

G5 Batch Log

Register List

This document describes G5 registers for the Batch Log Application (2108888-001).

1 Register addressing

G5 devices provide access to application data by numeric tags. These numeric tags consist of three values: application number, array number and register number. These three values uniquely identify any accessible application data item. These values are commonly expressed as "app.array.index". Each array has a single data type.

Name	Range		Type
App	0-253	0-0xFD	uint8
Array	0-255	0-0xFF	uint8
Index	0-65535	0-0xFFFF	uint16

2 Arrays used

Array	Data Type	Description	Notes
0	UInt8	Bools and enumerations	See register table
1	UInt16	Sizes, limits, etc.	See register table
2	UInt32	Counters, timestamps	See register table
3	Float32	Converted from array 4	
4	Float64	Parameters, values	See register table
5	Register	Location of external data	See register table
6	String32	Names and values	Appears to be String65 to host but is limited to 31 characters + null terminator
7	RegData32	Event old and new values	See register table
10	Float64	HMI Read log - Values - Double	Grp:10/Log:10/Rec:10/Data:50 = 50,000, 0 is current data
11	Float32	HMI Read log - Values - converted	Grp:10/Log:10/Rec:10/Data:50 = 50,000, 0 is current data
12	String32	HMI Read log - String values	Grp:10/Log:10/Rec:10/Data:20 = 20,000, 0 is current data
13	UInt32	HMI Read log - Miscellaneous values	Grp:10/Log:10/Rec:10/Data:10 = 10,000, 0 is current data
90	Struct	Modbus Event Records	See Event Structure
91	Struct	Modbus Log Header - App	See App Header Structure
92	Struct	Modbus Log Headers - Group	Grp:10 See Group Header structure
93	Struct	Modbus Log Headers - Log	Grp:10/Log:10 See Log Header Structure
100-199	Struct	Modbus Log records	0 is the newest record, 1 is the next older record, See Log Data Structure Array: Grp:10/Log:10

NOTE: Register indexes for some arrays specify the group, log, record, and/or data requested.

Designation	Description
Group	Index=0 is group 1
Group/Log	Index=13 is group 2, Log 4
Group/Log/Data	((((Grp*Size_Log)+Log)*Size_Data)+Point
Group/Log/Rec/Data	((((Grp*Size_Log)+Log)*Size_Rec)+Rec)*Size_Data)+Point
Event	0 is newest, 499 is oldest

Example of index calculation:

Group Size = 10, Log Size = 10, where Grp, Log, and Data Point in formula are zero based.

Record index - **0 is current, 9 is oldest.**

NOTE: The Maximum size is used, not the current selected size.

The register starting point must be added to the Formula

Type	Data Size	Record Size	Group	Log	Record	Data	Index	Formula
Group/Log/Rec/Data	50	10	4	7	3	13	19,112	((((Grp * Size_Log) + Log) * Size_Rec) + Rec) * Size_Data) + Point
Group/Log/Data	20	-	4	7	-	13	953	((Grp * Size_Log) + Log) * Size_Data) + Point
Group/Log	-	-	4	7	-	-	47	(Grp * Size_Log) + Log

2.1 Data Types

The G5 supports the following data types:

Data Type	#	Description	Range
bool	0	Boolean: integer 8 bits, 0 = false, all others = true	0,1 (also same as uint8)
sint8	1	integer 8 bits, signed	-128 to 127
uint8 (byte)	2	integer 8 bits, unsigned	0 to 255
sint16	3	integer 16 bits, signed	-32,768 to 32,767
uint16	4	integer 16 bits, unsigned	0 to 65,535
sint32	5	integer 32 bits, signed	-2,147,483,648 to 2,147,483,647
uint32	6	integer 32 bits, unsigned	0 to 4,294,967,295
sint64	17	integer 64 bits, signed	-9,223,372,036,854,775,808 to 9,223,372,036,854,775,807
uint64	18	integer 64 bits, unsigned	0 to 18,446,744,073,709,551,615
float32 (float)	7	IEEE-754 single precision floating point	Precision ~7.2 digits max:~3.4x10 ³⁸
float64 (double)	19	Double: IEEE-754 double precision floating point	Precision ~15 digits max:~1.7x10 ³⁰⁸
String65	8	65 byte, null terminated (64 visible)	US-ASCII UTF-8
struct	9	structure	Various: format must be determined outside of register type
register	10	structure (app-8, array-8, index-16)	0.0.0 -> 255.255.65535
AIstruct	16	Analog Input (status:int16, value:float32)	See float 32 for range
time32	252	Seconds since Epoch Jan 1, 1970	Reserved for future use
time64	253	Seconds since Epoch Jan 1, 1970	Reserved for future use
struct	254	Local protocol Binary structure	Reserved for future use
pointer	255	Pointer to data	Reserved for future use
Invalid	-1	Not a valid register	Error condition

RegData – union of all data types – 65 bytes width.

RegData32 – union of all data types w/String32– 32 bytes width.

3 Registers

3.1 Registers – Array/Index Order

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
0	0	1	Event screen Refresh	Int8	WO	Temp	Event	0		0		1	Fake register
0	10	10	Group n Enable	Int8	RW	Temp	Group	0	enum	Disable/Enable	10	1	
0	20	10	Group n Trigger Type	Int8	RW	Temp	Group	0	Enum	Manual, Hour, Day, Week, Month, Minute	14	1	
0	30	10	Group n Contract – Min/Hr	Int8	RO	Gen	Group	0	Minute	0-59	15	1	
0	40	10	Group n Contract – Hr/Day	Int8	RO	Gen	Group	0	Hour	0-23	15	1	
0	50	10	Group n Contract – Day/Week	Int8	RW	Cfg	Group	0	Day	0-6 (Sun-Sat)	16	1	
0	60	10	Group n Contract – Day/Month	Int8	RW	Cfg	Group	0	Day	0-31	17	1	
0	70	10	Group n Status	Int8	RO	Warm	Group	0	Enum	Inactive, Run, Stop		1	
0	80	10	Group n Start	Int8	WO	Warm	Group	0	Enum	na/Start	32	1	Always reads 0
0	90	10	Group n Stop	Int8	WO	Warm	Group	0	Enum	na/Stop	33	1	Always reads 0
0	100	10	Group n Write Back Option	Int8	RW	Cfg	Group	0	Enum	Disable/Enable	30	1	
0	110	10	Group n Contract State Min/Hr	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	120	10	Group n Contract State Hr/Day	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	130	10	Group n Contract State Day/Week	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	140	10	Group n Contract State Day/Month	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	160	10	Group n Delete	Int8	WO	Temp	Group	0	Enum	No, Yes	11	1	
0	170	10	Group n Run/Stop	Int8	RW	Gen	Group	0	Enum	Stop/Run	34	1	
0	180	10	Group n Split logs	Int8	WO	Temp	Group	0	Enum	-,Split	31	1	Split all logs in Group n
0	1000	500	Event e – Group n	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Group n changed
0	1500	500	Event e – Log m	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Log changed
0	2000	500	Event e – Data point y	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Data point changed
0	2500	500	Event e Data Type	Uint16	RW	Warm	Event	0	Enum	Bool,int8,...		1	See Table 2.1

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
0	10,000	2,000	Group n Log m String z Persist	Int8	RW	Cfg	Log	Non-Persist	Enum	Non-persist, Persist	62	1	When enabled, Log Record String is not cleared on record creation (Roll log) (app.6.1000)
1	1	1	Max Num of Groups	Uint16	RO	Gen	Group	10		10		1	
1	2	1	Max Num of Logs in a Group	Uint16	RO	Gen	Group	10		10		1	
1	4	1	Max Num of Values in Log	Uint16	RO	Gen	Log	50		50		1	
1	5	1	Max Num of Event records	Uint16	RO	Gen	Group	500		500		1	
1	6	1	Max Num of Strings in Groups	Uint16	RO	Gen	Group	20		20		1	
1	7	1	Max Num of Values in Groups	Uint16	RO	Gen	Group	20		20		1	
1	8	1	Current Num of Groups	Uint16	RW	Cfg	Group	1		0-10	3	1	
1	9	1	Number of Active Events	Uint16	RO	Warm	Event	0		0-500		1	
1	10	1	Max Num of Strings in Log Header	Uint16	RO	Gen	Log	10		10		1	
1	11	1	Events - Capacity	Uint16	RW	Cfg	Event	100		50-500	4	1	
1	20	10	Group n Current Num of Strings	Uint16	RW	Cfg	Group	0		0-20	20	1	
1	30	10	Group n Current Num of Values	Uint16	RW	Cfg	Group	0		0-20	24	1	
1	40	10	Group n Current Num of Logs	Uint16	RW	Cfg	Group	1		0-10	18	1	CAUTION: Changing will delete all of Group n Log Data G
1	200	100	Group n Log m - Current Number of Values	Uint16	RW	Cfg	Log	0		0-50	47	1	
1	300	100	Group n Log m Flow Rate Index	Uint16	RO	Gen	Log	-1		-1, 0-49		1	
1	400	100	Group n Log m - Current Number of Strings	Uint16	RW	Cfg	Group	0		0-20	48	1	CAUTION: Changing will delete all of Group n Log Data
1	5000	5,000	Group n Log m Value x Command	Uint16	RW	Cfg	Log	Mean		None, Snap-Begin, Snap-End, Mean, Min, Max, Sum, Accum, Bit Accum	55	1	

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
1	10000	5,000	Group n Log n Value x Options – Non-Zero	Uint16	RW	Cfg	Log	0	Bit	x01, Bit:0	58	1	
1	10000	5,000	Group n Log m Value x Option – Flow Rate	Uint16	RW	Cfg	Log	0	Bit	x02, Bit:1	59	1	
1	10000	5,000	Group n Log m Value x Option – Weight	Uint16	RW	Cfg	Log	0	Bit	x04, Bit:2	60	1	
2	0	1	Event Next Sequence Number	Uint32	RO	Gen	Event	0		0-65,535		1	
2	1	1	Event Record Size	Uint32	RO	Gen	Event	123	Bytes	123		1	
2	30	10	Group n Log Data Capacity	Uint32	RW	Cfg	Group	0		200-2000	19	1	CAUTION: making this smaller will delete all of Group n Log Data
2	40	10	Group n Next Seq	Uint32	RO	Gen	Group					1	
2	50	10	Group n Max Seq	Uint32	RO	Gen	Group					1	
2	60	10	Group n Actual Records	Uint32	RO	Gen	Group					1	
2	80	10	Group n Start Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss		1	
2	90	10	Group n Stop Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss		1	
2	100	10	Group n Contract Start	Uint32	RW	Cfg	Group	00:00	hh:mm			1	
2	110	10	Group n Expected Stop Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss			
2	200	100	Group n Log m Max Seq	Uint32	RO	Gen	Log	0		0-xFFFFFFFF		1	
2	300	100	Group n Log m Current Num Records	Uint32	RO	Warm	Log	0		0-Capacity		1	
2	400	100	Group n Log m Max Num Records	Uint32	RO	Cfg	Log	0		0-1000		1	
2	500	100	Group n Log m Record Size	Uint32	RO	Gen	Log	0		0-8 + overhead		1	
2	600	100	Group n Log m Next Seq Num	Uint32	RO	Gen	Log	0		0-Max Seq		1	
2	700	100	Group n Log m Flow Time	Uint32	RO	Warm	Log		secs			1	
2	800	100	Group n Log m Period Time	Uint32	RO	Warm	Log		secs			1	
2	900	100	Group n Log m Preset Tube	Uint32	RO	Warm	Log	0	slot	0-254	44	1	0 = none/Customer
2	1000	100	Group n Log m Tube Type	Uint32	RW	Cfg	Log	0		0-255	52	1	0=none
2	1500	500	Event e Cause Code	Uint32	RO	Warm	Event	0				1	
2	2000	500	Event e Seq Num	Uint32	RO	Warm	Event	0				1	
2	2500	500	Event e Time Stamp	Uint32	RO	Warm	Event	0	Epoch			1	
3	-	-	Converted values from array 4	Float32	-	-	-					1	
4	0	200	Group n Value y: Value	Float64	RW	Warm	Group	0				1	
4	200	100	Group n Log m – Low Flow Cutoff setpoint	Float64	RO	Gen	Log	0			45	1	
4	300	100	Group n Log m – Rollover setpoint	Float64	RW	Cfg	Log	1,000,000,000			46	1	

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
4	5000	5,000	Group n Log m Value x: Value	Float64	RO	Warm	Log	0				1	
4	10000	5,000	Group n Log m Snap	Float64	RO	Warm	Log	0				1	
4	15000	5,000	Group n Log m Raw	Float64	RW	Warm	Log	0				1	
4	20000	5,000	Group n Log m Previous	Float64	RO	Warm	Log	0				1	
5	10	10	Group n Start Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	27	1	
5	20	10	Group n Stop Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	28	1	
5	30	10	Group n Run Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	29	1	
5	100	100	Group n Log m Name String Address	Register	RW	Cfg	Log	0.0.0			42	1	
5	200	100	Group n Log m Description String Address	Register	RW	Cfg	Log	0.0.0			43	1	
5	400	200	Group n Value y: Value Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	25	1	
5	600	200	Group n String y Address	Register	RW	Cfg	Group	0.0.0			23	1	
5	1000	1,000	Group n Log m Header String y Address	Register	RW	Cfg	Log	0.0.0			49	1	
5	2000	2,000	Group n Log m String y Address	Register	RW	Cfg	Log	0.0.0			62	1	
5	5000	2,000	Group n Log m Value x: Value Address	Register	RW	Cfg	Log	0.0.0		255.255.65535	57	1	
6	10	10	Group n Name	String32	RW	Cfg	Group				12	1	
6	20	10	Group n Description	String32	RW	Cfg	Group				13	1	
6	30	10	Group n File name	String32	RW	Cfg	Group					1	
6	100	100	Group n Log m File Name	String32	RW	Cfg	Group					1	
6	200	100	Group n Log m Name	String32	RW	Cfg	Log				40	1	
6	300	100	Group n Log m Description	String32	RW	Cfg	Log				41	1	
6	400	200	Group n Value y: Name	String32	RW	Cfg	Group				26	1	
6	600	200	Group n String x: Value	String32	RW	Cfg	Group				21	1	
6	800	200	Group n String x: Name	String32	RW	Cfg	Group				22	1	
6	1000	1,000	Group n Log m HdrStr x Value	String32	RW	Cfg	Group					1	
6	2000	1,000	Group n Log m HdrStr x Name	String32	RW	Cfg	Group					1	
6	3000	500	Event e Cause Name	String32	RW	Cfg	Event					1	
6	3500	500	Event e Old String	String32	RW	Cfg	Event					1	
6	4000	500	Event e New String	String32	RW	Cfg	Event					1	
6	5000	5,000	Group n Log m Value x: Value Name	String32	RW	Cfg	Log	Grp xx Log yy Data zz			56	1	
6	10000	2,000	Group n Log m String x - Value	String32	RW	Cfg	Log					1	
6	12000	2,000	Group n Log m String x - Name	String32	RW	Cfg	Log					1	
7	1000	500	Event e Old Data	Struct	RO	Warm	Event	0		Regdata32		1	
7	1500	500	Event e new Data	Struct	RO	Warm	Event	0		Regdata32		1	
10	0	50,000	HMI Read Log Value - Double	Float64	RO	Warm	Log					1	Rec=0 is live data

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
11	0	50,000	HMI Read Log Value - Float	Float32	RO	Warm	Log					1	Rec=0 is live data
12	0	20,000	HMI Read Log Record String Value	String32	RO	Warm	Log					1	Rec=0 is live data - RW
13	0	10,000	HMI Read Log - Uint32	Uin32	RO	Warm	Log					1	
90	0	500	MODBUS Event Records	Struct	Ro	Warm	Log					1	
91	0	1	MODBUS App header	Struct	RO	Warm	Log	0				1	
92	0	10	MODBUS Group header	Struct	RO	Warm	Log	0				1	
93	0	100	MODBUS Read Log header	Struct	RO	Warm	Log	0				1	
100	0	65,535	MODBUS Read Log Records	Struct	RO	Warm	Log	0				1	0 = newest

3.2 Registers – Function/Array/Index Order

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
3	-	-	Converted values from array 4	Float32	-	-	-					1	
0	0	1	Event screen Refresh	Int8	WO	Temp	Event	0		0		1	Fake register
0	1000	500	Event e – Group n	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Group n changed
0	1500	500	Event e – Log m	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Log changed
0	2000	500	Event e – Data point y	Uint16	RW	Warm	Event	0	Enum	0:na,1-10		1	Which Data point changed
0	2500	500	Event e Data Type	Uint16	RW	Warm	Event	0	Enum	Bool,int8,...		1	See Table 2.1
1	9	1	Number of Active Events	Uint16	RO	Warm	Event	0		0-500		1	
1	11	1	Events - Capacity	Uint16	RW	Cfg	Event	100		50-500	4	1	
2	0	1	Event Next Sequence Number	Uint32	RO	Gen	Event	0		0-65,535		1	
2	1	1	Event Record Size	Uint32	RO	Gen	Event	123	Bytes	123		1	
2	1500	500	Event e Cause Code	Uint32	RO	Warm	Event	0				1	
2	2000	500	Event e Seq Num	Uint32	RO	Warm	Event	0				1	
2	2500	500	Event e Time Stamp	Uint32	RO	Warm	Event	0	Epoch			1	
6	3000	500	Event e Cause Name	String32	RW	Cfg	Event					1	
6	3500	500	Event e Old String	String32	RW	Cfg	Event					1	
6	4000	500	Event e New String	String32	RW	Cfg	Event					1	
7	1000	500	Event e Old Data	Struct	RO	Warm	Event	0		Regdata32		1	
7	1500	500	Event e new Data	Struct	RO	Warm	Event	0		Regdata32		1	
0	10	10	Group n Enable	Int8	RW	Temp	Group	0	enum	Disable/Enable	10	1	
0	20	10	Group n Trigger Type	Int8	RW	Temp	Group	0	Enum	Manual, Hour, Day, Week, Month, Minute	14	1	
0	30	10	Group n Contract – Min/Hr	Int8	RO	Gen	Group	0	Minute	0-59	15	1	

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
0	40	10	Group n Contract – Hr/Day	Int8	RO	Gen	Group	0	Hour	0-23	15	1	
0	50	10	Group n Contract – Day/Week	Int8	RW	Cfg	Group	0	Day	0-6 (Sun-Sat)	16	1	
0	60	10	Group n Contract – Day/Month	Int8	RW	Cfg	Group	0	Day	0-31	17	1	
0	70	10	Group n Status	Int8	RO	Warm	Group	0	Enum	Inactive, Run, Stop		1	
0	80	10	Group n Start	Int8	WO	Warm	Group	0	Enum	na/Start	32	1	Always reads 0
0	90	10	Group n Stop	Int8	WO	Warm	Group	0	Enum	na/Stop	33	1	Always reads 0
0	100	10	Group n Write Back Option	Int8	RW	Cfg	Group	0	Enum	Disable/Enable	30	1	
0	110	10	Group n Contract State Min/Hr	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	120	10	Group n Contract State Hr/Day	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	130	10	Group n Contract State Day/Week	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	140	10	Group n Contract State Day/Month	Int8	RW	Temp	Group	0	Enum	not, just, stil		1	
0	160	10	Group n Delete	Int8	WO	Temp	Group	0	Enum	No, Yes	11	1	
0	170	10	Group n Run/Stop	Int8	RW	Gen	Group	0	Enum	Stop/Run	34	1	
0	180	10	Group n Split logs	Int8	WO	Temp	Group	0	Enum	-,Split	31	1	Split all logs in Group n
1	1	1	Max Num of Groups	Uint16	RO	Gen	Group	10		10		1	
1	2	1	Max Num of Logs in a Group	Uint16	RO	Gen	Group	10		10		1	
1	5	1	Max Num of Event records	Uint16	RO	Gen	Group	500		500		1	
1	6	1	Max Num of Strings in Groups	Uint16	RO	Gen	Group	20		20		1	
1	7	1	Max Num of Values in Groups	Uint16	RO	Gen	Group	20		20		1	
1	8	1	Current Num of Groups	Uint16	RW	Cfg	Group	1		0-10	3	1	
1	20	10	Group n Current Num of Strings	Uint16	RW	Cfg	Group	0		0-20	20	1	
1	30	10	Group n Current Num of Values	Uint16	RW	Cfg	Group	0		0-20	24	1	
1	40	10	Group n Current Num of Logs	Uint16	RW	Cfg	Group	1		0-10	18	1	CAUTION: Changing will delete all of Group n Log Data G
1	400	100	Group n Log m – Current Number of Strings	Uint16	RW	Cfg	Group	0		0-20	48	1	CAUTION: Changing will delete all of Group n Log Data

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes	
2	30	10	Group n Log Data Capacity	Uint32	RW	Cfg	Group	0		200-2000	19	1	CAUTION: making this smaller will delete all of Group n Log Data	
2	40	10	Group n Next Seq	Uint32	RO	Gen	Group					1		
2	50	10	Group n Max Seq	Uint32	RO	Gen	Group					1		
2	60	10	Group n Actual Records	Uint32	RO	Gen	Group					1		
2	80	10	Group n Start Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss		1		
2	90	10	Group n Stop Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss		1		
2	100	10	Group n Contract Start	Uint32	RW	Cfg	Group	00:00	hh:mm			1		
2	110	10	Group n Expected Stop Date	Uint32	RO	Warm	Group	0		mm-dd-yyyy hh:mm:ss				
4	0	200	Group n Value y: Value	Float64	RW	Warm	Group	0				1		
5	10	10	Group n Start Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	27	1		
5	20	10	Group n Stop Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	28	1		
5	30	10	Group n Run Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	29	1		
5	400	200	Group n Value y: Value Address	Register	RW	Cfg	Group	0.0.0		255.255.65535	25	1		
5	600	200	Group n String y Address	Register	RW	Cfg	Group	0.0.0			23	1		
6	10	10	Group n Name	String32	RW	Cfg	Group				12	1		
6	20	10	Group n Description	String32	RW	Cfg	Group				13	1		
6	30	10	Group n File name	String32	RW	Cfg	Group					1		
6	100	100	Group n Log m File Name	String32	RW	Cfg	Group					1		
6	400	200	Group n Value y: Name	String32	RW	Cfg	Group				26	1		
6	600	200	Group n String x: Value	String32	RW	Cfg	Group				21	1		
6	800	200	Group n String x: Name	String32	RW	Cfg	Group				22	1		
6	1000	1,000	Group n Log m HdrStr x Value	String32	RW	Cfg	Group					1		
6	2000	1,000	Group n Log m HdrStr x Name	String32	RW	Cfg	Group					1		
0	10,000	2,000	Group n Log m String z Persist	Int8	RW	Cfg	Log	Non-Persist	Enum	Non-persist, Persist	62	1	When enabled, Log Record String is not cleared on record creation (Roll log) (app.6.1000)	
1	4	1	Max Num of Values in Log	Uint16	RO	Gen	Log	50		50		1		
1	10	1	Max Num of Strings in Log Header	Uint16	RO	Gen	Log	10		10		1		
1	200	100	Group n Log m - Current Number of Values	Uint16	RW	Cfg	Log	0		0-50	47	1		

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
1	300	100	Group n Log m Flow Rate Index	Uint16	RO	Gen	Log	-1		-1, 0-49		1	
1	5000	5,000	Group n Log m Value x Command	Uint16	RW	Cfg	Log	Mean		None, Snap-Begin, Snap-End, Mean, Min, Max, Sum, Accum, Bit Accum	55	1	
1	10000	5,000	Group n Log n Value x Options – Non-Zero	Uint16	RW	Cfg	Log	0	Bit	x01, Bit:0	58	1	
1	10000	5,000	Group n Log m Value x Option – Flow Rate	Uint16	RW	Cfg	Log	0	Bit	x02, Bit:1	59	1	
1	10000	5,000	Group n Log m Value x Option – Weight	Uint16	RW	Cfg	Log	0	Bit	x04, Bit:2	60	1	
2	200	100	Group n Log m Max Seq	Uint32	RO	Gen	Log	0		0-xFFFFFFFF		1	
2	300	100	Group n Log m Current Num Records	Uint32	RO	Warm	Log	0		0-Capacity		1	
2	400	100	Group n Log m Max Num Records	Uint32	RO	Cfg	Log	0		0-1000		1	
2	500	100	Group n Log m Record Size	Uint32	RO	Gen	Log	0		0-8 + overhead		1	
2	600	100	Group n Log m Next Seq Num	Uint32	RO	Gen	Log	0		0-Max Seq		1	
2	700	100	Group n Log m Flow Time	Uint32	RO	Warm	Log		secs			1	
2	800	100	Group n Log m Period Time	Uint32	RO	Warm	Log		secs			1	
2	900	100	Group n Log m Preset Tube	Uint32	RO	Warm	Log	0	slot	0-254	44	1	0 = none/Custom
2	1000	100	Group n Log m Tube Type	Uint32	RW	Cfg	Log	0		0-255	52	1	0=none
4	200	100	Group n Log m – Low Flow Cutoff setpoint	Float64	RO	Gen	Log	0			45	1	
4	300	100	Group n Log m – Rollover setpoint	Float64	RW	Cfg	Log	1,000,000,000			46	1	
4	5000	5,000	Group n Log m Value x: Value	Float64	RO	Warm	Log	0				1	
4	10000	5,000	Group n Log m Snap	Float64	RO	Warm	Log	0				1	
4	15000	5,000	Group n Log m Raw	Float64	RW	Warm	Log	0				1	
4	20000	5,000	Group n Log m Previous	Float64	RO	Warm	Log	0				1	
5	100	100	Group n Log m Name String Address	Register	RW	Cfg	Log	0.0.0			42	1	
5	200	100	Group n Log m Description String Address	Register	RW	Cfg	Log	0.0.0			43	1	
5	1000	1,000	Group n Log m Header String y Address	Register	RW	Cfg	Log	0.0.0			49	1	
5	2000	2,000	Group n Log m String y Address	Register	RW	Cfg	Log	0.0.0			62	1	
5	5000	2,000	Group n Log m Value x: Value Address	Register	RW	Cfg	Log	0.0.0		255.255.65535	57	1	
6	200	100	Group n Log m Name	String32	RW	Cfg	Log				40	1	
6	300	100	Group n Log m Description	String32	RW	Cfg	Log				41	1	

Array	Index	Max Size	Description	Data Type	RW	Data Group	Func	Default Value	Units	Range	Evt	Rev	Notes
6	5000	5,000	Group n Log m Value x: Value Name	String32	RW	Cfg	Log	Grp xx Log yy Data zz			56	1	
6	10000	2,000	Group n Log m String x - Value	String32	RW	Cfg	Log					1	
6	12000	2,000	Group n Log m String x - Name	String32	RW	Cfg	Log					1	
10	0	50,000	HMI Read Log Value - Double	Float64	RO	Warm	Log					1	Rec=0 is live data
11	0	50,000	HMI Read Log Value - Float	Float32	RO	Warm	Log					1	Rec=0 is live data
12	0	20,000	HMI Read Log Record String Value	String32	RO	Warm	Log					1	Rec=0 is live data - RW
13	0	10,000	HMI Read Log - Uint32	Uin32	RO	Warm	Log					1	
90	0	500	MODBUS Event Records	Struct	Ro	Warm	Log					1	
91	0	1	MODBUS App header	Struct	RO	Warm	Log	0				1	
92	0	10	MODBUS Group header	Struct	RO	Warm	Log	0				1	
93	0	100	MODBUS Read Log header	Struct	RO	Warm	Log	0				1	
100	0	65,535	MODBUS Read Log Records	Struct	RO	Warm	Log	0				1	0 = newest

3.3 Registers – Offsets for Real Log – Uint32 array 13

Array	Offset	Max Size	Description	Data Type	Grouping
13	0	1	Read Log – Sequence Number – per record	Uin32	G/L/Rec:10/Data:10
13	1	1	Read Log – Start Time – per record	Uin32	G/L/Rec:10/Data:10
13	2	1	Read Log – Stop Time – per record	Uin32	G/L/Rec:10/Data:10
13	3	1	Read Log – Flow Time – per log	Uin32	G/L/Rec:10/Data:10
13	4	1	Read Log – Period Time – per record	Uin32	G/L/Rec:10/Data:10
13	5	1	Read Log – Number of Data points (Float64) max 50 – per record	Uin32	G/L/Rec:10/Data:10
13	6	1	Read Log - Number of String points (String32) max 20 – per record	Uin32	G/L/Rec:10/Data:10
13	7	1	Read Log – Spare 1 – per record	Uin32	G/L/Rec:10/Data:10
13	8	1	Read Log – Spare 2 – per record	Uin32	G/L/Rec:10/Data:10
13	9	1	Read Log – Spare 3 – per record	Uin32	G/L/Rec:10/Data:10

4 Data structures and unions

4.1 Regdata32: union

Data Type	Bytes	Notes
UInt8	1	Signed values also stored here.
UInt16	2	
UInt32	4	
UInt64	8	
String32	32	Terminated by zero, therefore only 31 visible characters
Float32	4	
Float64	8	
Register	4	slot.array.index

A union is a collection of variables of different datatypes in the same memory location. A union is defined with many members, but at a given point of time only one member can contain a value. Unions only allocate enough space to store the largest field listed, and all fields are stored at the same space.

4.2 AIstruct

Data Type	Size	Description
Float32	4	Data Value
UInt16	2	Input Status

Input Status:

Name	Hex	Description
A2D_READ	x01	Data is valid – only bit set by type conversion
A2D_STABLE	x02	Data is stable
A2D_OVERRANGE	x04	Data is out of range

4.3 App header: structure

Data Type	Bytes	Description	Default/Range	Rev	Notes
UInt32	4	Size of Header	144	1	Includes this variable
UInt32	4	Unique ID	7000	1	
UInt8	1	DSID		1	Only valid in DSID requests
String32	32	Application Name	Batch Log-1	1	Terminated by zero
UInt32	4	Date Time of Collect		1	Current date in box
UInt32	4	App Instance	0-10	1	
UInt32	4	Number of Groups in response	0-10	1	
String32	32	Station Id	TOTALFLOW	1	Terminated by zero
String32	32	Station Location	Measurement and Control	1	Terminated by zero
String32	32	Flash Software Part Number	210xxxx-rrr	1	Terminated by zero
Total	149				

4.4 Group Setup Header: structure

Data Type	Size	Description	Default/Range	Rev	Notes
Uin32	4	Size of Header	91	1	Includes this variable
Uin32	4	Unique ID	7200	1	
Uin8	1	Group Number	0-10	1	
Uin8	1	Group Enable	0-1	1	
Uin8	1	Group Trigger	0-5	1	
Uin8	1	Group Contract Min in Hour	0-59	1	
Uin8	1	Group Contract Hour in Day	0-23	1	
Uin8	1	Group Contract Day in Week	0-6	1	
Uin8	1	Group Contract Day in Month	1-31	1	
Uin16	2	Group - Number of Logs	0-10	1	
Uin8[10]	10	Log Preset	0-254	1	App Slot
String32	32	Group Name	Group-01	1	Terminated by zero
String32	32	Group Description		1	Terminated by zero
Uin32	4	Size of Header	16	1	
Uin32	4	Unique ID	7300	1	
Uin32	4	Group - number of Data Values	0-20	1	
Uin32	4	Size of Data Value and name	40	1	
Struct	N*40	Data Values and Names	Cnt: 0-20	1	See 4.5
Uin32	4	Size of Header	16	1	
Uin32	4	Unique ID	7300	1	
Uin32	4	Group - Number of Strings	0-20	1	
Uin32	4	Size of String Value and name	64	1	
Struct	N*64	Data Strings and Names	Cnt: 0-20	1	See 4.6
Max Total	2,203	91+16+800+16+1280	Total Min	123	

4.5 Group data values and names: structure

Data Type	Size	Description	Default/Range	Rev	Notes
Float64	8	Group Value		1	
String32	32	Group Value Name		1	Terminated by zero
Total	40				

4.6 Group string values and names: structure

Data Type	Size	Description	Default/Range	Rev	Notes
String32	32	Group String Value		1	Terminated by zero
String32	32	Group String Name		1	Terminated by zero
Total	64				

4.7 Log Setup Header: structure

Data Type	Bytes	Description	Default/Range	Rev	Notes
UInt32	4	Size of Header	732	1	Includes this variable
UInt32	4	Unique ID	7500	1	
UInt32	4	Log Number	1-10	1	
String32	32	Log Name	Log-01	1	Terminated by zero
String32	32	Log Description		1	Terminated by zero
String32[10]	320	Log Header String Name		1	Terminated by zero
String32[10]	320	Log Header String Value		1	Terminated by zero
UInt32	4	Number of Data	0-50	1	
UInt32	4	Size of Data	32	1	
UInt32	4	Number of Strings	0-20	1	
UInt32	4	Size of Strings	32	1	
String32	32	Tube Name		1	Terminated by zero
String32	32	Tube Description		1	Terminated by zero
Struct	D*32	Data Names (0-49)	See Number of Data	1	Column Headers Max: 1,600
Struct	S*32	String Names (0-20)	See Number of Strings	1	Column Headers Max: 640
Max Total	2,972	732 + (50*32) + (20*32)	Total Min	732	

4.8 Log Data Header: structure

Data Type	Bytes	Description	Default/Range	Rev	Notes
UInt32	4	Size of Header	732	1	Includes this variable
UInt32	4	Unique ID	7600	1	
UInt32	4	Log Number	0-9	1	This log number
UInt32	4	Number of Records	0-2,000	1	
UInt32	4	Number of bytes in Records	0-1,040	1	$(50*8) + (20*32) = 400+640 = 1,040$ max
Total	20				

4.9 Log Data: structure

Data Type	Bytes	Description	Default/Range	Rev	Notes
UInt32	4	CRC32 - vcode		1	Includes this variable
UInt32	4	Start Date		1	Seconds since 1/1/1970
UInt32	4	Sequence Number		1	
UInt32	4	Stop Date		1	Seconds since 1/1/1970
UInt32	4	Flow Seconds	0-86400	1	Flow Rate \geq low flow cutoff.
UInt32	4	Period Seconds	0-86400	1	
UInt32	4	Number of Data	0-50	1	
UInt32	4	Size of Data	8	1	
UInt32	4	Number of Strings	0-20	1	
UInt32	4	Size of Strings	32	1	
Float64	8*D	Data Values		1	
String32	32*S	String values		1	Terminated by zero
Total max	1080	$16 + 24 + (50*8) + (20*32)$	Total Min	40	

4.10 Event Data: structure

Data Type	Bytes	Description	Rev	Notes
UInt32	4	CRC32 - vcode	1	CRC32 over entire record
UInt32	4	Start Date	1	Julian Date/Time seconds since Jan 1, 1970 - no second adjust
UInt32	4	Sequence Number	1	Sequence number from log
UInt32	4	Stop Date	1	Julian Date/Time seconds since Jan 1, 1970 - no second adjust
UInt8	1	Data Type	1	See Data Type Table
Int32	4	Cause Code	1	See register table - Cause column
Int16	2	Batch	1	Which batch was changed
Int16	2	Log	1	Which log was changed
Int16	2	Data	1	Which Data item was changed
Regdata32	32	Old Value	1	union of all possible data types
Regdata32	32	New Value	1	union of all possible data types
String32	32	Cause String	1	Conversion of Cause Code
Total	123			Number of bytes in structure

4.11 Event Cause Code

Cause	Ary	Index	Rev	Event Cause	Description
0	-	-	1	(empty)	The event log record is empty.
1	-	-	1	Warm Start App	The Batch Log application has warm started
2	-	-	1	Cold Start App	The Batch Log application has been instantiated. This is event is logged when the application is added and activated by the user from the Application and License Management tab.
3	1	8	1	Group Size	The Number of Groups has been updated by the user on the group's Summary tab.
4	1	11	1	Event Capacity	The Capacity of the Event log has been updated by the user on the group's Summary tab.
10	0	10	1	Group Enable	The group has been enabled for data logging by the user on the group's Setup tab.
11	0	160	1	Group Delete	The data in Group n all logs has been deleted.
12	6	10	1	Group Name	The group Name has been changed from defaults or updated by the user on the group's Setup tab.
13	6	20	1	Group Description	The group description has been defined or updated by the user on the group's Setup tab.
14	0	20	1	Group Trigger Type	The group Trigger Type selection has been changed by the user on the group's Setup tab. The trigger type options include: manually, hourly, daily, weekly, and monthly.
15	0	30	1	Group Contract Hour/Day	The group Contract Start: Hour for daily logging has been updated by the user in the group's Setup tab.
16	0	50	1	Group Contract Day/Week	The group Contract Start: Day for weekly logging has been updated by the user in the group's Setup tab.
17	0	60	1	Group Contract Day/Month	The group Contract Start: Day for monthly logging has been updated by the user in the group's Setup tab.
18	1	40	1	Group Number of Logs	The group Number of Logs has been updated in the group's Setup tab.
19	2	30	1	Group Log Record Capacity	Maximum number of log records before rollover occurs.
20	1	20	1	Group String Size	The group's number of strings has been updated.
21	6	600	1	Group String Value	The value of one of the defined strings has been updated by the user in the Group n Strings tab.
22	6	800	1	Group String Name	The name of one of the defined strings has been updated by the user in the Group n Strings tab.
23	5	600	1	Group String Address	The group string register address has been changed.
24	1	30	1	Group Value Size	The group's number of values has been updated.
25	5	400	1	Group Value Address	The register address of one of the defined values has been updated by the user in the Group n Values tab.
26	6	400	1	Group Value Name	The name of one of the defined values has been updated by the user in the Group n Values tab.
27	5	10	1	Group Start Address	The address for the Start Batch DI Register has been updated by the user in the group's Setup tab.

Cause	Ary	Index	Rev	Event Cause	Description
28	5	20	1	Group Stop Address	The address for the Stop Batch DI Register has been updated by the user in the group's Setup tab.
29	5	30	1	Group Run Address	The address for the Run Batch DI Register has been updated by the user in the group's Setup tab.
30	0	100	1	Group Write Back	The group Write Back Option selection has been changed by the user on the group's Setup tab.
31	0	180	1	Group Log Split	The user has requested a Split of the current Group log Record.
32	0	80	1	Group Start	The user has requested a Start of the current Group log Record.
33	0	90	1	Group Stop	The user has requested a Stop of the current Group log Record.
34	0	170	1	Group Run	The user has requested a Run/Stop of the current Group log Record.
40	6	200	1	Group Log Name	The name of a group log has been updated by the user in the Log Setup tab.
41	6	300	1	Group Log Description	The description of a group log has been updated by the user in the Log Setup tab.
42	5	100	1	Group Log Name Address	The register address for the value of a log name has been update d the Log Setup tab.
43	5	200	1	Group Log Description Address	The register address holding the log description has been updated on the Log Setup tab.
44	2	900	1	Group Log Preset	A tube has been selected for the log at Preset Tube on the Log Setup tab.
45	4	200	1	Group Log Low Flow Cutoff	The Low Flow Cutoff value of a log has been updated by the user on the Log Setup tab.
46	4	300	1	Group Log Rollover Setpoint	The Rollover Setpoint value of a log has been updated by the user on the Log Setup tab.
47	1	200	1	Group Log Record Data Size	Number of Record Values has been updated by the user on Log Setup tab
48	1	400	1	Group Log Record String Size	Number of Record Strings has been updated by the user on Log Setup tab
49	5	1,000	1	Group Log Header Address	The register address for the value of a Log Header string has been updated on the Log Setup tab.
50	-	-	1	Group Log Out of Memory	The log was unable to be created due to memory shortage.
51	-	-	1	Group Log Data Rollover	The data point has exceeded the Rollover Setpoint and has been reset.
52	2	1,000	1	Group Log Tube Type	The Tube Type of a data point in a log has been updated by the user on the Log Setup tab.
55	1	5000	1	Group Log Data Trigger	The Trigger type of a data point in a log has been updated by the user on the Log Setup tab.
56	6	5,000	1	Group Log Data Name	The name of a data point in a log has been updated by the user on the Log Setup tab.
57	5	5,000	1	Group Log Data Address	The register address of a data point in a log has been updated by the user on the Log Setup tab.
58	1	10,000	1	Group Log Data Option: Non-Zero	The Non-Zero option for a data point has been enabled On the Log Setup tab,
59	1	10,000	1	Group Log Data Option: Flow Rate	The Flow Rate option for a data point has been enabled On the Log Setup tab, all other data points will have the option disabled.
60	1	10,000	1	Group Log Data Option: Weight	The Flow Weighted option is selected at the Average value for a data point on the Log Setup tab. The default is Linear Averaging.
61	5	2,000	1	Group Log Record String Address	The register address for the value of a record string has been updated on the Log Setup tab.
62	0	10,000	1	Group Log Record String Persist	The option of persist for the record string has been changed.

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