


Logic inputs F, R, RES, and VIA (if parameter [VIA selection] (*F I D 9*) is set to 1 or 2) can be set to the functions described in the table below. See table on page 107 for logic input function compatibility.

Function		Action			
No.	Description				
0	[No assigned] No function assigned	Logic input disabled			
1	[Run permissive] (see also input function 54, page 105)	OFF: drive motor output disabled, motor coasts to stop ON: drive ready for operation If [Logic Funct 2 active] ( <i>F I D</i> ) is not set to 1 [Run permissive], a logic input should be assigned to the [Run permissive] logic function to enable the motor to start,			
2	[Forward] (2-wire control: input function 49 NOT used) or (3-wire control: input function 49 USED)	<b>Mode</b>	<b>Logic Input Action</b>		
		2-wire control	OFF: Motor ramps down to a stop ON: Motor runs forward		
		<b>Mode</b>	<b>Stop Input State</b>	<b>Logic Input Action</b>	
		3-wire control	OFF	OFF: no function ON: no function	
3-wire control	ON	OFF to ON transition starts the drive, motor runs forward			
3	[Reverse] (2-wire control: input function 49 NOT used) or (3-wire control: input function 49 USED)	<b>Mode</b>	<b>Logic Input Action</b>		
		2-wire control	OFF: Motor ramps down to a stop ON: Motor runs reverse		
		<b>Mode</b>	<b>Stop Input State</b>	<b>Logic Input Action</b>	
		3-wire control	OFF	OFF: no function ON: no function	
3-wire control	ON	OFF to ON transition starts the drive, motor runs in reverse			
5	[Acc / Dec]	OFF: Acceleration/deceleration pattern 1 ON: Acceleration/deceleration pattern 2			
6	[PS1] Preset speed command input 1	Input 3	Input 2	Input 1	Motor Speed
		0	0	0	minimum speed or speed reference per [Frequency mode sel] ( <i>F P D</i> )
		0	0	1	<i>S r 1</i> : preset speed 1
7	[PS2] Preset speed command input 2	0	1	0	<i>S r 2</i> : preset speed 2
		0	1	1	<i>S r 3</i> : preset speed 3
		1	0	0	<i>S r 4</i> : preset speed 4
8	[PS3] Preset speed command input 3	1	0	1	<i>S r 5</i> : preset speed 5
		1	1	0	<i>S r 6</i> : preset speed 6
		1	1	1	<i>S r 7</i> : preset speed 7
10	[Fault reset] (see also input function 55, page 105)	<b>⚠ DANGER</b>			
		<b>UNINTENDED EQUIPMENT OPERATION</b> This configuration enables to reset the drive. Check this action will not endanger personnel or equipment in any way <b>Failure to follow these instructions will result in death or serious injury.</b>			
		ON to OFF transition clears a detected fault (if cause of detected fault has been cleared)			
11	[Ext Fault] (see also input function 45, page 104)	OFF: No external detected fault ON: Motor stops according to method set by parameter [Ext. fault stop Mode] ( <i>F B D 3</i> ) Embedded display terminal displays <i>E</i> detected fault, detected fault relay activated			

Function		Action
No.	Description	
13	[DC braking]	<div style="border: 1px solid black; padding: 10px; text-align: center;">  <b>WARNING</b> </div> <p><b>NO HOLDING TORQUE</b></p> <ul style="list-style-type: none"> <li>• DC injection braking does not provide any holding torque at zero speed.</li> <li>• DC injection braking does not work when there is a loss of power or when the drive detects a fault.</li> <li>• Where necessary, use a separate brake to maintain torque levels.</li> </ul> <p><b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b></p> <p>OFF: No DC braking command  ON: DC braking applied to motor,  Level and time set by parameters [DC braking current] (<i>F 2 5 1</i>) and [DC braking time] (<i>F 2 5 2</i>)</p>
14	[PID disable]	<p>OFF: PID control permitted  ON: PID control prohibited</p> <p>PID control prohibited input terminal function is available to switch PID control and open-loop control.</p> <p>Also Clear PID integral value input terminal function (function 65) is available.</p> <p><b>Note:</b> For software version lower than V1.7IE04, when Clear PID integral value (function 65) and PID Control Prohibited (function 14) are used, it is necessary to set [Command mode sel] (<i>C P D d</i>) to [Logic inputs] (<i>D</i>) Control terminal logic inputs.</p>
15	[Param Edit] Functional only when parameter [Parameter lock] ( <i>F 7 0 0</i> ) = 1	<p>OFF: Parameters locked (if parameter <i>F 7 0 0</i> = 1)  ON: Programming changes permitted</p>
16	[Run reset]	<p>OFF: drive motor output disabled, motor coasts to stop  ON: drive ready for operation  ON to OFF transition clears a detected fault (if cause of detected fault has cleared)</p>
20	[FW-RMP2] Combination of forward run command and acceleration/deceleration pattern 2 selection	<p>OFF: Motor stops, ramping down per ACC/dEC pattern 2  ON: Motor runs forward, ramping up per ACC/dEC pattern 2</p>
21	[Rev- RMP2] Combination of reverse run command and acceleration/deceleration pattern 2 selection	<p>OFF: Motor stops, ramping down per ACC/dEC pattern 2  ON: Motor runs in reverse, ramping up per ACC/dEC pattern 2</p>
22	[FW, PS1] Combination of forward run command and preset speed 1 command	<p>OFF: Motor ramps down to a stop  ON: Motor runs forward, at speed set by <i>S r 1</i>, preset speed 1</p>
23	[RV, PS1] Combination of reverse run command and preset speed 1 command	<p>OFF: Motor ramps down to a stop  ON: Motor runs in reverse, at speed set by <i>S r 1</i>, preset speed 1</p>
24	[FW, PS2] Combination of forward run command and preset speed 2 command	<p>OFF: Motor ramps down to a stop  ON: Motor runs forward, at speed set by <i>S r 2</i>, preset speed 2</p>
25	[RV, PS2] Combination of reverse run command and preset speed 2 command	<p>OFF: Motor ramps down to a stop  ON: Motor runs in reverse, at speed set by <i>S r 2</i>, preset speed 2</p>
26	[FW, PS3] Combination of forward run command and preset speed 3 command	<p>OFF: Motor ramps down to a stop  ON: Motor runs forward, at speed set by <i>S r 3</i>, preset speed 3</p>

Function		Action
No.	Description	
27	[RV, PS3] Combination of reverse run command and preset speed 3 command	OFF: Motor ramps down to a stop ON: Motor runs in reverse, at speed set by <i>S r 3</i> , preset speed 3
30	[FW-RMP2-SP1] Combination of forward run command, preset speed 1 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs forward, at speed set by <i>S r 1</i> , preset speed 1, ramping up per ACC/dEC pattern 2
31	[Rev-RMP2-SP1] Combination of reverse run command, preset speed 1 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs in reverse, at speed set by <i>S r 1</i> , preset speed 1, ramping up per ACC/dEC pattern 2
32	[FW-RMP2-SP2] Combination of forward run command, preset speed 2 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs forward, at speed set by <i>S r 2</i> , preset speed 2, ramping up per ACC/dEC pattern 2
33	[Rev-RMP2-SP2] Combination of reverse run command, preset speed 2 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs in reverse, at speed set by <i>S r 2</i> , preset speed 2, ramping up per ACC/dEC pattern 2
34	[FW-RMP2-SP3] Combination of forward run command, preset speed 3 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs forward, at speed set by <i>S r 3</i> , preset speed 3, ramping up per ACC/dEC pattern 2
35	[Rev-RMP2-SP3] Combination of reverse run command, preset speed 3 command, and acceleration/deceleration pattern 2 selection	OFF: Motor stops, ramping down per ACC/dEC pattern 2 ON: Motor runs in reverse, at speed set by <i>S r 3</i> , preset speed 3, ramping up per ACC/dEC pattern 2
38	[Frequency source] Frequency reference source switching	OFF: drive follows speed reference set by parameter [Frequency mode sel] ( <i>F n 0 d</i> ) ON: drive follows speed reference set by parameter [Remote spd ref 2] ( <i>F 2 0 7</i> ) > (if [Auto/man speed ref] ( <i>F 2 0 0</i> ) = 1)
39	[Motor switch]	<div style="text-align: center;"><b>NOTICE</b></div> <div style="border: 1px solid black; padding: 5px;"> <p><b>RISK OF DAMAGE TO THE MOTOR</b></p> <ul style="list-style-type: none"> <li>• The motor switching function disables motor thermal protection.</li> <li>• The use of external overload protection is required when using motor switching.</li> </ul> <p><b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b></p> </div> <p>OFF: 1<sup>st</sup> motor V/Hz parameter set active: ([Mot cont. mode sel.] (<i>P 4</i>), [Motor rated freq.] (<i>u L</i>), [Motor rated voltage] (<i>u L u</i>), [Mot Voltage Boost] (<i>u b</i>), [Motor thermal prot.] (<i>t H r</i>))</p> <p>ON: 2<sup>nd</sup> motor V/Hz parameter set active: (<i>P 4</i> = 0, <i>F 1 7 0</i>, <i>F 1 7 1</i>, <i>F 1 7 2</i>, <i>F 1 7 3</i>)</p>

Function		Action
No.	Description	
40	[Mot param. switch] Motor control parameter switching V/Hz, current limit, acceleration/deceleration pattern	<div style="text-align: center;"><b>NOTICE</b></div> <div style="border: 1px solid black; padding: 5px;"> <p><b>RISK OF DAMAGE TO THE MOTOR</b></p> <ul style="list-style-type: none"> <li>• The parameter switching function disables motor thermal protection.</li> <li>• The use of external overload protection is required when using motor switching.</li> </ul> <p><b>Failure to follow these instructions can result in death, serious injury, or equipment damage.</b></p> </div> <p>OFF: 1<sup>st</sup> motor control parameter set active: ([Mot cont. mode sel.] (PE), [Motor rated freq.] (UL), [Motor rated voltage] (ULV), [Mot Voltage Boost] (VB), [Motor thermal prot.] (EHR), [Acceleration time 1] (ACC), [Deceleration time 1] (DEC), [Acc/dec 1 pattern] (FSD2), [Motor Current Limit] (FDD1))</p> <p>ON: 2<sup>nd</sup> motor control parameter set active: (PE = 0, F170, F171, F172, F173, F185, F500, F501, F503)</p>
41	[(+ speed)]	OFF: No motor speed increase ON: Motor accelerates
42	[(- speed)]	OFF: No motor speed reduction ON: Motor decelerates
43	[+/- clear]	OFF to ON transition clears frequency level set by +/- speed inputs
44	[+/- SPD, FLT CLR]	OFF to ON transition clears frequency level set by +/- speed inputs ON to OFF transition clears a detected fault (if cause of detected fault has been cleared)
45	[Inv Ext. fault] Inversion of external detected fault signal (see also input function 11, page 101)	OFF: Motor stops according to method set by parameter [Ext. fault stop Mode] (FDD3) Embedded display terminal displays E detected fault ON: No external detected fault
46	[Ext. Th fault] External overheating input (see also input function 47)	OFF: No external overheating ON: Motor stops, embedded display terminal displays OH2
47	[Inv Ext. Th fault] Inversion of external overheating input (see also input function 46)	OFF: Motor stops, embedded display terminal displays OH2 ON: No external overheating
48	[Forced local]	OFF: No forced local function ON: Control of the drive is forced to mode set by [Frequency mode sel] (FDD), [Command mode sel] (CDD), and [Remote spd ref 2] (FDD7).
49	[3-wire]	OFF: Motor ramps down to a stop ON: drive ready for operation
51	[Reset kWh] Clear accumulated power consumption kWh display	OFF: No function ON: Clears kWh memory
52	[Forced mode]	<div style="text-align: center;"><b>⚠ DANGER</b></div> <div style="border: 1px solid black; padding: 5px;"> <p><b>LOSS OF PERSONNEL AND EQUIPMENT PROTECTION</b></p> <p>When F550 is set to 1 or 2 and a logic input set to function "52" is activated, all the drive controller protection will be disable.</p> <ul style="list-style-type: none"> <li>• Logic input should not be enable on function 52 for typical applications...</li> <li>• Logic input should be enable on function 52 only in extraordinary situations where a thorough risk analysis demonstrates that the presence of adjustable speed drive protection poses a greater risk than personnel injury or equipment damage.</li> </ul> <p><b>Failure to follow these instructions will result in death or serious injury.</b></p> </div> <p>This function enables the "Forced fire" mode. In this mode, all the detected fault will be ignored or if it is a hardware trip, the drive will be reset to try to restart.</p> <p>OFF: No function ON: Motor runs at speed set by F294</p> <p><b>Note:</b> F550, F559 and F294 must be configured to activate this function.</p>

Function		Action
No.	Description	
53	[Fire mode]	This function enables the "Fire" mode OFF: No function ON: Motor runs at speed set by <i>F 2 9 4</i> <b>Note:</b> <i>F 6 5 0</i> , <i>F 6 5 9</i> and <i>F 2 9 4</i> must be configured to activate this function.
54	[Inverse Run permis.] Inversion of run permissive (see also input function 1 page 101)	OFF: drive ready for operation ON: drive motor output disabled, motor coasts to stop This mode allows to have a freewheel stop using a terminal command.
55	[Inv fault reset] Inversion of clear detected fault (see also input function 10 page 101)	<div style="text-align: center; background-color: black; color: white; padding: 5px;"><b>⚠ DANGER</b></div> <div style="background-color: #f0f0f0; padding: 5px;"><b>UNINTENDED EQUIPMENT OPERATION</b> This configuration enables to reset the drive. Check this action will not endanger personnel or equipment in any way <b>Failure to follow these instructions will result in death or serious injury.</b></div> OFF to ON transition clears a detected fault (if cause of detected fault has been cleared)
56	[Run, FW] Combination of run permissive and run forward command (2-wire control only)	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs forward
57	[Run, RV] Combination of run permissive and run reverse command (2-wire control only)	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs reverse
61	[I limit 1/2] Current limit level selection	OFF: Current limit level 1 [Motor Current Limit] ( <i>F 6 0 1</i> ) selected ON: Current limit level 2 [Mot. 2 current limit] ( <i>F 1 8 5</i> ) selected
62	[RY on] Holding of RYA-RYC relay output	OFF: Normal real-time relay operation ON: RYA-RYC is held on once activated
64	[Cancel HMI cmd] Cancellation of last graphic display option command	OFF: Last graphic display option command cancelled ON: Last graphic display option command retained
65	[PID integral] Clear PID integral value	OFF: No action ON: PID integral value held at zero
66	[Run-fw-sp1] Combination of run permissive, run forward command, and preset speed 1 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs forward at speed set by <i>S r 1</i> , preset speed 1
67	[Run-rev-sp1] Combination of run permissive, run reverse command, and preset speed 1 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs reverse at speed set by <i>S r 1</i> , preset speed 1
68	[Run-fw-sp2] Combination of run permissive, run forward command, and preset speed 2 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs forward at speed set by <i>S r 2</i> , preset speed 2
69	[Run-rev-sp2] Combination of run permissive, run reverse command, and preset speed 2 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs reverse at speed set by <i>S r 2</i> , preset speed 2

Function		Action
No.	Description	
70	[Run-fw-sp4] Combination of run permissive, run forward command, and preset speed 4 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs forward at speed set by $Sr4$ , preset speed 4
71	[Run-rev-sp4] Combination of run permissive, run reverse command, and preset speed 4 command	OFF: drive motor output disabled, motor coasts to stop ON: Motor runs reverse at speed set by $Sr4$ , preset speed 4
72	[PID rev] PID error signal reversed	OFF: if $F111 = 72$ and F terminal is OFF, PI error input = reference - feedback ON: if $F111 = 72$ and F terminal is ON, PI error input = feedback - reference
73	[Damper feedBack]	OFF: if $F111$ or $F112$ or $F113$ is not set to 73 the damper has no effect. ON: if $F111$ or $F112$ or $F113 = 73$ the damper is ON. The damper feedback has not effect if not configured to an output.

## Logic Input Function Compatibility

O = Compatible

X = Incompatible

+ = Compatible under some conditions

@ = Priority

Function No. / Function	1/54	2	3	5	6-9	10/55	11/45	13	14	15	46/47	48	41-43	49	38	39	40	52/53
1/54 [No assigned] / [Inverse Run permissive]		@	@	@	@	O	O	@	O	O	O	O	O	@	O	O	O	X
2 [Forward]	+		X	O	O	O	X	X	O	O	X	O	O	X	O	O	O	X
3 [Reverse]	+	+		O	O	O	X	X	O	O	X	O	O	X	O	O	O	X
5 [Acc / Dec]	+	O	O		O	O	X	X	O	O	X	O	O	O	O	O	X	O
6~8 [PS1]~[PS3]	+	O	O	O		O	X	X	O	O	X	O	O	O	O	O	O	X
10/55 [Fault reset] / [Inv fault reset]	O	O	O	O	O		X	O	O	O	X	O	O	O	O	O	O	X
11/45 [Ext. fault] / [Inv. Ext. fault]	+	@	@	@	@	@		@	@	O	+	O	@	@	O	O	O	X
13 [DC braking]	+	@	@	@	@	O	X		@	O	X	O	@	@	O	O	O	X
14 [PID disable]	O	O	O	O	O	O	X	X		O	X	O	O	O	O	O	O	X
15 [Param Edit]	O	O	O	O	O	O	O	O	O		O	O	O	O	O	O	O	O
46/47 [Ext. Th fault] / [Inv Ext. Th fault]	@	@	@	@	@	@	+	@	@	O		O	O	@	O	O	O	X
48 [Forced local]	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	O	X
41-43 [(+) speed] [(-) speed] [+/- clear]	O	O	O	O	O	O	O	O	O	O	O	O		O	O	O	O	X
49 [3-wire]	+	@	@	O	O	O	X	X	O	O	X	O	O		O	O	O	X
38 [Frequency source]	O	O	O	O	O	O	O	O	O	O	O	O	O	O		O	O	X
39 [Motor switch]	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O		X	O
40 [Mot param. switch]	O	O	O	@	O	O	O	O	O	O	O	O	O	O	O	@		O
52/53 [Forced mode] / [Fire mode]	@	@	@	O	@	@	@	@	@	O	@	@	@	@	@	O	O	

The following logic input functions are active, regardless of the [Frequency mode sel] (F P D d) and [Command mode sel] (C P D d) setting.

- (1) Run permissive
- (10) Clear detected fault
- (11) External detected fault

When determining function compatibility using the table above, the function listed horizontally is activated first and the function listed vertically is activated second.