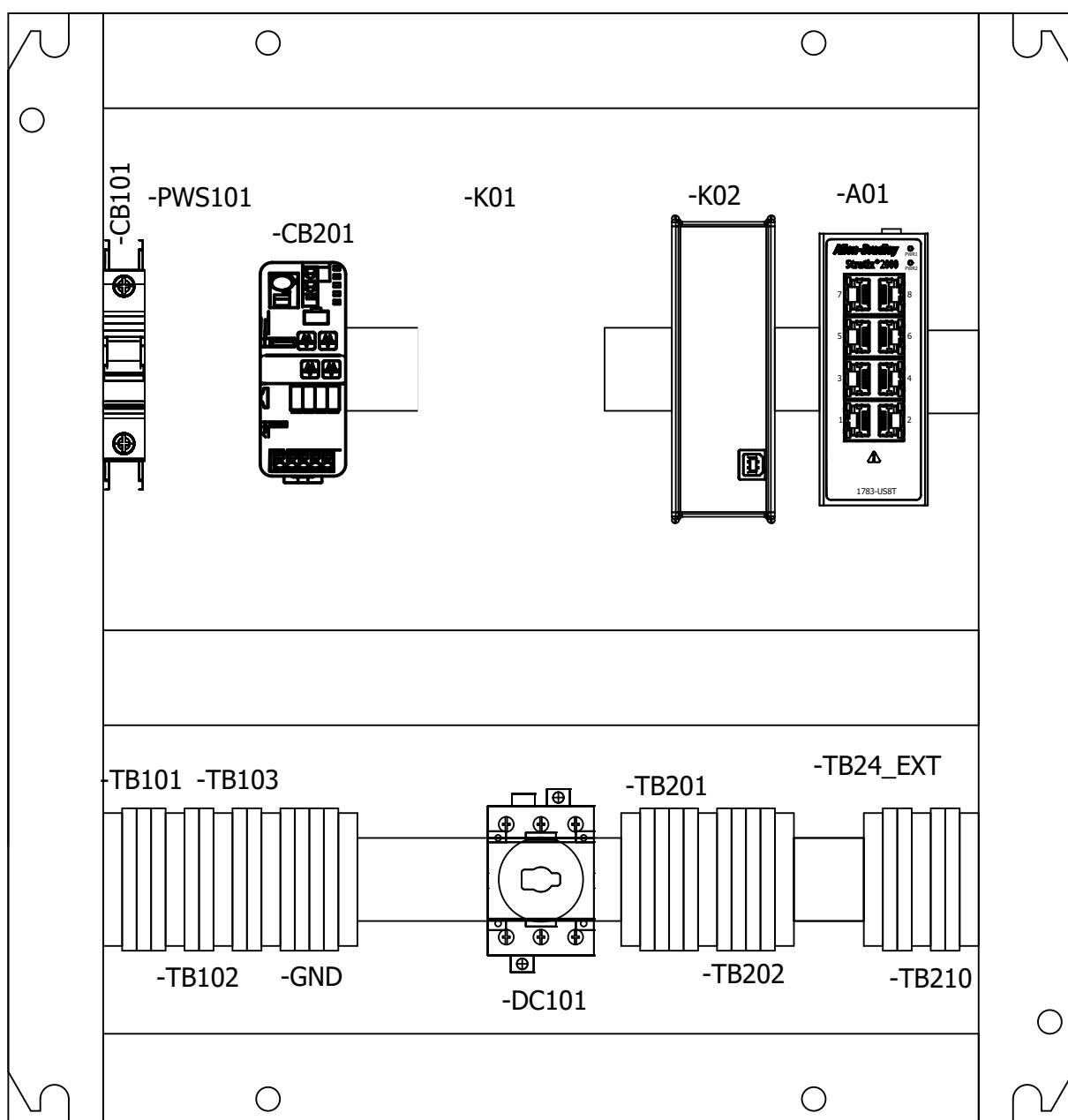
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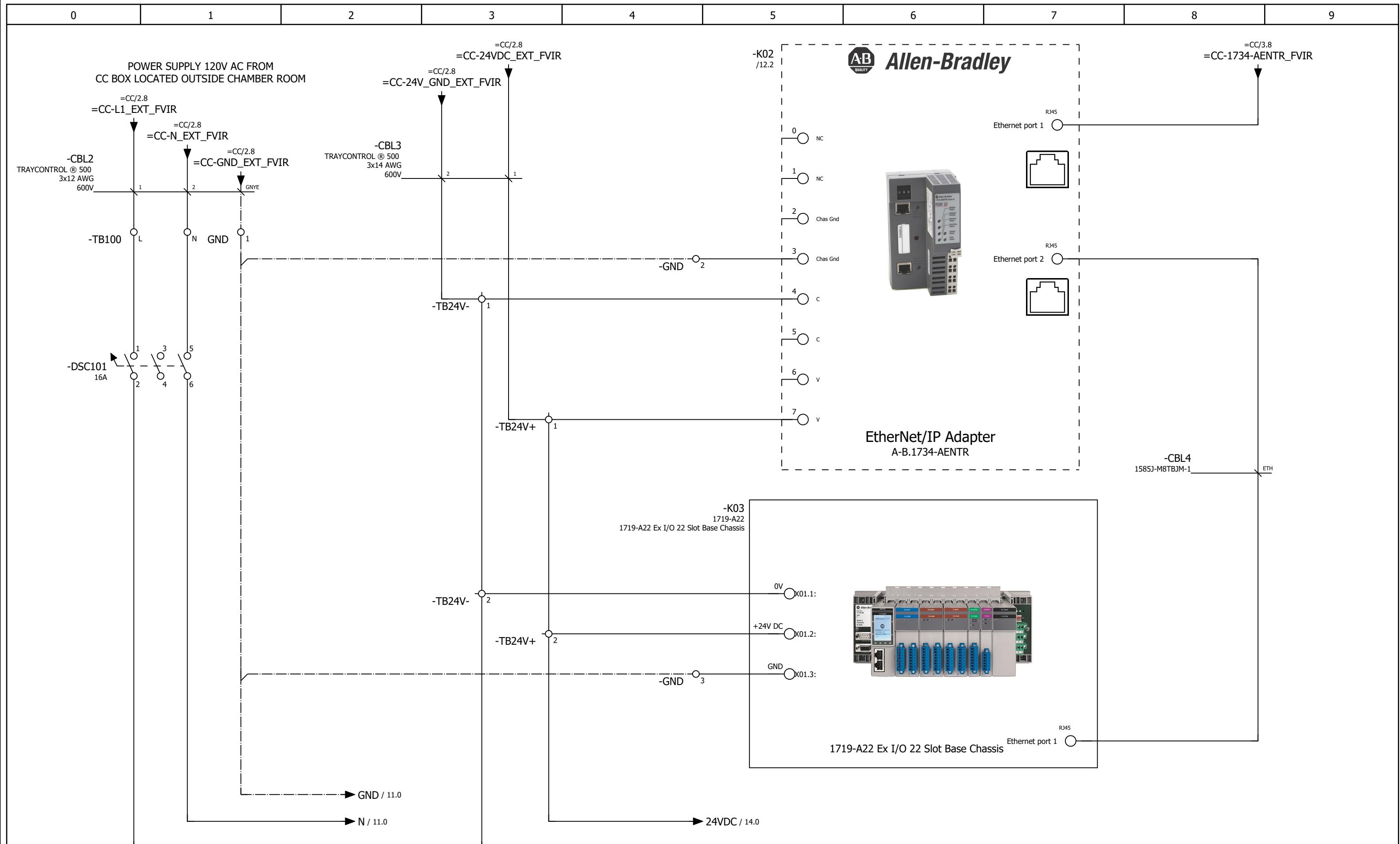
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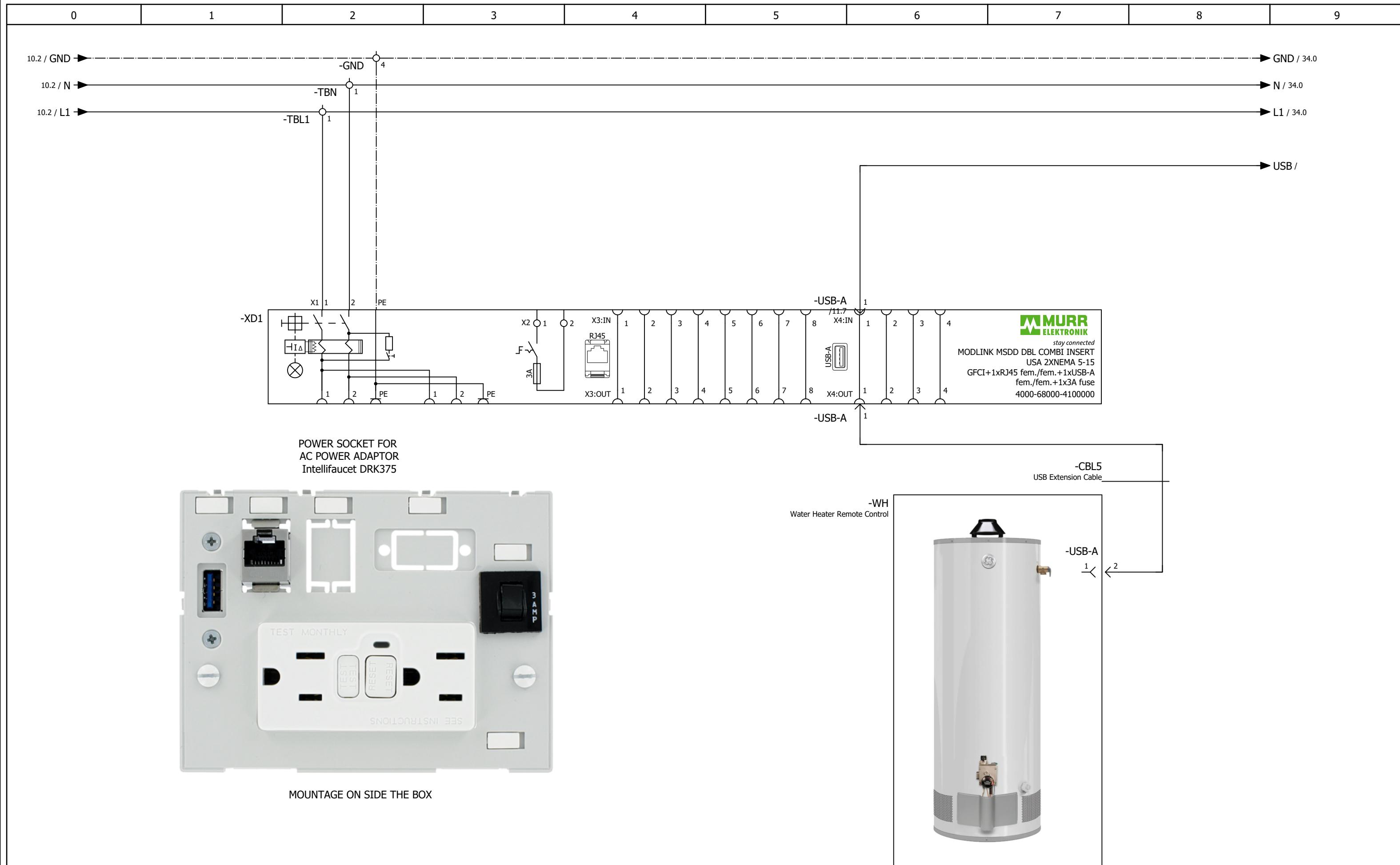


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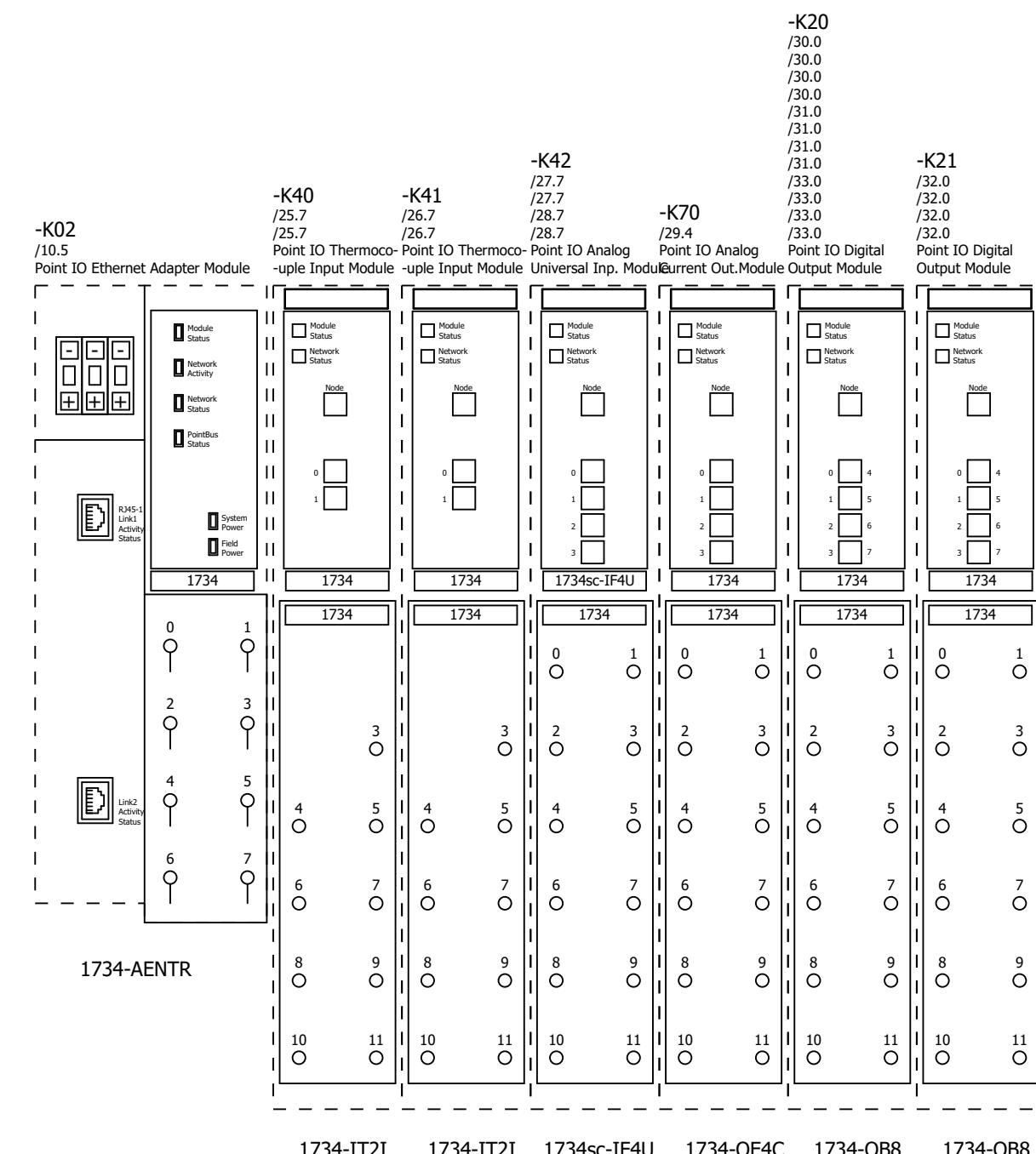




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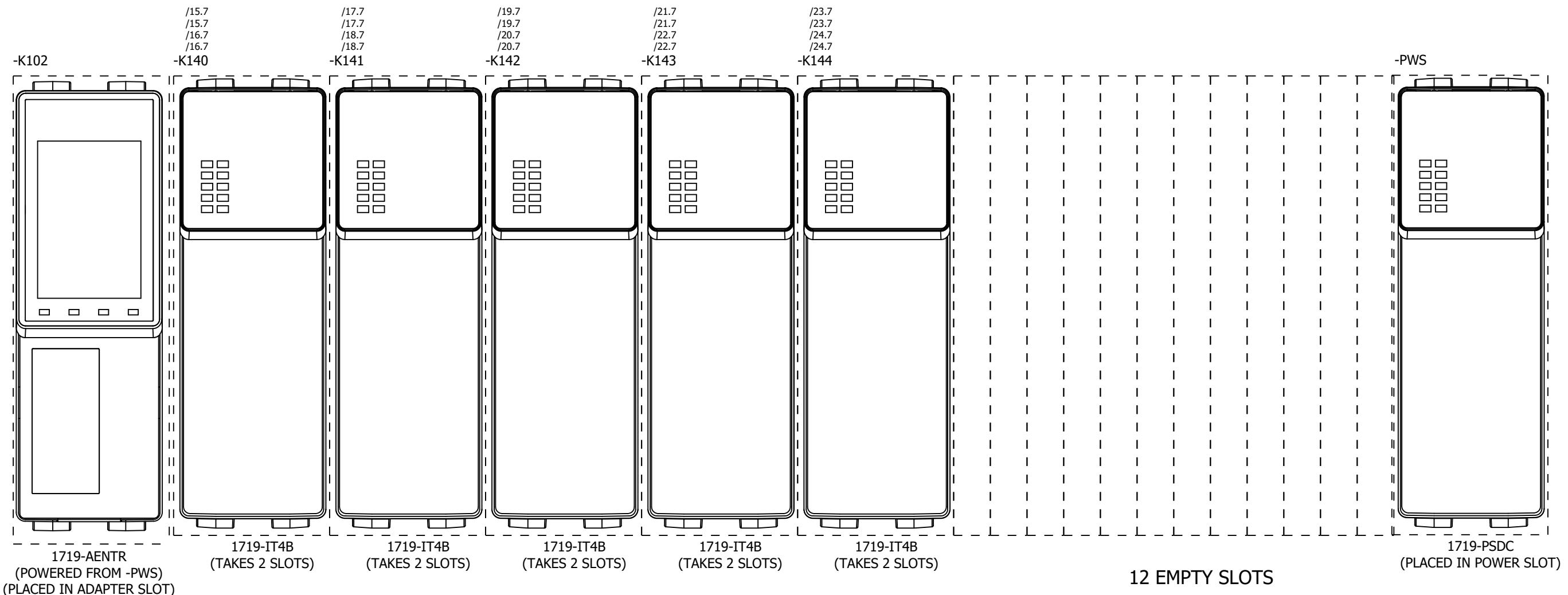
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IO POINT FOR SIGNAL FROM NON HAZARDOUS ZONE

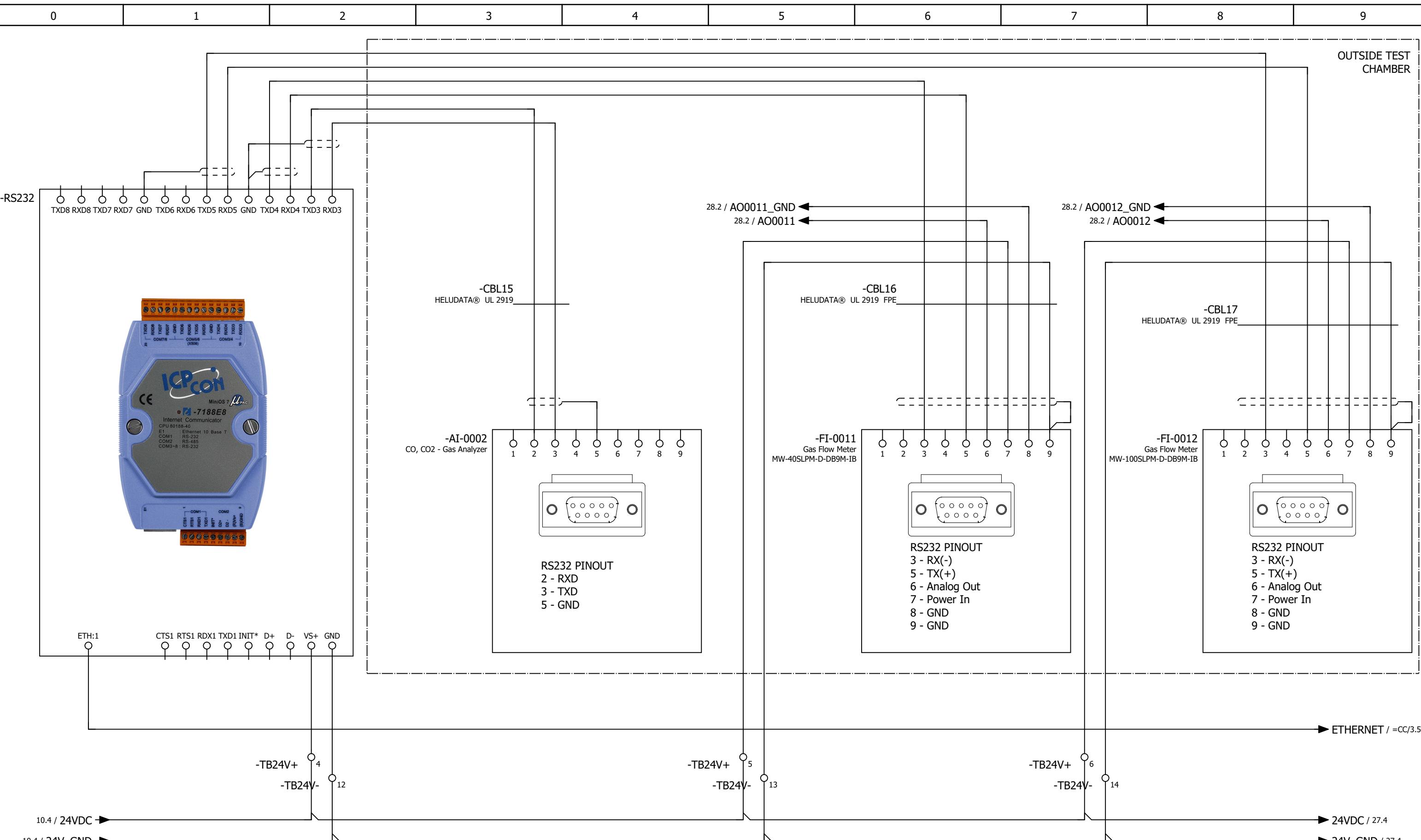
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IO POINT FOR SIGNAL FROM HAZARDOUS ZONE

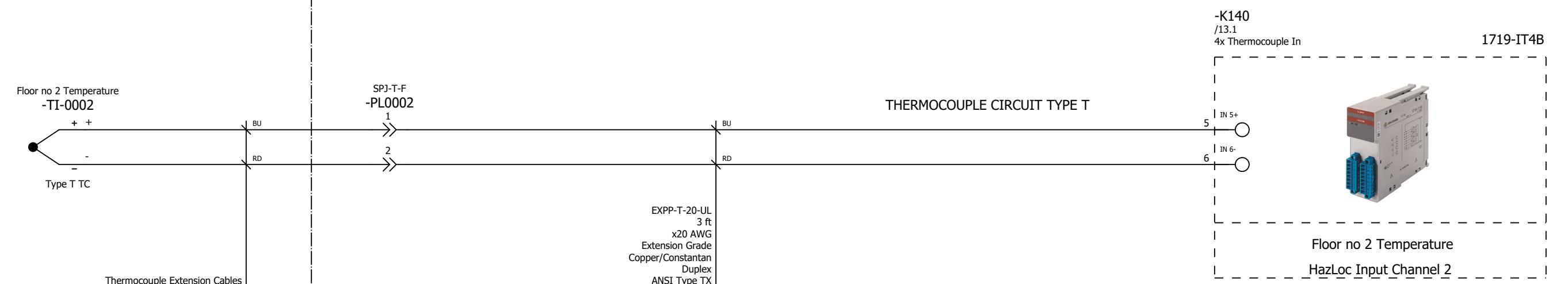
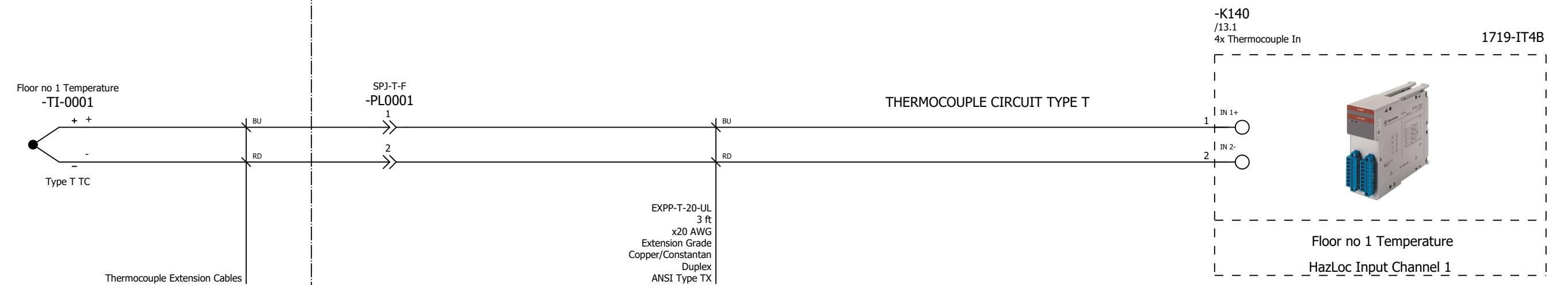
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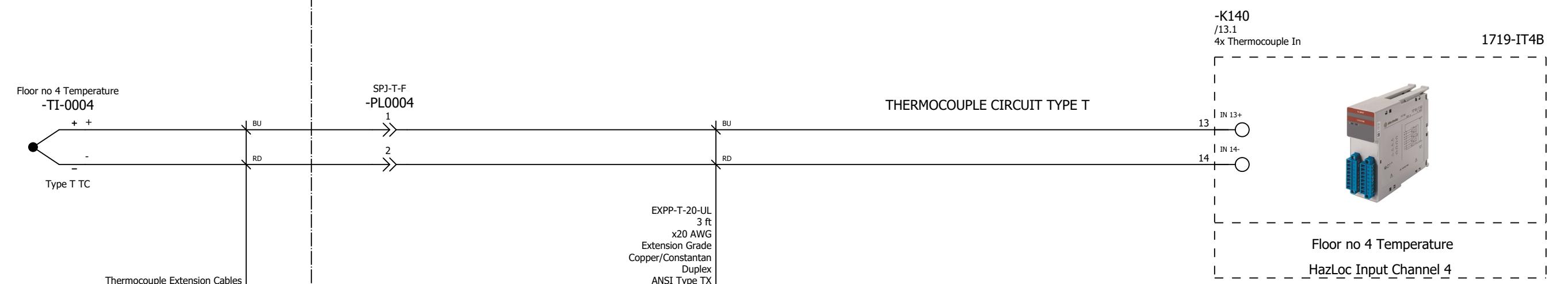
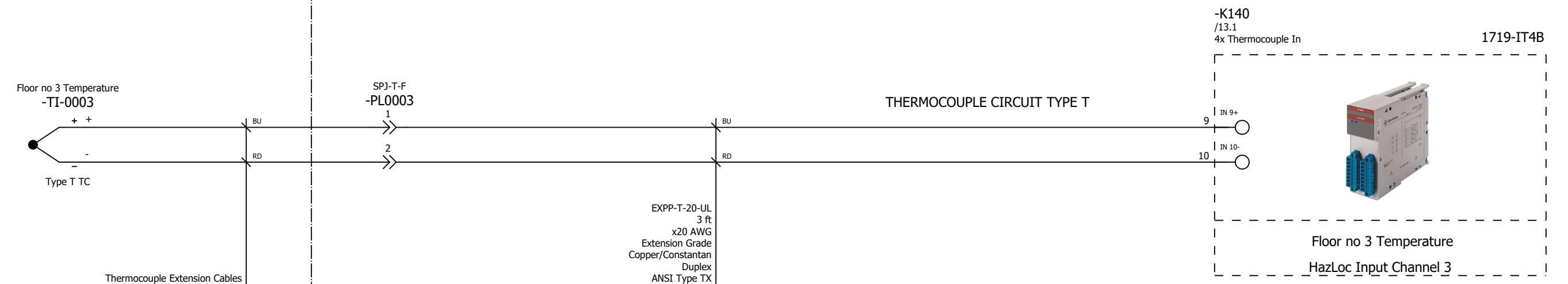
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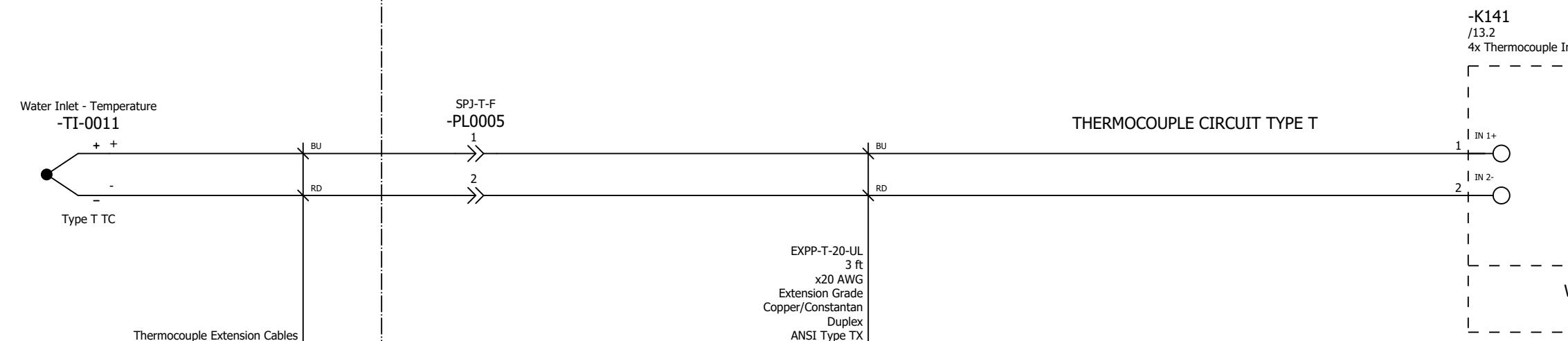
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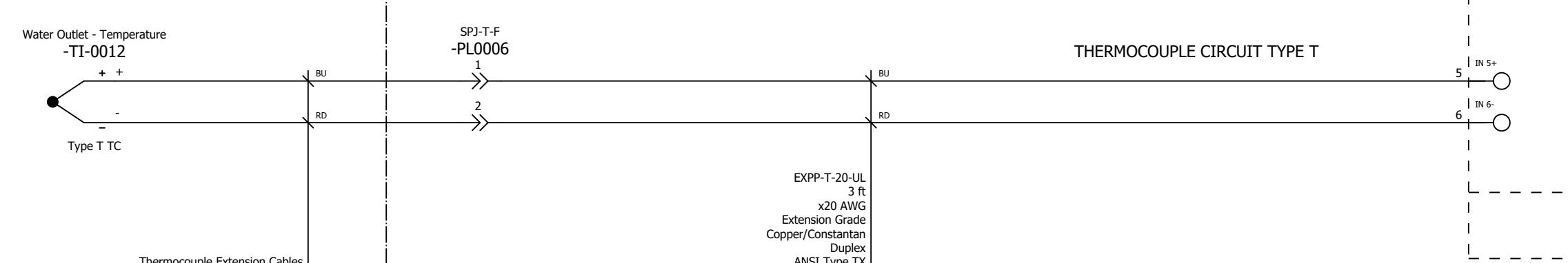
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TEST CHAMBER



Water Inlet - Temperature
HazLoc Input Channel 1

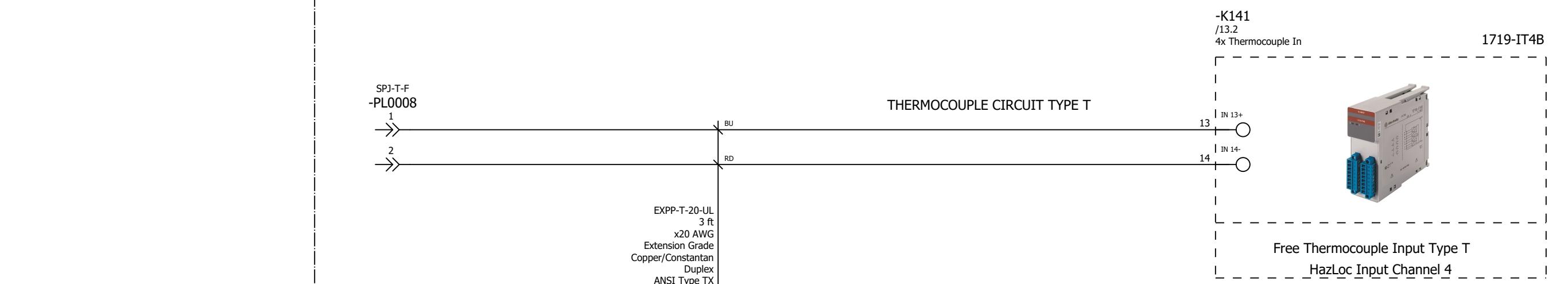
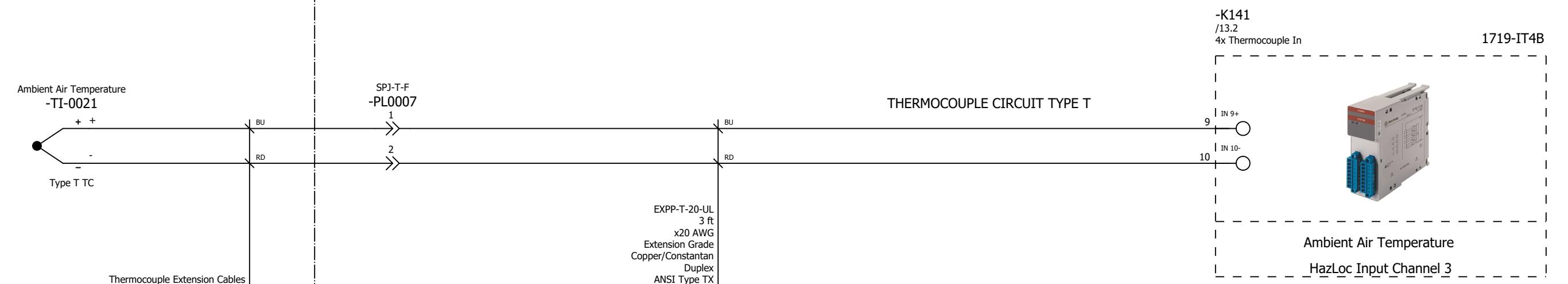


Water Outlet - Temperature
HazLoc Input Channel 2

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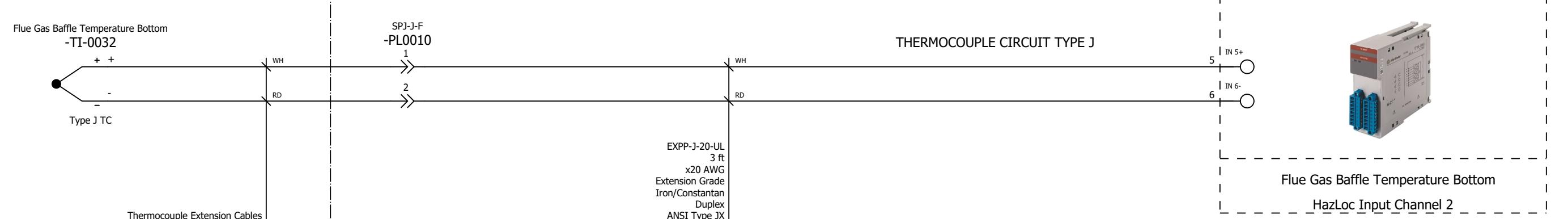
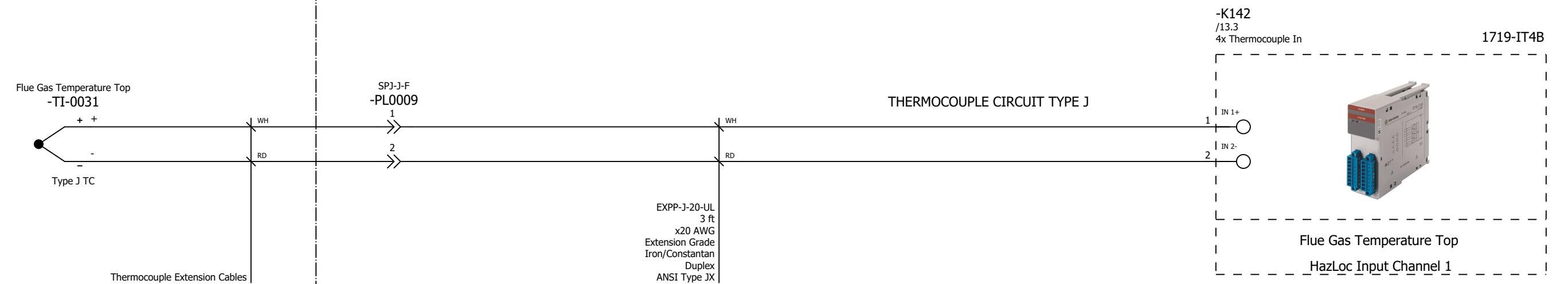
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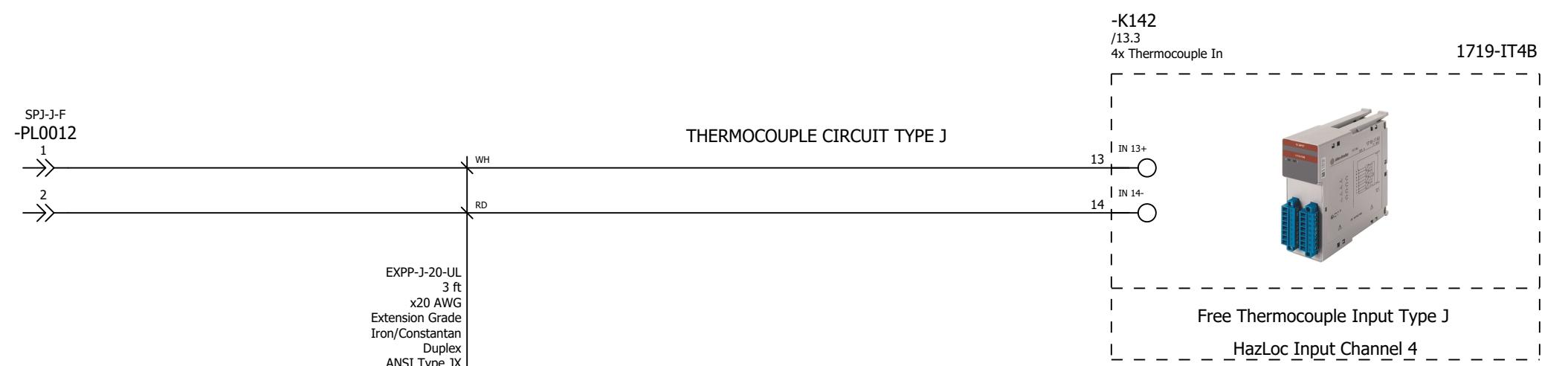
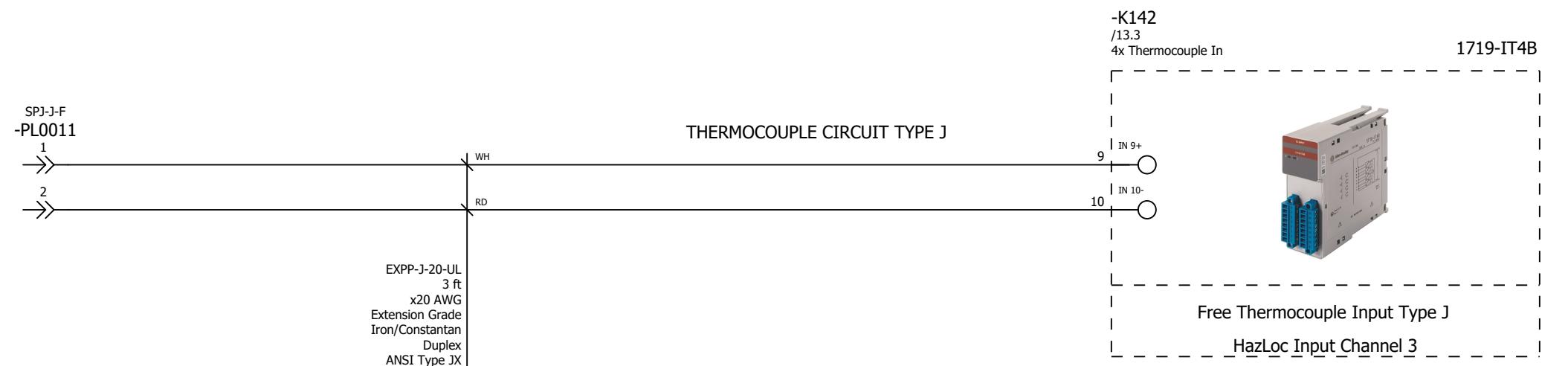
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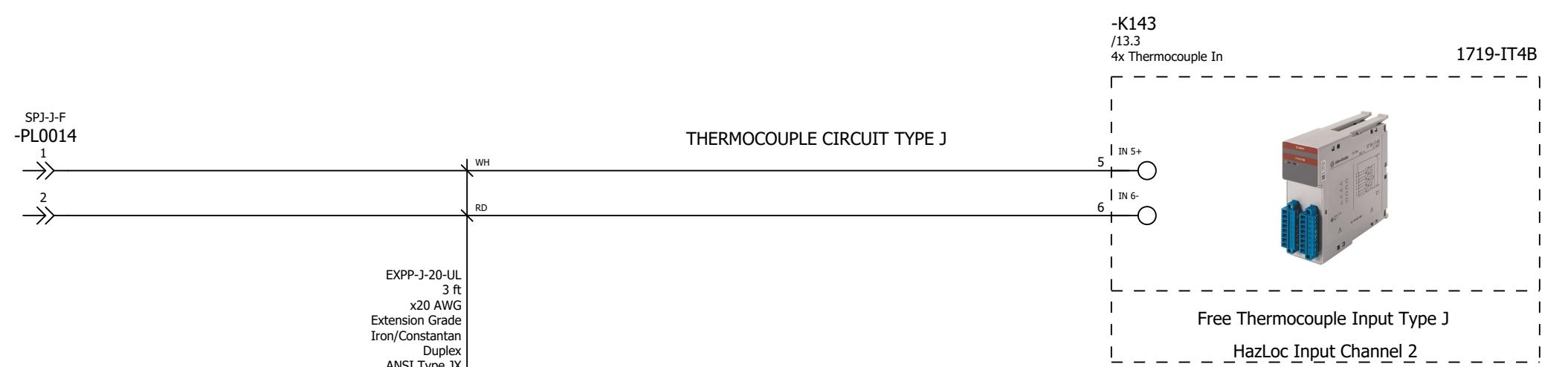
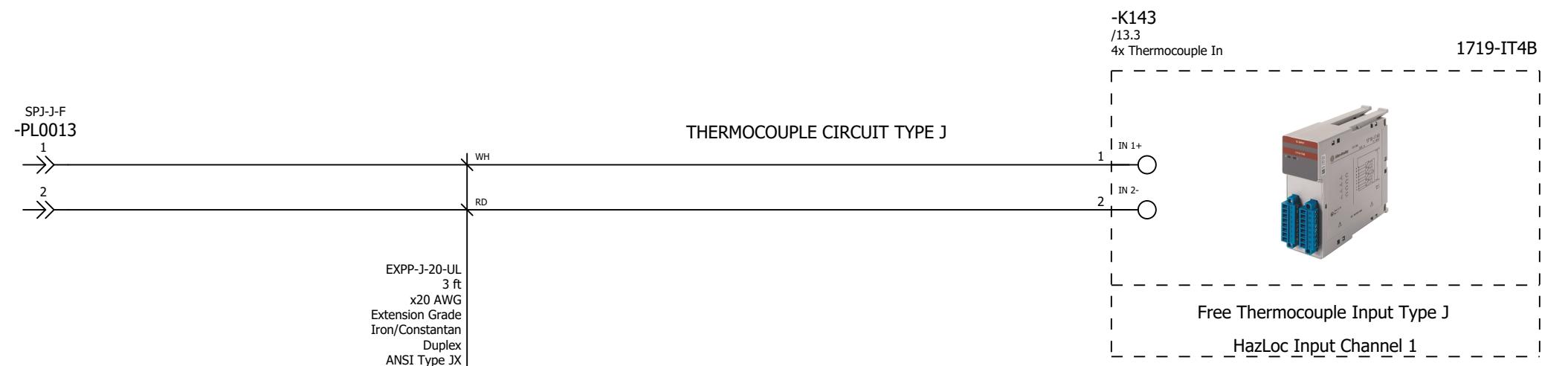
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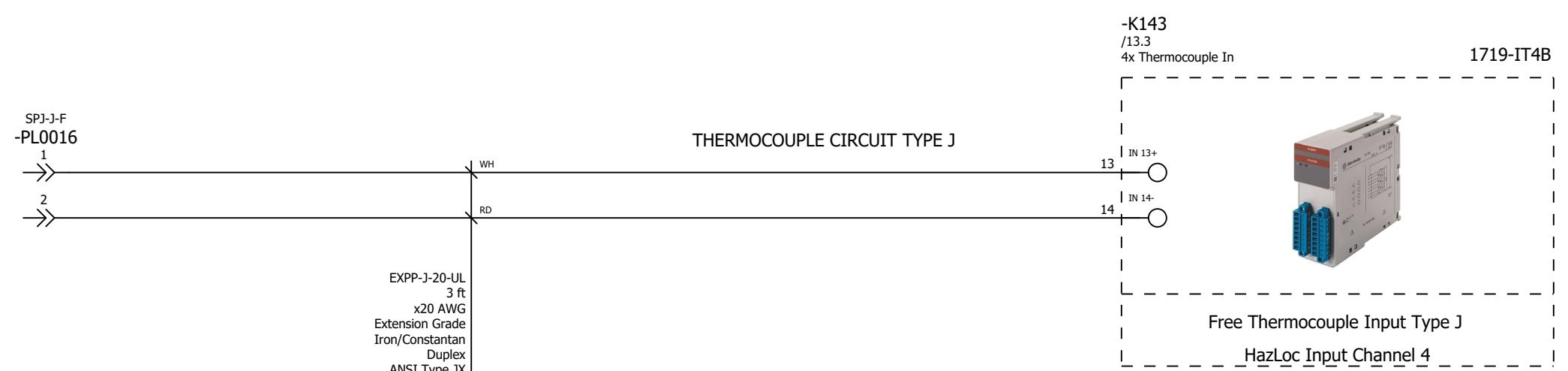
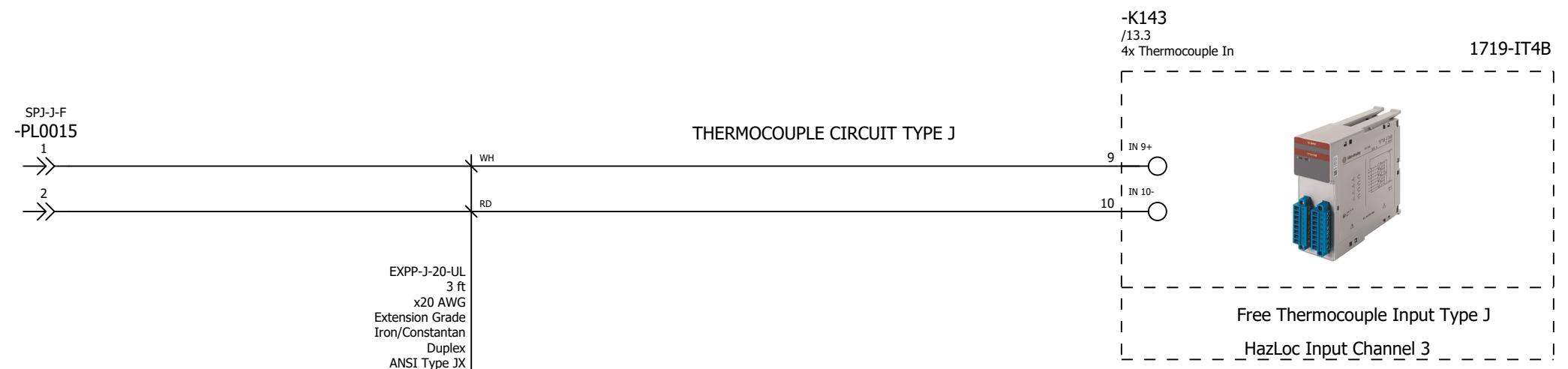
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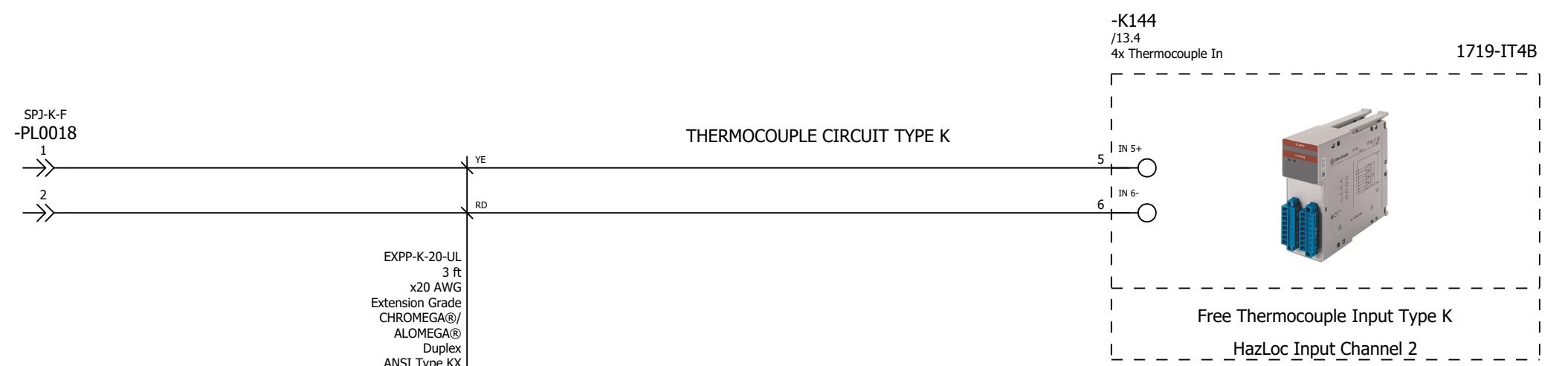
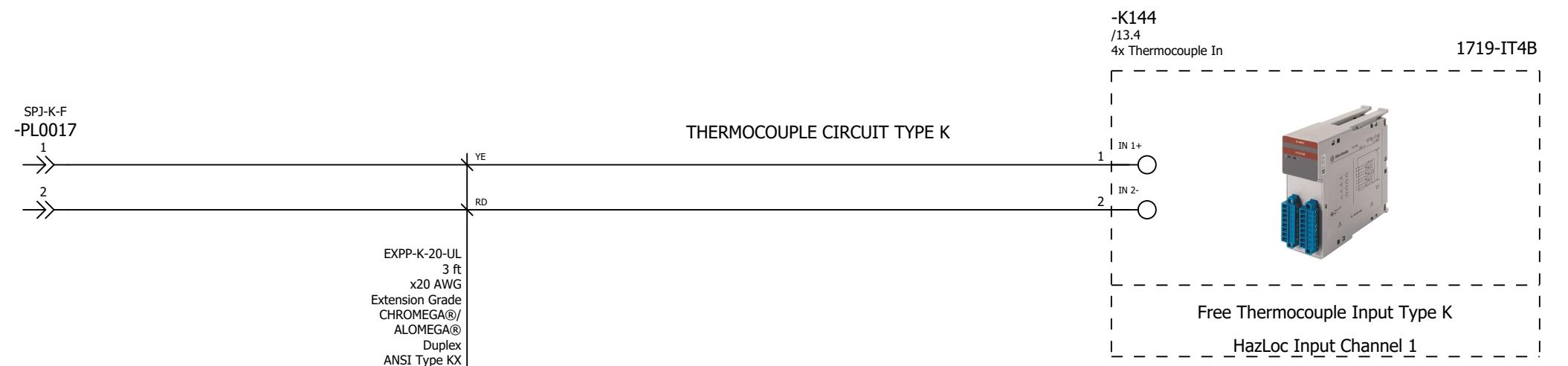
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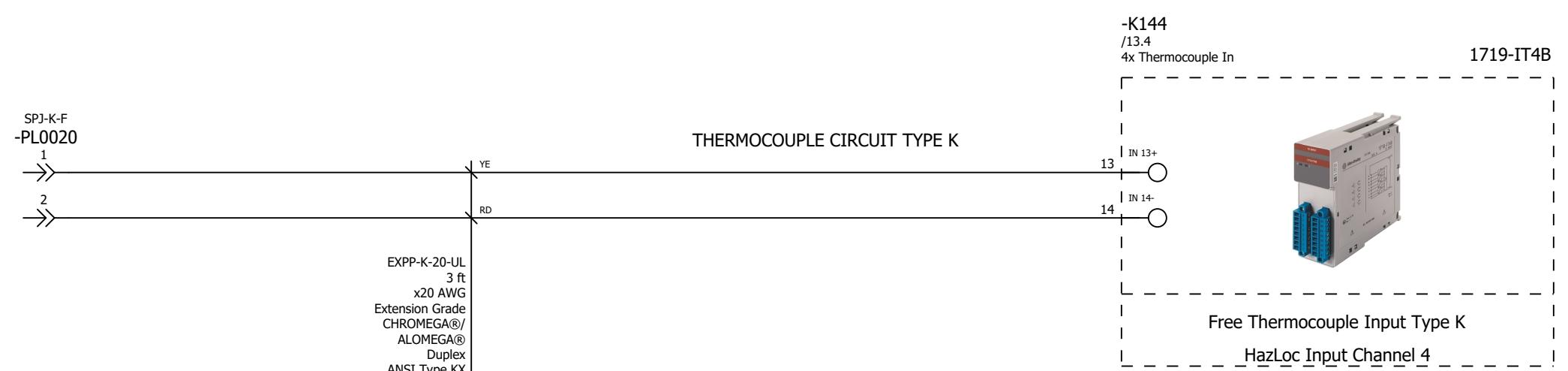
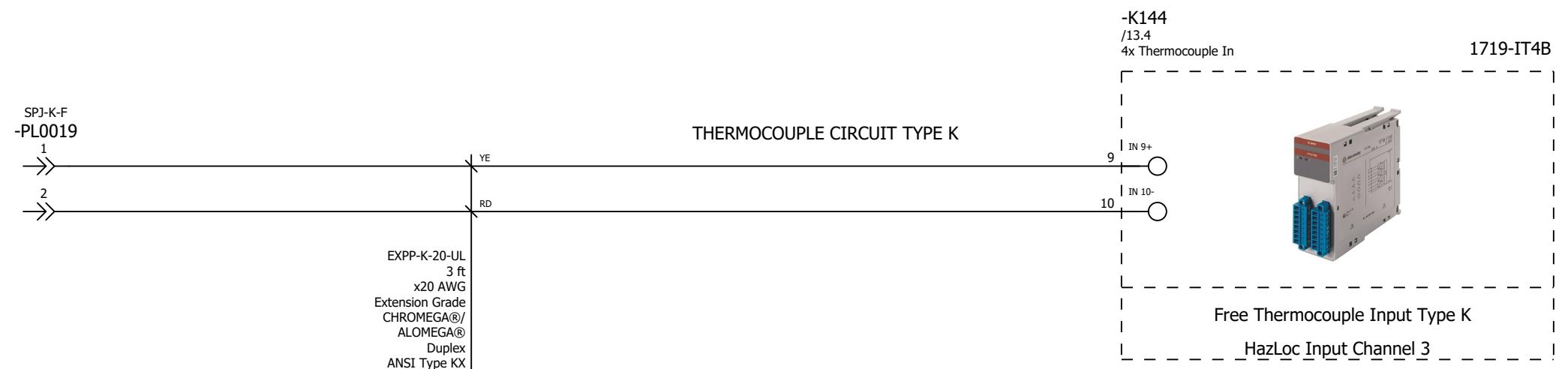
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OUTSIDE TEST CHAMBER

Cold Water Inlet to Intellifaucet
-TI-0013

Type T TC

Thermocouple Extension Cables

SPJ-T-F
-PL0021

1
2

EXPP-T-20-UL
3 ft
x20 AWG
Extension Grade
Copper/Constantan
Duplex
ANSI Type TX

THERMOCOUPLE CIRCUIT TYPE T

-K40
/12.3
2x Thermocouple In

4

5

IN 0+

IN 0-

1734-IT2I



Cold Water Inlet to Intellifaucet

Input Channel 0

Hot Water Inlet to Intellifaucet
-TI-0014

Type T TC

Thermocouple Extension Cables

SPJ-T-F
-PL0022

1
2

EXPP-T-20-UL
3 ft
x20 AWG
Extension Grade
Copper/Constantan
Duplex
ANSI Type TX

THERMOCOUPLE CIRCUIT TYPE T

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/12.3
2x Thermocouple In

6

7

IN 1+

IN 1-

1734-IT2I



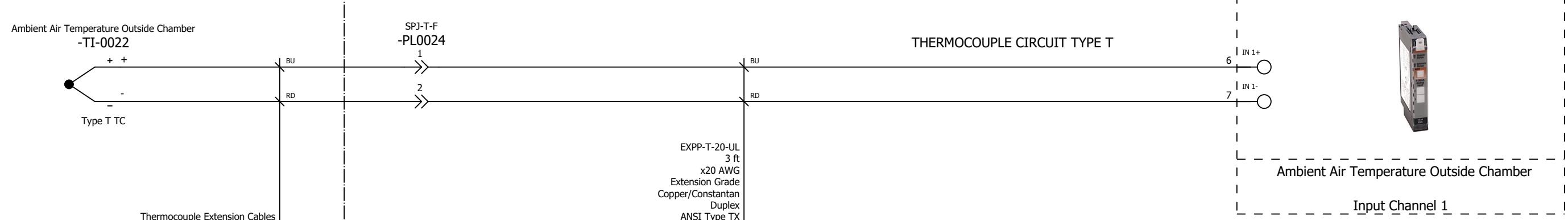
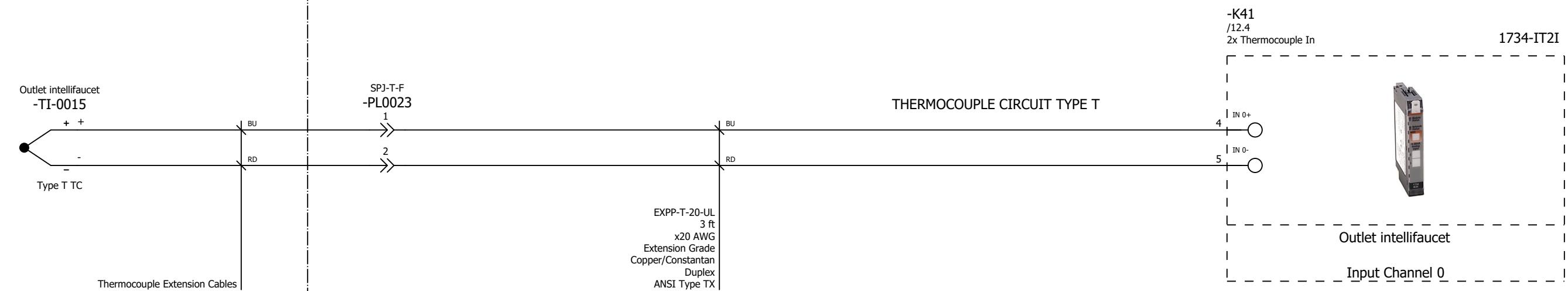
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Input Channel 1

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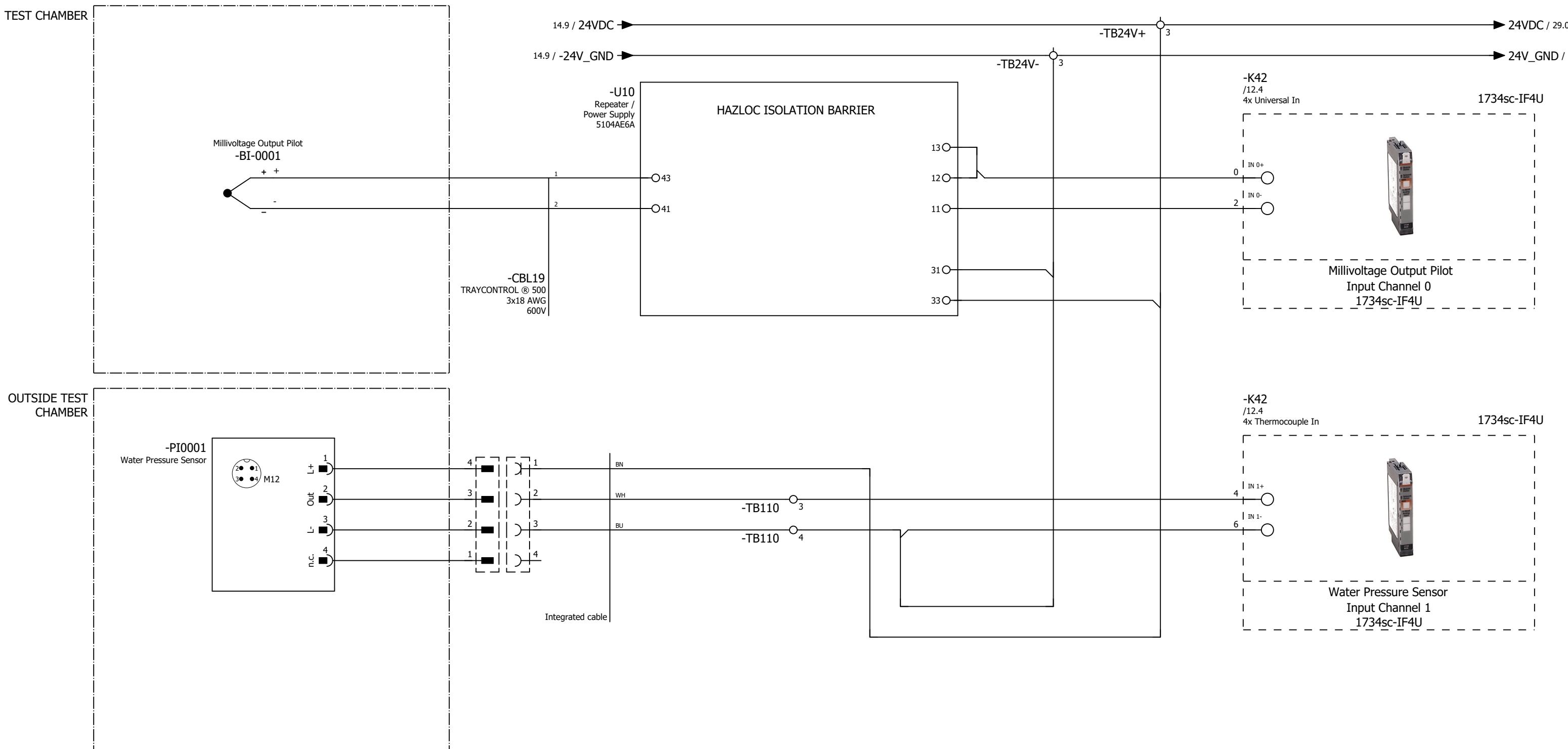
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OUTSIDE TEST CHAMBER



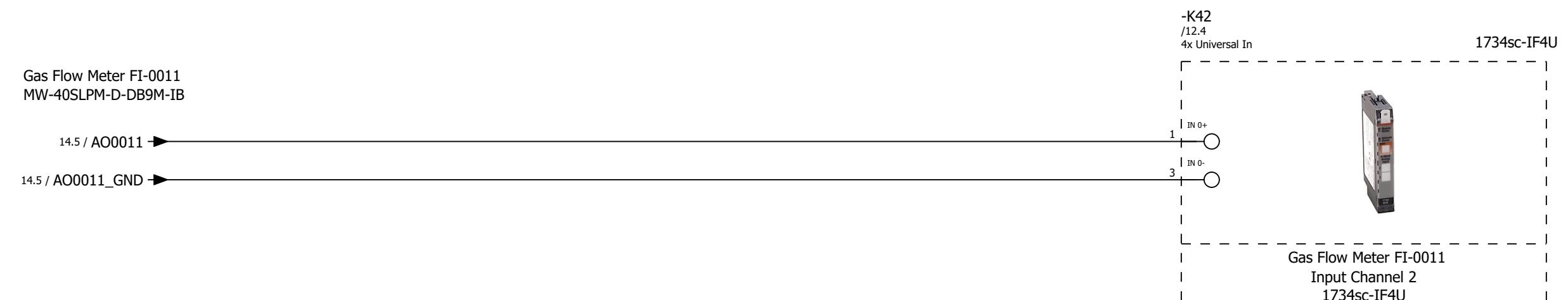
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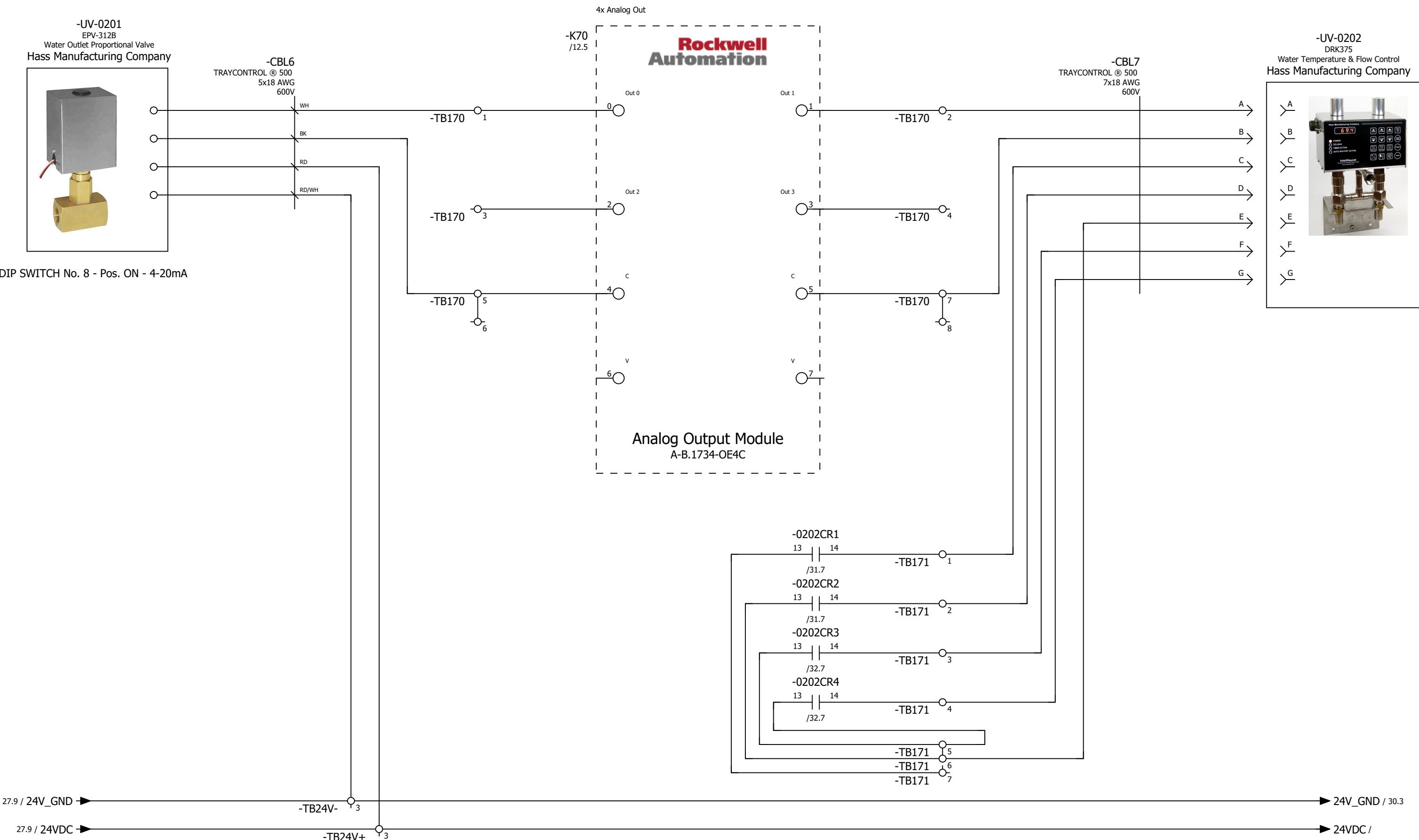
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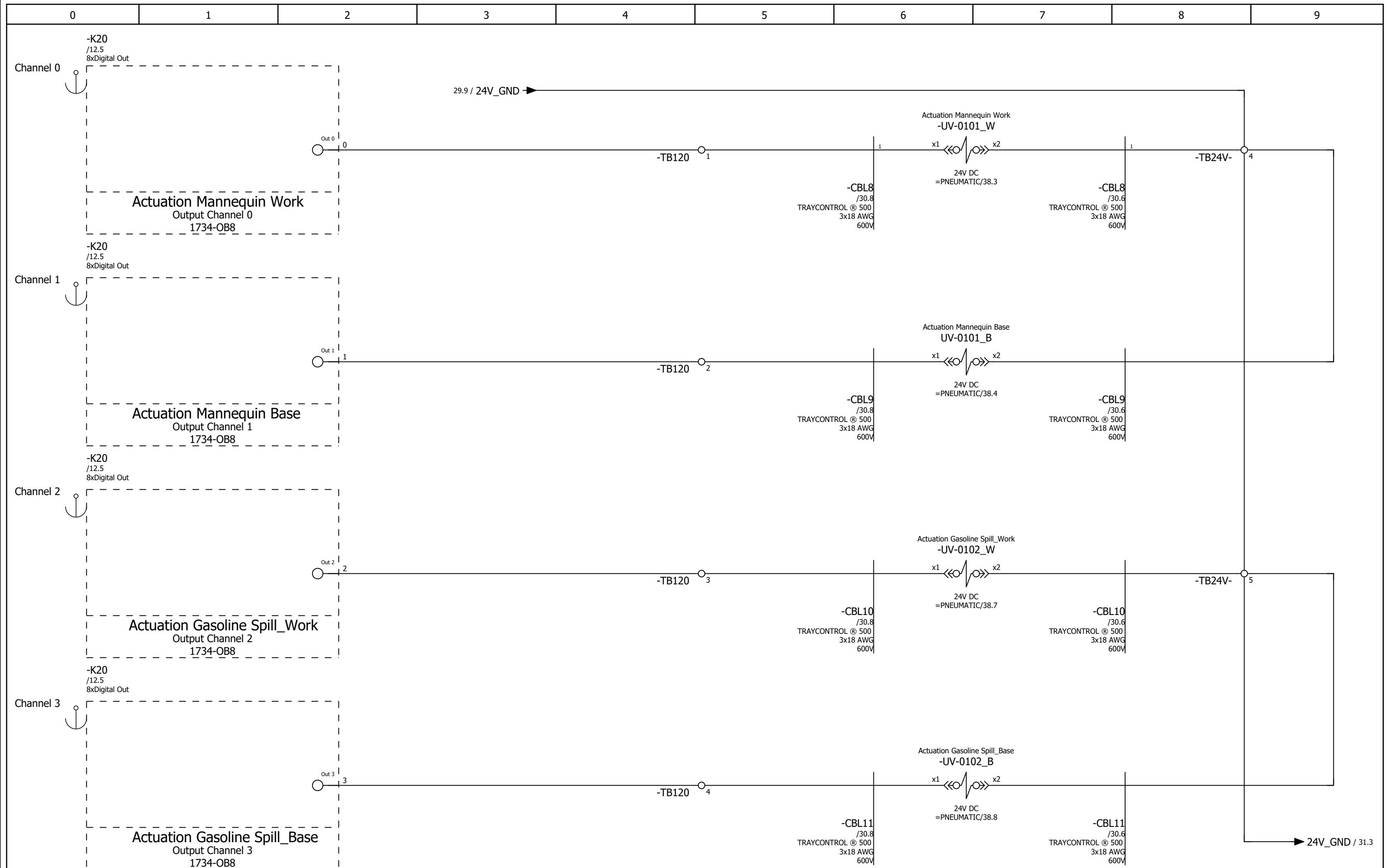
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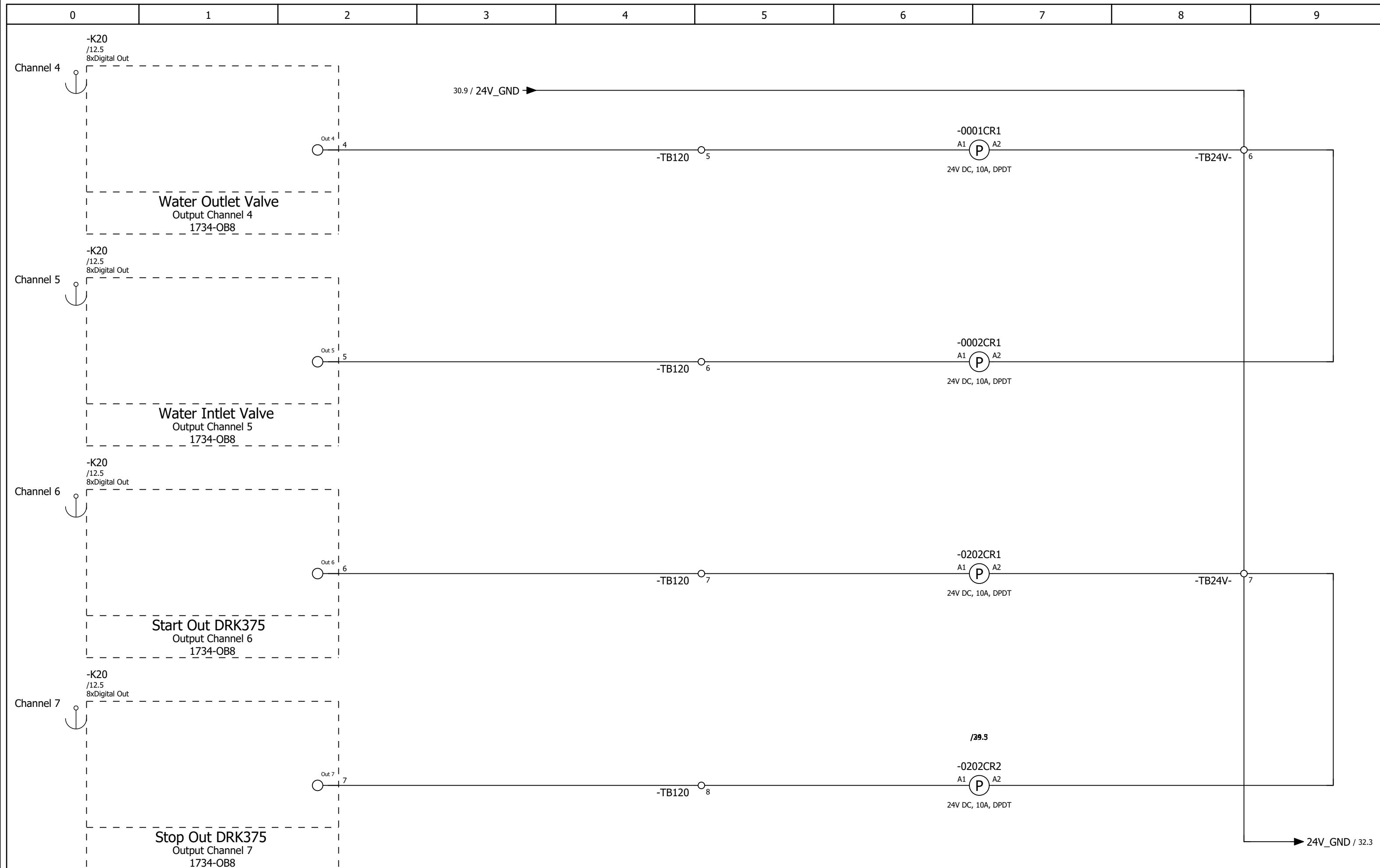




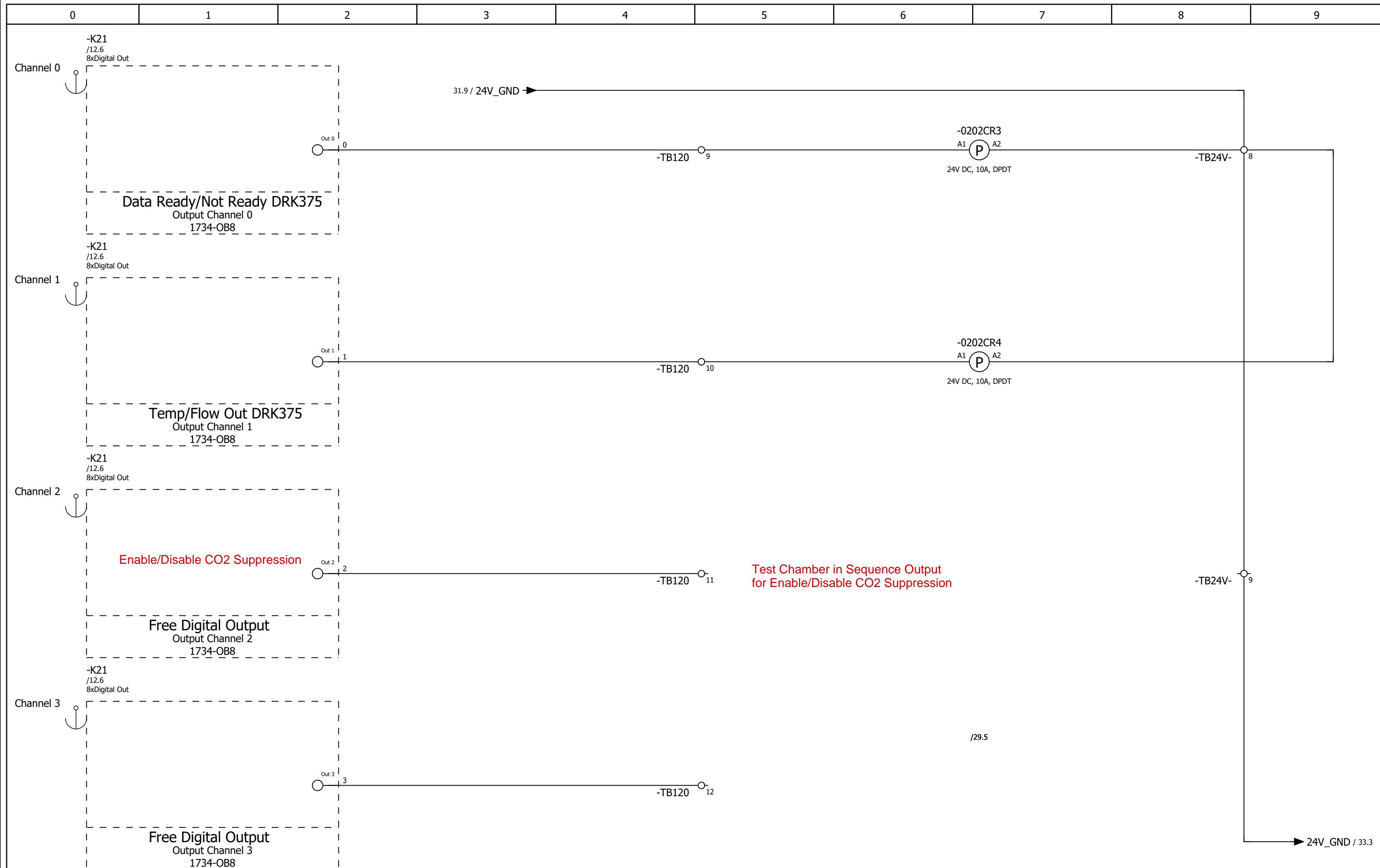
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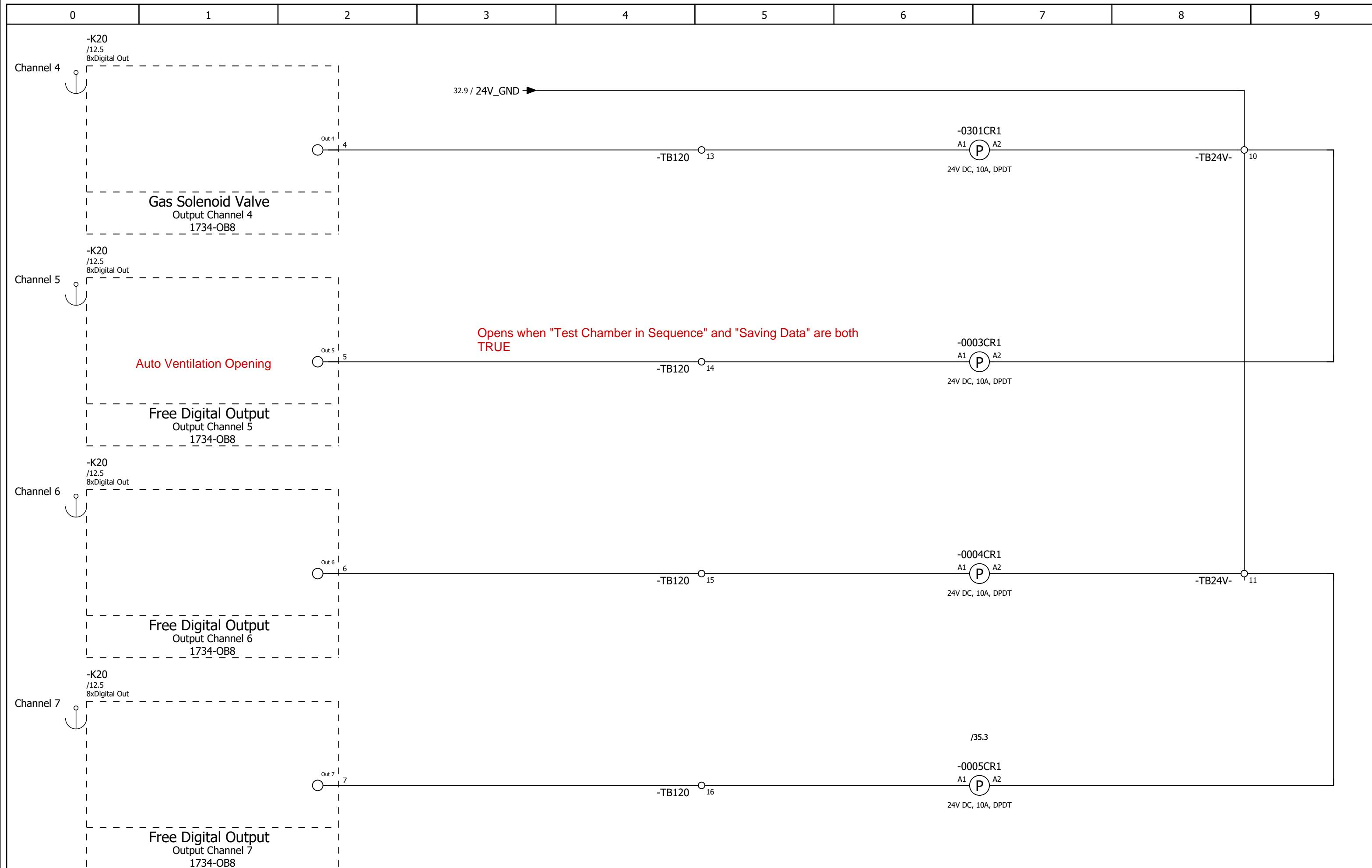
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CREADIS Inc.	Scale	1 : 1	Checker:		11/05/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Next page nr:	32
			Approved:							Total pages:	26 / 59	

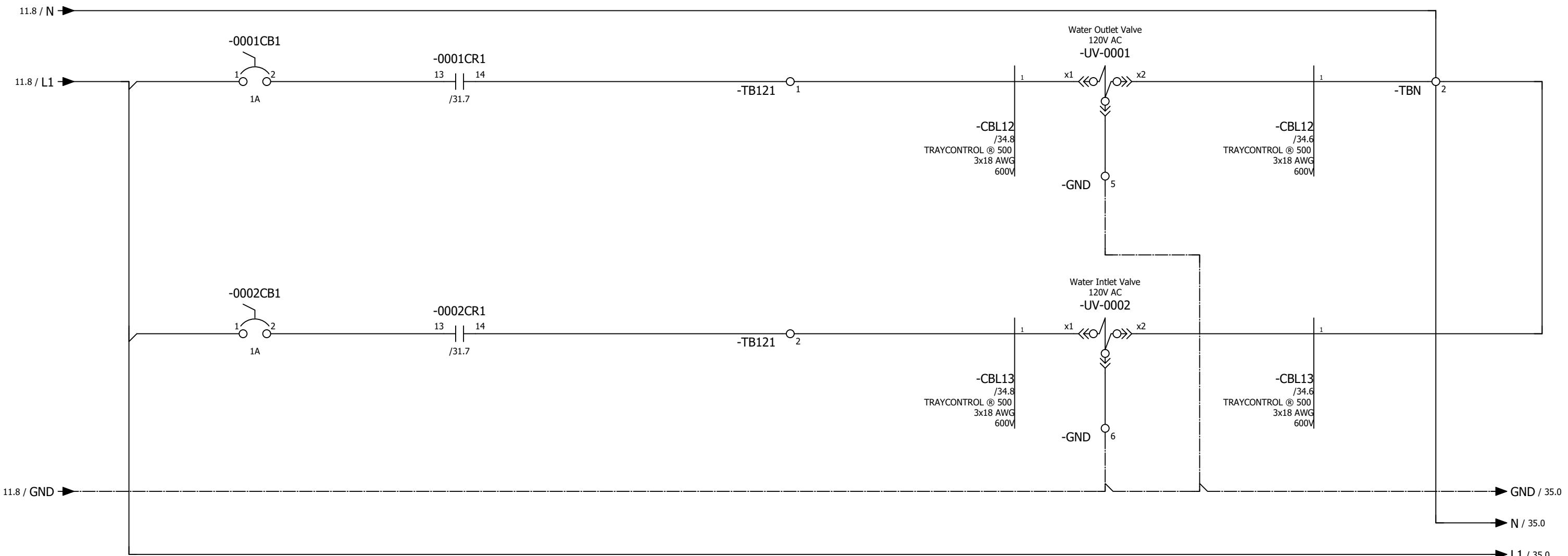


Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB	Schematic type:	Current page nr:	32
CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		06/05/2021					Previous page nr:	31	
CREADIS Inc.	Scale	1 : 1	Checker:		11/05/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Next page nr:	33
			Approved:							Total pages:	27 / 59	



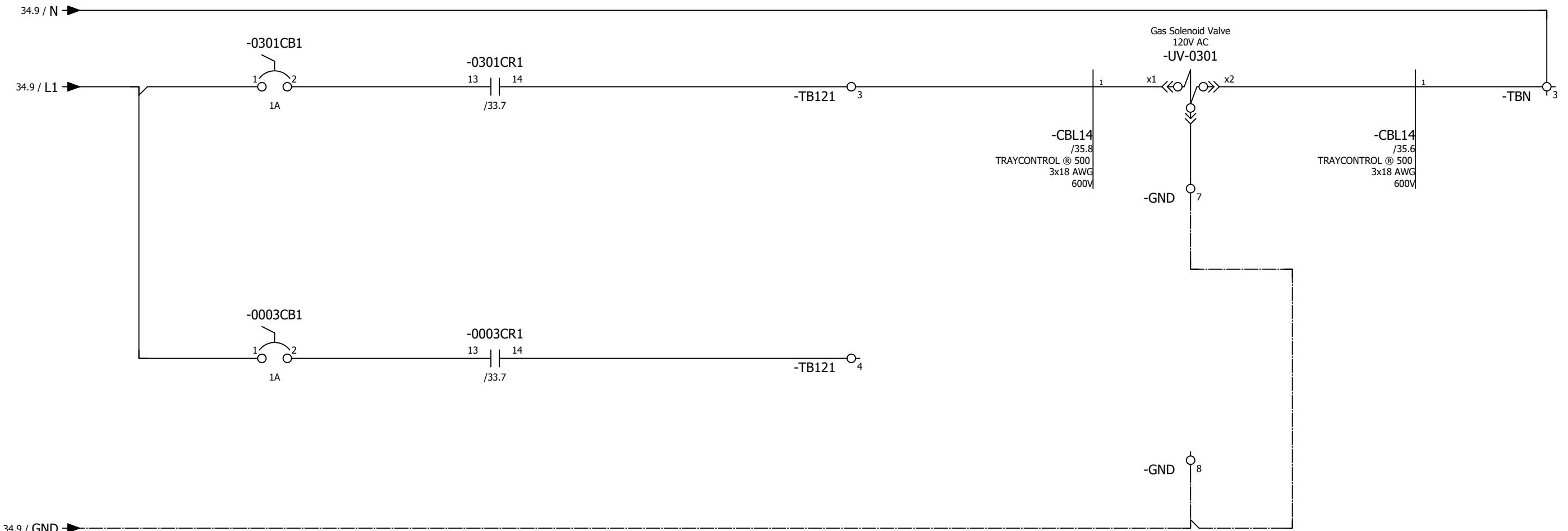
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CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		06/05/2021					Previous page nr:	32	
CREADIS Inc.	Scale	1 : 1	Checker:		11/05/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Next page nr:	34
			Approved:							Total pages:	28 / 59	

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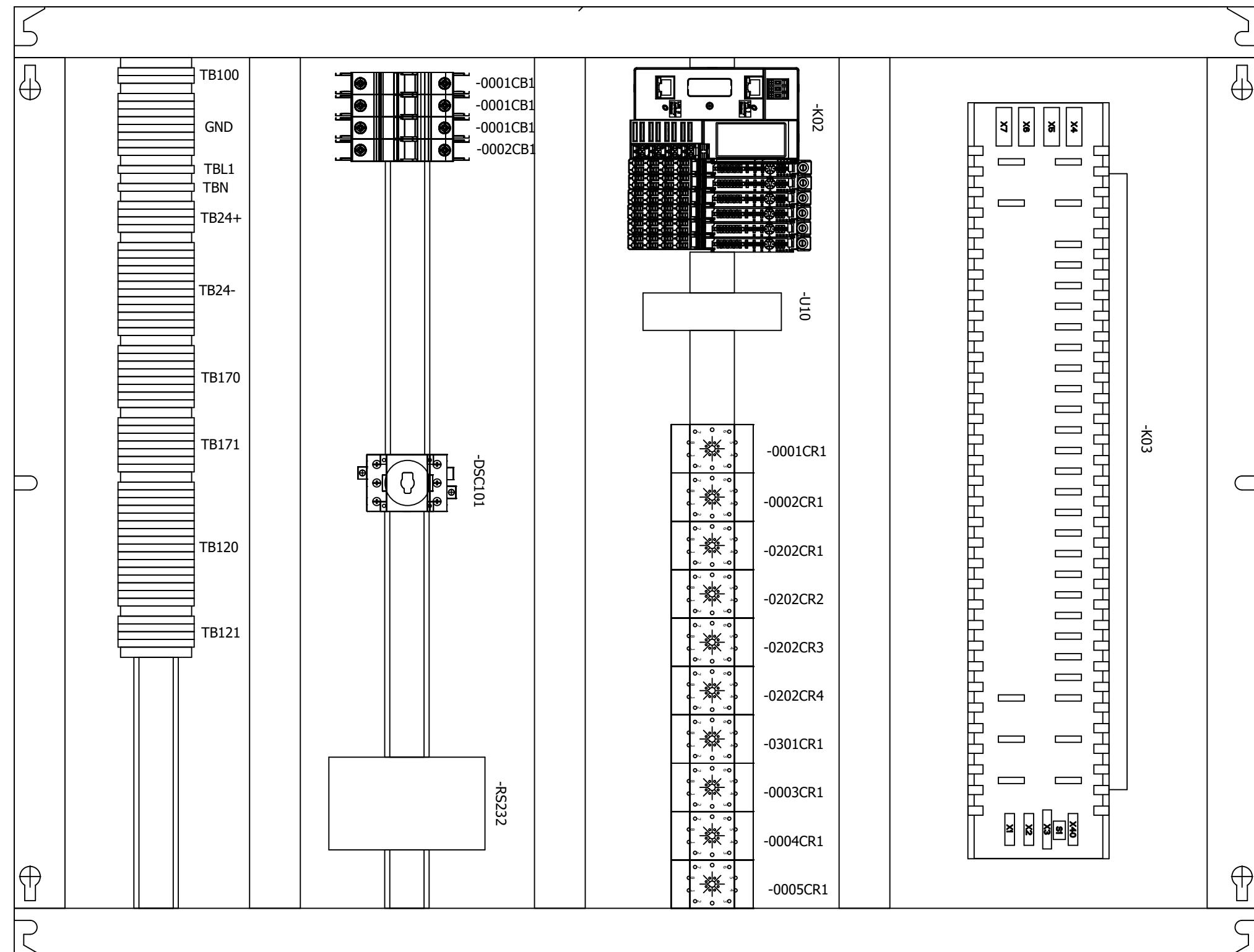


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C R E A D I S innovative engineering CREADIS Inc.	62173			GE Appliances Water Heater Validation	= JB		Previous page nr:	33
Customer	GE Appliances, a Haier company	Creator:	23/04/2021				Next page nr:	35
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	Approved:							

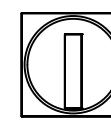
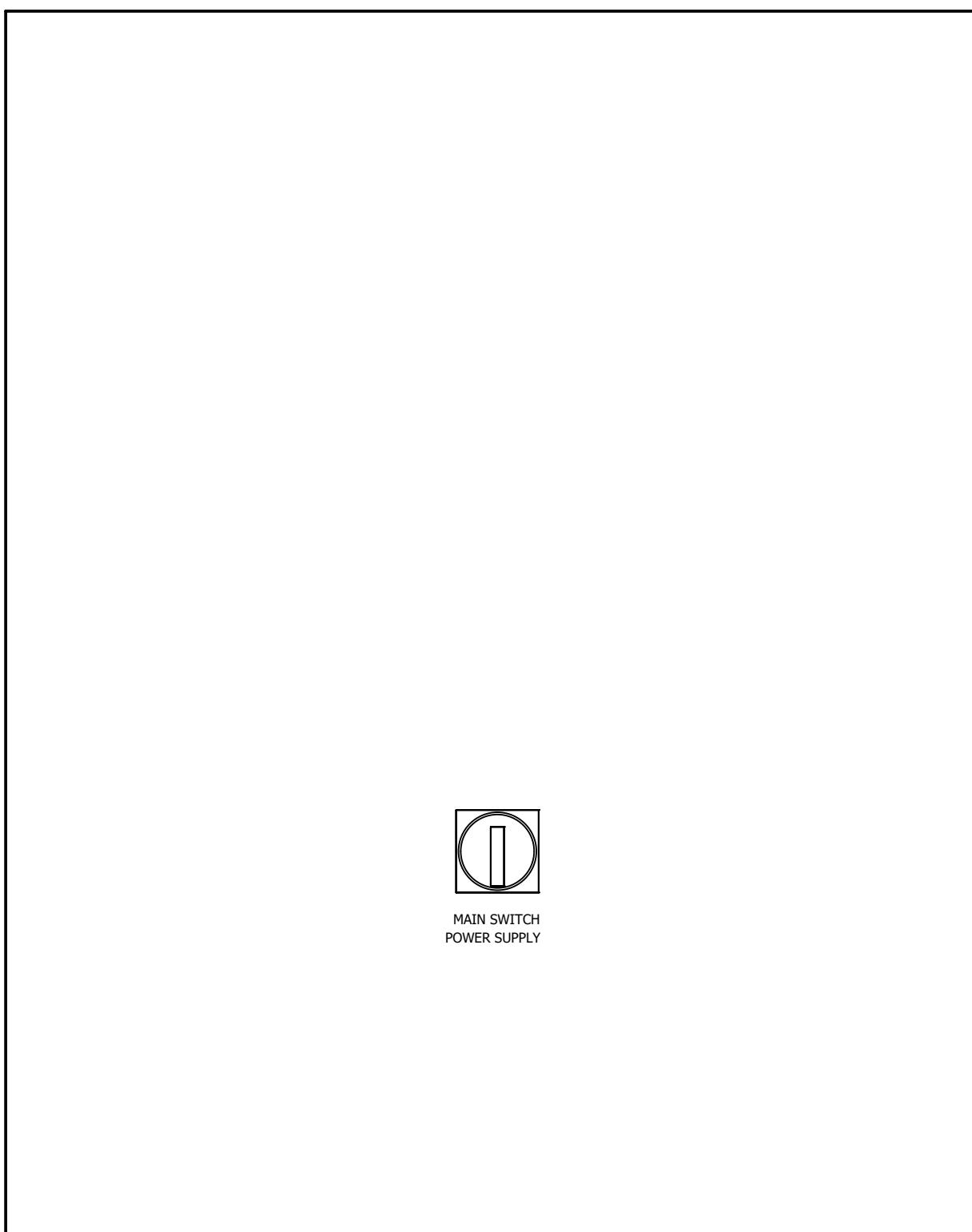
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C R E A D I S innovative engineering CREADIS Inc.	Customer	GE Appliances, a Haier company	Creator:		06/05/2021					Previous page nr:		34
Scale	1 : 1		Checker:		11/05/2021	Page description:	DIGITAL OUTPUT 120V DC	Location:	=	Schematic desc.:	Next page nr:	36
			Approved:								Total pages:	30 / 59

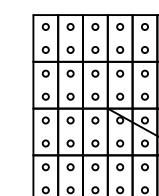
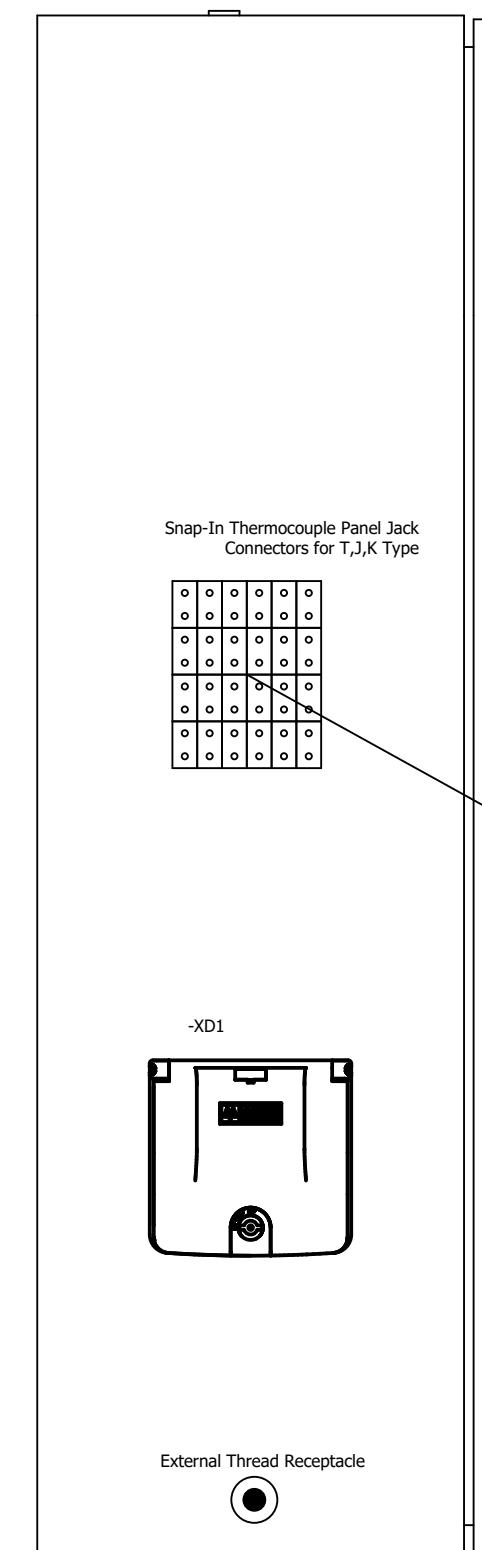


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Customer	62173	Revision:	Date:	GE Appliances Water Heater Validation	= JB		Previous page nr:	35
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		Approved:					Total pages:	31 / 59



MAIN SWITCH
POWER SUPPLY

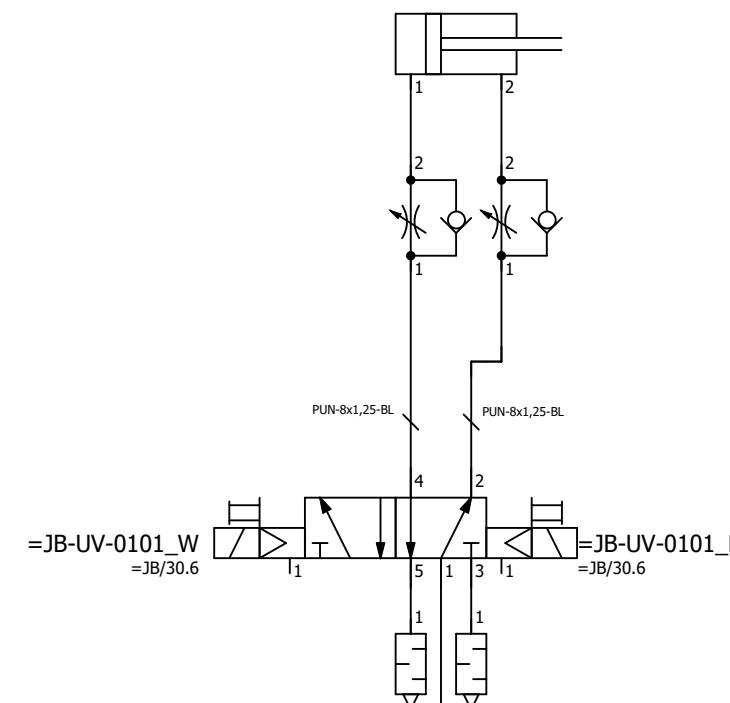
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=JB-CBL2



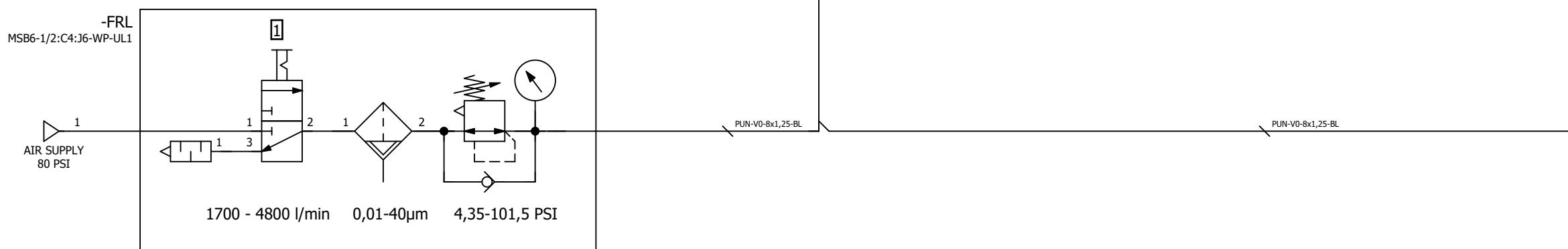
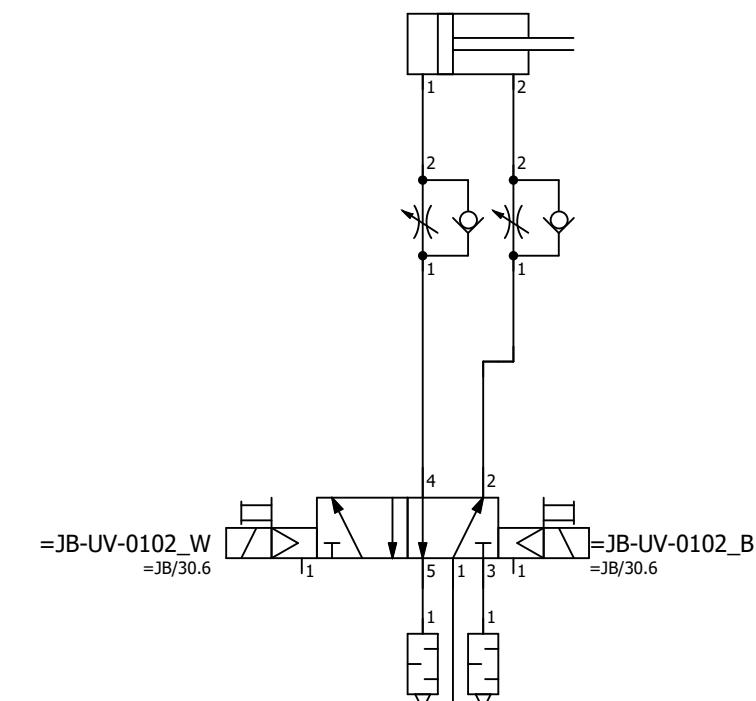
-PL001 ○ SPJ-T-F ○	-PL002 ○ SPJ-T-F ○	-PL003 ○ SPJ-T-F ○	-PL004 ○ SPJ-T-F ○	-PL005 ○ SPJ-T-F ○	-PL006 ○ SPJ-T-F ○
-PL007 ○ SPJ-T-F ○	-PL008 ○ SPJ-T-F ○	-PL009 ○ SPJ-J-F ○	-PL010 ○ SPJ-J-F ○	-PL011 ○ SPJ-J-F ○	-PL012 ○ SPJ-J-F ○
-PL013 ○ SPJ-J-F ○	-PL014 ○ SPJ-J-F ○	-PL015 ○ SPJ-J-F ○	-PL016 ○ SPJ-J-F ○	-PL017 ○ SPJ-K-F ○	-PL018 ○ SPJ-K-F ○
-PL019 ○ SPJ-K-F ○	-PL020 ○ SPJ-K-F ○	-PL021 ○ SPJ-T-F ○	-PL022 ○ SPJ-T-F ○	-PL023 ○ SPJ-T-F ○	-PL024 ○ SPJ-T-F ○

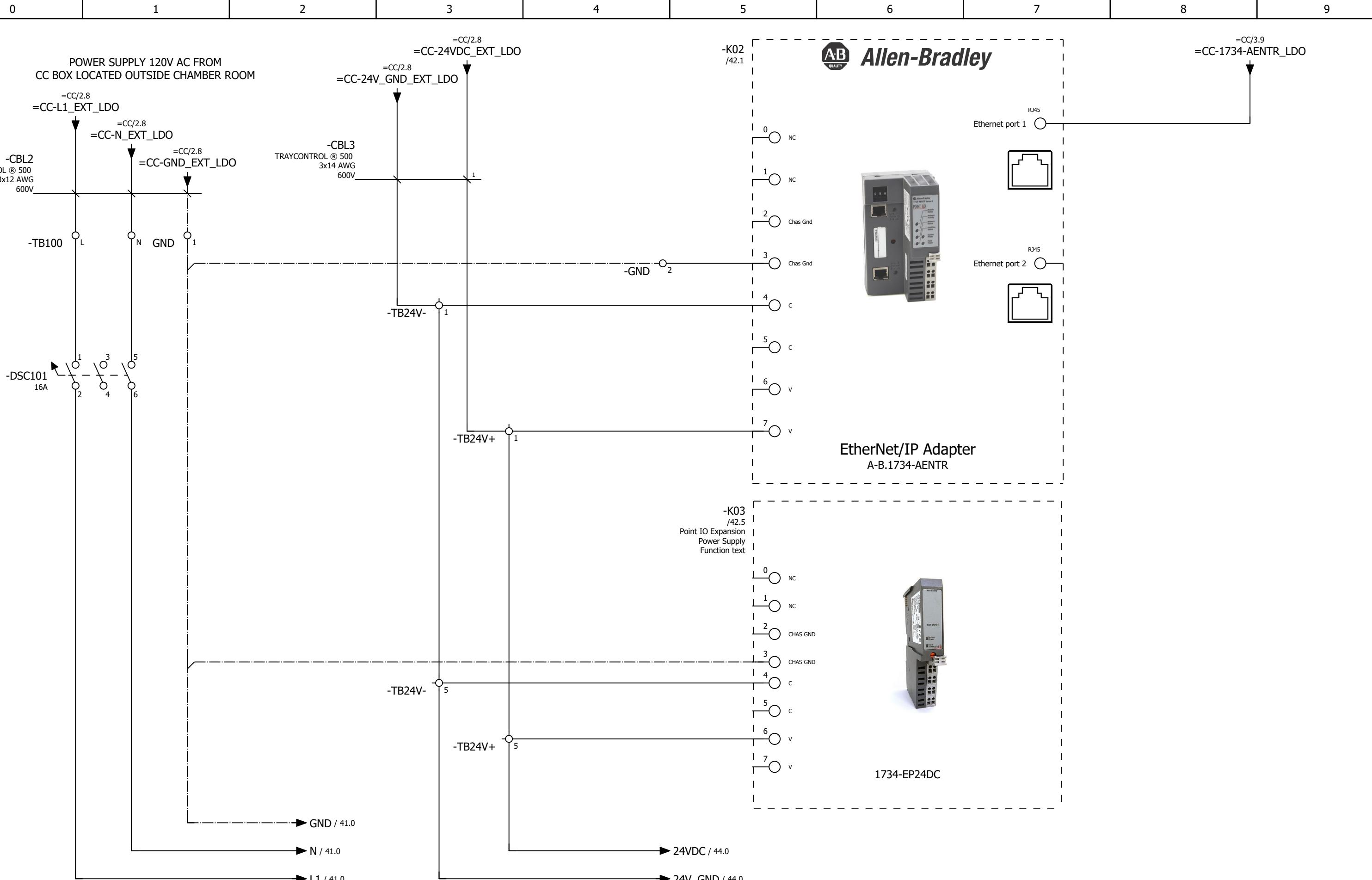
Actuation Mannequin

DGC-32-910-KF-YSRW-A



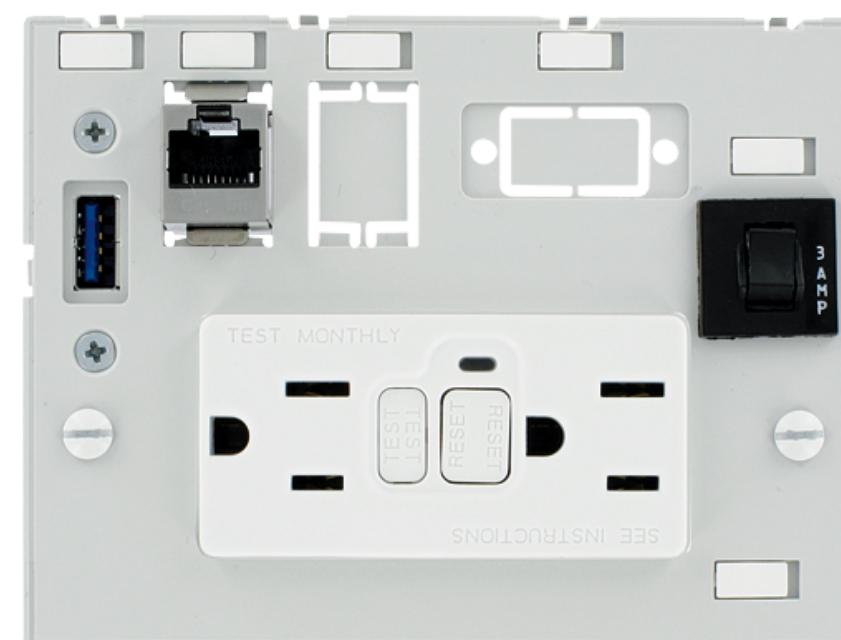
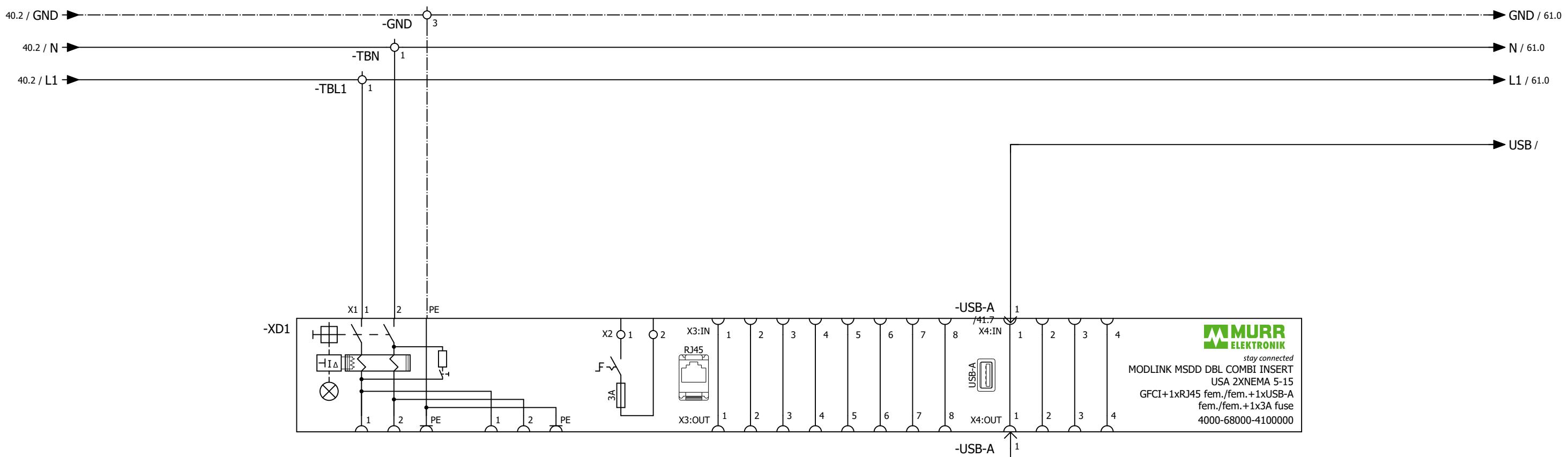
Actuation Gasoline Spill



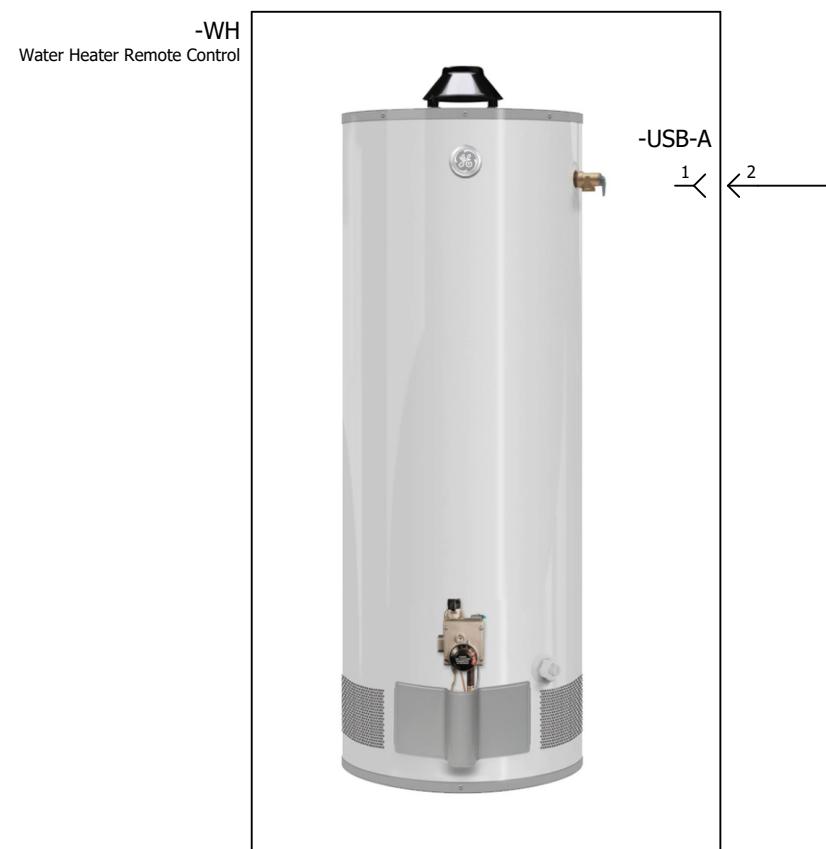


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CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	=PNEUMATIC/38	
CREADIS Inc.	Scale	1 : 1	Checker:		21/02/2022	Page description:	JUNCTION BOX POWER SUPPLY	Location:	=	Schematic desc.:	Next page nr:	41
			Approved:							Total pages:	34 / 59	

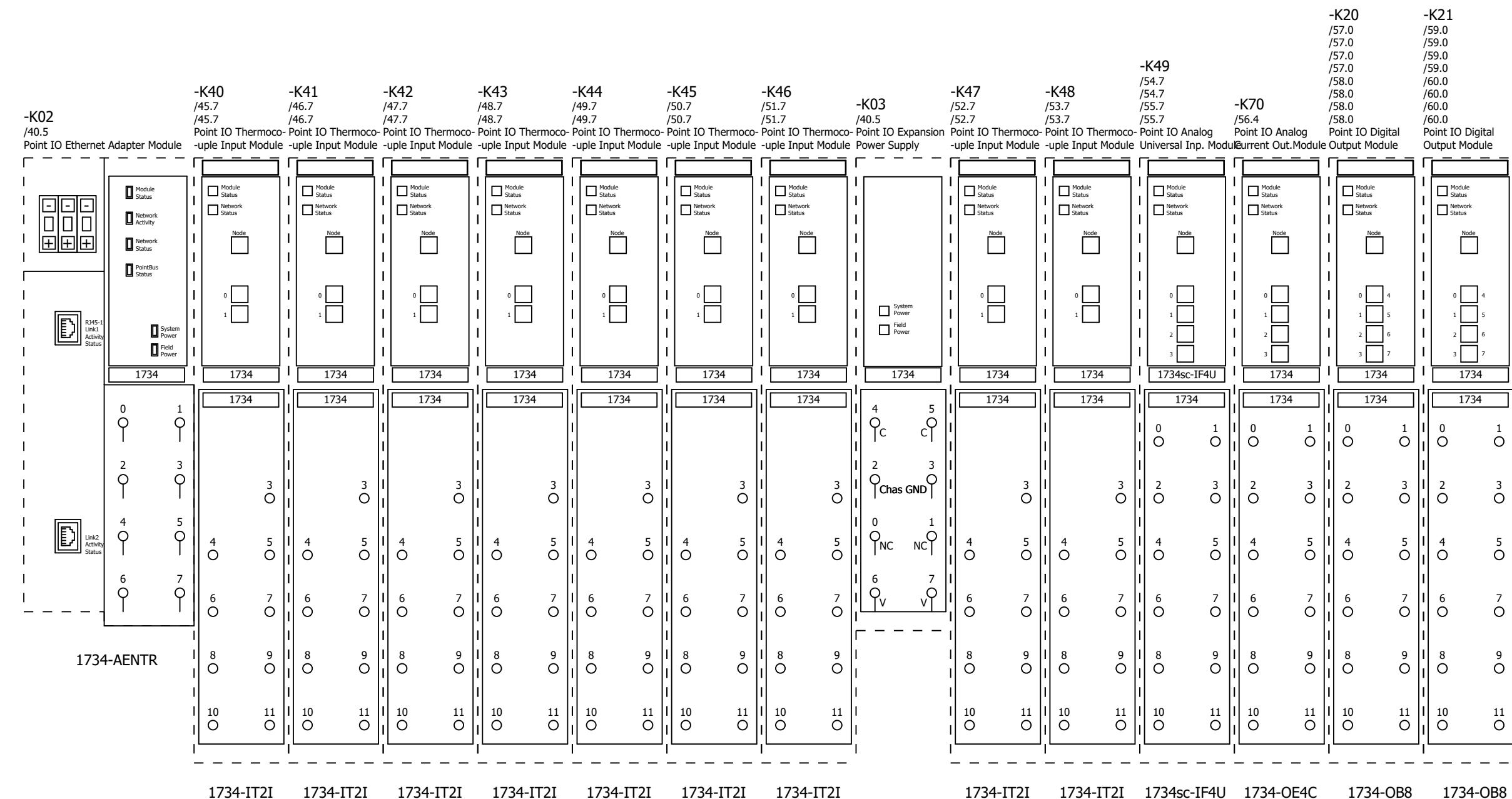
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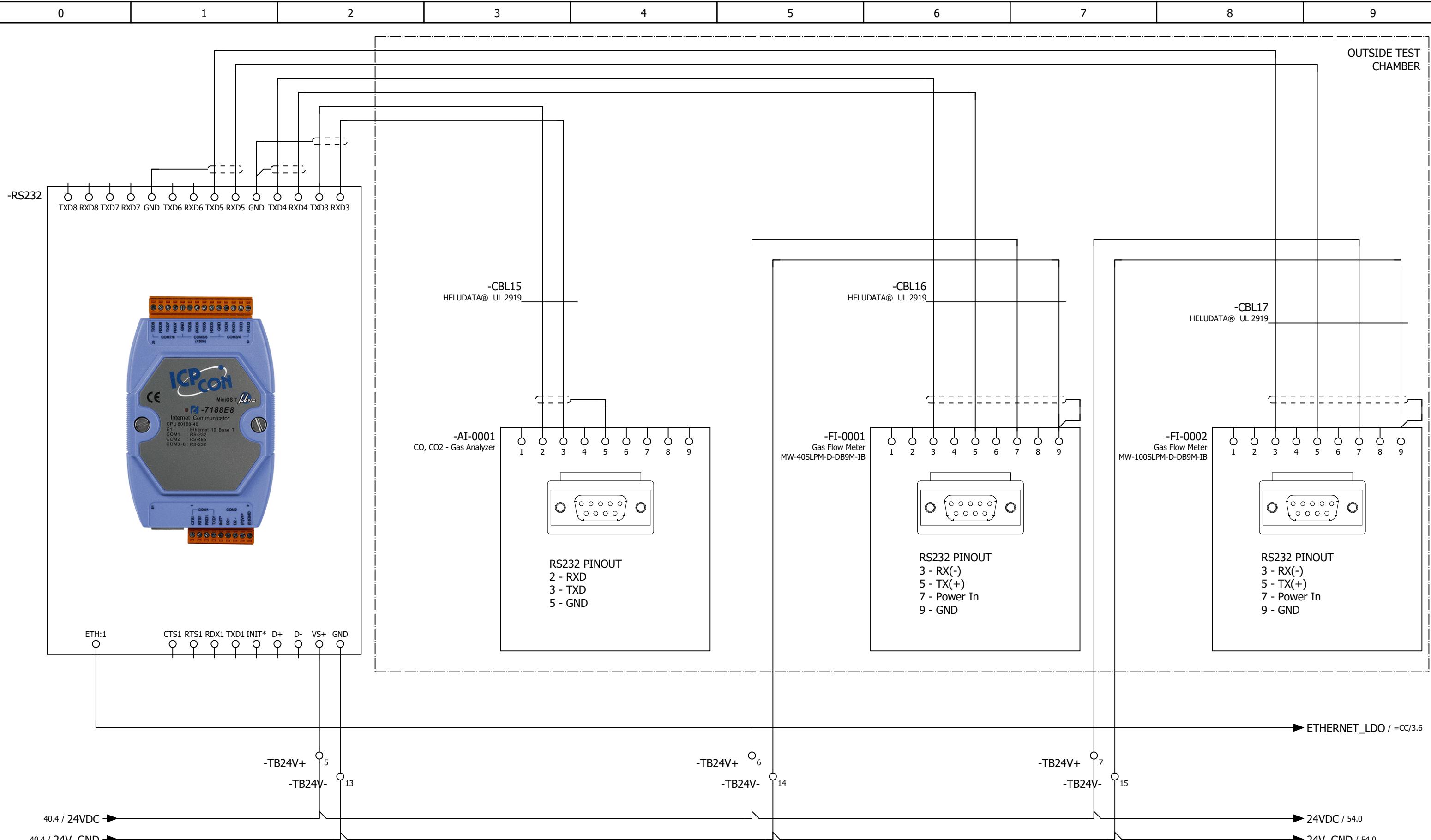
MOUNTAGE ON SIDE THE BOX



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	41
Customer	GE Appliances, a Haier company		Creator:		14/06/2021					Previous page nr:	40	
Scale	1 : 1		Checker:		21/02/2022	Page description:	FRONT PANEL INTERFACES	Location:	=	Schematic desc.:	Next page nr:	42
CREADIS innovative engineering CREADIS Inc.			Approved:							Total pages:	35 / 59	



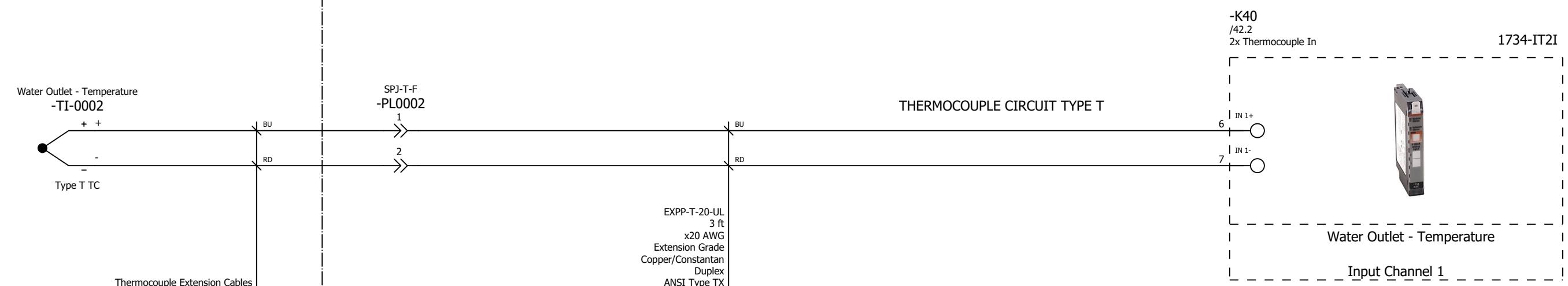
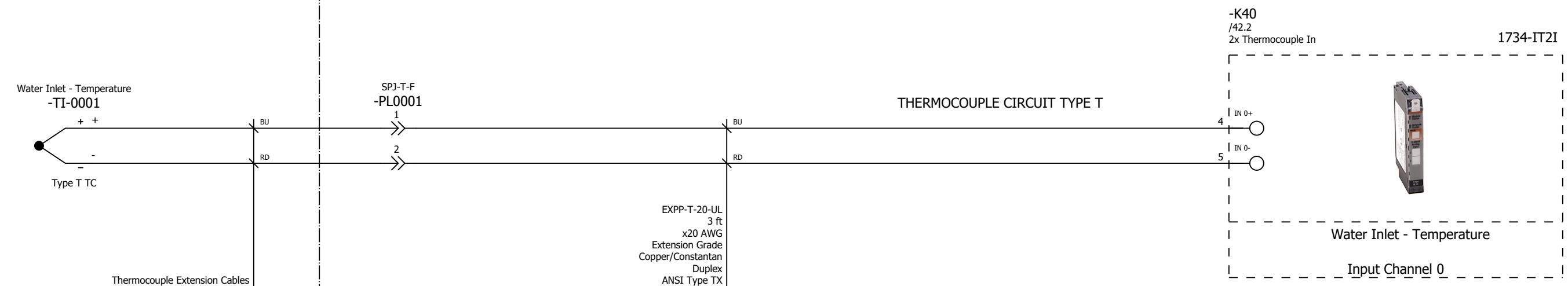
IO POINT FOR SIGNAL



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	44
Customer	GE Appliances, a Haier company		Creator:		14/06/2021					Previous page nr:	42	
Scale	1 : 1		Checker:		21/02/2022	Page description:	RS232/ETHERNET GATEWAY	Location:	=	Schematic desc.:	Next page nr:	45
CREADIS innovative engineering			Approved:							Total pages:	37 / 59	

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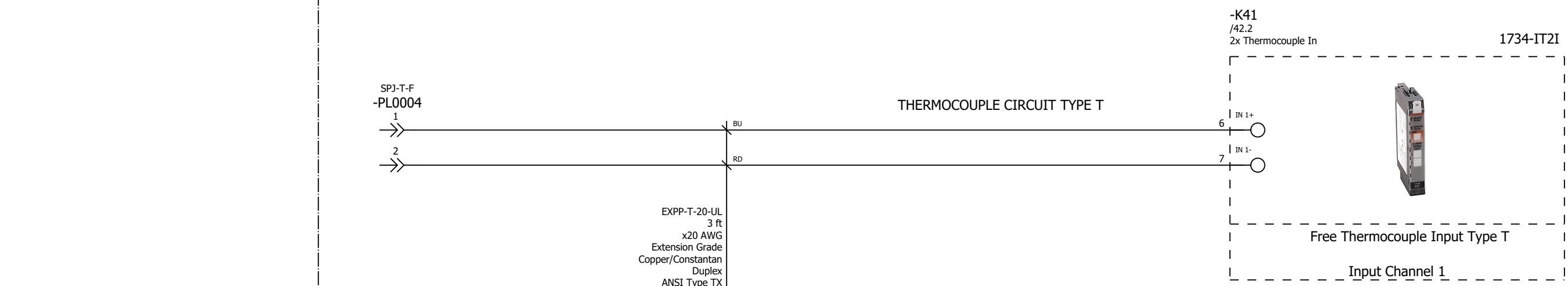
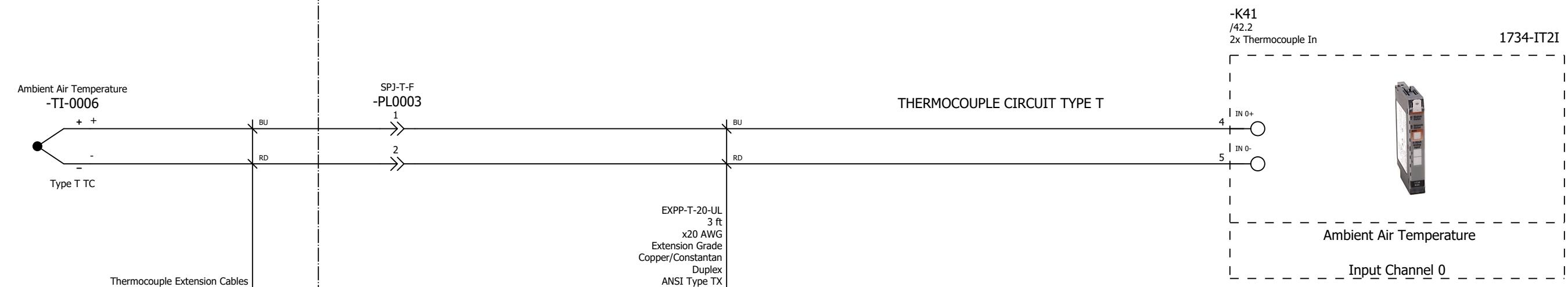
TEST CHAMBER



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	45
Customer	GE Appliances, a Haier company		Creator:		14/06/2021					Previous page nr:	44	
Scale	1 : 1		Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	46
CREADIS innovative engineering			Approved:							Total pages:	38 / 59	

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TEST CHAMBER



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	46
CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	45	
CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	47
			Approved:							Total pages:	39 / 59	

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OUTSIDE TEST CHAMBER

Cold Water Inlet to Intellifaucet
-TI-0003

Type T TC
Thermocouple Extension Cables

SPJ-T-F
-PL0005

1
2

EXPP-T-20-UL
3 ft
x20 AWG
Extension Grade
Copper/Constantan
Duplex
ANSI Type TX

THERMOCOUPLE CIRCUIT TYPE T

-K42
/42.3
2x Thermocouple In

4

5

IN 0+

IN 0-

1734-IT2I



Cold Water Inlet to Intellifaucet
Input Channel 0

Hot Water Inlet to Intellifaucet
-TI-0004

Type T TC
Thermocouple Extension Cables

SPJ-T-F
-PL0006

1
2

EXPP-T-20-UL
3 ft
x20 AWG
Extension Grade
Copper/Constantan
Duplex
ANSI Type TX

THERMOCOUPLE CIRCUIT TYPE T

-K42
/42.3
2x Thermocouple In

6

7

IN 1+

IN 1-

1734-IT2I

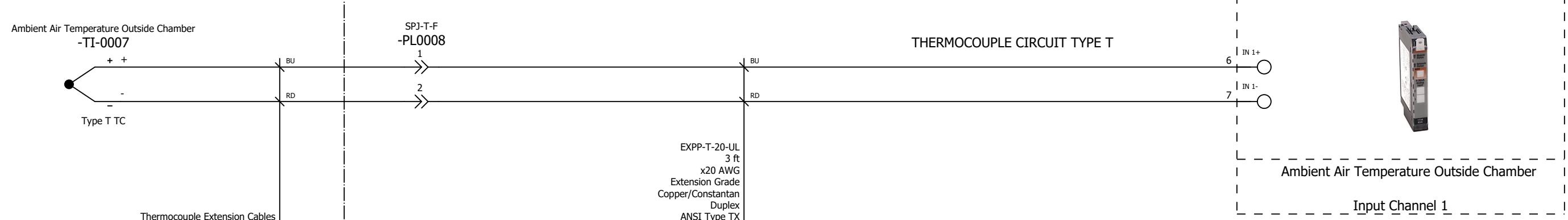
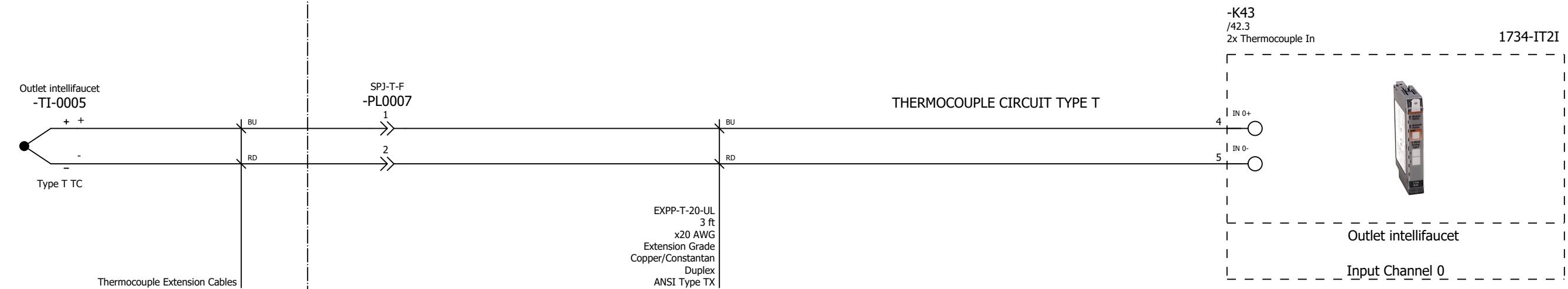


Hot Water Inlet to Intellifaucet
Input Channel 1

Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	47
Customer	GE Appliances, a Haier company		Creator:		14/06/2021					Previous page nr:	46	
Scale	1 : 1		Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	48
CREADIS innovative engineering			Approved:							Total pages:	40 / 59	

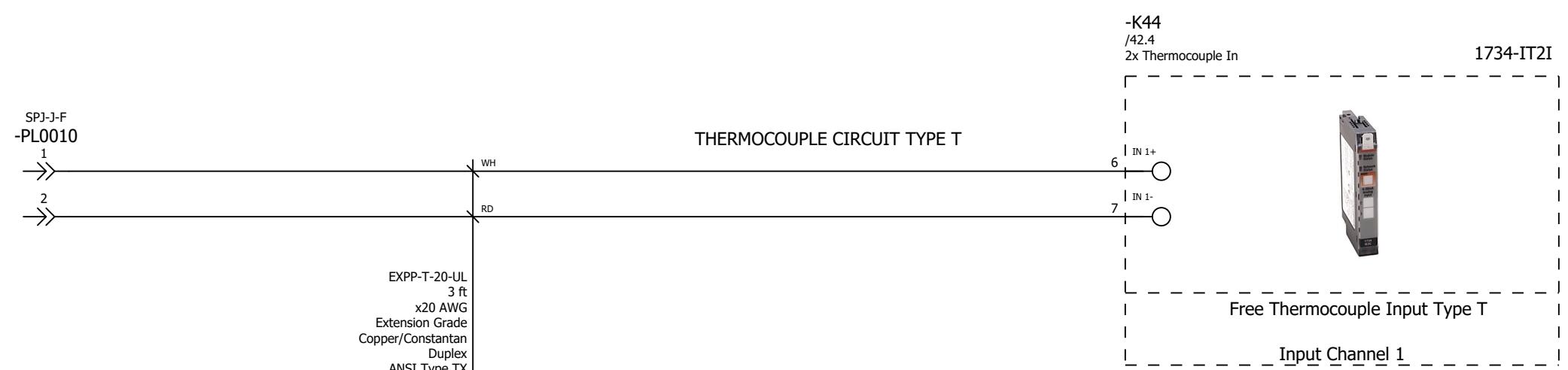
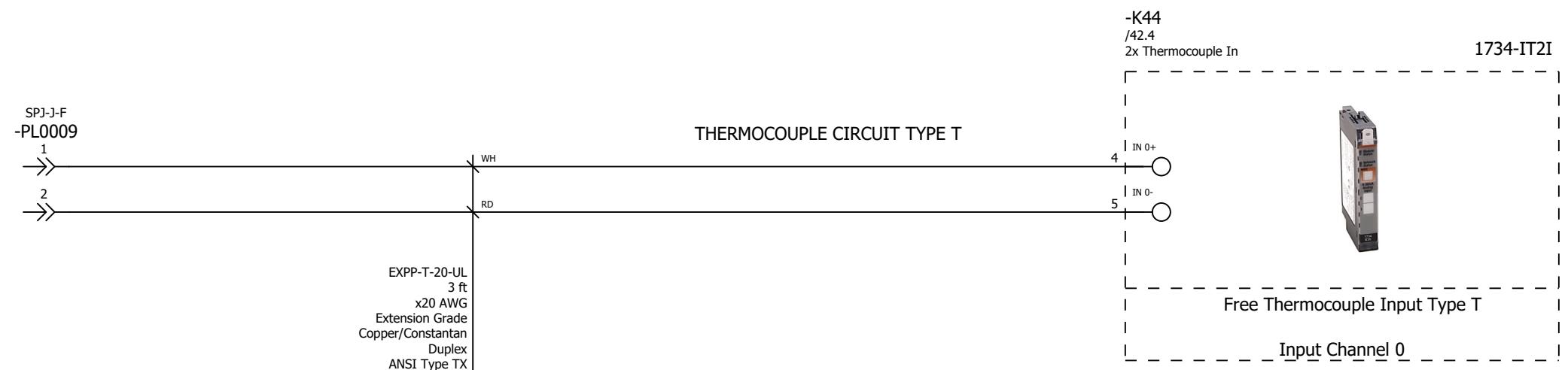
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OUTSIDE TEST CHAMBER



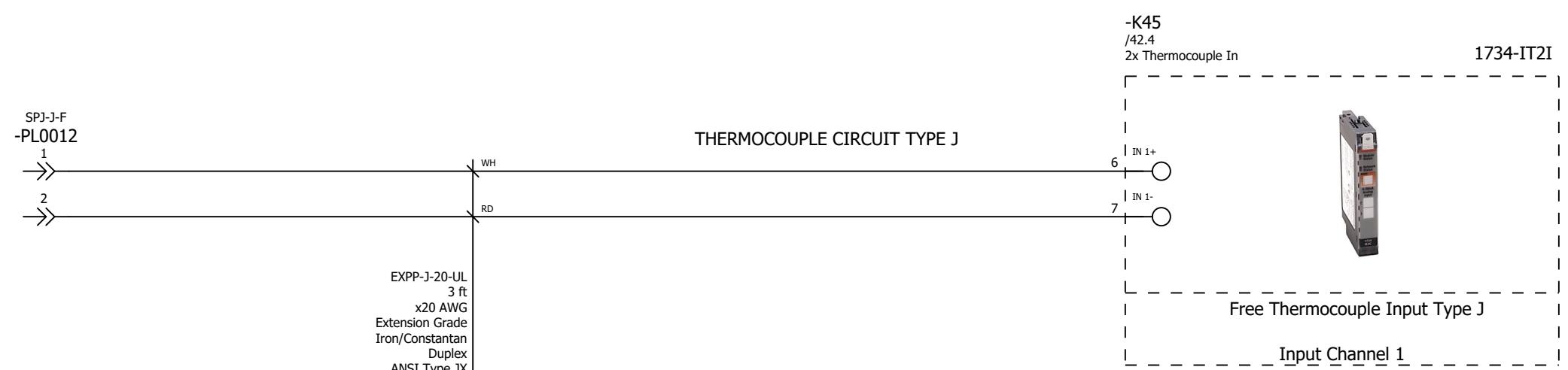
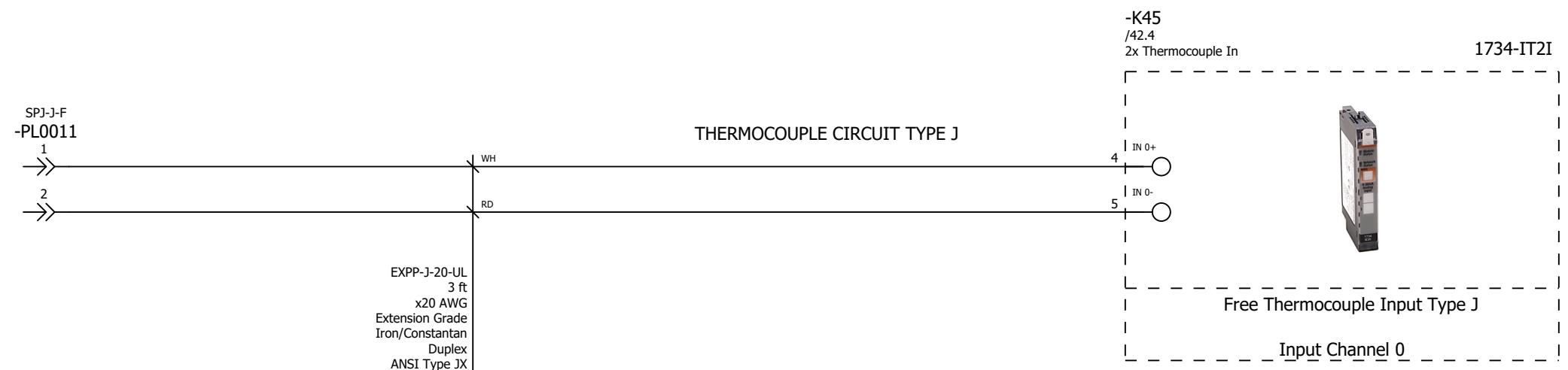
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Customer	GE Appliances, a Haier company		Creator:		14/06/2021					Previous page nr:	47	
Scale	1 : 1		Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	49
CREADIS innovative engineering CREADIS Inc.			Approved:							Total pages:	41 / 59	

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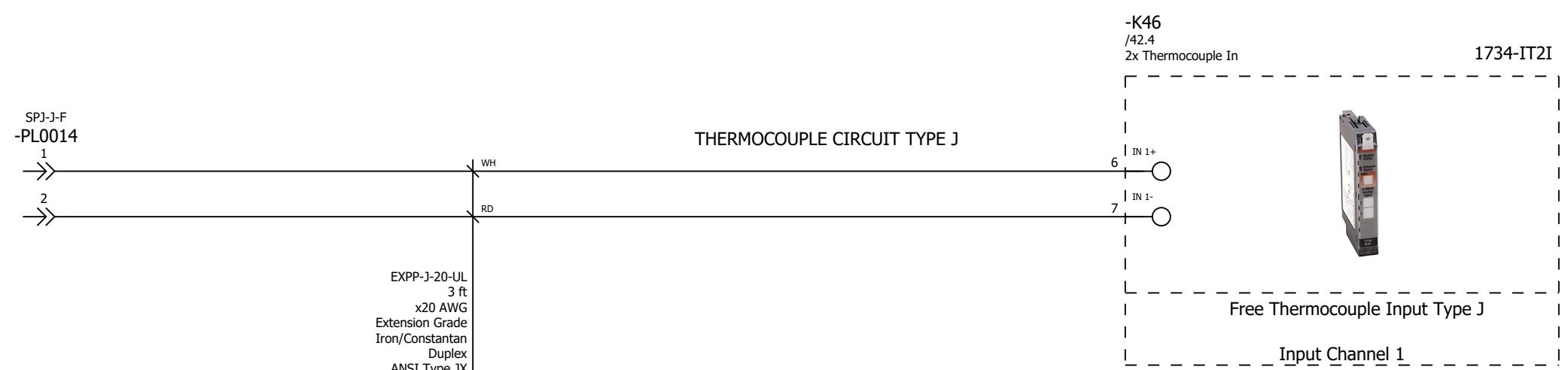
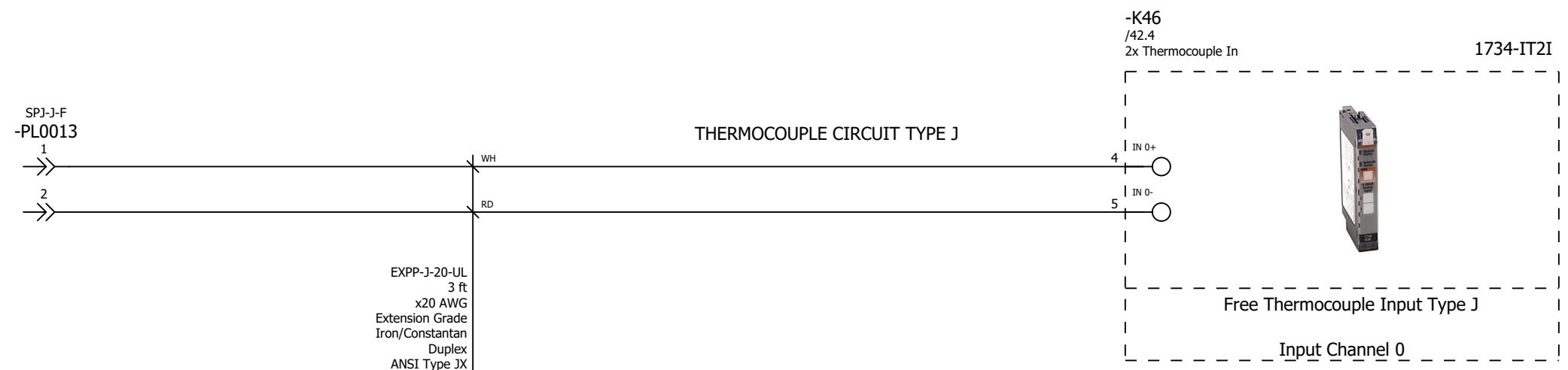
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C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:		48
CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	50
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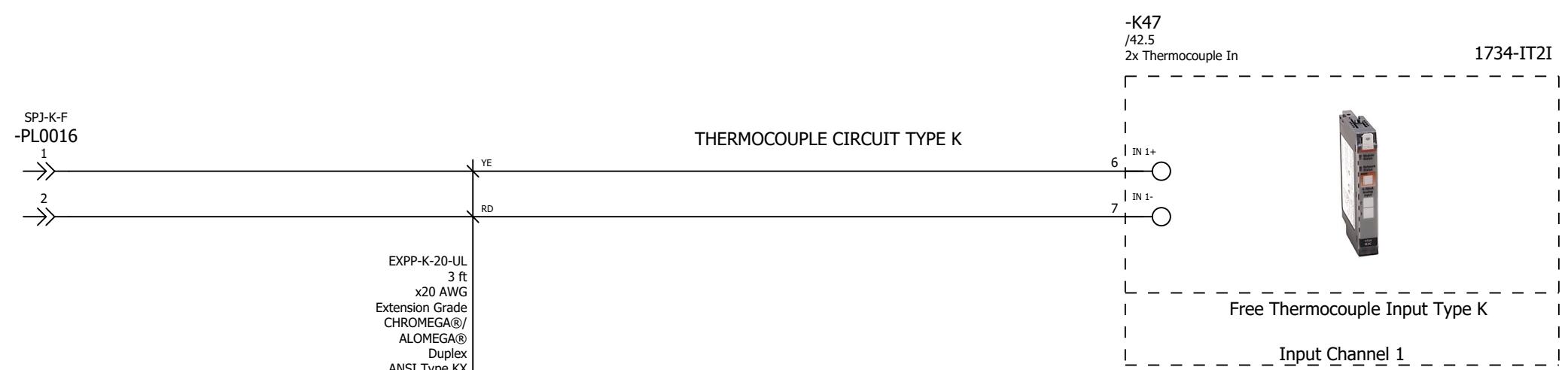
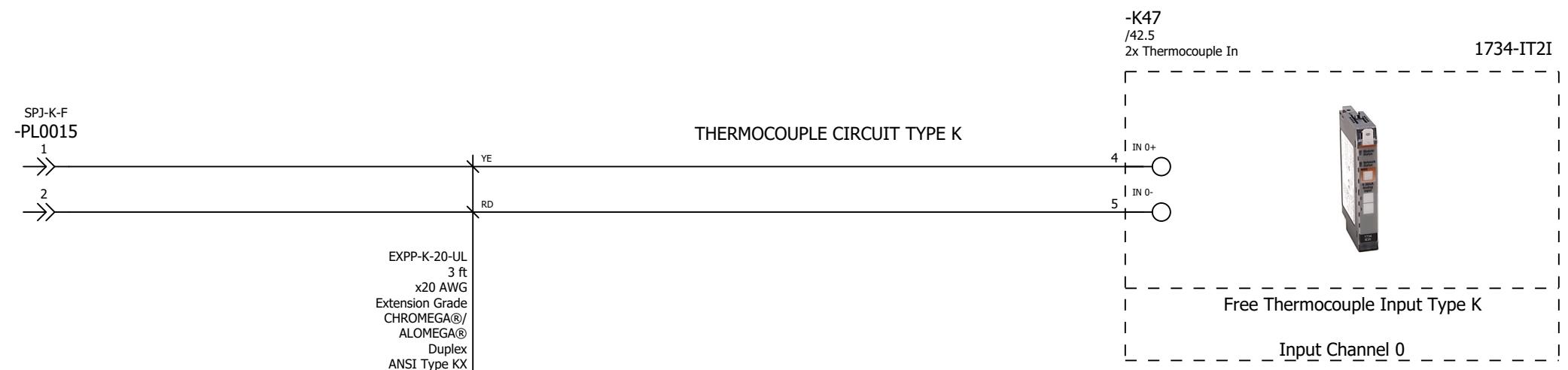
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C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	49	
CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	51
			Approved:							Total pages:	43 / 59	

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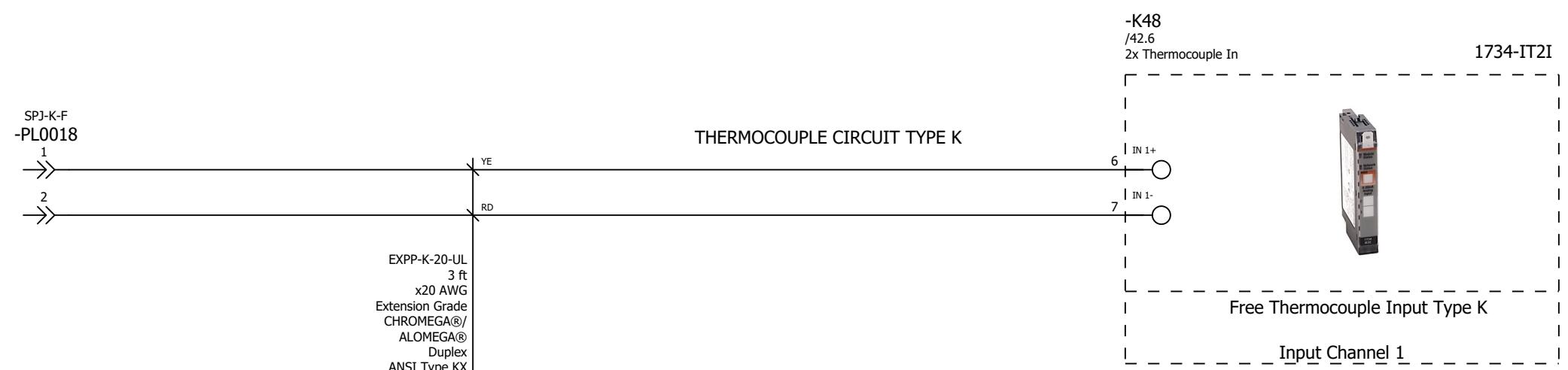
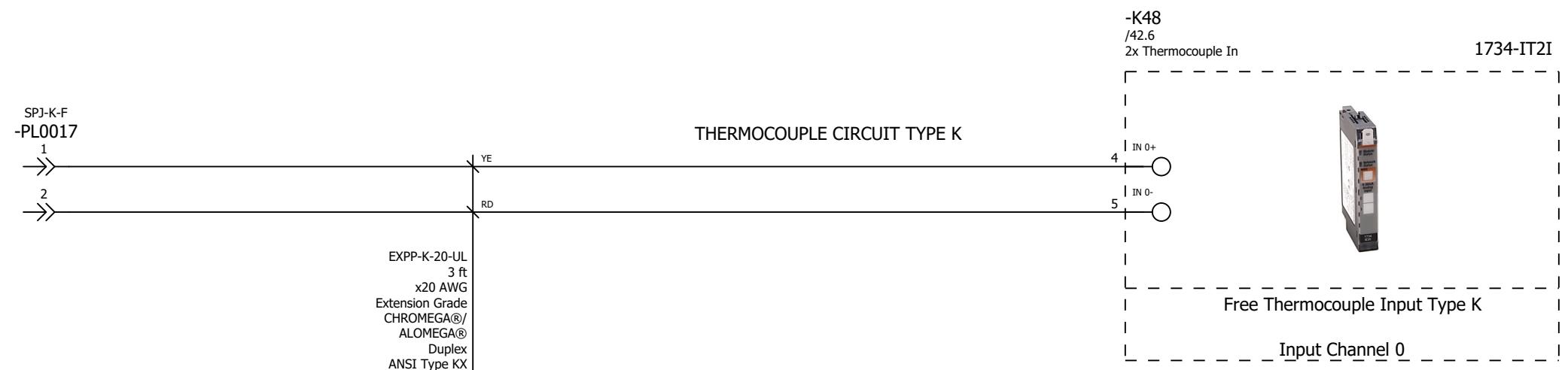
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CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	52
			Approved:							Total pages:	44 / 59	

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Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	52
CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	51	
CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	53
			Approved:							Total pages:	45 / 59	

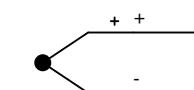
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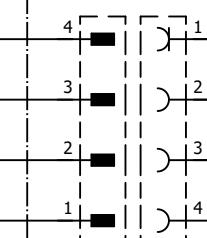
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C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:		52
CREADIS Inc.	Scale	1 : 1	Checker:		05/10/2021	Page description:	THERMOCOUPLE INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	54
			Approved:							Total pages:	46 /	59

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TEST CHAMBER

Millivoltage Output Pilot
-BI-0001-CBL19
TRAYCONTROL ® 500
3x18 AWG
600V-TB110
1
2-TB110
1
2-K49
/42.6
4x Universal In0
IN 0+
2
IN 0-

1734sc-IF4U

Millivoltage Output Pilot
Input Channel 0
1734sc-IF4U-PI0001
Air Different Pressure

Integrated cable

-TB110
3-TB110
4-K49
/42.6
4x Thermocouple In4
IN 1+
6
IN 1-

1734sc-IF4U

Air Different Pressure
Input Channel 1
1734sc-IF4U

44.8 / 24V_GND → 24V_GND / 55.0
44.8 / 24VDC → 24VDC / 55.0

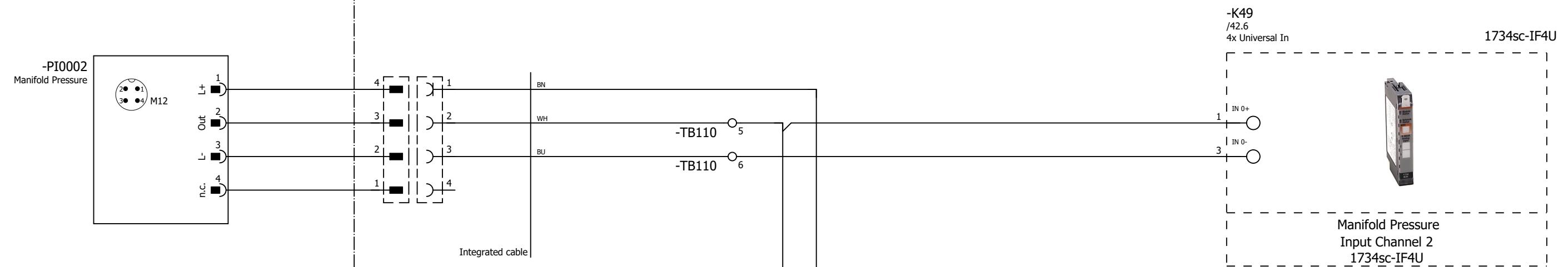
-TB24V-
2-TB24V+
2

Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	54
C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	53	
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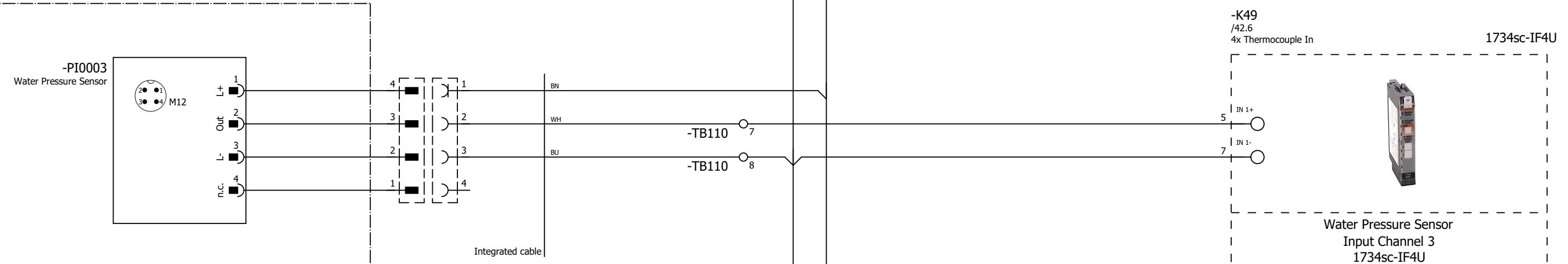
47 / 59

0 1 2 3 4 5 6 7 8 9

TEST CHAMBER



OUTSIDE TEST CHAMBER



54.9 / 24V_GND → 24V_GND / 56.0

54.9 / 24VDC → 24VDC / 56.0

-TB24V- 3
-TB24V+ 3

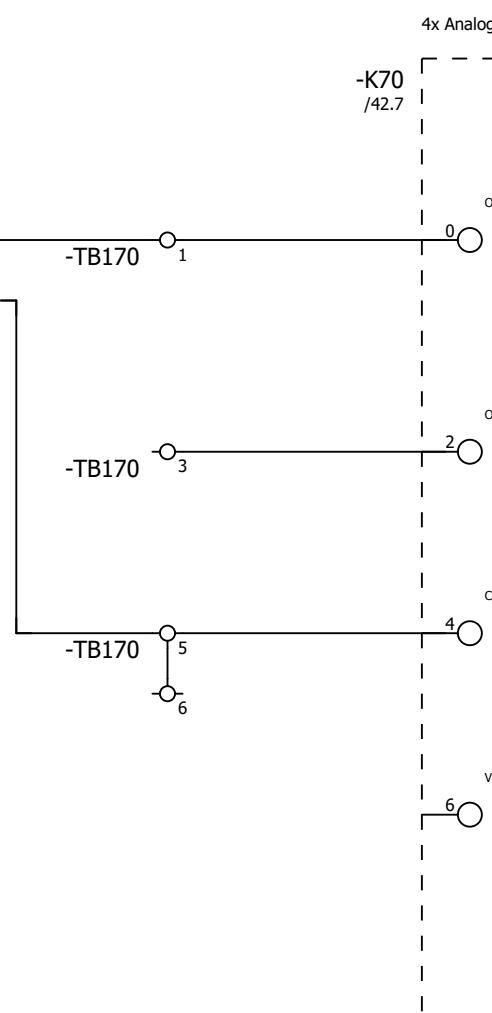
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C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	54	
CREADIS Inc.	Scale	1 : 1	Checker:		01/07/2021	Page description:	ANALOG INPUT MODULE	Location:	=	Schematic desc.:	Next page nr:	56
			Approved:							Total pages:	48 / 59	

-UV-0201
EPV-312B
Water Outlet Proportional Valve
Hass Manufacturing Company



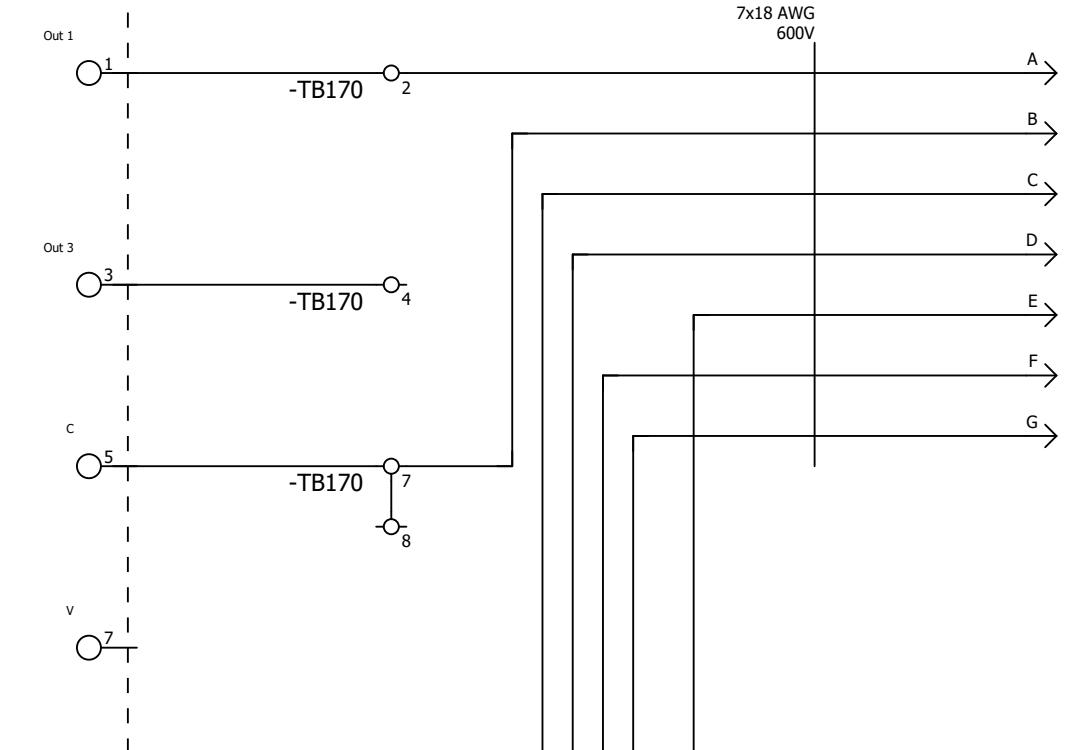
-CBL6
TRAYCONTROL ® 500
5x18 AWG
600V

DIP SWITCH No. 8 - Pos. ON - 4-20mA

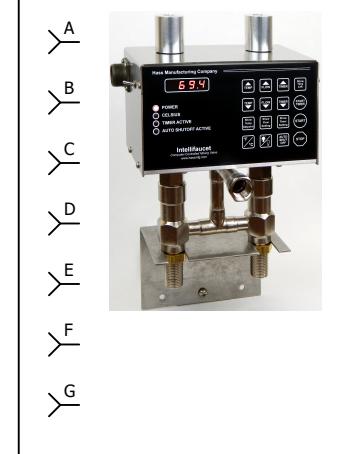
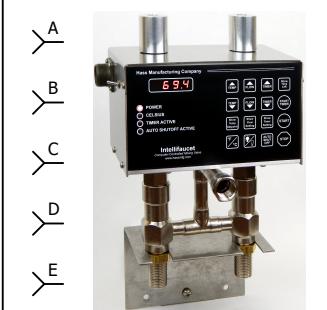


Rockwell
Automation

-CBL7
TRAYCONTROL ® 500
7x18 AWG
600V



-UV-0202
DRK375
Water Temperature & Flow Control
Hass Manufacturing Company



-0202CR1

13 | 14 /59.7

-TB171 1

-0202CR2

13 | 14 /59.7

-TB171 2

-0202CR3

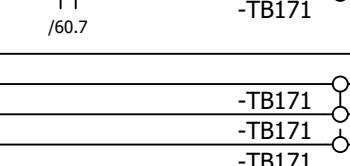
13 | 14 /60.7

-TB171 3

-0202CR4

13 | 14 /60.7

-TB171 4



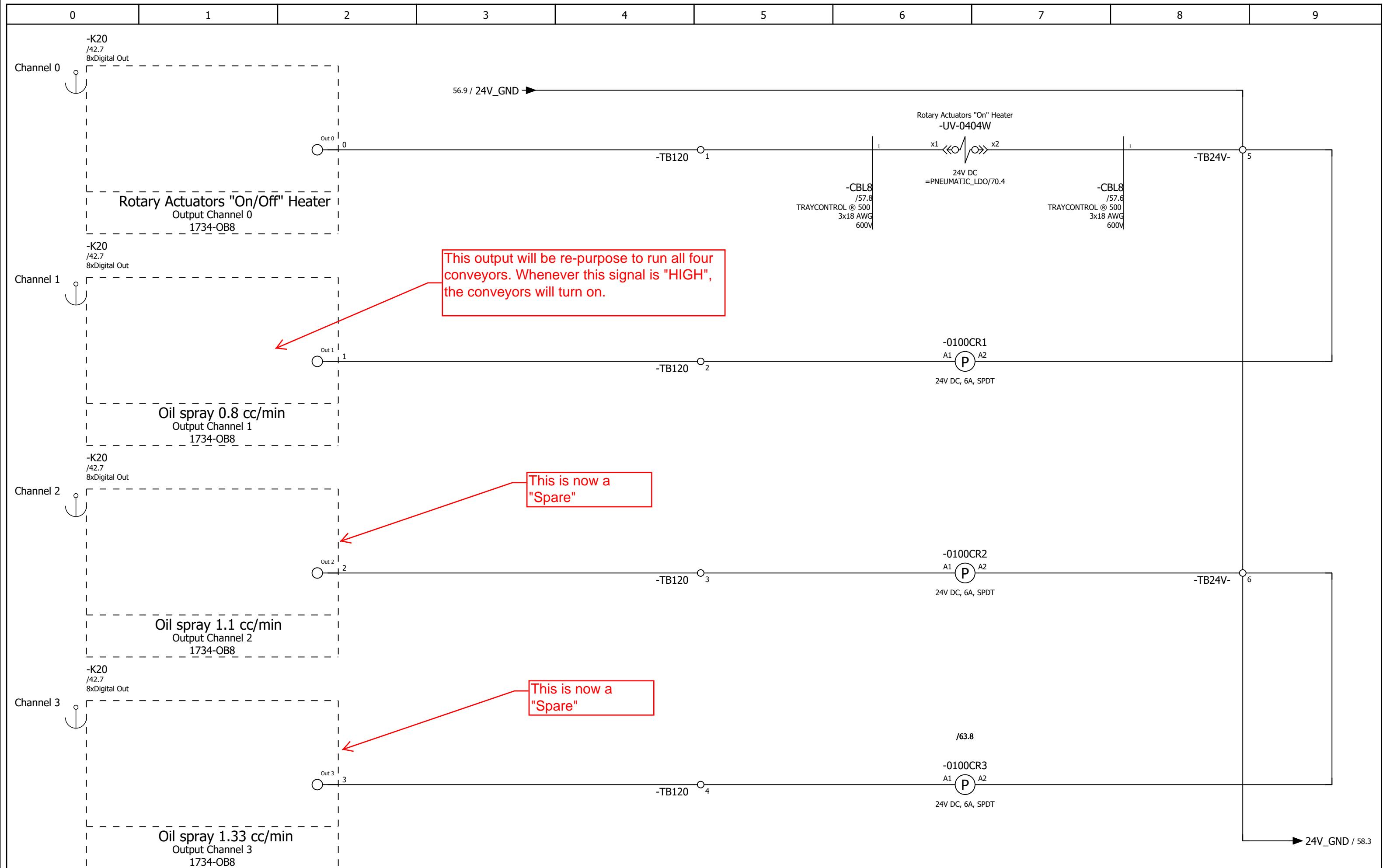
55.9 / 24V_GND → 24V_GND / 57.3

55.9 / 24VDC → 24VDC /

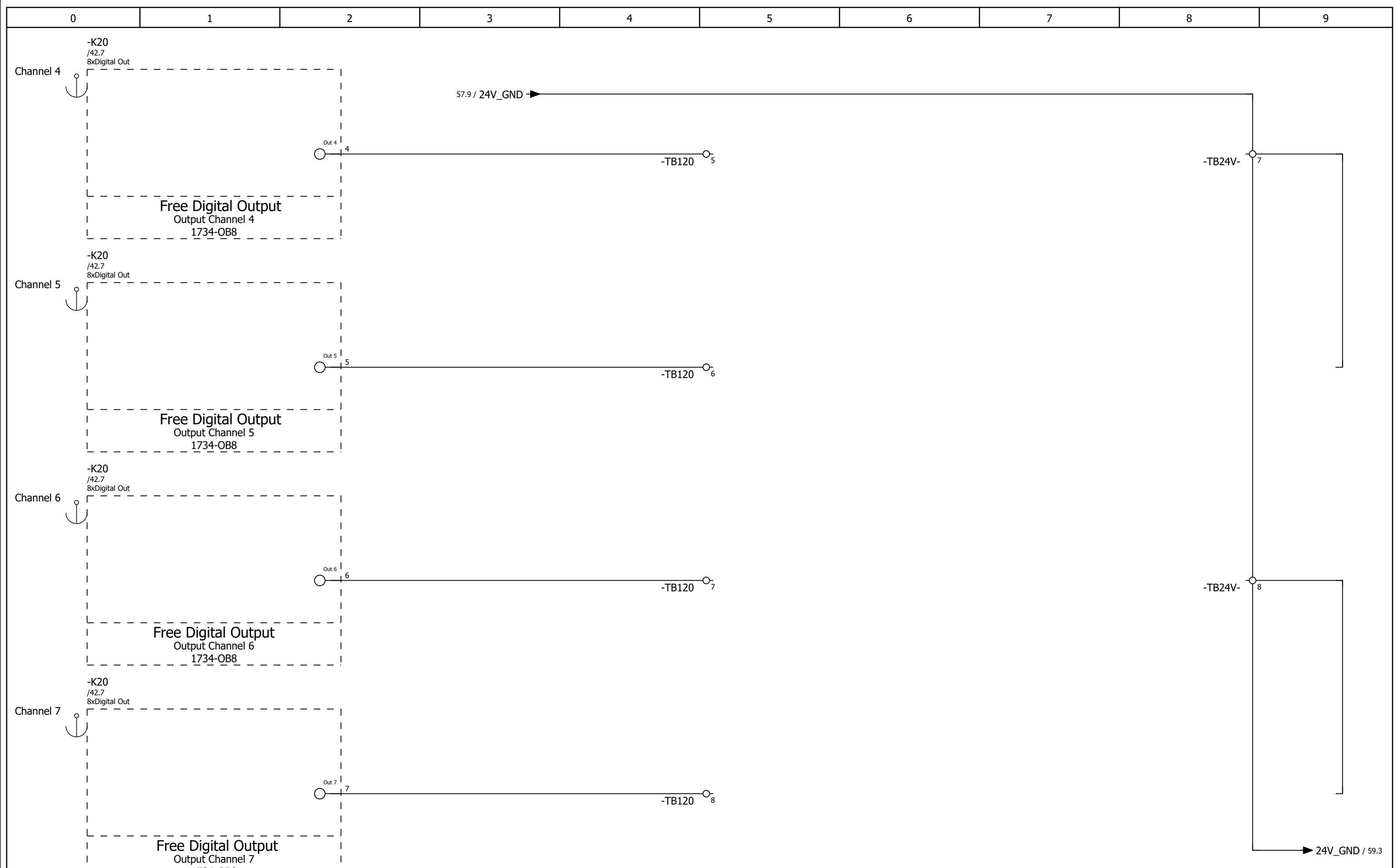
-TB24V-

-TB24V+

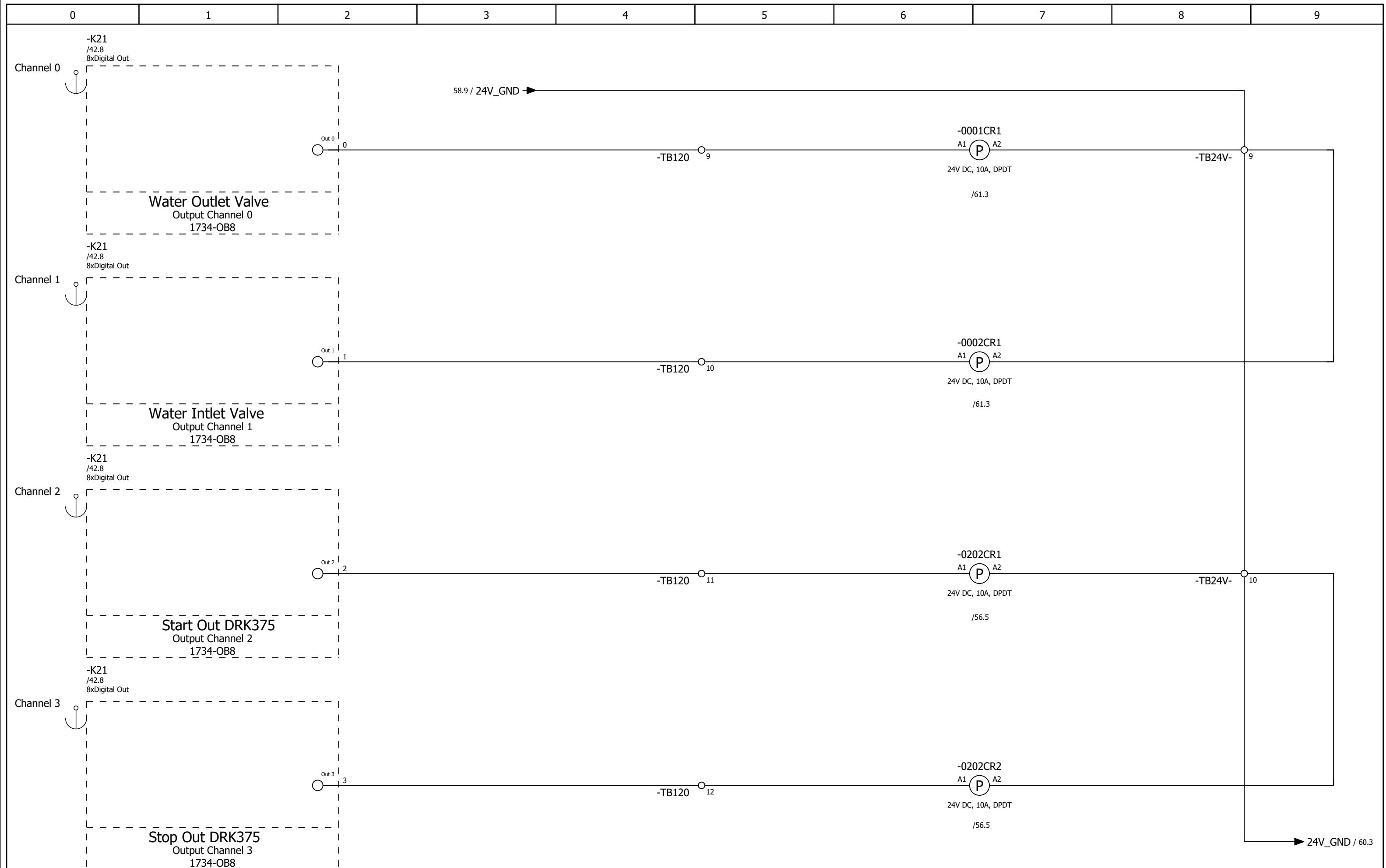
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C R E A D I S innovative engineering CREADIS Inc.	62173			GE Appliances Water Heater Validation	= JB_LDO		Previous page nr:	55	
Customer	GE Appliances, a Haier company	Creator:	14/06/2021	Page description:	ANALOG OUTPUT MODULE	Location:	Schematic desc.:	Next page nr:	57
Scale	1 : 1	Checker:	14/06/2021				Total pages:	49 / 59	
		Approved:							



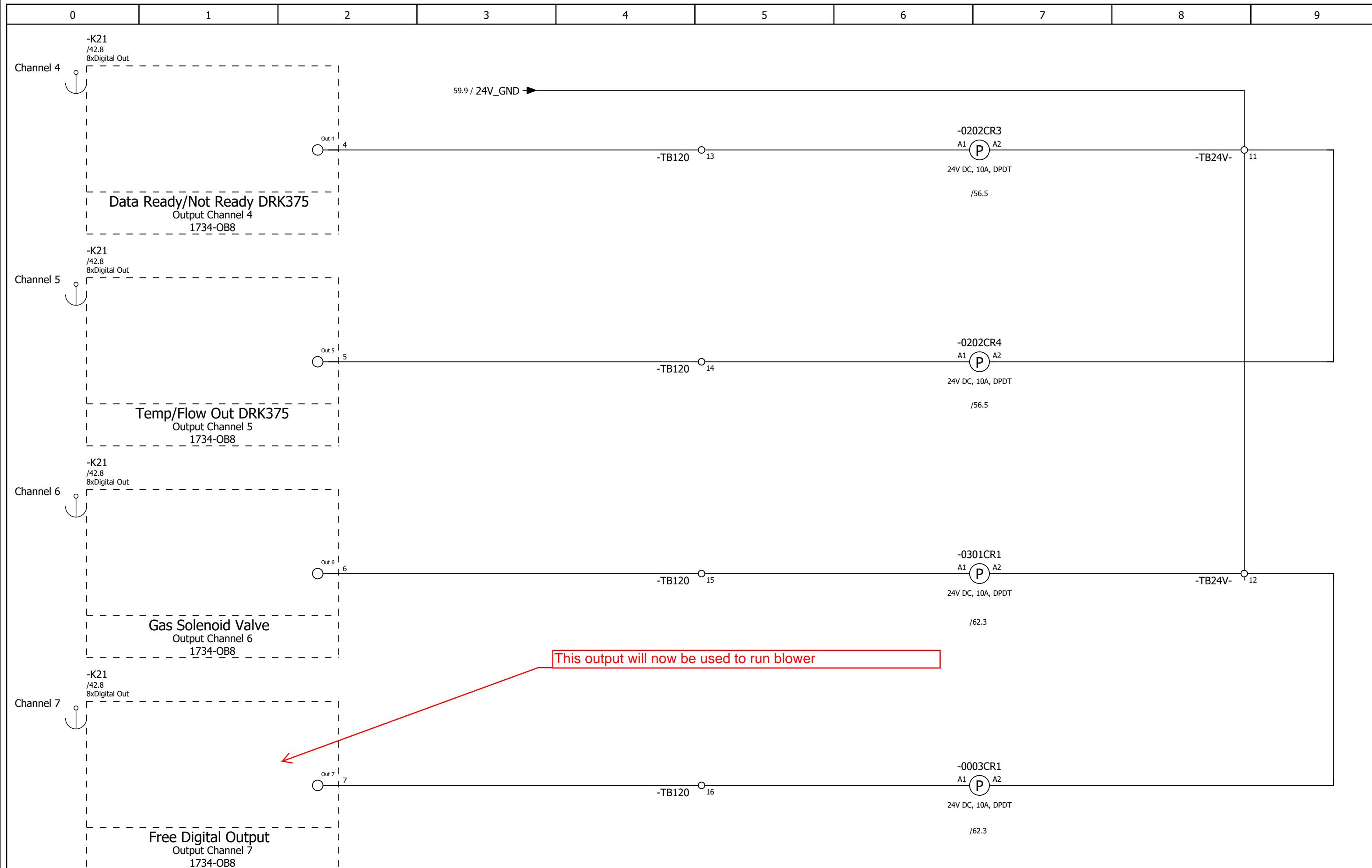
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Customer	GE Appliances, a Haier company	Creator:			14/06/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Previous page nr:	56
Scale	1 : 1	Checker:			09/07/2021	Approved:					Next page nr:	58
CREADIS innovative engineering CREADIS Inc.											Total pages:	50 / 59



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	58
CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	57	
CREADIS Inc.	Scale	1 : 1	Checker:		29/06/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Next page nr:	59
			Approved:							Total pages:	51 / 59	

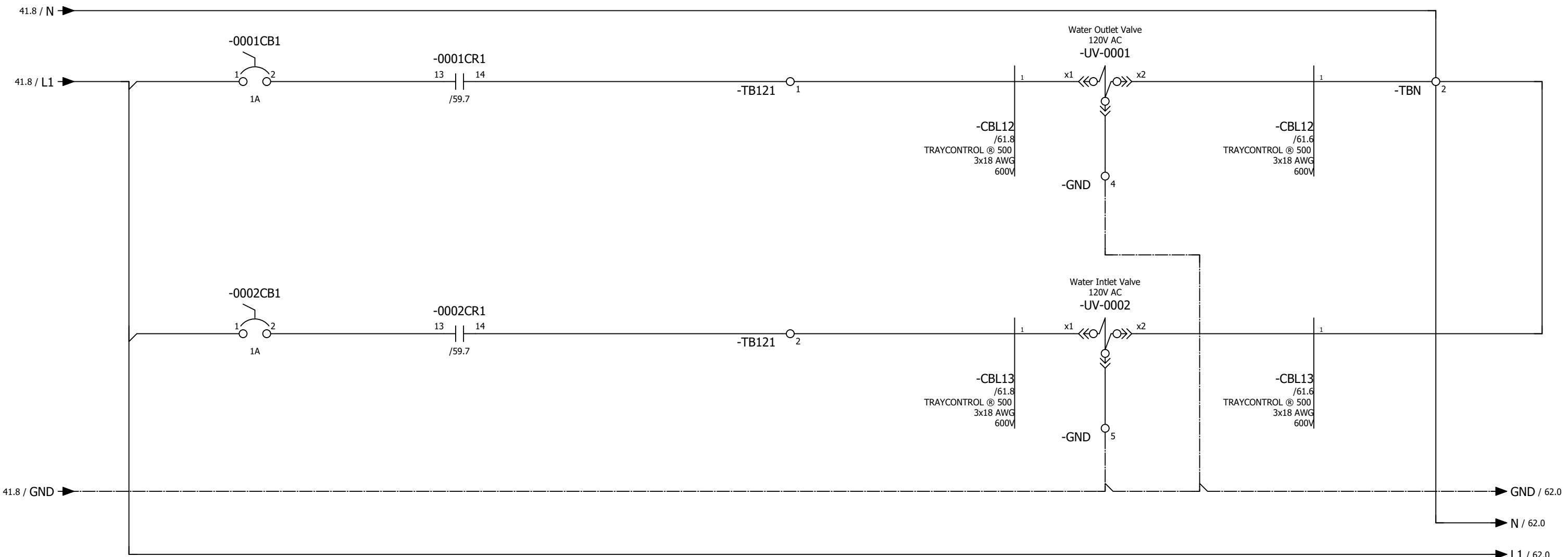


Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	59
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CREADIS Inc.	Scale	1 : 1	Checker:		15/06/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Next page nr:	60
			Approved:							Total pages:	52 / 59	



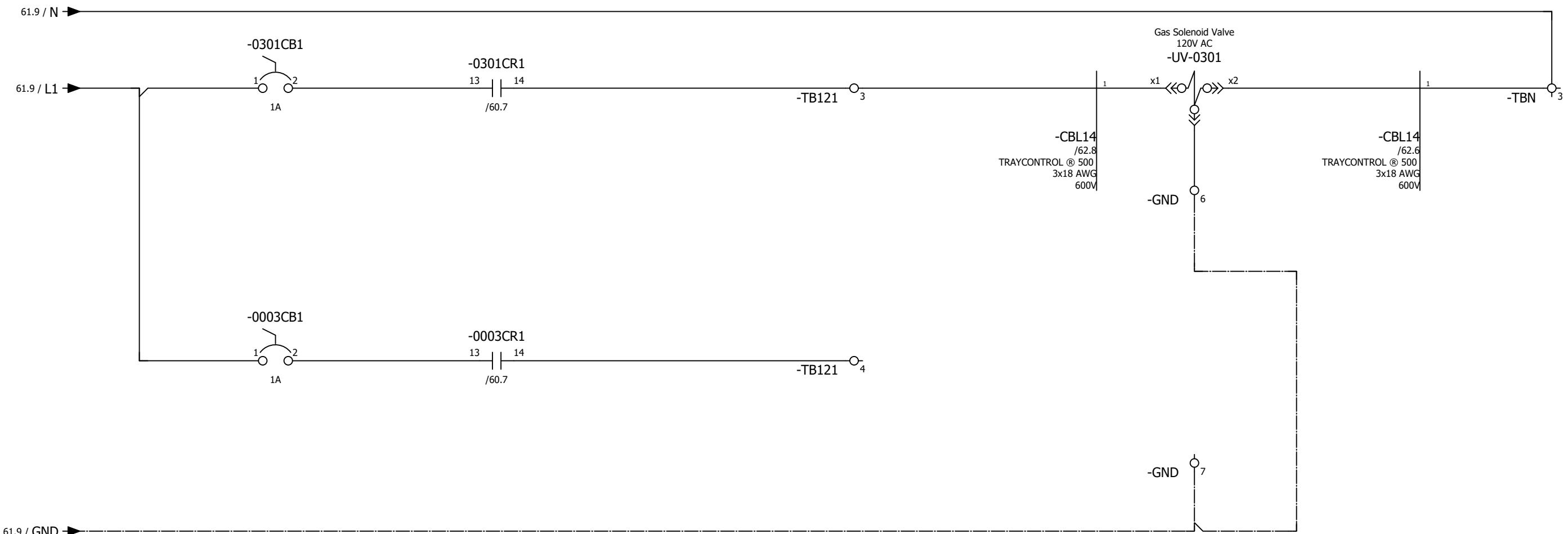
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Customer	GE Appliances, a Haier company	Creator:			14/06/2021	Page description:	DIGITAL OUTPUT 24V DC MODULE	Location:	=	Schematic desc.:	Previous page nr:	59
Scale	1 : 1	Checker:			29/06/2021	Approved:					Next page nr:	61
CREADIS innovative engineering CREADIS Inc.											Total pages:	53 / 59

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Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	61
C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	60	
CREADIS Inc.	Scale	1 : 1	Checker:		14/06/2021	Page description:	DIGITAL OUTPUT 120V DC	Location:	=	Schematic desc.:	Next page nr:	62
			Approved:							Total pages:	54 / 59	

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Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	62
CREADIS innovative engineering CREADIS Inc.	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	61	
Scale	1 : 1		Checker:		14/06/2021	Page description:	DIGITAL OUTPUT 120V DC	Location:	=	Schematic desc.:	Next page nr:	63
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0	1	2	3	4	5	6	7	8	9
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QUANTUM

-DI1 O_{24V}-DI1 O_{IN}-DI1 O_{GND}

Oil spray 0.8 cc/min

-0100CR1
14 | 11
/57.6-DI2 O_{24V}-DI2 O_{IN}-DI2 O_{GND}

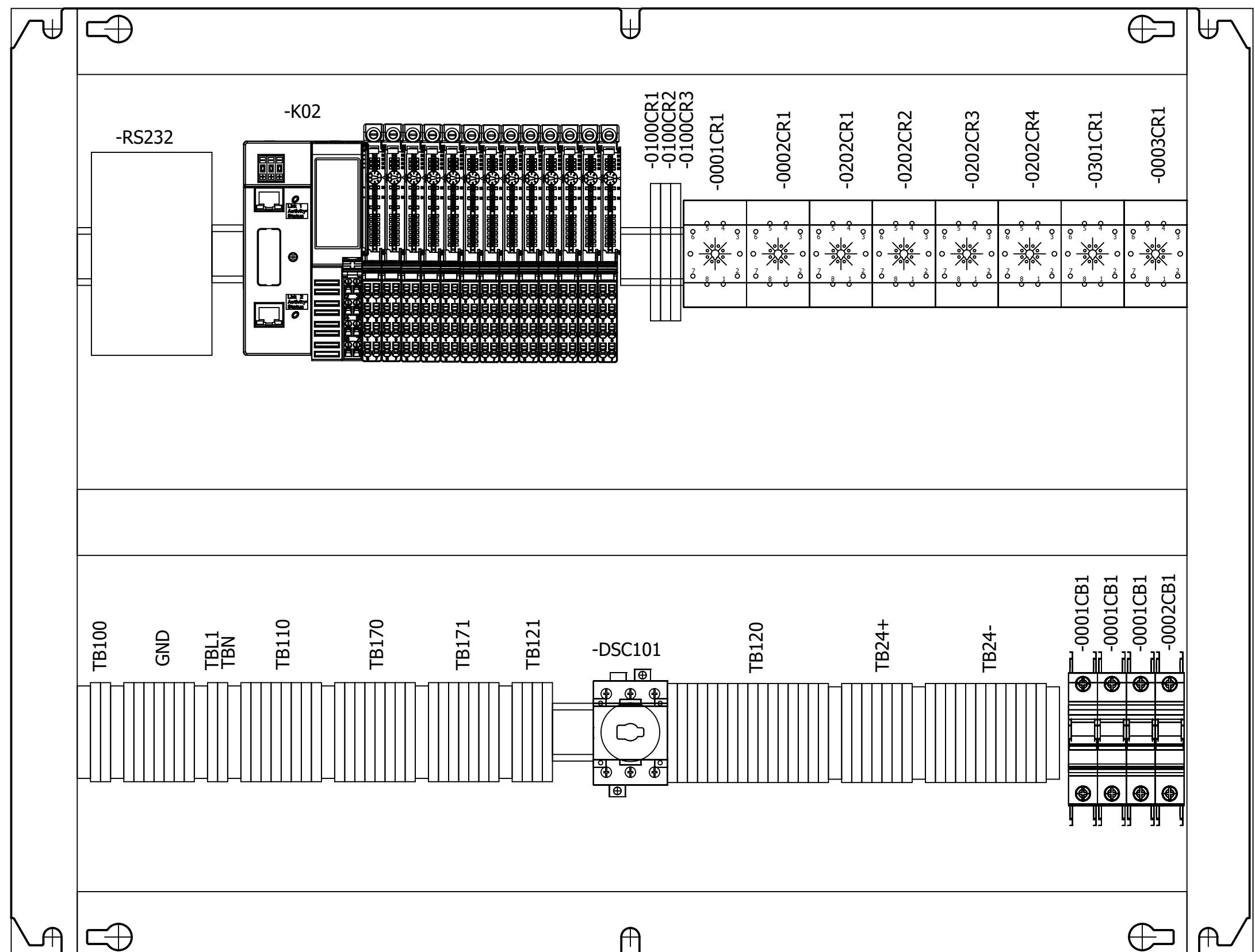
Oil spray 1.1 cc/min

-0100CR2
14 | 11
/57.6-DI3 O_{24V}-DI3 O_{IN}-DI3 O_{GND}

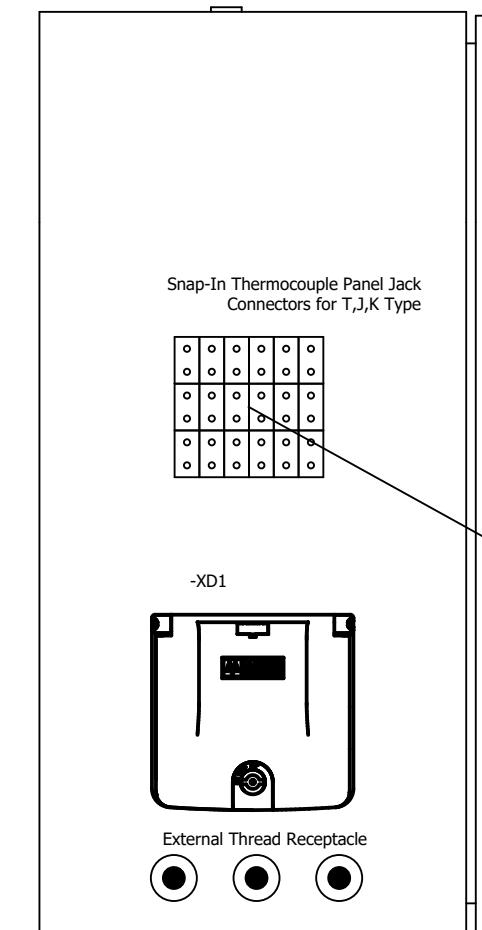
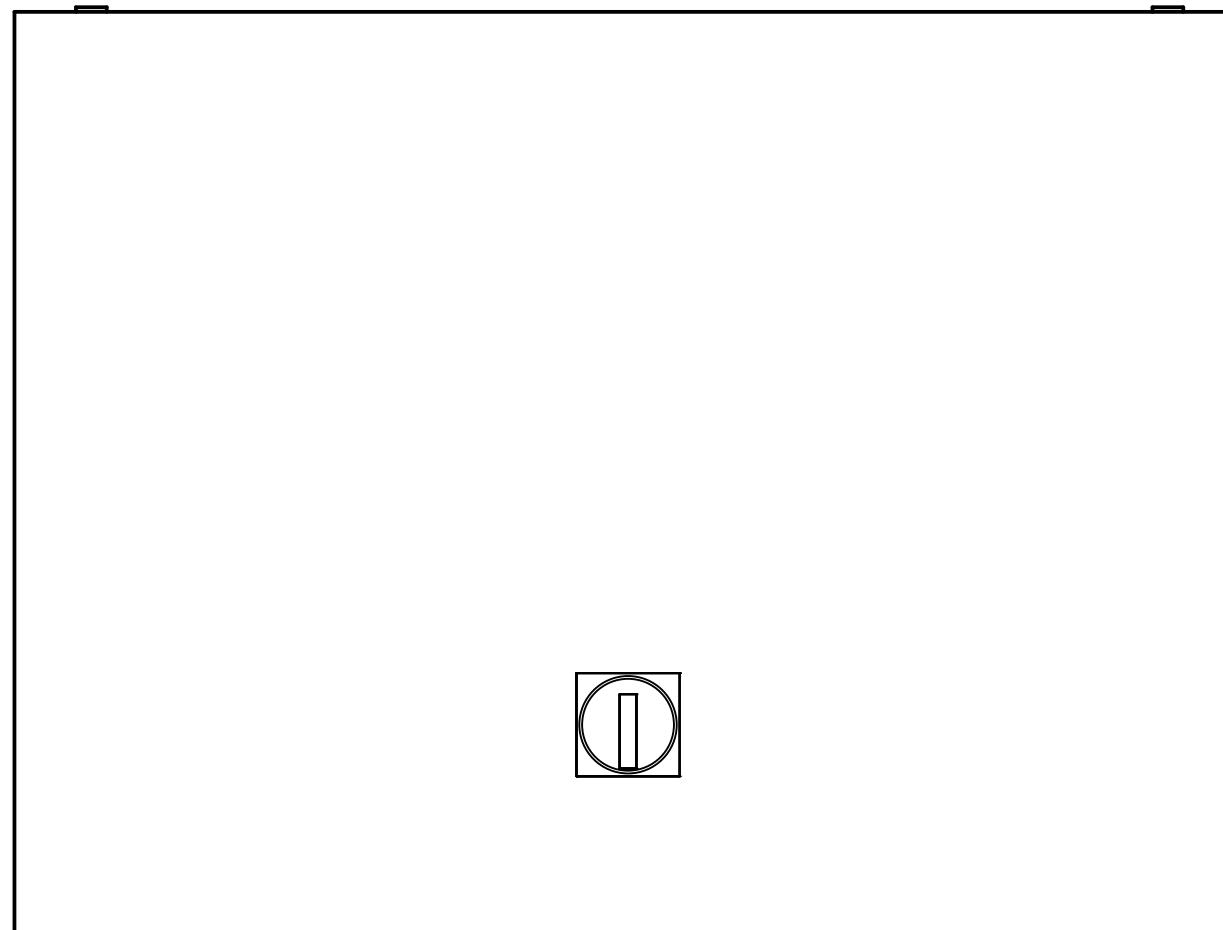
Oil spray 1.33 cc/min

-0100CR3
14 | 11
/57.6-CBL20
TRAYCONTROL ® 500
7x18 AWG
600V

Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	63
C R E A D I S innovative engineering	Customer	GE Appliances, a Haier company	Creator:		09/07/2021					Previous page nr:	62	
CREADIS Inc.	Scale	1 : 1	Checker:		09/07/2021	Page description:	DIGITAL OUTPUT QUANTUM	Location:	=	Schematic desc.:	Next page nr:	64
			Approved:							Total pages:	56 / 59	



Producer:	Project number:	62173	Revision:		Date:	Project title:	GE Appliances Water Heater Validation	Function:	= JB_LDO	Schematic type:	Current page nr:	64
CREADIS innovative engineering	Customer	GE Appliances, a Haier company	Creator:		14/06/2021					Previous page nr:	63	
CREADIS Inc.	Scale	1 : 1	Checker:		09/07/2021	Page description:	PANEL LAYOUT	Location:	=	Schematic desc.:	Next page nr:	65
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-PL001 ○ SPJ-T-F ○	-PL002 ○ SPJ-T-F ○	-PL003 ○ SPJ-T-F ○	-PL004 ○ SPJ-T-F ○	-PL005 ○ SPJ-T-F ○	-PL006 ○ SPJ-T-F ○
-PL007 ○ SPJ-T-F ○	-PL008 ○ SPJ-T-F ○	-PL009 ○ SPJ-J-F ○	-PL010 ○ SPJ-J-F ○	-PL011 ○ SPJ-J-F ○	-PL012 ○ SPJ-J-F ○
-PL013 ○ SPJ-J-F ○	-PL014 ○ SPJ-J-F ○	-PL015 ○ SPJ-K-F ○	-PL016 ○ SPJ-K-F ○	-PL017 ○ SPJ-K-F ○	-PL018 ○ SPJ-K-F ○

Rotary Actuators "On/Off" Heater

