

ACS800 CRANE (+N697)

5 SPEED STEP REFERENCE

Description:

This document details the implementation of a five speed step reference system used by many crane manufacturers. This functionality is implemented with Drive AP programming and replaces the drives internal four speed system which will not provide the desired behavior.

Title for the main body of the document:

ACS800 Crane 5 speed step reference

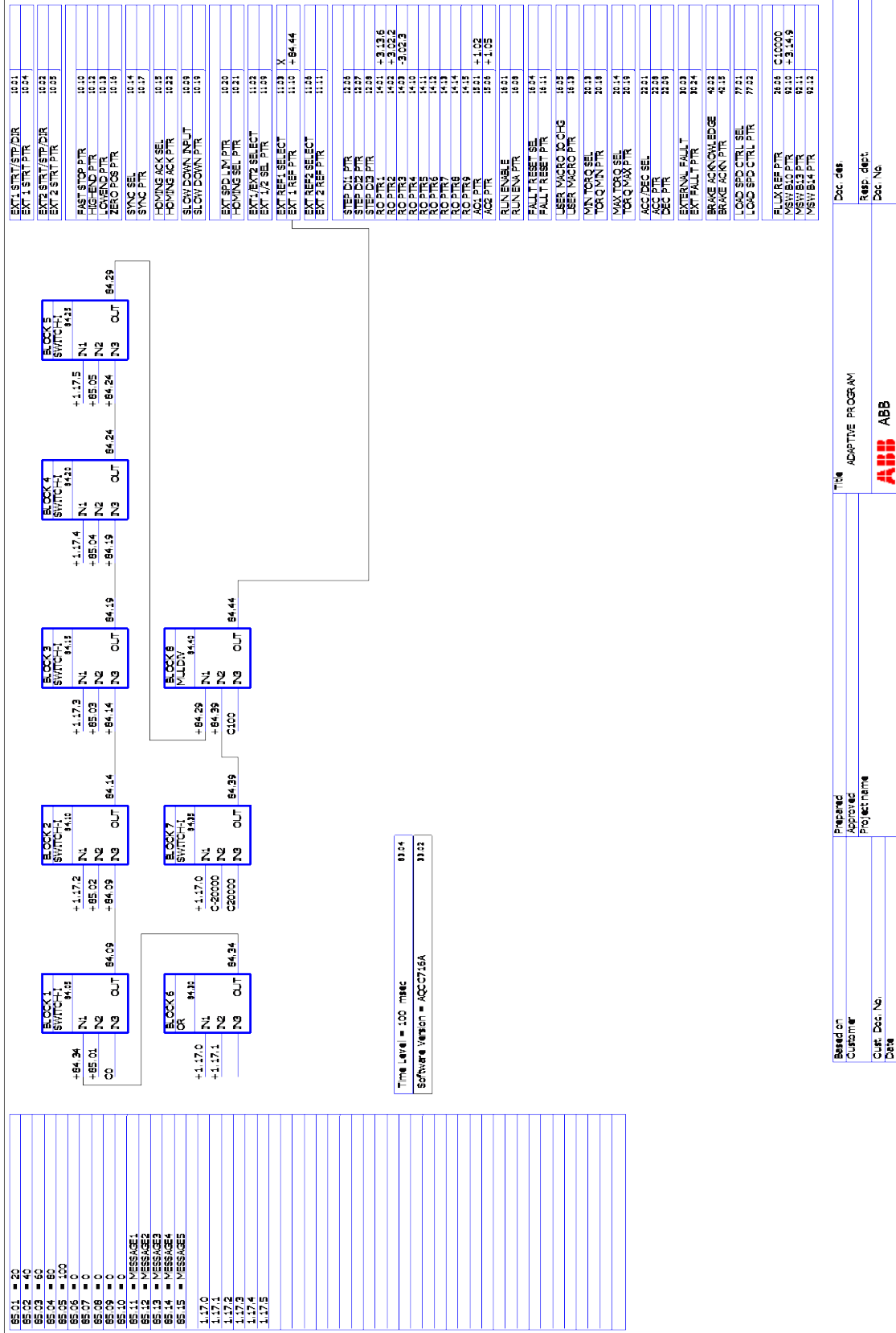
Documents or other reference material:

3AFE68775230 Rev E (EN) Firmware Manual, Crane Control Program (+N697)

Corrective Actions:

None.

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95.21	= 20
95.22	= 60
95.23	= 60
95.24	= 60
95.25	= 100
95.26	= 0
95.27	= 0
95.28	= 0
95.29	= 0
95.30	= 0
95.31	= 0
95.32	= MESSAGE1
95.33	= MESSAGE2
95.34	= MESSAGE3
95.35	= MESSAGE4
95.36	= MESSAGE5
1.17.0	
1.17.1	
1.17.2	
1.17.3	
1.17.4	
1.17.5	

EXT 1 STR PIR	18.01
EXT 2 STR PIR	18.04
EXT 3 STR PIR	18.02
EXT 4 STR PIR	18.05
FAST STOP PIR	18.10
ACC STOP PIR	18.11
ZERO POS PIR	18.13
SLAC SEL	18.14
SLAC PIR	18.17
LOWING JACK SEL	18.19
LOWING JACK PIR	18.22
SLOW DOWN INJLT	18.23
SLOW DOWN PIR	18.24
EXT SPD LN PIR	18.30
MOVING SEL PIR	18.31
EXT 1/2 SEL PIR	11.03
EXT 1/2 SEL PIR	11.04
EXT REF1 SELECT	11.03 X
EXT 1 REF PIR	11.10 +84.44
EXT REFS SELECT	11.04
EXT 2 REF PIR	11.11
STEP INJ PIR	18.25
STEP INJ PIR	18.27
STEP INJ PIR	18.28
RC PIR 1	14.21 +3.13.6
RC PIR 2	14.22 +3.02.2
RC PIR 3	14.23 -3.02.3
RC PIR 4	14.24
RC PIR 5	14.25
RC PIR 6	14.26
RC PIR 7	14.27
RC PIR 8	14.28
RC PIR 9	14.29
RC PIR 10	14.30
RC PIR 11	14.31
RC PIR 12	14.32
RC PIR 13	14.33
RC PIR 14	14.34
RC PIR 15	14.35
RC PIR 16	14.36
RC PIR 17	14.37
RC PIR 18	14.38
RC PIR 19	14.39
RC PIR 20	14.40
RC PIR 21	14.41
RC PIR 22	14.42
RC PIR 23	14.43
RC PIR 24	14.44
RC PIR 25	14.45
RC PIR 26	14.46
RC PIR 27	14.47
RC PIR 28	14.48
RC PIR 29	14.49
RC PIR 30	14.50
RC PIR 31	14.51
RC PIR 32	14.52
RC PIR 33	14.53
RC PIR 34	14.54
RC PIR 35	14.55
RC PIR 36	14.56
RC PIR 37	14.57
RC PIR 38	14.58
RC PIR 39	14.59
RC PIR 40	14.60
RC PIR 41	14.61
RC PIR 42	14.62
RC PIR 43	14.63
RC PIR 44	14.64
RC PIR 45	14.65
RC PIR 46	14.66
RC PIR 47	14.67
RC PIR 48	14.68
RC PIR 49	14.69
RC PIR 50	14.70
RC PIR 51	14.71
RC PIR 52	14.72
RC PIR 53	14.73
RC PIR 54	14.74
RC PIR 55	14.75
RC PIR 56	14.76
RC PIR 57	14.77
RC PIR 58	14.78
RC PIR 59	14.79
RC PIR 60	14.80
RC PIR 61	14.81
RC PIR 62	14.82
RC PIR 63	14.83
RC PIR 64	14.84
RC PIR 65	14.85
RC PIR 66	14.86
RC PIR 67	14.87
RC PIR 68	14.88
RC PIR 69	14.89
RC PIR 70	14.90
RC PIR 71	14.91
RC PIR 72	14.92
RC PIR 73	14.93
RC PIR 74	14.94
RC PIR 75	14.95
RC PIR 76	14.96
RC PIR 77	14.97
RC PIR 78	14.98
RC PIR 79	14.99
RC PIR 80	15.00
RC PIR 81	15.01
RC PIR 82	15.02
RC PIR 83	15.03
RC PIR 84	15.04
RC PIR 85	15.05
RC PIR 86	15.06
RC PIR 87	15.07
RC PIR 88	15.08
RC PIR 89	15.09
RC PIR 90	15.10
RC PIR 91	15.11
RC PIR 92	15.12
RC PIR 93	15.13
RC PIR 94	15.14
RC PIR 95	15.15
RC PIR 96	15.16
RC PIR 97	15.17
RC PIR 98	15.18
RC PIR 99	15.19
RC PIR 100	15.20

Dec 486	Dec 486
REF. dept	REF. dept
Dec. No.	Dec. No.

Based on	Prepared
Customer	Approved
Proj. Name	Project Name
Cur. Dec. No.	Cur. Dec. No.
Date	Date

The	ADAPTIVE PROGRAM
ABB	ABB

Dec 486	Dec 486
REF. dept	REF. dept
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The entire AP program is shown on the previous page. A discussion of the program follows:

This program provides similar functionality provided in drive parameter group 12, Step Speed. The group has a limitation of only four speeds defined by three digital inputs. This program provides for five speeds from four digital inputs from the inputs below:

Digital input defined in:				Speed defined in:	Default Speed
84.11	84.16	84.21	84.26		
0	0	0	0	85.01	20%
1	0	0	0	85.02	40%
1	1	0	0	85.03	60%
1	1	1	0	85.04	80%
1	1	1	1	85.05	100%

AP Blocks 1 through 5 provide for the selection of a speed via four digital inputs. These four inputs which determine different speeds and the lowest speed is assumed whenever the drive is running in either the forward or reverse direction and no input is energized. Each of the speed selection blocks passes its output to the next block in left to right sequence which provides a reference from the highest numbered block that is selected. The program has the advantage that it does not require lower numbered blocks to remain on as shown above in the truth table although most control sticks work in the manner shown.

The speeds should advance in a positive direction, left to right for clarity of function.

The digital inputs used by default are DI3 to DI6, these can be changed to the desired input by changing the IN1 assignments of AP blocks 2 to 5.

The program assumes speeds to be provided in percent without a decimal place. This can be easily changed by changing the constant in parameter 84.43. It is defined as 100 by default which scales the speeds to 0 to 100%. You can add an implied decimal point by making this value 1000 which represents 0-100.0% speed and requires reprogramming of the reference values in 85.01 to 85.05. The scale of the reference value can also be changed to RPM by changing 84.43 to be the maximum speed and setting the desired step speeds in 85.01 to 85.05.

The speeds are set in parameters 85.01 to 85.05 to allow changing these values without placing the AP program into the EDIT state. This also allows for changes while the drive is running. If this functionality is not desired, set the speeds directly in blocks 1 to 5 as a constant value in the blocks IN2 address thereby effectively locking the speeds when the drive is running.

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