Aptus Automation

A5016-PR-LG-BPL

User Manual

Notice before start-up

Please confirm the specification of instrument is to totally with your requirement before using it, also read this manual in detail.

Danger

Danger! Electric Shock!
DON'T touch AC power wiring terminals when instrument has been powered! Keep the power off until all of the wirings are completed!

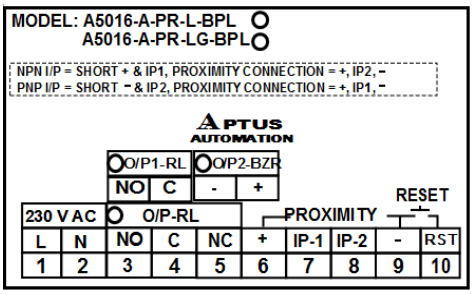
Warning

1) Please confirm the AC power wiring to instrument is correct, otherwise it would be caused aggravated damage on instrument.
2) Be sure to use the rated power supply, otherwise it would be caused aggravated damage on instrument.
3) Please confirm wires are connected with correct terminal (Power, Input and Output).
4) Avoid installing instrument in following spaces:
   I. A place where the ambient temperature may reach beyond the range from 0 to 50°C
   II. A place where the ambient humidity may reach beyond the range from 20 to 90% RH.
   III. A place where the instrument likely to come into contact with water, oil, chemicals, steam and vapor.
   IV. A place where the instrument is subject to interface with static electricity, magnetism and noise.
5) For proximity input, use shield compensating lead wire.

TECHNICAL SPECIFICATIONS

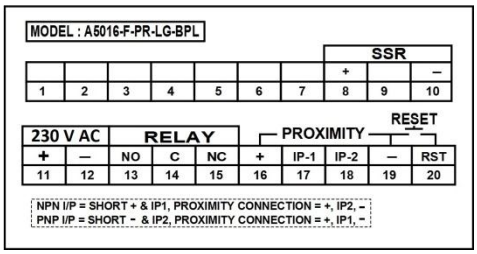
Product Name : Universal Counter (BPL-Batch/Preset/Length).
Model No. : A5016-X-PR-L-BPL / A5016-X-PR-LG-BPL.
Input 1 : Pulses through Proximity (NPN/PNP)/Limit Switch/Push button.
Input 2 : Reset Push button.
Output : For A5016-X-PR-L = 5Amp/1CO Relay (Contacts NO-C-NC).
For A5016-X-PR-LG = 5Amp/1CO Relay (Contacts NO-C) + Unregulated DC Voltage for SSR or Buzzer.
Reset : Manual Reset/Auto Reset/TPR.
Output Logic : On Delay/Off Delay/Disable.
Power Supply : 230VAC ± 10%, 50Hz.

A5016–A(96mm x 96mm) Terminal Wiring



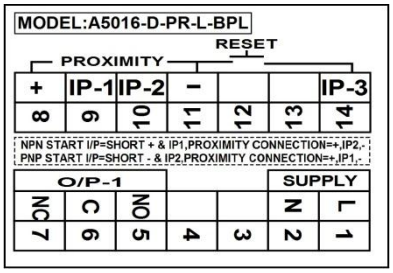
INPUT TYPE	A5015-A-PR-L-BPL	A5016-A-PR-LG-BPL
230 V AC Power supply	Terminal 1 & 2	Terminal 1 & 2
NPN Pulse Input	Short Terminal 6 & 7, Terminal 6(+Ve), 8 (NPN Signal) & 9(-Ve)	Short Terminal 6 & 7, Terminal6 (+Ve), 8 (NPN Signal) & 9 (-Ve)
PNP Pulse Input	Short Terminal 8 & 9, Terminal 6(+Ve), 7 (PNP Signal) & 9(-Ve)	Short Terminal 8 & 9, Terminal6(+Ve), 7 (PNP Signal) & 9 (-Ve)
Reset Input	Terminal 9 & 10 (Potential Free Contact)	Terminal 9 &10 (Potential Free Contact)
Output 1(Relay)	Terminal 3(NO), 4(C) & 5(NC)	Terminal 3(NO) & 4(C)
Output 2(SSR/Buzzer)		Terminal 5(-Ve) & 6(+Ve)

A5016-F(48x96mm)Terminal Wiring



INPUT TYPE	A5016-F-PR-L-BPL / A5016-F-PR-LG-BPL
230 V AC Power supply	Terminal 11 & 12
NPN Pulse Input	Short Terminal 16 & 17, Terminal 16(+Ve), 18(NPN Signal) & 19(-Ve)
PNP Pulse Input	Short Terminal 18 & 19, Terminal 16(+Ve), 17(PNP Signal) & 19(-Ve)
Reset Input	Terminal 19 & 20 (Potential Free Contact)
Output 1(Relay)	Terminal 13(NO), 14(C) & 15(NC)
Output 2(SSR)	Terminal 8(+Ve) & 10(-Ve)

A5016-D(72x72mm)Terminal Wiring



INPUT TYPE	A5016-D-PR-L-BPL
230 V AC Power supply	Terminal 1 & 2
NPN Pulse Input	Short Terminal 8 & 9, Terminal 8 (+Ve), 10 (NPN Signal) & 11 (-Ve)
PNP Pulse Input	Short Terminal 10 & 11, Terminal 8 (+Ve), 9 (PNP Signal) & 11 (-Ve)
Reset Input	Terminal 11 & 14 (Potential Free Contact)
Output 1(Relay)	Terminal 5(NO), 6(C) & 7(NC)

CONFIGURATION MENU

To enter in configuration menu, press SET+UP Key till 1 second. Parameter will appear on display as shown below table. Configure all the parameter as per your requirement using UP key & SHIFT key.

KEY	DISPLAY	FUNCTION	RANGE
SET+UP	PASS	**Password:** This is the password parameter to go into configuration menu. Press SET Key.	-
SET	0000	Using UP Key & SHIFT Key, enter the password value 808 in the display & press ENTER Key.	0~9999
ENTER	C.tYP	**Counter type**: This is the parameter to select the counter type. Press SET Key.	-
SET	LEngth	You can select counter as a Length counter, Batch counter or, Preset counter.	Length/bAtCh/ PrESEt
SET	C.dIr	**Counting direction:** This is the parameter to select the counting direction. Press SET Key.	-
SET	UP	Using UP Key & SHIFT Key, select Up counting or Down counting.	UP/dovn
SET	Con.1	**Control -1 operation mode:** select Output1 operation mode. Press SET Key.	-
SET	On dElAY	Using UP Key & SHIFT Key, change parameter value. The Output1 changes its status when counter value reached at SEt1 or b.Cnt value. On delay - Counter value >= set1 = Output1 ON Counter value < set1 = Output1 OFF OFF delay- Counter value >= set1 = Output1 OFF Counter value < set1 = Output1 ON Disable - Output1 output is disable, and will remain OFF.	On dElAY/ OFF dElAy/ dISAbl
SET	Con.2	**Control -2 operation mode:** select Output2 operation mode. Press SET Key.	-
SET	dEvItn	Using UP Key & SHIFT Key, change parameter value. The Output2 changes its status when counter value reached at SEt2 value. Deviation mode - Counter value >= (set1 - set2) = Output2 ON Individual mode - Counter value >= set2 = Output2 ON Disable - Output2 will disable, and will remain OFF.	dEvItn/ IndIvL/ dISAbl
SET	rSt	**Reset:** select reset by manual, auto or TPR mode. Press SET Key.	-
SET	AUtO	Using UP Key & SHIFT Key, change parameter value. Manual – In this mode, to reset counter and output relay, press enter key till 5 sec. Auto – Counter Value and Output1 will reset according to set an Auto reset time. TPR – After set count relay change its status according ON/OFF delay. At end of count cycle, count automatically reset, and counting continues uninterrupted during pulse time, but Relay will change its status after Reset time.	AUtO/ Manual/ tPr
SET	O.rUn	**Over run** : This is the parameter to select, whether the input pulse has to be counted or not, after the set value reached. (If rSt = TPR, this mode will not be applicable.)	-
SET	EnAbLE	Using UP Key & SHIFT Key, change parameter value. Enable – counter will continues increase after reached at set1. Disable – counter will stop to increase after reached at set1.	EnabLE/ dIsAbL
SET	F.rSt	**Front Reset (Key)**: This parameter is to select, the counter can be reset by front reset key or not.	-
SET	EnAbLE	Using UP Key & SHIFT Key, change parameter value. Enable – reset by front reset key is enable. Disable – reset by front reset key is disable.	EnabLE/ dIsAbL
SET	m.r.t.1	**Manual reset time-1:** This is a manual reset time to reset Running Batch Count Or Running Counter Value.	-
SET	02	Using UP Key & SHIFT Key, change parameter value. To reset manually press RST/ENT key till 2 second.	01~99 sec

SET	m.r.t.2	**Manual reset time-2:** This is a manual reset time to reset only Total Completed Batches and Total count.	-
SET	05	Using UP Key & SHIFT Key, change parameter value. To reset manually press RST/ENT key till 5 sec. (This parameter is available only if the Batch Counter is selected.)	01~99 sec
SET	dsp.1	**Display-1 parameter setting:** This is the parameter to select, whether the display-1 will show the Running Batch Count, the Total Count or the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	-
SET	tot.Cnt	Using UP Key & SHIFT Key, change parameter value. run.Cnt – display-1 will show the Running Batch Count. tot.Cnt – display-1 will show the Total Count. batch – display-1 will show the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	tot.Cnt/ run.Cnt/ batch
SET	dsp.2	**Display-2 parameter setting:** This is the parameter to select, whether the display-2 will show the Running Batch Count, the Total Count or the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	-
SET	run.Cnt	Using UP Key & SHIFT Key, change parameter value. run.Cnt – display-2 will show the Running Batch Count. tot.Cnt – display-2 will show the Total Count. batch – display-2 will show the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	tot.Cnt/ run.Cnt/ batch
SET	dsp.3	**Display-3 parameter setting:** This is the parameter to select, whether the display-3 will show the Running Batch Count, the Total Count or the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	-
ENTER	batch	Using UP Key & SHIFT Key, change parameter value. run.Cnt – display-3 will show the Running Batch Count. tot.Cnt – display-3 will show the Total Count. batch – display-3 will show the Total Completed Batches. (This parameter is available only if the Batch Counter is selected.)	tot.Cnt/ run.Cnt/ batch

PARAMETER SETTING MENU

- To set parameters which are required to change frequently, go in parameter setting menu.
- Press SET Key till 1 sec to enter in this menu.
- Use UP and SHIFT key to change value, set current parameter and press SET key, to save and goes to next parameter.
- After last parameter first parameter will be repeated. To exit press Enter Key.
- There are 3 types in this counter, Length counter, Batch counter, and Preset counter. So parameter list will appear according selected counter.

FOR LENGTH COUNTER:

KEY	DISPLAY	FUNCTION	RANGE
SET	SEt 1	**Set 1:** This parameter is the SET Value for Output1. Press SET Key.	-
SET	000100	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00000.1~999999
SET	SEt 2	**Set 2:** This parameter is the SET Value for Output2. Press SET Key.	-
SET	000010	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00000.1~999999
SET	dIA	**Diameter:** This parameter is the Diameter used in length counter. Press SET Key.	-
SET	318.400	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	000.001~999.999(mm)
SET	rSLn	**Resolution:** This parameter is the resolution (decimal point) for counter value, as Well as for Set Value. Press SET Key.	-
SET	9999.99	Using SHIFT key set the parameter value as per your requirement.	9.99999~999999
Enter	tImE	**Auto reset time:** This parameter is the Auto reset time for counter & Output1. Press SET Key.	-
Enter	05.00	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00.01~99.99 sec

FOR BATCH COUNTER:

KEY	DISPLAY	FUNCTION	RANGE
SET	b.Cnt	**Batch count:** This parameter is the Set Value for Output1.(i.e. running batch count).	-

SET	000100	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	000001~999999
SET	SEt 2	**Set 2:** This parameter is the SET Value for Output2. Press SET Key.	-
SET	000010	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	000001~999999
SET	tImE	**Auto reset time:** This parameter is the Auto reset time for counter & Output1. Press SET Key.	-
Enter	05.00	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00.01~99.99 sec

FOR PRESET COUNTER:

KEY	DISPLAY	FUNCTION	RANGE
SET	SEt 1	**Set 1:** This parameter is the SET Value for Output1. Press SET Key.	-
SET	000100	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00000.1~999999
SET	SEt 2	**Set 2:** This parameter is the SET Value for Output2. Press SET Key.	-
SET	000010	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	0.00001~999999
SET	DP.FA	**DP for Scale Factor**: This parameter is the decimal point location for Factor. Press SET Key.	-
SET	999999	Using SHIFT key set the parameter value as per your requirement.	9.99999~999999
SET	FCtr	**Factor**: This parameter is the Factor Value. This factor value will be multiply with input pulse and finally counter value will be according this multiplied value.	-
SET	000001	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	0.00001~999999
SET	rSLn	**Resolution:** This parameter is the resolution (decimal point) for counter value, as Well as for Set Value. Press SET Key.	-
SET	9999.99	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	DP.FA ~999999
SET	tImE	**Auto reset time:** This parameter is the Auto reset time for counter & Output1. Press SET Key.	-
Enter	05.00	Using UP Key & SHIFT Key, set the parameter value as per your requirement.	00.01~99.99 sec

Display Indication:

[1] Batch Counter:

Total Count ---------- = on the display (display-1)
Running Batch Count ---------- = on display-2 by pressing SHIFT Key
Total Completed Batches ---------- = on display-3 by pressing UP Key

[2] Length Counter:

Running Counter Value ---------- = on the display (display-1)
MPM Indication ---------- = on the display-2 by pressing UP Key

[3] Preset Counter:

Running Counter Value ---------- = on the display (display-1)
RPM Indication ---------- = on the display-2 by pressing UP Key

Keys & Terminal Function:

[1] Batch Counter:

External Reset (Back RST) ---------- = to reset Running Batch Count
Front Reset Key till manual reset time-1(m.r.t.1) -------- = to reset Running Batch Count
Front Reset Key till manual reset time-2(m.r.t.2) -------- = to reset Total Count & Total Completed Batches

[2] Length Counter Or Preset Counter:

External Reset (Back RST) ---------- = to reset Running Counter
Front Reset Key till manual reset time-1(m.r.t.1) ----- = to reset Running Counters

Working:

This is the Universal counter. Working is described below.

[1] Batch Counter – *Principle of operation* > > >

- Running Counter Value will be increase with the input pulse.

[2] Length Counter – *Principle of operation* > > >

Total Length = [3.14 x dia (mm) x No. of Revolutions]/1000
Meter/Min = [3.14 x dia (mm) x RPM]/1000

- So the *Running Length* will be increased according to the set *Diameter* and *No. of Revolution.*

[3] Preset Counter – *Principle of operation* > > >

- Running Counter Value will be increase with the input pulse.

- **Factor** is multiply with input pulse count, so final Running Counter Value will be increase according to the *factor*.

[Output1]:-

Here in this Counter the Output1 is operated in two different ways as described below…

1> On delay:
   - (Running Batch Count) Or (Running Counter Value) >= set1 = Output1 ON
   - (Running Batch Count) Or (Running Counter Value) < set1 = Output1 OFF

2> OFF delay:
   - (Running Batch Count) Or (Running Counter Value) >= set1 = Output1 OFF
   - (Running Batch Count) Or (Running Counter Value) < set1 = Output1 ON

- If the Auto Reset mode for Output1 is enabled, then the Output1 and (Running Batch Count) Or (Running Counter Value) will be reset automatically.
- Otherwise the Output1 and (Running Batch Count) Or (Running Counter Value) can be reset manually by pressing Front Reset Key.

[Output2]:-

Here in this Counter the Output2 is operated in three different ways as described below…

1> Deviation mode:
   - In this mode, when the (Running Batch Count) Or (Running Counter Value) reaches to (set1 – set2), the Output2 will be ON.
   - Now when the (Running Batch Count) Or (Running Counter Value) reaches to set1, the Output1 will change status & the Output2 will be OFF.

2> Individual mode:
   - In this mode, when the (Running Batch Count) Or (Running Counter Value) reaches to set2, the Output2 will be ON.
   - When the (Running Batch Count) Or (Running Counter Value) reaches to set1, the Output2 will be OFF, Output1 will be ON.

3> Disable mode:
   - In this mode, the Output2 will be OFF since the Output2 is disabled.