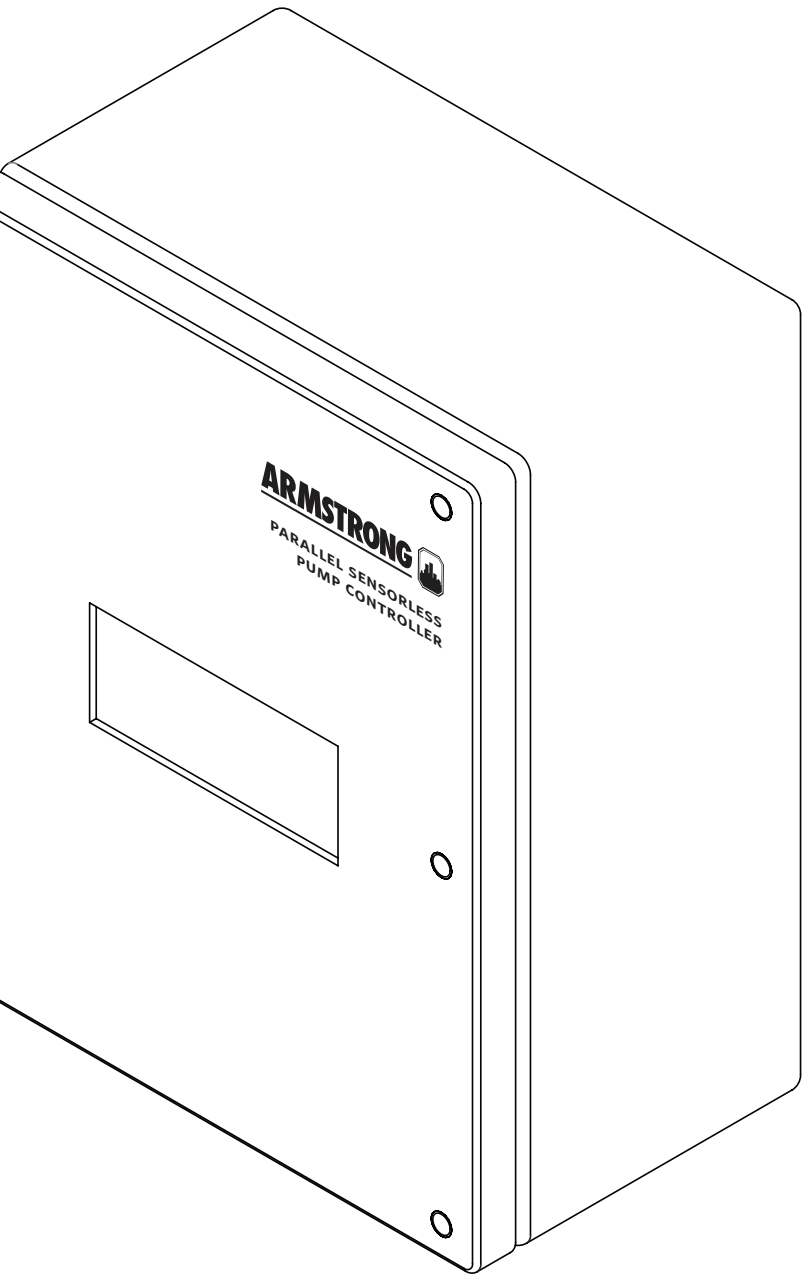
ARMSTRONG



Parallel Sensorless pump controller

Data points

File No: 90.682
Date: AUGUST 29, 2013
Supersedes: 90.682
Date: APRIL 19, 2013

CONTENTS

SUMMARY

PARAMETERS TO BE DISPLAYED ON CONTROLLER		
SYSTEM STATUS	**INDIVIDUAL PUMP STATUS**	**INDIVIDUAL IVS102 STATUS**
Total Sensorless flow	Speed Ref (%)	Current (Amps)
Sensorless head	Speed (%) (RPM)	Volt (VAC)
Total power	Run time (hrs)	Power (kW)
Pumps speed	Fault Num	Head
Alarm	Run status (running/stopped)	Flow
Wire to water efficiency (calculated)		
Number of pumps running		
Lead pump number		

PARAMETERS TO BE SET		
FROM BAS OR CONTROLLER	**FROM CONTROLLER**	**IVS102 READOUT FACTORS**
Number of pumps	Number of standby pumps	Amps
Lead pump switch time (HRS)	Speed maximum ramp time (s)	Volts
Flow – design	Pump minumum speed (%)	kW
Head – design	Pump maximum speed (%)	Flow
Head zero flow (H_{min})	Motor rated speed (RPM)	Head
Flow – BEP	Hz	
Head – BEP	PID gain (Kc)	
Dead band	PID integral (Ti)	
Sensorless adjustment	BAS protocol (option)	
Enable signal to controller	BAS address (option)	
	BAS baud rate (option)	
	Head unit	
	Flow unit	

BAS DATA POINTS - MODBUS RTU

BUILDING AUTOMATION SYSTEM MODBUS RTU

Parallel Sensorless Modbus RTU - Communication interface Rev 13081

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
10401	Digital	R	System alarm	Ok	Alarm	Toggle
10402	Digital	R	Reserved	Ok	Alarm	Toggle
10403	Digital	R	Pump alarm	Ok	Alarm	Toggle
10404	Digital	R	Pump 1 in hand mode		Hand	Toggle
10405	Digital	R	Pump 1 in off mode		Off	Toggle
10406	Digital	R	Pump 1 in auto mode		Auto	Toggle
10407	Digital	R	Pump 2 in hand mode		Hand	Toggle
10408	Digital	R	Pump 2 in off mode		Off	Toggle
10409	Digital	R	Pump 2 in auto mode		Auto	Toggle
10410	Digital	R	Pump 3 in hand mode		Hand	Toggle
10411	Digital	R	Pump 3 in off mode		Off	Toggle
10412	Digital	R	Pump 3 in auto mode		Auto	Toggle
10413	Digital	R	Pump 4 in hand mode		Hand	Toggle
10414	Digital	R	Pump 4 in off mode		Off	Toggle
10415	Digital	R	Pump 4 in auto mode		Auto	Toggle
10416	Digital	R	Reserved			
10417	Digital	R	Reserved			
10418	Digital	R	Reserved			
10419	Digital	R	Reserved			
10420	Digital	R	Reserved			
10421	Digital	R	Reserved			
10422	Digital	R	Reserved			
10423	Digital	R	Reserved			
10424	Digital	R	Reserved			
10425	Digital	R	Reserved			
10426	Digital	R	Reserved			
10427	Digital	R	Reserved			
10428	Digital	R	Reserved			
10429	Digital	R	Reserved			
10430	Digital	R	Reserved			
10431	Digital	R	Reserved			
10432	Digital	R	Reserved			
10433	Digital	R	Reserved			
10434	Digital	R	Pump 1 run feedback	Stopped	Running	Toggle
10435	Digital	R	Pump 2 run feedback	Stopped	Running	Toggle
10436	Digital	R	Pump 3 run feedback	Stopped	Running	Toggle
10437	Digital	R	Pump 4 run feedback	Stopped	Running	Toggle
10438	Digital	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
10439	Digital	R	Reserved			
10440	Digital	R	Reserved			
10441	Digital	R	Reserved			
10442	Digital	R	Reserved			
10443	Digital	R	Reserved			
10444	Digital	R	Reserved			
10445	Digital	R	Reserved			
10446	Digital	R	Reserved			
10447	Digital	R	Reserved			
10448	Digital	R	Reserved			
10449	Digital	R	Reserved			
10450	Digital	R	Reserved			
10451	Digital	R	Reserved			
10452	Digital	R	Reserved			
10453	Digital	R	Reserved			
10454	Digital	R	Reserved			
10455	Digital	R	Reserved			
10456	Digital	R	Reserved			
10457	Digital	R	Reserved			
10458	Digital	R	Reserved			
10459	Digital	R	Reserved			
10460	Digital	R	Reserved			
10461	Digital	R	Reserved			
10462	Digital	R	Reserved			
10463	Digital	R	Reserved			
10464	Digital	R	Reserved			
10465	Digital	R	Reserved			
10466	Digital	R	Reserved			
10467	Digital	R	Reserved			
10468	Digital	R	Pump 1 alarm	Ok	Alarm	Toggle
10469	Digital	R	Pump 2 alarm	Ok	Alarm	Toggle
10470	Digital	R	Pump 3 alarm	Ok	Alarm	Toggle
10471	Digital	R	Pump 4 alarm	Ok	Alarm	Toggle
10472	Digital	R	Reserved			
10473	Digital	R	Reserved			
10474	Digital	R	Reserved			
10475	Digital	R	Reserved			
10476	Digital	R	Reserved			
10477	Digital	R	Reserved			
10478	Digital	R	Pump 1 run feedback alarm	Ok	Alarm	Toggle

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
10479	Digital	R	Pump 2 run feedback alarm	Ok	Alarm	Toggle
10480	Digital	R	Pump 3 run feedback alarm	Ok	Alarm	Toggle
10481	Digital	R	Pump 4 run feedback alarm	Ok	Alarm	Toggle
10482	Digital	R	Reserved			
10483	Digital	R	Reserved			
10484	Digital	R	Reserved			
10485	Digital	R	Reserved			
10486	Digital	R	Reserved			
10487	Digital	R	Reserved			
10488	Digital	R	Pump 1 drive fault	Ok	Alarm	Toggle
10489	Digital	R	Pump 2 drive fault	Ok	Alarm	Toggle
10490	Digital	R	Pump 3 drive fault	Ok	Alarm	Toggle
10491	Digital	R	Pump 4 drive fault	Ok	Alarm	Toggle
10492	Digital	R	Reserved			
10493	Digital	R	Reserved			
10494	Digital	R	Reserved			
10495	Digital	R	Reserved			
10496	Digital	R	Reserved			
10497	Digital	R	Reserved			
10498	Digital	R	Reserved			
10499	Digital	R	Reserved			
10500	Digital	R	Reserved			
10501	Digital	R	Reserved			
10502	Digital	R	Reserved			
10503	Digital	R	Reserved			
10504	Digital	R	Reserved			
10505	Digital	R	Reserved			
10506	Digital	R	Reserved			
10507	Digital	R	Reserved			
10508	Digital	R	Reserved			
10509	Digital	R	Reserved			
10510	Digital	R	Reserved			
10511	Digital	R	Reserved			
10512	Digital	R	Reserved			
10513	Digital	R	Reserved			
10514	Digital	R	Reserved			
10515	Digital	R	Reserved			
10516	Digital	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
10517	Digital	R	Reserved			
10518	Digital	R	Reserved			
10519	Digital	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
551	Digital	R/W	Remote Start		Start	Toggle
552	Digital	R/W	Set pump 1 hand		Hand	Momentary
553	Digital	R/W	Set pump 1 off		Off	Momentary
554	Digital	R/W	Set pump 1 auto		Auto	Momentary
555	Digital	R/W	Set pump 2 hand		Hand	Momentary
556	Digital	R/W	Set pump 2 off		Off	Momentary
557	Digital	R/W	Set pump 2 auto		Auto	Momentary
558	Digital	R/W	Set pump 3 hand		Hand	Momentary
559	Digital	R/W	Set pump 3 off		Off	Momentary
560	Digital	R/W	Set pump 3 auto		Auto	Momentary
561	Digital	R/W	Set pump 4 hand		Hand	Momentary
562	Digital	R/W	Set pump 4 off		Off	Momentary
563	Digital	R/W	Set pump 4 auto		Auto	Momentary
564	Digital	R/W	Reserved			
565	Digital	R/W	Reserved			
566	Digital	R/W	Reserved			
567	Digital	R/W	Reserved			
568	Digital	R/W	Reserved			
569	Digital	R/W	Reserved			
570	Digital	R/W	Reserved			
571	Digital	R/W	Reserved			
572	Digital	R/W	Reserved			
573	Digital	R/W	Reserved			
574	Digital	R/W	Reserved			
575	Digital	R/W	Reserved			
576	Digital	R/W	Reserved			
577	Digital	R/W	Reserved			
578	Digital	R/W	Reserved			
579	Digital	R/W	Reserved			
580	Digital	R/W	Reserved			
581	Digital	R/W	Reserved			
582	Digital	R/W	Reserved		Reset	Momentary
583	Digital	R/W	Set alarm reset			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
30401	Analog	R	Reserved			
30402	Analog	R	Reserved			
30403	Analog	R	Reserved			
30404	Analog	R	Reserved			
30405	Analog	R	Reserved			
30406	Analog	R	Reserved			
30407	Analog	R	Reserved			
30408	Analog	R	Reserved			
30409	Analog	R	Reserved			
30410	Analog	R	Reserved			
30411	Analog	R	Reserved			
30412	Analog	R	Reserved			
30413	Analog	R	Reserved			
30414	Analog	R	Reserved			
30415	Analog	R	Reserved			
30416	Analog	R	Reserved			
30417	Analog	R	Reserved			
30418	Analog	R	Reserved			
30419	Analog	R	Reserved			
30420	Analog	R	Reserved			
30421	Analog	R	Reserved			
30422	Analog	R	Reserved			
30423	Analog	R	Reserved			
30424	Analog	R	Reserved			
30425	Analog	R	Reserved			
30426	Analog	R	Reserved			
30427	Analog	R	Reserved			
30428	Analog	R	Reserved			
30429	Analog	R	Reserved			
30430	Analog	R	Reserved			
30431	Analog	R	Reserved			
30432	Analog	R	Reserved			
30433	Analog	R	Reserved			
30434	Analog	R	Reserved			
30435	Analog	R	Reserved			
30436	Analog	R	Reserved			
30437	Analog	R	Reserved			
30438	Analog	R	Reserved			
30439	Analog	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
30440	Analog	R	Pump 1 speed	0 to 1000	0.0 to 100.0	%
30441	Analog	R	Pump 2 speed			
30442	Analog	R	Pump 3 speed			
30443	Analog	R	Pump 4 speed			
30444	Analog	R	Reserved			
30445	Analog	R	Reserved			
30446	Analog	R	Reserved			
30447	Analog	R	Reserved			
30448	Analog	R	Reserved			
30449	Analog	R	Reserved			
30450	Analog	R	Reserved			
30451	Analog	R	Reserved			
30452	Analog	R	Total head	0 to 32767	0 to 3276.7	ft, psi, kPa
30453	Analog	R	Pump 1 drive amp	0 to 10000	0.0 to 1000.0	Amp
30454	Analog	R	Pump 1 drive volt AC			VAC
30455	Analog	R	Pump 1 drive power			kW
30456	Analog	R	Pump 1 drive speed feedback	0 to 1000	0.0 to 100.0	%
30457	Analog	R	Pump 2 drive amp	0 to 10000	0.0 to 1000.0	Amp
30458	Analog	R	Pump 2 drive volt AC			VAC
30459	Analog	R	Pump 2 drive power			kW
30460	Analog	R	Pump 2 drive speed feedback	0 to 1000	0.0 to 100.0	%
30461	Analog	R	Pump 3 drive amp	0 to 10000	0.0 to 1000.0	Amp
30462	Analog	R	Pump 3 drive volt AC			VAC
30463	Analog	R	Pump 3 drive power			kW
30464	Analog	R	Pump 3 drive speed feedback	0 to 1000	0.0 to 100.0	%
30465	Analog	R	Pump 4 drive amp	0 to 10000	0.0 to 1000.0	Amp
30466	Analog	R	Pump 4 drive volt AC			VAC
30467	Analog	R	Pump 4 drive power			kW
30468	Analog	R	Pump 4 drive speed feedback	0 to 1000	0.0 to 100.0	%
30469	Analog	R	Reserved			
30470	Analog	R	Reserved			
30471	Analog	R	Reserved			
30472	Analog	R	Reserved			
30473	Analog	R	Reserved			
30474	Analog	R	Reserved			
30475	Analog	R	Reserved			
30476	Analog	R	Reserved			
30477	Analog	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
30478	Analog	R	Reserved			
30479	Analog	R	Reserved			
30480	Analog	R	Reserved			
30481	Analog	R	Reserved			
30482	Analog	R	Reserved			
30483	Analog	R	Reserved			
30484	Analog	R	Reserved			
30485	Analog	R	Reserved			
30486	Analog	R	Reserved			
30487	Analog	R	Reserved			
30488	Analog	R	Reserved			
30489	Analog	R	Reserved			
30490	Analog	R	Reserved			
30491	Analog	R	Reserved			
30492	Analog	R	Reserved			
30493	Analog	R	Pump 1 head	0 to 32767	0.0 to 3276.7	ft, psi, kPa
30494	Analog	R	Pump 2 head			
30495	Analog	R	Pump 3 head			
30496	Analog	R	Pump 4 head			
30497	Analog	R	Reserved			
30498	Analog	R	Reserved			
30499	Analog	R	Reserved			
30500	Analog	R	Reserved			
30501	Analog	R	Reserved			
30502	Analog	R	Reserved			
30503	Analog	R	Wire to Water Efficiency	0 to 32767	0.0 to 3276.7	
30504	Analog	R	Total drive kW	0 to 32767	0.0 to 3276.7	
35400	Analog	R	Reserved			
35401	Analog	R	Reserved			
35402	Analog	R	Reserved			
35403	Analog	R	Pump 1 flow	0 to 32767	0 to 32767	gpm, lps, m3/hr
35404	Analog	R	Pump 2 flow			
35405	Analog	R	Pump 3 flow			
35406	Analog	R	Pump 4 flow			
35407	Analog	R	Reserved			
35408	Analog	R	Reserved			
35409	Analog	R	Reserved			
35410	Analog	R	Reserved			
35411	Analog	R	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
35412	Analog	R	Total Flow	0 to 32767	0 to 327670	gpm
35413	Analog	R	Pump 1 operating run hours	0 to 999		Hrs
35414	Analog	R	Pump 1 operating run khours	0 to 32000		Hrs x1000
35415	Analog	R	Pump 2 operating run hours	0 to 999		Hrs
35416	Analog	R	Pump 2 operating run khours	0 to 32000		Hrs x1000
35417	Analog	R	Pump 3 operating run hours	0 to 999		Hrs
35418	Analog	R	Pump 3 operating run khours	0 to 32000		Hrs x1000
35419	Analog	R	Pump 4 operating run hours	0 to 999		Hrs
35420	Analog	R	Pump 4 operating run khours	0 to 32000		Hrs x1000
35421	Analog	R	Reserved			
35422	Analog	R	Reserved			
35423	Analog	R	Reserved			
35424	Analog	R	Reserved			
35425	Analog	R	Reserved			
35426	Analog	R	Reserved			
35427	Analog	R	Reserved			
35428	Analog	R	Reserved			
35429	Analog	R	Reserved			
35430	Analog	R	Reserved			
35431	Analog	R	Reserved			
35432	Analog	R	Number of Pump Running	0 to 4		
35433	Analog	R	Lead Pump ID	1 to 4		
35434	Analog	R	Reserved			
35435	Analog	R	Flow Design	0 to 32767	0 to 327670	gpm, lps, m3/hr
35436	Analog	R	Flow BEP			
35437	Analog	R	Number of Pumps	0 to 4		
35438	Analog	R	Lead Pump Switch Time	1 to 999		Days
40551	Analog	R/W	Reserved			
40552	Analog	R/W	Reserved			
40553	Analog	R/W	Reserved			
40554	Analog	R/W	Reserved			
40555	Analog	R/W	Reserved			

MODBUS ADDRESS	SIGNAL TYPE	READ/WRITE	DESCRIPTION	RANGE	REPRESENT	UNITS
40556	Analog	R/W	Reserved			
40557	Analog	R/W	Reserved			
40558	Analog	R/W	Reserved			
40559	Analog	R/W	Reserved			
40560	Analog	R/W	Reserved			
40561	Analog	R/W	Reserved			
40562	Analog	R/W	Reserved			
40563	Analog	R/W	Reserved			
40564	Analog	R/W	Reserved			
40565	Analog	R/W	Reserved			
40566	Analog	R/W	Reserved			
40567	Analog	R/W	Reserved			
40568	Analog	R/W	Reserved			
40569	Analog	R/W	Pump 1 hand speed	0 to 1000	0.0 to 100.0	%
40570	Analog	R/W	Pump 2 hand speed			
40571	Analog	R/W	Pump 3 hand speed			
40572	Analog	R/W	Pump 4 hand speed			
40573	Analog	R/W	Reserved			
40574	Analog	R/W	Reserved			
40575	Analog	R/W	Reserved			
40576	Analog	R/W	Reserved			
40577	Analog	R/W	Reserved			
40578	Analog	R/W	Reserved			
40579	Analog	R/W	Reserved			
40580	Analog	R/W	Reserved			
40581	Analog	R/W	Design head	0 to 9999	0.0 to 999.9	ft, psi, bar
40582	Analog	R/W	Zero flow head			
40583	Analog	R/W	Reserved			
40584	Analog	R/W	Head BEP	0 to 9999	0.0 to 999.9	ft,psi,bar
40585	Analog	R/W	Dead Band	0 to 5	0 to 0.5	
40586	Analog	R/W	Sensorless map factor	0 to 5	0 to 5	%
40587	Analog	R/W	Reserved			
40588	Analog	R/W	Reserved			
40589	Analog	R/W	Reserved			
40590	Analog	R/W	Reserved			
40591	Analog	R/W	Reserved			
40592	Analog	R/W	Reserved			
40593	Analog	R/W	Reserved			
40594	Analog	R/W	Reserved			
40595	Analog	R/W	Reserved			

BAS DATA POINTS - BACNET

BUILDING AUTOMATION SYSTEM - BACNET MSTP BACNET ETHERNET, OR BACNET MSTP

Parallel Sensorless communication interface Rev 13081 (Device ID: 77000)

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
DO	100400	D100400	System alarm	Ok	Alarm	Toggle
DO	100401	D100401	Reserved	Ok	Alarm	Toggle
DO	100402	D100402	Pump alarm	Ok	Alarm	Toggle
DO	100403	D100403	Pump 1 in hand mode		Hand	Toggle
DO	100404	D100404	Pump 1 in off mode		Off	Toggle
DO	100405	D100405	Pump 1 in auto mode		Auto	Toggle
DO	100406	D100406	Pump 2 in hand mode		Hand	Toggle
DO	100407	D100407	Pump 2 in off mode		Off	Toggle
DO	100408	D100408	Pump 2 in auto mode		Auto	Toggle
DO	100409	D100409	Pump 3 in hand mode		Hand	Toggle
DO	100410	D100410	Pump 3 in off mode		Off	Toggle
DO	100411	D100411	Pump 3 in auto mode		Auto	Toggle
DO	100412	D100412	Pump 4 in hand mode		Hand	Toggle
DO	100413	D100413	Pump 4 in off mode		Off	Toggle
DO	100414	D100414	Pump 4 in auto mode		Auto	Toggle
DO	100415	D100415	Reserved			
DO	100416	D100416	Reserved			
DO	100417	D100417	Reserved			
DO	100418	D100418	Reserved			
DO	100419	D100419	Reserved			
DO	100420	D100420	Reserved			
DO	100421	D100421	Reserved			
DO	100422	D100422	Reserved			
DO	100423	D100423	Reserved			
DO	100424	D100424	Reserved			
DO	100425	D100425	Reserved			
DO	100426	D100426	Reserved			
DO	100427	D100427	Reserved			
DO	100428	D100428	Reserved			
DO	100429	D100429	Reserved			
DO	100430	D100430	Reserved			
DO	100431	D100431	Reserved			
DO	100432	D100432	Reserved			
DO	100433	D100433	Pump 1 run feedback	Stopped	Running	Toggle
DO	100434	D100434	Pump 2 run feedback	Stopped	Running	Toggle

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
DO	100435	D100435	Pump 3 run feedback	Stopped	Running	Toggle
DO	100436	D100436	Pump 4 run feedback	Stopped	Running	Toggle
DO	100437	D100437	Reserved			
DO	100438	D100438	Reserved			
DO	100439	D100439	Reserved			
DO	100440	D100440	Reserved			
DO	100441	D100441	Reserved			
DO	100442	D100442	Reserved			
DO	100443	D100443	Reserved			
DO	100444	D100444	Reserved			
DO	100445	D100445	Reserved			
DO	100446	D100446	Reserved			
DO	100447	D100447	Reserved			
DO	100448	D100448	Reserved			
DO	100449	D100449	Reserved			
DO	100450	D100450	Reserved			
DO	100451	D100451	Reserved			
DO	100452	D100452	Reserved			
DO	100453	D100453	Reserved			
DO	100454	D100454	Reserved			
DO	100455	D100455	Reserved			
DO	100456	D100456	Reserved			
DO	100457	D100457	Reserved			
DO	100458	D100458	Reserved			
DO	100459	D100459	Reserved			
DO	100460	D100460	Reserved			
DO	100461	D100461	Reserved			
DO	100462	D100462	Reserved			
DO	100463	D100463	Reserved			
DO	100464	D100464	Reserved			
DO	100465	D100465	Reserved			
DO	100466	D100466	Reserved			
DO	100467	D100467	Pump 1 alarm	Ok	Alarm	Toggle
DO	100468	D100468	Pump 2 alarm	Ok	Alarm	Toggle
DO	100469	D100469	Pump 3 alarm	Ok	Alarm	Toggle
DO	100470	D100470	Pump 4 alarm	Ok	Alarm	Toggle
DO	100471	D100471	Reserved			
DO	100472	D100472	Reserved			
DO	100473	D100473	Reserved			
DO	100474	D100474	Reserved			

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
DO	100475	D100475	Reserved			
DO	100476	D100476	Reserved			
DO	100477	D100477	Pump 1 run feedback alarm	Ok	Alarm	Toggle
DO	100478	D100478	Pump 2 run feedback alarm	Ok	Alarm	Toggle
DO	100479	D100479	Pump 3 run feedback alarm	Ok	Alarm	Toggle
DO	100480	D100480	Pump 4 run feedback alarm	Ok	Alarm	Toggle
DO	100481	D100481	Reserved			
DO	100482	D100482	Reserved			
DO	100483	D100483	Reserved			
DO	100484	D100484	Reserved			
DO	100485	D100485	Reserved			
DO	100486	D100486	Reserved			
DO	100487	D100487	Pump 1 drive fault	Ok	Alarm	Toggle
DO	100488	D100488	Pump 2 drive fault	Ok	Alarm	Toggle
DO	100489	D100489	Pump 3 drive fault	Ok	Alarm	Toggle
DO	100490	D100490	Pump 4 drive fault	Ok	Alarm	Toggle
DI	100550	D100550	Remote start	Stop	Start	Toggle
DI	100551	D100551	Set pump 1 hand		Hand	Momentary
DI	100552	D100552	Set pump 1 off		Off	Momentary
DI	100553	D100553	Set pump 1 auto		Auto	Momentary
DI	100554	D100554	Set pump 2 hand		Hand	Momentary
DI	100555	D100555	Set pump 2 off		Off	Momentary
DI	100556	D100556	Set pump 2 auto		Auto	Momentary
DI	100557	D100557	Set pump 3 hand		Hand	Momentary
DI	100558	D100558	Set pump 3 off		Off	Momentary
DI	100559	D100559	Set pump 3 auto		Auto	Momentary
DI	100560	D100560	Set pump 4 hand		Hand	Momentary
DI	100561	D100561	Set pump 4 off		Off	Momentary
DI	100562	D100562	Set pump 4 auto		Auto	Momentary
DI	100563	D100563	Reserved			
DI	100564	D100564	Reserved			
DI	100565	D100565	Reserved			
DI	100566	D100566	Reserved			
DI	100567	D100567	Reserved			
DI	100568	D100568	Reserved			
DI	100569	D100569	Reserved			

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	OFF STATE (0)	ON STATE (1)	TYPE
DI	100570	D100570	Reserved			
DI	100571	D100571	Reserved			
DI	100572	D100572	Reserved			
DI	100573	D100573	Reserved			
DI	100574	D100574	Reserved			
DI	100575	D100575	Reserved			
DI	100576	D100576	Reserved			
DI	100577	D100577	Reserved			
DI	100578	D100578	Reserved			
DI	100579	D100579	Reserved			
DI	100580	D100580	Reserved			
DI	100581	D100581	Reserved			
DI	100582	D100582	Alarm Reset		Reset	Momentary

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	RANGE	REPRESENT	UNITS
AO	100400	A100400	Reserved			
AO	100401	A100401	Reserved			
AO	100402	A100402	Reserved			
AO	100403	A100403	Reserved			
AO	100404	A100404	Reserved			
AO	100405	A100405	Reserved			
AO	100406	A100406	Reserved			
AO	100407	A100407	Reserved			
AO	100408	A100408	Reserved			
AO	100409	A100409	Reserved			
AO	100410	A100410	Reserved			
AO	100411	A100411	Reserved			
AO	100412	A100412	Reserved			
AO	100413	A100413	Reserved			
AO	100414	A100414	Reserved			
AO	100415	A100415	Reserved			
AO	100416	A100416	Reserved			
AO	100417	A100417	Reserved			
AO	100418	A100418	Reserved			
AO	100419	A100419	Reserved			
AO	100420	A100420	Reserved			
AO	100421	A100421	Reserved			
AO	100422	A100422	Reserved			
AO	100423	A100423	Reserved			
AO	100424	A100424	Reserved			

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	RANGE	REPRESENT	UNITS
AO	100425	A100425	Reserved			
AO	100426	A100426	Reserved			
AO	100427	A100427	Reserved			
AO	100428	A100428	Reserved			
AO	100429	A100429	Reserved			
AO	100430	A100430	Reserved			
AO	100431	A100431	Reserved			
AO	100432	A100432	Reserved			
AO	100433	A100433	Reserved			
AO	100434	A100434	Reserved			
AO	100435	A100435	Reserved			
AO	100436	A100436	Reserved			
AO	100437	A100437	Reserved			
AO	100438	A100438	Reserved			
AO	100439	A100439	Pump 1 speed	0 to 1000	0.0 to 100.0	%
AO	100440	A100440	Pump 2 speed			
AO	100441	A100441	Pump 3 speed			
AO	100442	A100442	Pump 4 speed			
AO	100443	A100443	Reserved			
AO	100444	A100444	Reserved			
AO	100445	A100445	Reserved			
AO	100446	A100446	Reserved			
AO	100447	A100447	Reserved			
AO	100448	A100448	Reserved			
AO	100449	A100449	Reserved			
AO	100450	A100450	Reserved			
AO	100451	A100451	Total head	0 to 32767	0 to 3276.7	ft, psi, kPa
AO	100452	A100452	Pump 1 drive amp	0 to 10000	0.0 to 1000.0	Amp
AO	100453	A100453	Pump 1 drive volt AC			VAC
AO	100454	A100454	Pump 1 drive power			kW
AO	100455	A100455	Pump 1 drive speed feedback	0 to 1000	0.0 to 100.0	%
AO	100456	A100456	Pump 2 drive amp	0 to 10000	0.0 to 1000.0	Amp
AO	100457	A100457	Pump 2 drive volt AC			VAC
AO	100458	A100458	Pump 2 drive power			kW
AO	100459	A100459	Pump 2 drive speed feedback	0 to 1000	0.0 to 100.0	%
AO	100460	A100460	Pump 3 drive amp	0 to 10000	0.0 to 1000.0	Amp
AO	100461	A100461	Pump 3 drive volt AC			VAC
AO	100462	A100462	Pump 3 drive power			kW

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	RANGE	REPRESENT	UNITS
AO	100463	A100463	Pump 3 drive speed feed-back	0 to 1000	0.0 to 100.0	%
AO	100464	A100464	Pump 4 drive amp	0 to 10000	0.0 to 1000.0	Amp
AO	100465	A100465	Pump 4 drive volt AC			VAC
AO	100466	A100466	Pump 4 drive power			kW
AO	100467	A100467	Pump 4 drive speed feed-back	0 to 1000	0.0 to 100.0	%
AO	100468	A100468	Reserved			
AO	100469	A100469	Reserved			
AO	100470	A100470	Reserved			
AO	100471	A100471	Reserved			
AO	100472	A100472	Reserved			
AO	100473	A100473	Reserved			
AO	100474	A100474	Reserved			
AO	100475	A100475	Reserved			
AO	100476	A100476	Reserved			
AO	100477	A100477	Reserved			
AO	100478	A100478	Reserved			
AO	100479	A100479	Reserved			
AO	100480	A100480	Reserved			
AO	100481	A100481	Reserved			
AO	100482	A100482	Reserved			
AO	100483	A100483	Reserved			
AO	100484	A100484	Reserved			
AO	100485	A100485	Reserved			
AO	100486	A100486	Reserved			
AO	100487	A100487	Reserved			
AO	100488	A100488	Reserved			
AO	100489	A100489	Reserved			
AO	100490	A100490	Reserved			
AO	100491	A100491	Reserved			
AO	100492	A100492	Pump 1 head	0 to 32767	0 to 3276.7	ft, psi, kPa
AO	100493	A100493	Pump 2 head			
AO	100494	A100494	Pump 3 head			
AO	100495	A100495	Pump 4 head			
AO	100496	A100496	Reserved			
AO	100497	A100497	Reserved			
AO	100498	A100498	Reserved			
AO	100499	A100499	Reserved			
AO	100500	A100500	Reserved			
AO	100501	A100501	Reserved			

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	RANGE	REPRESENT	UNITS
AO	100502	A100502	Wire to Wire Efficiency	0 to 9999	0.0 to 999.9	
AO	100503	A100503	Total drive kW	0 to 32767	0.0 to 3276.7	kW
AI	100568	A100568	Pump 1 hand speed	0 to 1000	0.0 to 100.0	%
AI	100569	A100569	Pump 2 hand speed			
AI	100570	A100570	Pump 3 hand speed			
AI	100571	A100571	Pump 4 hand speed			
AI	100572	A100572	Reserved			
AI	100573	A100573	Reserved			
AI	100574	A100574	Reserved			
AI	100575	A100575	Reserved			
AI	100576	A100576	Reserved			
AI	100577	A100577	Reserved			
AI	100578	A100578	Reserved			
AI	100579	A100579	Reserved			
AI	100580	A100580	Design head	0 to 9999	0.0 to 999.9	ft, psi, bar
AI	100581	A100581	Zero flow head			
AI	100582	A100582	Reserved			
AI	100583	A100583	Head BEP	0 to 9999	0.0 to 999.9	ft, psi, bar
AI	100584	A100584	Dead band	0 to 5	0 to 0.5	
AI	100585	A100585	Sensorless map factor	0 to 5	0 to 5	%
AI	100586	A100586	Reserved			
AI	100587	A100587	Reserved			
AI	100588	A100588	Reserved			
AI	100589	A100589	Reserved			
AI	100590	A100590	Reserved			
AI	100591	A100591	Reserved			
AI	100592	A100592	Reserved			
AI	100593	A100593	Reserved			
AO	200401	A200401	Pump 1 Flow	0 to 32000		gpm, lps, m3/hr
AO	200402	A200402	Pump 2 Flow			
AO	200403	A200403	Pump 3 Flow			
AO	200404	A200404	Pump 4 Flow			
AO	200405	A200405	Reserved			
AO	200406	A200406	Reserved			
AO	200407	A200407	Reserved			
AO	200408	A200408	Reserved			
AO	200409	A200409	Reserved			
AO	200410	A200410	Reserved			

SIGNAL TYPE	INSTANCE	NAME	DESCRIPTION	RANGE	REPRESENT	UNITS
AO	200411	A200411	Total Flow			
AO	200412	A200412	Pump 1 Operating Run Hours	0 to 999		hrs
AO	200413	A200413	Pump 1 Operating Run KHours	0 to 32000		hrs ×1000
AO	200414	A200414	Pump 2 Operating Run Hours	0 to 999		hrs
AO	200415	A200415	Pump 2 Operating Run KHours	0 to 32000		hrs ×1000
AO	200416	A200416	Pump 3 Operating Run Hours	0 to 999		hrs
AO	200417	A200417	Pump 3 Operating Run KHours		0 to 32000	hrs ×1000
AO	200418	A200418	Pump 4 Operating Run Hours		0 to 999	hrs
AO	200419	A200419	Pump 4 Operating Run KHours		0 to 32000	hrs ×1000
AO	200420	A200420	Reserved			
AO	200421	A200421	Reserved			
AO	200422	A200422	Reserved			
AO	200423	A200423	Reserved			
AO	200424	A200424	Reserved			
AO	200425	A200425	Reserved			
AO	200426	A200426	Reserved			
AO	200427	A200427	Reserved			
AO	200428	A200428	Reserved			
AO	200429	A200429	Reserved			
AO	200430	A200430	Reserved			
AO	200431	A200431	Number of pumps running	0 to 4		
AO	200432	A200432	Lead Pump ID	0 to 4		
AO	200433	A200433	Reserved			
AI	200434	A200434	Flow Design		0 to 32000	gpm, lps, m3/hr
AI	200435	A200435	Flow BEP			
AI	200436	A200436	Number of Pumps		0 to 4	
AI	200437	A200437	Lead pump switch time		1 to 999	Days

BAS DATA POINTS – LONWORKS

IPS 4000 - BUILDING AUTOMATION SYSTEM REV 13021

LonWorks Communication Interface - FTT-10

NO	TYPE	NAME NV	TYPE NV	DIRECTION	RES/UNIT
1	ANL	nvoTotalDrvkW	28	output	0.1 kW
2	ANL	nvoNumOfRun	8	output	1
3	ANL	nvoLeadPump	8	output	1
4	ANL	nvoZone1PV	30	output	0.1 Unit
5	ANL	nvoZone2PV	30	output	0.1 Unit
6	ANL	nvoZone3PV	30	output	0.1 Unit
7	ANL	nvoZone4PV	30	output	0.1 Unit
8	ANL	nvoZone5PV	30	output	0.1 Unit
9	ANL	nvoZone1Err	30	output	0.1 Unit
10	ANL	nvoZone2Err	30	output	0.1 Unit
11	ANL	nvoZone3Err	30	output	0.1 Unit
12	ANL	nvoZone4Err	30	output	0.1 Unit
13	ANL	nvoZone5Err	30	output	0.1 Unit
14	ANL	nvoDrv1Amp	1	output	0.1 Amp
15	ANL	nvoDrv1Kw	28	output	0.1 kW
16	ANL	nvoDrv2Amp	1	output	0.1 Amp
17	ANL	nvoDrv2Kw	28	output	0.1 kW
18	ANL	nvoDrv3Amp	1	output	0.1 Amp
19	ANL	NvoDrv3Kw	28	output	0.1 kW
20	ANL	nvoDrv4Amp	1	output	0.1 Amp
21	ANL	nvoDrv4Kw	28	output	0.1 kW
22	ANL	nvoDrv5Amp	1	output	0.1 Amp
23	ANL	nvoDrv5Kw	28	output	0.1 kW
24	ANL	nvoDrv6Amp	1	output	0.1 Amp
25	ANL	nvoDrv6Kw	28	output	0.1 kW
26	ANL	nvoP1Speed	34	output	0.1%
27	INT	nvoP2Speed	34	output	0.1%
28	INT	nvoP3Speed	34	output	0.1%
29	INT	nvoP4Speed	34	output	0.1%
30	INT	nvoP5Speed	34	output	0.1%
31	INT	nvoP6Speed	34	output	0.1%
32	INT	nvoWord1	83	output	1 bit
33	INT	nvoWord2	83	output	1 bit
34	DGT	nvoWord3	83	output	1 bit
35	DGT	nvoWord4	83	output	1 bit
36	ANL	nvoWord5	83	output	1 bit
37	ANL	nvoWWEff	8	output	1 bit
38	ANL	nviZone1SP	30	input	0.1 Unit

NO	TYPE	NAME NV	TYPE NV	DIRECTION	RES/UNIT
39	ANL	nviZone2SP	30	input	0.1 Unit
40	ANL	nviZone3SP	30	input	0.1 Unit
41	ANL	nviZone4SP	30	input	0.1 Unit
42	ANL	nviZone5SP	30	input	0.1 Unit
43	ANL	nviHeadDes	30	input	0.1 Unit
44	ANL	nviZeroFlowHead	30	input	0.1 Unit
45	ANL	nviHeadBEP	30	input	0.1 Unit
46	ANL	nviFlowBEP	15	input	0.1 Unit
47	ANL	nviStageDeadBand	8	input	0.1 Unit
48	ANL	nviVlvMaxOpen	8	input	0.1 Unit
49	INT	nviStageFactor	8	input	1
50	INT	nvoSystemHead	15	output	1 Unit
51	INT	nvoSysFlow	8	output	1
52	INT	nvoLeadPump	8	output	1
53	INT	nviDesFlow	8	input	1
54	INT	nviNoOfPumps	8	input	1
55	INT	nviPmpSwitchTime	8	input	1
56	DGT	nviRemStart	95	input	On/Off
57	DGT	nviAlarmReset	95	input	On/Off
58	DGT	nviBypassReset	95	input	On/Off

	NAME NV
nvoWord1 Bit:	Pump 1 in Hand
	Pump 1 in Off
	Pump 1 in Auto
	Pump 2 in Hand
	Pump 2 in Off
	Pump 2 in Auto
	Pump 3 in Hand
	Pump 3 in Off
	Pump 3 in Auto
	Pump 4 in Hand
	Pump 4 in Off
	Pump 4 in Auto
	Pump 5 in Hand
	Pump 5 in Off
	Pump 5 in Auto
	Pump 6 in Hand

	NAME NV
nvoWord2 Bit:	Pump 6 in Off
	Pump 6 in Auto
	Pump 1 Run Feedback Alarm
	Pump 2 Run Feedback Alarm
	Pump 3 Run Feedback Alarm
	Pump 4 Run Feedback Alarm
	Pump 5 Run Feedback Alarm
	Pump 6 Run Feedback Alarm
	Pump 1 Drive Fault
	Pump 2 Drive Fault
	Pump 3 Drive Fault
	Pump 4 Drive Fault
	Pump 5 Drive Fault
	Pump 6 Drive Fault
	Pump 1 No Flow Alarm
	Pump 2 No Flow Alarm

	NAME NV
nvoWord3 Bit:	Pump 3 no flow alarm
	Pump 4 no flow alarm
	Pump 5 no flow alarm
	Pump 6 no flow alarm
	Pump 1 in auto bypass
	Pump 2 in auto bypass
	Pump 3 in auto bypass
	Pump 4 in auto bypass
	Pump 5 in auto bypass
	Pump 6 in auto bypass
	System alarm
	Pump alarm
	Temp sensor alarm
	Auto bypass on
	Pump 1 run feedback
	Pump 2 run feedback

	NAME NV
nvoWord4 Bit:	Pump 3 run feedback
	Pump 4 run feedback
	Pump 5 run feedback
	Pump 6 run feedback
	Pump 1 Alarm
	Pump 2 Alarm
	Pump 3 Alarm
	Pump 4 Alarm
	Pump 5 Alarm
	Pump 6 Alarm
	System DP Xmtr alarm
	System flow Xmtr alarm
	All zone failed
	Zone 1 Xmtr alarm
	Zone 2 Xmtr alarm
	Zone 3 Xmtr alarm

	NAME NV
nvoWord5 Bit:	Zone 4 Xmtr Alarm
	Zone 5 Xmtr Alarm
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare
	Spare

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