

BHEL SPECIFICATIONS ON DATA ACQUISITION SYSTEM

Item 1 – Data Scanning Interface Unit

S. No.	Description	BHEL Specification
1	Main functions	Control of the power supply and input/output modules, communication with the PC, storage of data on the CF card and even during a communication failure on Ethernet.
2	Measurements interval for all channels	Selection from 100/200/500 ms, 1/2/5/10/20/30/60 sec
3	Multi-interval for measurement groups	Three different measurement intervals for different input modules and combinations
4	Transfer intervals of measured data to the PC	Minimum 100 ms
5	Filter function	First-order lag filter. The function can be set for each channel. Time constant equals measurement interval multiplied by N (where N is any number of the following: 5, 10, 20,25,40,50 and 100)
6	Computation between channels	Basic Math functions between arbitrary channels (DCV, TC, RTD, DI, scaling), relational operations etc., Linear scaling computation Possible range for scaling: DCV, TC, RTD, DI Possible scope for scaling: - 30,000 to 30,000 Position of the decimal point: any digit
7	Saving the data	Save function: Backup in the event of a communication failure during data acquisitions by the PC. Supported external media: CF Card (up to 2Gbytes)
8	PC's data acquisition	Save channel: Monitor 'ON' channel Save interval: Data is saved automatically (or approximately every 60 s)
9	Data guarantee during a power Failure	Guaranteed until data is written immediately before the indication
10	7-segement indication	Status indication by 7 segments in 2 digit s (unit no., operation status indication, indication of error occurrence, indication of messages concerning the CF Card, etc.) Communication functions
11	Interface	100Base –TX/10Base-T (automatic detection) Ethernet
12	Basic protocol	FTP, SMTP, SNTP, DHCP, DNS, HTTP, ModbusTCP
13	Communication services	Send/receive setting values, send measured values and computed values, maintenance/diagnosis of the communication connection, and others
14	Login function	Use when accessing a setting/measurement server, maintenance/diagnostic server, FTP server, or HTTP server. Up to 10 users can be registered

15	DHCP function	The IP address is automatically obtained from the DHCP server SNTP function
16	Client function	Gets time information from the specified server such as when power is turned ON and when recording starts
17	Server function	Supplies time information to any units connected to the network.
18	Mail function	Sends timing information via e-mail including the time of alarm activation/release, specified time, file creation time, time at which free memory space drops below specified amount, time power turned ON, and time errors occur
19	FTP function	<p>Client function: Files from the CF card containing measured values, computed values, and thinned values are automatically sent to the FTP server. A primary and secondary destination server can be specified.</p> <p>Server function: File transfers from the CF card, directory manipulation within the CF card, deletion of files from the CF card, and other functions can be carried out through requests from the computer.</p> <p>HTTP function: Enables entry of settings on the unit and real time monitoring of measured and computed values using a Web browser, and file acquisition on the CF card using WebDAV, and other functions.</p> <p>Supported OS and browser: Windows 8, Internet Explorer 11.0</p>
20	Transmission function	Transmission of measured values and setting values
21	Receiving function	Reception of setting values
22	Operating Temperature range	- 20 deg C to 60 deg C
23	Power supply	100 to 240 V AC, 50 Hz

Item 2 – Universal Input module

S. No.	Description	BHEL Specification
1	Measurement range	DC voltage: 20/60/200 mV, 2/6/20/100 V Thermocouple: R, S, B, K, E, J, T, L, U, N, W, KpvsAu7Fe 3 wire RTD: Pt100, Pt100 (high resolution), JPt100, JPt100 (high resolution), Ni100, Ni120, Pt50, Cu10, J263B, Should support DI inputs and 4-20mA inputs
2	Measurement accuracy	Less than or equal to $\pm (0.05\%)$
3	A/D resolution	$\pm 20,000$
4	Safety	Burnout detection should be available for Thermocouples
5	Reinforced insulation	Between input terminal and case, 3700 Vrms (one minute) or 600 Vrms/VDC (continuous)
6	No. of channels	30 channels (All the channels need not be in a single module)

Item 3 – 4 wire RTD Input module

S. No.	Description	BHEL Specification
1	Input method	Floating unbalanced input, isolation between channels
2	Measurement range	DC voltage: 20/60/200 mV, 2/6/20/100 V 4 wire RTD: Pt100, Pt100 (high resolution), JPt100, JPt100 (high resolution), Ni100SAMA, Ni100DIN, Ni120, Pt50, Cu10GE, Cu10WEED, Cu10BAILEY etc Resistance Ranges: 20 Ω , 200 Ω , 2k Ω Should support DI inputs
3	Measurement accuracy	Less than or equal to $\pm (0.05\%)$
4	A/D resolution	$\pm 20000/\pm 6000(16\text{-Bit A/D})$
5	Common mode voltage between channels	120 VACrms (50/60 Hz) for DCV/DI 50 VACrms (50/60 Hz) for RTD/resistance
6	No. of channels	18 channels (All the channels need not be in a single module)

Item 4 – Software for Data Acquisition & Analysis

S. No.	Description	BHEL Specification
1	Standard Software	For connection with one unit
2	Integration Monitor (main functions)	Setting of the basic connection, setting of various conditions (range, interval, computation, tag), monitor display (digital, trend), 20 channels in one group, 10 groups, logging, computation function (20 channels), alarm output, manual DO, etc.
3	Viewer (main functions)	Re-display of saved data files, 20 channels in one group, 50 groups, data synchronization processing, file merge display (limited to files that can be merged), multi-interval supported, graph, and digital display/print
4	Calibration software (main function)	Calibration function required
5	Start/Stopping data recording	Measured data can be recorded to the CF card in the main unit and can be transferred to the PC either on line or offline. Browser required for real-time monitoring of measured data and control starting and stopping of the record operation from the browser screen