

XBF-LD02S Load Cell Input Module

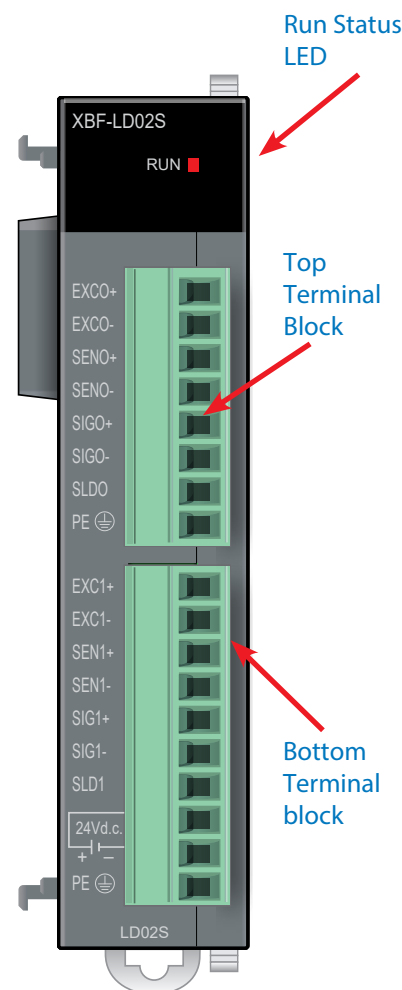
XBF-LD02S load cell input module gives the XGB PLC the capability to work with any weighing application that uses load cells. This is the only AutomationDirect offered PLC with load cell capability.

Part Number	Price	Classification	Description	Drawing
XBF-LD02S	\$;061f1:	Load Cell Input Module	LS Electric XGB load cell input module, 2-channel, voltage, 15-bit resolution, input voltage signal range(s) of 0-6 mV/VDC. For use with 5 VDC four- or six-wire load cells. Removable terminal blocks included.	PDF

General Specifications		XBF-LD02S
Input Channel		2
Load Cell Input Voltage		5VDC±5% (8 per 350Ω load cell channel)
Load Cell Type		Four-wire or six-wire
Resolution		1/40000
Analog Input Range		0.0–30.0 mV ¹ (Load cell 6mV/V)
Load Cell Output Sensitivity		0.125μV (when the rated output of the load cell is 0.0–1.0 mV/V)
Input Accuracy		±0.01% or less (nonlinear accuracy, 25°C) Zero Drift: ±0.25 μV/°C Gain Drift: ±15ppm/ °C
Sampling Cycle (per channel)		2.5 ms, 5ms (default), 10ms, 20ms
Insulation	Classification	Input terminal and internal circuits
	Insulation Method	Photocoupler
	Insulation Voltage Resistance	550VAC, 50/60Hz, 1 minute Leakage 10mA or less
	Insulation Resistance	500VDC, 10MΩ or more
Warm-up Time		30 minutes or more ²
Input ConnectorHi		8-pin connector (CH0), 10-pin connector (CH1)
I/O Occupation Points		Fixed type: 64 points
Maximum Number per CPU		7
Power Supply		Internal: 5VDC External: 20.4–28.8 VDC
Power Consumption	Internal 5VDC	110mA
	External 24VDC	280mA
Weight		68g

1 - Analog input range: For the tensile strength and type load cell, the input range is ±30mV

2 - Warm-up time: Calibration or measurement must begin 30 minutes after the power supply is applied.



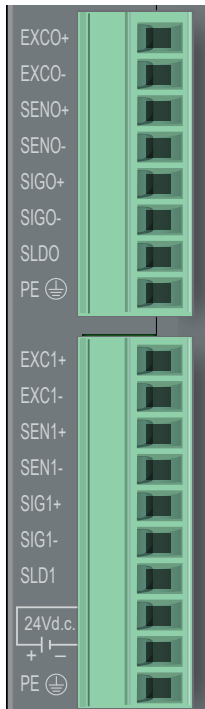


XGB Analog Modules

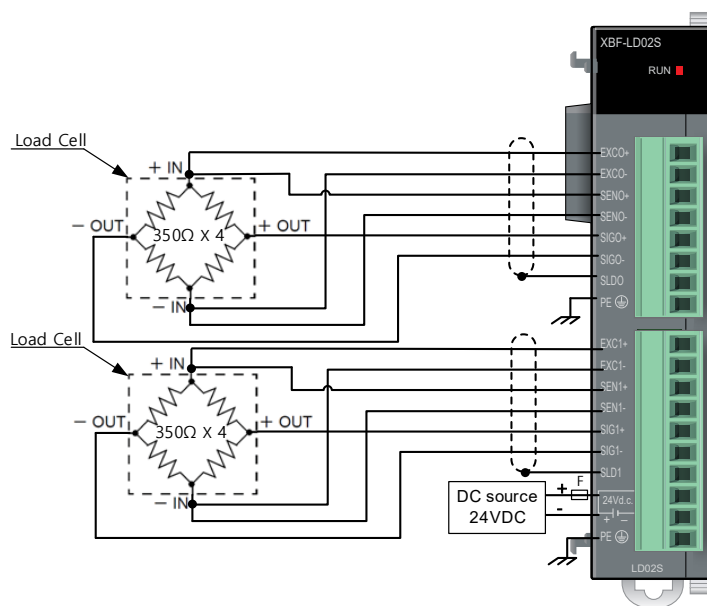
XBF-LD02S Load Cell Input Module Functions

Item	Function		Details
Load Cell Input Function	Calibration Function	2-point Calibration Function	Before measuring the actual weight, it calibrates the measurement range of the weight system.
		1-point Calibration Function	After 2-point calibration, calibrates only the zero point depending on changes in the surrounding environment such as temperature.
		Equivalent Circuit calibration Function	Perform calibration when using environment that is difficult to calibrate using actual load or tension / compression type load cell.
	Input Processing	Moving Average Function	The average processing method that reflects the diving the difference (between the present value and the previous moving average value) by 2 ⁿ .
		Moving/Count Average Function	It accumulates the moving averages of a designated channel in accordance with the set counts, and displays the average value of the sum as digital data.
		Moving/Time Average Function	It accumulates the moving averages of a designated channel for the set amount of time, and displays the average value of the sum as digital data.
		Stable Status Determination Function	It determines whether the status of the total weight value is safe.
	Zero Processing	Zero Tracking Function	It adjusts zero output values in accordance with changes of the surrounding environment, such as temperature change.
		Zero Setting, Reset Function	It temporarily adjusts zero output values when 0 is not output even after 2-point calibration due to changes of the surrounding environment such as gathering of foreign matters around the pallet caused by using the load cell for a long time. When using a container (Tare), you can also use this function to remove the weight of the container.
	Alarm Function	HL Alarm Function	Processes alarm by defining the HH, H, L, LL of inputs.
		Flag Display Function	It displays (L) L Status Flag. It displays (L) L Status Flag.
	Output Maintenance Function	Maximum Minimum Value Maintenance Function	It displays the maximum / minimum values of the total weight measured while running the input channel.
		Output Value Maintenance Function	It temporarily maintains the output value of the total weight. It is executed only when the output status request flag is turned on.
	Auxiliary Functions	Free Fall Calibration Function	It automatically calibrates free fall values.
	Backup	Zero-point Backup Setting	Function to measure the weight on the weighing pan when PLC power is turned on or display it as zero automatically.

XBF-LD02S Load Cell Input Module Wiring

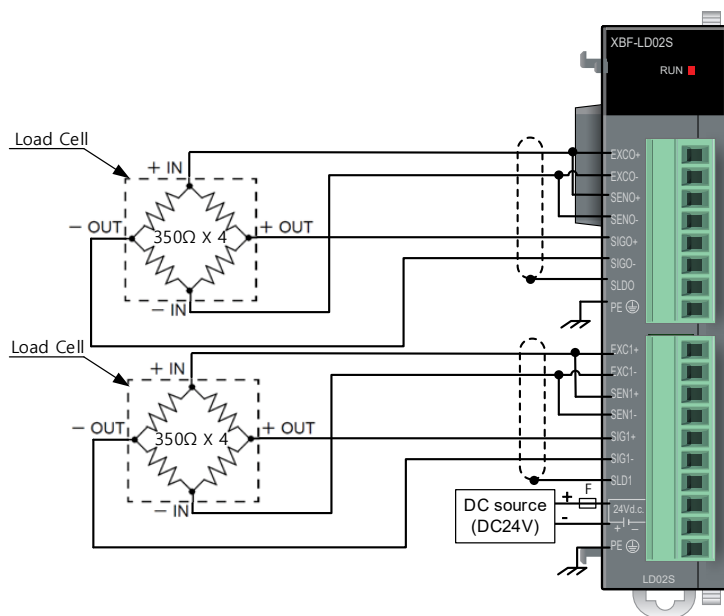
Terminal Image	Terminal Name	Function	Description
	EXC0+	Load cell applied voltage(+)	Voltage supplied to the load cell in the module(5VDC)(CH0)
	EXC0-	Load cell applied voltage(-)	
	SEN0+	Load cell sensing input(+)	Signal for measuring the voltage drop in EXC0+ side of the load cell cable
	SEN0-	Load cell sensing input(-)	Signal for measuring the voltage drop in EXC0- side of the load cell cable
	SIG0+	Load cell signal input(+)	Load cell output voltage(CH0)
	SIG0-	Load cell signal input(-)	
	SLD0	Shield	Connect shield wires of the load cell cable(CH0)
	PE	Grounding	External grounding (CH0)
	EXC1+	Load cell applied voltage(+)	Voltage supplied to the load cell in the module(5VDC)(CH1)
	EXC1-	Load cell applied voltage(-)	
	SEN1+	Load cell sensing input(+)	Signal for measuring the voltage drop in EXC1+ side of the load cell cable
	SEN1-	Load cell sensing input(-)	Signal for measuring the voltage drop in EXC1- side of the load cell cable
	SIG1+	Load cell signal input(+)	Load cell output voltage(CH1)
	SIG1-	Load cell signal input(-)	
	SLD1	Shield	Connect shield wires of the load cell cable(CH1)
	24VDC	24VDC power +	External 24VDC power supply (24V)
	GND	24VDC power ground	External 24VDC power supply ground (0VDC)
	PE	Grounding	External grounding (CH1)

6 Lines Type Load Cell

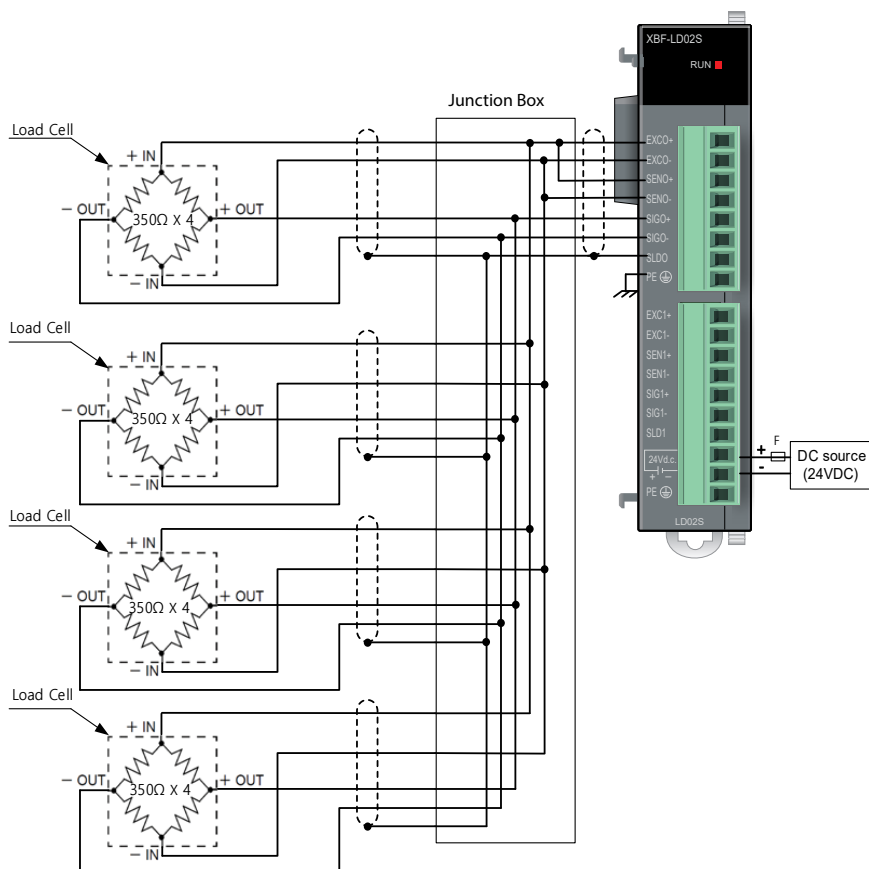


XBF-LD02S Load Cell Input Module Wiring, *continued*

4 Lines Type Load Cell



Load Cell Parallel Connection





XGB Analog Modules

XBF-LD02S Load Cell Input Module Configuration

Follow the Quick start video to learn how to Register and Configure any Analog Module:

Analog Module Setup

Direct Variables

All XGB series analog modules are assigned 32 words in the "U" memory area based on the slot number assignment. (%UW0.z.0 - %UW0.z.31, z = slot number). The actual memory address used within the 32 word block are specific to each module. See the table below for Direct Variable assignments.

For Direct Variable nomenclature explanation, see [Direct Variable User Programming Memory](#).

Symbolic Variables

Symbolic variables for the analog module can be automatically created in XG5000 software by using the top MENU bar: Edit > Register Module Variable Comments.

Symbolic variables and direct variables for XBF-LD02S are as follows (z refers to module slot number (2 to 8)).

Type	Scope	Variable (Symbolic)	Address (Direct Variable Alias)	Data Type	Comment
Tag	GlobalVariable	_0z_CH0_CAL1REQ	%UX0.z.464	BOOL	Loadcell Input Module: CH0 1-Point Calibration Request
Tag	GlobalVariable	_0z_CH0_CAL2REQ	%UX0.z.466	BOOL	Loadcell Input Module: CH0 2-Point Calibration Request
Tag	GlobalVariable	_0z_CH0_CALEND	%UX0.z.52	BOOL	Loadcell Input Module: CH0 Save Complete Flag
Tag	GlobalVariable	_0z_CH0_CALMOD	%UX0.z.24	BOOL	Loadcell Input Module: CH0 Calibration Status
Tag	GlobalVariable	_0z_CH0_CALSTORE	%UX0.z.484	BOOL	Loadcell Input Module: CH0 Save Request
Tag	GlobalVariable	_0z_CH0_COMPLETE	%UX0.z.36	BOOL	Loadcell Input Module: CH0 Weighing Complete Status
Tag	GlobalVariable	_0z_CH0_CUR_FFVAL	%UW0.z.26	WORD	Loadcell Input Module: CH0 Free Fall Data
Tag	GlobalVariable	_0z_CH0_EQUCALEND	%UX0.z.54	BOOL	Loadcell Input Module: CH0 Equivalent Calibration Status
Tag	GlobalVariable	_0z_CH0_EQUCALREQ	%UX0.z.468	BOOL	Loadcell Input Module: CH0 Equivalent Calibration Request
Tag	GlobalVariable	_0z_CH0_ERR	%UX0.z.30	BOOL	Loadcell Input Module: CH0 Error
Tag	GlobalVariable	_0z_CH0_GRSMINUS	%UX0.z.76	BOOL	Loadcell Input Module: CH0 Gross Weight Negative Status
Tag	GlobalVariable	_0z_CH0_GWDATA	%UD0.z.3	DINT	Loadcell Input Module: CH0 Gross Weight Data
Tag	GlobalVariable	_0z_CH0_GWMAX	%UD0.z.9	DWORD	Loadcell Input Module: CH0 Gross Weight Max. Data
Tag	GlobalVariable	_0z_CH0_GWMIN	%UD0.z.10	DWORD	Loadcell Input Module: CH0 Gross Weight Min. Data
Tag	GlobalVariable	_0z_CH0_HHOORSTAT	%UX0.z.88	BOOL	Loadcell Input Module: CH0 High High Status
Tag	GlobalVariable	_0z_CH0_HOLDREQ	%UX0.z.502	BOOL	Loadcell Input Module: CH0 Output Hold Request
Tag	GlobalVariable	_0z_CH0_HOOR	%UX0.z.80	BOOL	Loadcell Input Module: CH0 Upper Alarm
Tag	GlobalVariable	_0z_CH0_HOORSTAT	%UX0.z.89	BOOL	Loadcell Input Module: CH0 High Status
Tag	GlobalVariable	_0z_CH0_LLOORSTAT	%UX0.z.91	BOOL	Loadcell Input Module: CH0 Low Low Status
Tag	GlobalVariable	_0z_CH0_LOOR	%UX0.z.82	BOOL	Loadcell Input Module: CH0 Lower Alarm
Tag	GlobalVariable	_0z_CH0_LOORSTAT	%UX0.z.90	BOOL	Loadcell Input Module: CH0 Low Status
Tag	GlobalVariable	_0z_CH0_MAXMINREQ	%UX0.z.504	BOOL	Loadcell Input Module: CH0 Min./Max. Hold Request
Tag	GlobalVariable	_0z_CH0_MINMAXHLD	%UX0.z.72	BOOL	Loadcell Input Module: CH0 Min./Max. Hold Status
Tag	GlobalVariable	_0z_CH0_NEARZERO	%UX0.z.74	BOOL	Loadcell Input Module: CH0 Near Zero Status
Tag	GlobalVariable	_0z_CH0_NETDATA	%UD0.z.7	DINT	Loadcell Input Module: CH0 Net Weight Data
Tag	GlobalVariable	_0z_CH0_NETMINUS	%UX0.z.78	BOOL	Loadcell Input Module: CH0 Net weight Negative Status
Tag	GlobalVariable	_0z_CH0_OVER	%UX0.z.42	BOOL	Loadcell Input Module: CH0 Over Status
Tag	GlobalVariable	_0z_CH0_RUN	%UX0.z.16	BOOL	Loadcell Input Module: CH0 Run Status
Tag	GlobalVariable	_0z_CH0_SCALEND	%UX0.z.50	BOOL	Loadcell Input Module: CH0 Span Calibration Status
Tag	GlobalVariable	_0z_CH0_SCALREQ	%UX0.z.482	BOOL	Loadcell Input Module: CH0 Span Calibration Request
Tag	GlobalVariable	_0z_CH0_SEQREQ	%UX0.z.506	BOOL	Loadcell Input Module: CH0 Sequential Control Request
Tag	GlobalVariable	_0z_CH0_SP1	%UX0.z.38	BOOL	Loadcell Input Module: CH0 Step1 Status
Tag	GlobalVariable	_0z_CH0_SP2	%UX0.z.39	BOOL	Loadcell Input Module: CH0 Step2 Status
Tag	GlobalVariable	_0z_CH0_SP3	%UX0.z.40	BOOL	Loadcell Input Module: CH0 Step3 Status
Tag	GlobalVariable	_0z_CH0_STBL	%UX0.z.32	BOOL	Loadcell Input Module: CH0 Stable Status
Tag	GlobalVariable	_0z_CH0_TAREDATA	%UD0.z.5	DWORD	Loadcell Input Module: CH0 Tare Weight Data
Tag	GlobalVariable	_0z_CH0_TARERREQ	%UX0.z.500	BOOL	Loadcell Input Module: CH0 Tare Setting
Tag	GlobalVariable	_0z_CH0_TARERSTREQ	%UX0.z.508	BOOL	Loadcell Input Module: CH0 Tare Release Request
Tag	GlobalVariable	_0z_CH0_TSET	%UX0.z.68	BOOL	Loadcell Input Module: CH0 Tare Setting Status



XGB Analog Modules

XBF-LD02S Load Cell Input Module Configuration, *continued*

Type	Scope	Variable (Symbolic)	Address (Direct Variable Alias)	Data Type	Comment
Tag	GlobalVariable	_0z_CH0_UNDER	%UX0.z.41	BOOL	Loadcell Input Module: CH0 Lack Status
Tag	GlobalVariable	_0z_CH0_WEIGHTHLD	%UX0.z.70	BOOL	Loadcell Input Module: CH0 Output Hold Status
Tag	GlobalVariable	_0z_CH0_ZCALEND	%UX0.z.48	BOOL	Loadcell Input Module: CH0 Zero Calibration Status
Tag	GlobalVariable	_0z_CH0_ZCALREQ	%UX0.z.480	BOOL	Loadcell Input Module: CH0 Zero Calibration Request
Tag	GlobalVariable	_0z_CH0_ZERO	%UX0.z.34	BOOL	Loadcell Input Module: CH0 Zero Status
Tag	GlobalVariable	_0z_CH0_ZRST	%UX0.z.66	BOOL	Loadcell Input Module: CH0 Zero Reset Status
Tag	GlobalVariable	_0z_CH0_ZRSTREQ	%UX0.z.498	BOOL	Loadcell Input Module: CH0 Zero Reset request
Tag	GlobalVariable	_0z_CH0_ZSET	%UX0.z.64	BOOL	Loadcell Input Module: CH0 Zero Setting Status
Tag	GlobalVariable	_0z_CH0_ZSETREQ	%UX0.z.496	BOOL	Loadcell Input Module: CH0 Zero Setting Request
Tag	GlobalVariable	_0z_CH1_CAL1REQ	%UX0.z.465	BOOL	Loadcell Input Module: CH1 1-Point Calibration Request
Tag	GlobalVariable	_0z_CH1_CAL2REQ	%UX0.z.467	BOOL	Loadcell Input Module: CH1 2-Point Calibration Request
Tag	GlobalVariable	_0z_CH1_CALED	%UX0.z.53	BOOL	Loadcell Input Module: CH1 Save Complete Flag
Tag	GlobalVariable	_0z_CH1_CALMOD	%UX0.z.25	BOOL	Loadcell Input Module: CH1 Calibration Status
Tag	GlobalVariable	_0z_CH1_CALSTORE	%UX0.z.485	BOOL	Loadcell Input Module: CH1 Save Request
Tag	GlobalVariable	_0z_CH1_COMPLETE	%UX0.z.37	BOOL	Loadcell Input Module: CH1 Weighing Complete Status
Tag	GlobalVariable	_0z_CH1_CUR_FFVAL	%UW0.z.27	WORD	Loadcell Input Module: CH1 Free Fall Data
Tag	GlobalVariable	_0z_CH1_EQUCALEND	%UX0.z.55	BOOL	Loadcell Input Module: CH1 Equivalent Calibration Status
Tag	GlobalVariable	_0z_CH1_EQUCALREQ	%UX0.z.469	BOOL	Loadcell Input Module: CH1 Equivalent Calibration Request
Tag	GlobalVariable	_0z_CH1_ERR	%UX0.z.31	BOOL	Loadcell Input Module: CH1 Error
Tag	GlobalVariable	_0z_CH1_GRSMINUS	%UX0.z.77	BOOL	Loadcell Input Module: CH1 Gross Weight Negative Status
Tag	GlobalVariable	_0z_CH1_GWDATA	%UD0.z.4	DINT	Loadcell Input Module: CH1 Gross Weight Data
Tag	GlobalVariable	_0z_CH1_GWMAX	%UD0.z.11	DWORD	Loadcell Input Module: CH1 Gross Weight Max. Data
Tag	GlobalVariable	_0z_CH1_GWMIN	%UD0.z.12	DWORD	Loadcell Input Module: CH1 Gross Weight Min. Data
Tag	GlobalVariable	_0z_CH1_HHOORSTAT	%UX0.z.92	BOOL	Loadcell Input Module: CH1 High High Status
Tag	GlobalVariable	_0z_CH1_HOLDREQ	%UX0.z.503	BOOL	Loadcell Input Module: CH1 Output Hold Request
Tag	GlobalVariable	_0z_CH1_HOOR	%UX0.z.81	BOOL	Loadcell Input Module: CH1 Upper Alarm
Tag	GlobalVariable	_0z_CH1_HOORSTAT	%UX0.z.93	BOOL	Loadcell Input Module: CH1 High Status
Tag	GlobalVariable	_0z_CH1_LLOORSTAT	%UX0.z.95	BOOL	Loadcell Input Module: CH1 Low Low Status
Tag	GlobalVariable	_0z_CH1_LOOR	%UX0.z.83	BOOL	Loadcell Input Module: CH1 Lower Alarm
Tag	GlobalVariable	_0z_CH1_LOORSTAT	%UX0.z.94	BOOL	Loadcell Input Module: CH1 Low Status
Tag	GlobalVariable	_0z_CH1_MAXMINREQ	%UX0.z.505	BOOL	Loadcell Input Module: CH1 Min./Max. Hold Request
Tag	GlobalVariable	_0z_CH1_MINMAXHLD	%UX0.z.73	BOOL	Loadcell Input Module: CH1 Min./Max. Hold Status
Tag	GlobalVariable	_0z_CH1_NEARZERO	%UX0.z.75	BOOL	Loadcell Input Module: CH1 Near Zero Status
Tag	GlobalVariable	_0z_CH1_NETDATA	%UD0.z.8	DINT	Loadcell Input Module: CH1 Net Weight Data
Tag	GlobalVariable	_0z_CH1_NETMINUS	%UX0.z.79	BOOL	Loadcell Input Module: CH1 Net weight Negative Status
Tag	GlobalVariable	_0z_CH1_OVER	%UX0.z.47	BOOL	Loadcell Input Module: CH1 Over Status
Tag	GlobalVariable	_0z_CH1_RUN	%UX0.z.17	BOOL	Loadcell Input Module: CH1 Run Status
Tag	GlobalVariable	_0z_CH1_SCALED	%UX0.z.51	BOOL	Loadcell Input Module: CH1 Span Calibration Status
Tag	GlobalVariable	_0z_CH1_SCALREQ	%UX0.z.483	BOOL	Loadcell Input Module: CH1 Span Calibration Request
Tag	GlobalVariable	_0z_CH1_SEQREQ	%UX0.z.507	BOOL	Loadcell Input Module: CH1 Sequential Control Request
Tag	GlobalVariable	_0z_CH1_SP1	%UX0.z.43	BOOL	Loadcell Input Module: CH1 Step1 Status
Tag	GlobalVariable	_0z_CH1_SP2	%UX0.z.44	BOOL	Loadcell Input Module: CH1 Step2 Status
Tag	GlobalVariable	_0z_CH1_SP3	%UX0.z.45	BOOL	Loadcell Input Module: CH1 Step3 Status
Tag	GlobalVariable	_0z_CH1_STBL	%UX0.z.33	BOOL	Loadcell Input Module: CH1 Stable Status
Tag	GlobalVariable	_0z_CH1_TAREDATA	%UD0.z.6	DWORD	Loadcell Input Module: CH1 Tare Weight Data
Tag	GlobalVariable	_0z_CH1_TAREREQ	%UX0.z.501	BOOL	Loadcell Input Module: CH1 Tare Setting
Tag	GlobalVariable	_0z_CH1_TARERSTREQ	%UX0.z.509	BOOL	Loadcell Input Module: CH1 Tare Release Request
Tag	GlobalVariable	_0z_CH1_TSET	%UX0.z.69	BOOL	Loadcell Input Module: CH1 Tare Setting Status
Tag	GlobalVariable	_0z_CH1_UNDER	%UX0.z.46	BOOL	Loadcell Input Module: CH1 Lack Status



XGB Analog Modules

XBF-LD02S Load Cell Input Module Configuration, *continued*

Type	Scope	Variable (Symbolic)	Address (Direct Variable Alias)	Data Type	Comment
Tag	GlobalVariable	_0z_CH1_WEIGHTHLD	%UX0.z.71	BOOL	Loadcell Input Module: CH1 Output Hold Status
Tag	GlobalVariable	_0z_CH1_ZCALEND	%UX0.z.49	BOOL	Loadcell Input Module: CH1 Zero Calibration Status
Tag	GlobalVariable	_0z_CH1_ZCALREQ	%UX0.z.481	BOOL	Loadcell Input Module: CH1 Zero Calibration Request
Tag	GlobalVariable	_0z_CH1_ZERO	%UX0.z.35	BOOL	Loadcell Input Module: CH1 Zero Status
Tag	GlobalVariable	_0z_CH1_ZRST	%UX0.z.67	BOOL	Loadcell Input Module: CH1 Zero Reset Status
Tag	GlobalVariable	_0z_CH1_ZRSTREQ	%UX0.z.499	BOOL	Loadcell Input Module: CH1 Zero Reset request
Tag	GlobalVariable	_0z_CH1_ZSET	%UX0.z.65	BOOL	Loadcell Input Module: CH1 Zero Setting Status
Tag	GlobalVariable	_0z_CH1_ZSETREQ	%UX0.z.497	BOOL	Loadcell Input Module: CH1 Zero Setting Request
Tag	GlobalVariable	_0z_CH_CUR_FFVAL_ARY	%UW0.z.26	ARRAY[0..1] OF WORD	Loadcell Input Module: Each CH Free Fall Data
Tag	GlobalVariable	_0z_CH_GWDATA_ARY	%UD0.z.3	ARRAY[0..1] OF DINT	Loadcell Input Module: Each CH Gross Weight Data
Tag	GlobalVariable	_0z_CH_NETDATA_ARY	%UD0.z.7	ARRAY[0..1] OF DINT	Loadcell Input Module: Each CH Net Weight Data
Tag	GlobalVariable	_0z_CH_TAREDATA_ARY	%UD0.z.5	ARRAY[0..1] OF DWORD	Loadcell Input Module: Each CH Tare Weight Data
Tag	GlobalVariable	_0z_ECODE	%UW0.z.28	WORD	Loadcell Input Module: Error Code
Tag	GlobalVariable	_0z_ERR	%UX0.z.0	BOOL	Loadcell Input Module: Error Flag
Tag	GlobalVariable	_0z_RDY	%UX0.z.15	BOOL	Loadcell Input Module: Ready Flag