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**Technology
Department**

CERN TE/EC

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Engineering Specification

BGV Demonstrator Temperature and Humidity Measurement System

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History of Changes

<i>Rev. No.</i>	<i>Date</i>	<i>Pages</i>	<i>Description of Changes</i>
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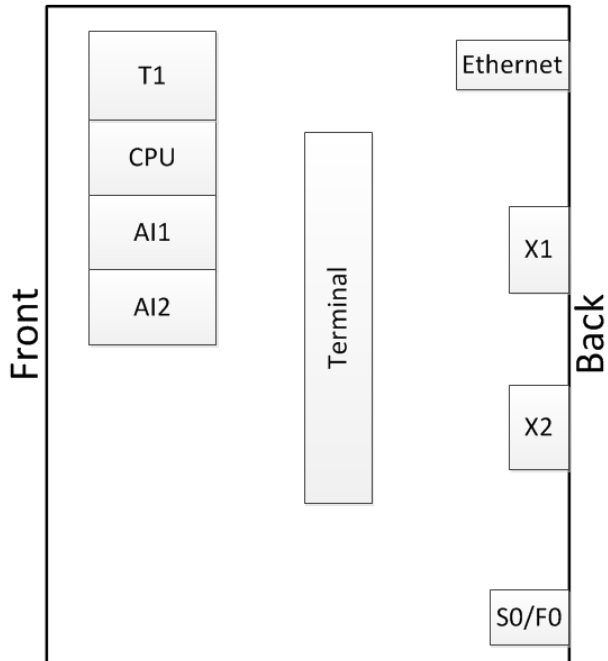
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1. INTRODUCTION

To avoid (belivable) temperatures of the spare sensors, the data will be overwritten with '4444'. Therefore, if a new sensor is connected, the PLC program has to be updated.

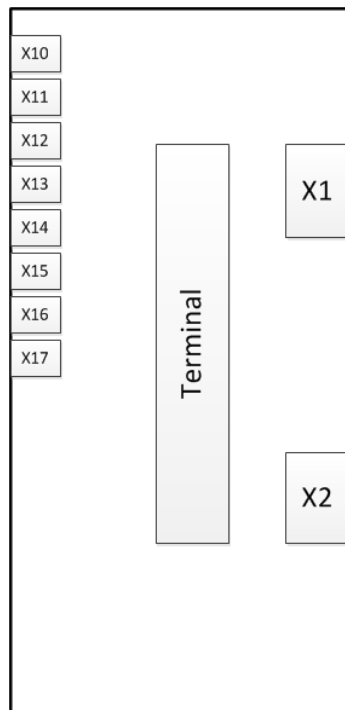
2. HARDWARE

2.1 CONTROLS



Label	Firm	Reference	Description
T1	Siemens	6ES7307-1EA01-0AA0	Power Supply 24V, 5A
CPU	Siemens	6ES7315-2EH14-0AB0	CPU 315-2 PN/DP
AI1	Siemens	6ES7331-7PF01-0AB0	8AI, Resistance, PT100/...
AI2	Siemens	6ES7331-7KF02-0AB0	8AI, Resolution 9/12/14 Bits
SO/F0	Schaffner		Power Supply Input
X1, X2	Burndy	UTO 0-20-28S-21T	BSF28

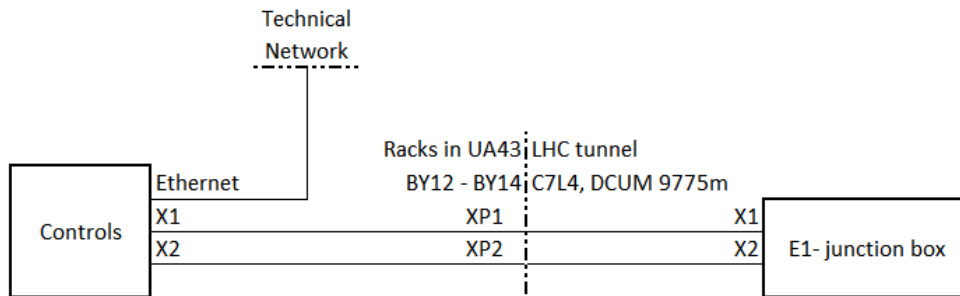
2.2 JUNCTION BOX



Label	Firm	Reference	Description
X1, X2	Burndy	UTO 0-20-28S-21T	Burndy, 28pin, Socket, Female
X10...X17	LEMO	ERA.2S.304.CLL	LEMO-2, 4pin, Socket
E1	Rose+Bopla	01.12 36 08	IP66 aluminium enclosure, 360x120x80mm

3. CABLING

3.1 STRUCTURE



Label	Cable Connectors	Cable	Cable Number
XP1	Both sides: 28BPMB, UTO 0-20-28P-21T	NE26	1425 436
XP2	Both sides: 28BPMB, UTO 0-20-28P-21T	NE26	1425 437

3.2 PIN ASSIGNMENT

Cable	Cable Pin	Destination	Signal
XP1	1	Temperature Gas Tank 1	red
XP1	2	Temperature Gas Tank 1	red
XP1	3	Temperature Gas Tank 1	white
XP1	4	Temperature Gas Tank 1	white
XP1	5	Temperature Gas Tank 2	red
XP1	6	Temperature Gas Tank 2	red
XP1	7	Temperature Gas Tank 2	white
XP1	8	Temperature Gas Tank 2	white
XP1	9	Temperature Gas Tank 3	red
XP1	10	Temperature Gas Tank 3	red
XP1	11	Temperature Gas Tank 3	white
XP1	12	Temperature Gas Tank 3	white
XP1	13	Temperature Tent	red
XP1	14	Temperature Tent	red
XP1	15	Temperature Tent	white
XP1	16	Temperature Tent	white

Cable	Cable Pin	Destination	Signal
XP1	17	Temperature Spare 1	
XP1	18	Temperature Spare 1	
XP1	19	Temperature Spare 1	
XP1	20	Temperature Spare 1	
XP1	21	Temperature Spare 2	
XP1	22	Temperature Spare 2	
XP1	23	Temperature Spare 2	
XP1	24	Temperature Spare 2	
XP2	1	Humidity Sensor 1	2.2V (wh)
XP2	2	Humidity Sensor 1	Data (bn)
XP2	3	Humidity Sensor 1	GND (gn)
XP2	4	Humidity Sensor 1	Not used
XP2	5	Humidity Sensor 2	2.2V (wh)
XP2	6	Humidity Sensor 2	Data (bn)
XP2	7	Humidity Sensor 2	GND (gn)
XP2	8	Humidity Sensor 2	Not used
XP2	9		
XP2	10		
XP2	11		
XP2	12		
XP2	13		
XP2	14		
XP2	15		
XP2	16		

4. ADDRESSING

4.1 OVERVIEW OF ADDRESSES

Type	Addr. from	Addr. to	Device	Description
I	0	15	AI1	AI 8xRTD
I	16	31	AI2	AI 8x12BIT

4.2 PLC INPUT

Address	From	Sensor	Logic
PIW0	Gas tank 1 -> AI1	PT100	Range 10...200°C
PIW2	Gas tank 2 -> AI1	PT100	Range 10...200°C
PIW4	Gas tank 3 -> AI1	PT100	Range 10...200°C
PIW6	Tent -> AI1	PT100	Range 10...200°C
PIW8	Spare 1		
PIW10	Spare 2		
PIW12..14			
PIW16	Temperature	Humidity Sensor 1	4...20mA
PIW18	Dew Point	Humidity Sensor 1	4...20mA
PIW20	Temperature	Humidity Sensor 2	4...20mA
PIW22	Dew Point	Humidity Sensor 2	4...20mA

5. NETWORK

5.1 ETHERNET

MAC address	28-63-36-17-4F-2A
Device name	CFP-UA43-PLCBT2
Interface name	CFP-UA43-PLCBT2.cern.ch
Outlet	1908/02
Location	Rack BY14 in UA43
IPv4	172.18.46.149
Subnet mask	255.255.255.192
Gateway (Router)	172.18.46.129
Time servers	172.18.16.69 172.18.17.69 172.18.18.69

6. CONFIGURATION

6.1 ANALOG INPUT MODULE 1: AI8X RTD

Measuring Mode	8 channels, hardware filter
Temperature Unit	Degrees Celsius
Measuring Type	Therman resistor (linear, 4-wire)
Measuring Range	PT 100 standard range
Temperature coefficient	Pt.003850 (IPTS-68)
Smoothing	None

6.2 ANALOG INPUT MODULE 2: AI8X U/I/R/RTD/TC

Measuring Type	Current (2 wire transducer)
Measuring Range	4..20mA
Interference frequency	50 Hz

7. ATTACHMENTS

I. JUNCTION BOX SCHEME

II. ELECTRICAL DIAGRAM