 TORUS	· Owner BPCS RTU/PLC	Document No.	INS-DS-010		
		Revision / Date	A · September 29, 2026		
		Issue purpose	Issued for Review		
INSTRUMENTATION AND CONTROLS · BPCS RTU/PLC					
Rev.	Date	Revision description	Prepared	Reviewed	Approved
A	2026-09-29	Issued for Review			

NOTES

1. This datasheet covers the basic process control system RTU/PLC in panel CP-102A in control building B-102: control, sequencing, gas quality logic and SCADA communications.
2. Controlling documents:  GEN-DB-001, Basis of Design;  INS-LST-001, Instrument Index;  INS-LST-002, I/O List;  INS-LST-003, Alarm and Trip Setpoints;  INS-RPT-001, Control Philosophy and Functional Narrative;  INS-RPT-002, SCADA, Communications and Cybersecurity;  INS-DWG-001, Control System and Network Architecture;  INS-DWG-005, Control Panel Layout.
3. Values marked typical are budgetary. The vendor shall confirm them with its proposal and final data (HOLD H-15).
4. Units are US customary. Pressures are gauge unless stated as absolute. Operating cases C1 to C7 are defined in  GEN-DB-001, Section 6; normal conditions are case C2, maximum operating conditions the envelope of C1 to C7, and design conditions those of  GEN-DB-001, Section 7.
5. The RTU executes no safety function. It reads safety PLC status over a read-only Modbus TCP link.
6. Module counts are based on the channel densities in Table 1-3. If the selected product differs, at least 20 % installed spare per I/O type shall be kept.

GENERAL

Table 1-1: General Data

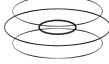
Item	Value	Item	Value
Project	 County, 	Service	120 MMSCFD gas receipt into the receiving pipeline operator's 
Form content	ISA-20; tag numbers to ISA-5.1	Electrical codes	NFPA 70 (2023) Articles 500 and 501; API RP 500
Safety instrumented tags	IEC 61511 and IEC 61508	Sour service	Not required; sweet gas, H2S 4 ppmv maximum (NACE MR0175 not applied)

SITE CONDITIONS

Table 1-2: Site and Environmental Conditions

Item	Value	Item	Value
Ambient design temperature	-5 °F to 110 °F	Electronics rating	-40 °F to 158 °F (-40 °C to 70 °C)
Solar radiation	1,000 W/m ² ; sunshades where exposed	Elevation and atmosphere	1,150 ft MSL; 14.10 psia
Wind and ice	108 mph (ASCE 7-22, Exposure C); 0.5 in radial ice (HOLD H-06)	Area classification	Class I, Division 2, Group D in process areas; Division 1 within 5 ft of vents and relief outlets (Volume 6 area classification drawing)
Temperature class	T3 minimum (natural gas autoignition about 900 °F)	Enclosure	NEMA 4X (IP66) minimum; 316 SS or copper-free aluminum (below 0.4 % Cu), epoxy coated



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Item	Value	Item	Value
Instrument power	24 VDC from the station UPS (GEN-DB-001, Section 9.8) unless noted		

I/O COUNT

Table 1-3 gives the I/O count. The RTU also has Ethernet links (Modbus TCP) to the flow computer, the safety PLC and the UPS, and RS-485 ports to BMS-150 and the demarcation panel.

Table 1-3: RTU I/O Count

I/O type	Used	Required with 20 % spare	Channels per module	Modules	Installed channels	Spare channels
AI	23	28	16	2	32	9
AO	6	8	8	1	8	2
DI	65	78	32	3	96	31
DO	15	18	16	2	32	17
PI	1	2	8	1	8	7
SER	2	3	4	1	4	2

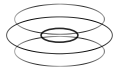
Note 1: Used points from  INS-LST-002, I/O List.

SPECIFICATION

Table 1-4: Specification

Item	Requirement
Type	Modular RTU/PLC for pipeline SCADA, programmable to IEC 61131-3 (ladder, function block, structured text), with local display
Processor	Single processor, hot-standby redundancy priced as an option; program retained without battery; 10 ms scan for control tasks
I/O modules	AI 16 channel 4-20 mA with HART pass-through, 16 bit, channel isolated; AO 8 channel 4-20 mA with HART; DI 32 channel 24 VDC sinking; DO 16 channel 24 VDC 0.5 A with interposing relays; pulse 8 channel 0 to 10 kHz
Protocols	DNP3 outstation with Secure Authentication v5 (IEEE 1815) to the Owner SCADA host; Modbus TCP client to the flow computer, safety PLC and UPS; Modbus RTU on RS-485 to BMS-150 and the demarcation panel (HOLD H-14)
Communication ports	Four Ethernet (control network, SCADA through the firewall, measurement, spare); four isolated RS-485/232
Data logging	Store-and-forward history of 30 days at 1 s for critical points; event log with 1 ms time stamps; DNP3 event buffers for report by exception
Time synchronization	NTP from the GPS time server in TR-102, and DNP3 time sync; accuracy 10 ms
Control functions	PID with anti-windup and low-select override (FIC-131 and PIC-134), cascade (TIC-135 to TIC-152), and the sequences of  INS-RPT-001 (run switching, series verification, gas quality shut-in, FCV switchover)
Local display	12 in color touch panel on the CP-102A door, role-based login, overview, alarm summary and safety PLC first-out
Cybersecurity	IEC 62443-4-2 SL 2 capable; secure boot, signed firmware, role-based access, unused ports and services disabled, audit log to the Owner's security monitoring ( INS-RPT-002)
Power	24 VDC from the UPS, redundant power supply modules; about 107 W for the panel ( INS-DS-014)
Environmental	-40 to 158 °F, 5 to 95 % relative humidity non-condensing, conformal coated boards (ISA-71.04 G3)
Hazardous area	B-102 is unclassified; Class I, Division 2 listed hardware preferred



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Item	Requirement		
Spares	20 % installed spare channels wired to terminals; one spare module of each type on site		
Inspection and testing	Factory acceptance test with simulated I/O to the Volume 8 inspection and test plan; site acceptance test and loop checks		
Documentation	Functional design specification, I/O assignment, configuration backups, program listing, network drawings, test reports		

OPEN ITEMS

Table 1-5: Open Items

HOLD	Item	Responsible party
H-14	Point list and protocol at the demarcation	Receiving pipeline operator
H-15	RTU make and model	Systems integrator after award