10.1.1 NOP (00h)

00H	NOP (No	Operation	on)												
Inst / Para	D/CX														
NOP	0	1 - 0 0 0 0 0 0 0 0 (00h)													
Parameter	No Para	No Parameter													
Description	This con	nmand is	empty co	mmand.											

[&]quot;-" Don't care

10.1.2 SWRESET (01h): Software Reset

01H	SWRESET (Software Reset)													
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX	
SWRESET	0	\uparrow	1	-	0	0	0	0	0	0	0	1	(01h)	
Parameter	No Para	meter											-	
	"-" Don't	care												
	-If Softw	are Rese	t is applie	d during	Sleep In r	mode, it w	vill be ned	essary to	wait 120r	msec bef	ore sendi	ng next c	ommand.	
Description	-The dis	play mod	ule loads	all defaul	t values t	o the regi	sters dur	ing 120ms	sec.					
	-If Softw	are Rese	t is applie	d during	Sleep Ou	t or Displa	ay On Mo	de, it will	be neces	sary to w	ait 120ms	sec before	e sending	
	next cor	nmand.												
Flow Chart					Display v blank sc Set Comma to S/V Defau Value	whole green		Para Dis Ac Sequ	gend mand meter play tion ode uential aster	·				

10.1.3 RDDID (04h): Read Display ID

04H	RDDID	(Read Di	isplay ID)										
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDID	0	↑	1	-	0	0	0	0	0	1	0	0	(04h)
1 st parameter	1	1	1	-	-	_	-	-	_	-	-	-	-
2 nd parameter	1	1	<u>†</u>	-	ID17	ID16	ID15	ID14	ID13	ID12	ID11	ID10	
3 rd parameter	1	1	↑	-	1	ID26	ID25	ID24	ID23	ID22	ID21	ID20	
4 th parameter	1	1	↑	-	ID37	ID36	ID35	ID34	ID33	ID32	ID31	ID30	
Description	-The 1st -The 2nd -The 3rd -The 4th -Comma respecti	t parame d parame d parame n parame ands RDI vely.	eter (ID17 eter (ID26 eter (ID37	-bit display amy data to ID10): to ID20): I to UD30): Ah, DBh, I	LCD mod	dule's ma lule/drive dule/drive	nufacture r version er ID.	ID	rameters	2,3,4 of th	ne comm	and 04h,	
	"-" Don't							Defau	ult Value	ID2		ID3	
Default	Power	On Seq	uence					-		NV Valu		NV Value	
	S/W R	-						-		NV Valu	-	NV Value	1
	H/W R							-		NV Valu		NV Value	
Flow Chart			Dumin Clock Send param Send param	my ck 2nd eter 3rd		Spa	ead 04h Dummy Read end 2nd arameter end 3rd arameter	Ho Disp			Para Dis	gend mand meter splay etion ode	
	1									1			•

Description

10.1.4 RDDST (09h): Read Display Status

09H	RDDST (Read Dis	play Statu	ıs)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDST	0	↑	1	-	0	0	0	0	1	0	0	1	(09h)
1 st parameter	1	1	↑	-	_	_	-	-	-	-	_	-	_
2 nd parameter	1	1	↑	-	BSTON	MY	MX	MV	ML	RGB	МН	ST24	
3 rd parameter	1	1	↑	-	ST23	IFPF2	IFPF1	IFPF0	IDMON	PTLON	SLOUT	NORON	
4 th parameter	1	1	↑	-	ST15	ST14	INVON	ST12	ST11	DISON	TEON	GCS2	
5 th parameter	1	1	↑	-	GCS1	GCS0	TELOM	ST4	ST3	ST2	ST1	ST0	

This command indicates the current status of the display as described in the table below:

Bit	Description	Value
BSTON	Booster Voltage Status	'1' =Booster on,
		'0' =Booster off
MY	Row Address Order (MY)	'1' =Decrement, (Bottom to Top, when MADCTL (36h) D7='1')
		'0' =Increment, (Top to Bottom, when MADCTL (36h) D7='0')
MX	Column Address Order (MX)	'1' =Decrement, (Right to Left, when MADCTL (36h) D6='1')
		'0' =Increment, (Left to Right, when MADCTL (36h) D6='1')
MV	Row/Column Exchange (MV)	'1' = Row/column exchange, (when MADCTL (36h) D5='1')
		'0' = Normal, (when MADCTL (36h) D5='0'
ML	Scan Address Order (ML)	'0' =Decrement,
		(LCD refresh Top to Bottom, when MADCTL (36h) D4='0')
		'1'=Increment,
		(LCD refresh Bottom to Top, when MADCTL (36h) D4='1')
RGB	RGB/ BGR Order (RGB)	'1' =BGR, (When MADCTL (36h) D3='1')
		'0' =RGB, (When MADCTL (36h) D3='0')
MH	Horizontal Order	'0' =Decrement,
		(LCD refresh Left to Right, when MADCTL (36h) D2='0')
		'1' =Increment,
		(LCD refresh Right to Left, when MADCTL (36h) D2='1')
ST24	For Future Use	'0'
ST23	For Future Use	'0'
IFPF2		"011" = 12-bit / pixel,
IFPF1	Interface Color Pixel Format	"101" = 16-bit / pixel,
IFPF0	- Definition	"110" = 18-bit / pixel, others are no define
IDMON	Idle Mode On/Off	'1' = On, "0" = Off
PTLON	Partial Mode On/Off	'1' = On, "0" = Off
SLPOUT	Sleep In/Out	'1' = Out, "0" = In
NORON	Display Normal Mode On/Off	'1' = Normal Display,
	Display Notifial Mode Official	'0' = Partial Display
ST15	Vertical Scrolling Status (Not Used)	'1' = Scroll on, "0" = Scroll off
ST14	Horizontal Scroll Status (Not Used)	,0,
INVON	Inversion Status	'1' = On, "0" = Off
ST12	All Pixels On (Not Used)	·O'
ST11	All Pixels Off (Not Used)	·0·

	J					
	DISON	Display On/Off	'1' = On,	"0" = Off		
	TEON	Tearing effect line on/off	'1' = On,			
	GCSEL2		"000" = 0	GC0		
	GCSEL1		"001" = 0	GC1		
		Gamma Curve Selection	"010" = 0	GC2		
	GCSEL0		"011" = 0	GC3		
			"100" to '	111" = Not define	ed	
	TELOM	Tearing effect line mode		le1, '1' = mode2		
	ST4	For Future Use	'0'			
	ST3	For Future Use	'0'			
	ST2	For Future Use	'0'			
	ST1	For Future Use	'0'			
	ST0	For Future Use	,0,			
	"-" Don't care					
	Status		Default Value	(ST31 to ST0)		
			ST[31-24]	ST[23-16]	ST[15-8]	ST[7-0]
Default	Power On S	equence	0000-0000	0110-0001	0000-0000	0000-0000
	S/W Reset		0xxx0xx00	0xxx-0001	0000-0000	0000-0000
	H/W Reset		0000-0000	0110-0001	0000-0000	0000-0000
Flow Chart		Dummy Clock Send 2nd parameter Send 3rd parameter Send 4th parameter	Send 2nd parameter Send 3rd parameter Send 4th parameter			Display Action Mode Sequential transter
		Send 5th parameter	Sendth parameter			

10.1.5 RDDPM (0Ah): Read Display Power Mode

0AH	RD	DPM ((Read Di	splay Pow	ver Mode)									
Inst / Para	D/C	CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDPM	0		↑	1	-	0	0	0	0	1	0	1	0	(0Ah)
1 st parameter	1		1	1	-	-	-	-	-	-	-	-	-	-
2 nd parameter	1		1	↑		BSTON	IDMON	PTLON	SLPOUT	NORON	DISON	D1	D0	
		Don't Bit BSTC	care				he displa	Value '1' =Boo '0' =Boo '1' = Idle '0' = Idle	oster on, oster off e Mode O e Mode O	n,	elow:			
Description		PTLO	N	Partial N	lode On/0	Off			rtial Mode					
		SLPO	N	Sleep In	/Out			'1' = Sle '0' = Sle	eep Out, eep In					
		NORO	ON	Display	Normal M	odemOn/	Off		rmal Disp					
		DISO	N	Display	On/Off				splay On, splay Off					
		D1		Not Use	d			'0'						
		D0		Not Use	d			'0'						
	3	Status						Default	Value (D7	7 to D0)				
Default	F	Power	On Sequ	ience				0000_1	000(08h)					
Boladit	5	S/W Re	eset					0000_1	000(08h)					
	ŀ	H/W R	eset					0000_1	000(08h)					
Flow Chart				RDD	PM 0Ah	ode		Dummy Read Send 2nd parameter	Ah			Commar Paramet Display Action Mode Sequentitranstei	er	

10.1.6 RDDMADCTL (0Bh): Read Display MADCTL

0BH	RDDMAI	OCTL (Read Disp	lav MADO	CTL)									
Inst / Para		WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX	
RDDMADCTL	0	↑	1	-	0	0	0	0	1	0	1	1	(0Bh)	
1 st parameter	1	1	1	-	-	-	-	-	-	-	-	-	-	
2 nd parameter	1	1	1		MY	MX	MV	ML	RGB	МН	D1	D0		
	This comr		ndicates th	e current	status of	the disp	olay as des	cribed ir	the table	below:			_	
	Bit		Description	ì			Value							
	MX	(Column Ac	ldress Or	der		_		(When MA					
	MY	ı	Row Addre	ess Order					pp (When I m (When I					
Description	MV	ı	Row/Colun	nn Order	(MV)		'1' = Row '0' = Norr		exchange =0)	(MV=1)				
	ML	,	Vertical Re	efresh Ord	der				Bottom to					
	RGB		RGB/BGR	Order			'1' =BGR	, "0"=RG	BB					
	МН	1	Horizontal	Refresh (Order		'0' = LCD	horizon	fresh dired tal refresh tal refresh	Left to ri	ight			
	D1		Not Used				·0'							
	D0		Not Used				'O'							
	Status						Default V	alue (D7	7 to D0)					
	Power C	On Seq	uence				0000_00	00 (00h)						
Default	S/W Res	set					No chanç	је						
	H/W Re	set					0000_00	00 (00h)						
Flow Chart	Serial I/F Mode Parallel I/F Mode RDDMADCTL 0Bh Parameter Dummy Read Display Action Action Sequential transter													

10.1.7 RDDCOLMOD (0Ch): Read Display Pixel Format

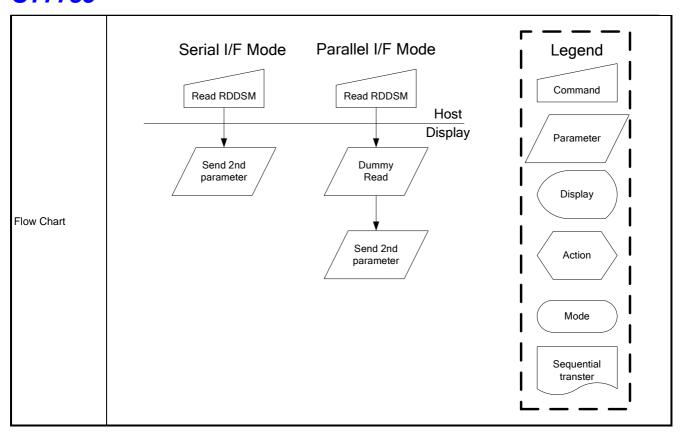
0CH	RDDCC)LMOD (F	Read Disp	olay Pixel	Format)								
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDCOLMOD	0	↑	1	-	0	0	0	0	1	1	0	0	(0Ch)
1 st parameter	1	1	1	-	-	-	-	-	-	-	-	-	-
2 nd parameter	1	1	↑	-	0	0	0	0	-	IFPF2	IFPF1	IFPF0	
			dicates th			Color Fo		scribed in	n the table	below:			
	011	0]		12-bit/		COIOI FO	ormat						
	101			16-bit/									
Description	110			18-bit/									
	111			No use	-								
	Others a	re no def	ine and ir	ıvalid									
	"-" Don'	t care											
	Status					Default	Value						
						IFPF[2:	0]						
Default	Power	On Sequ	ence			0110 (1	8 bits/pixe	el)					
	S/W Re	eset				No Cha	nge						
	H/W R	eset				0110 (1	8 bits/pixe	el)					
Flow Chart			Serial I	LMOD h	de 7	RI	DDCOLMC 0Ch V Dummy Read Send 2nd parameter	DD H	Host splay		Comma Parame Displa Action Mode	tter	
											transte		

10.1.8 RDDIM (0Dh): Read Display Image Mode

0DH	<u> </u>		Read Display										
Inst / Para	D/CX	WRX		D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDIM	0	1	1	-	0	0	0	0	1	1	0	1	(0Dh)
1 st parameter	1	1	↑	_	-	-	-	-	-	-	-	-	-
2 nd parameter	1	1	↑	-	VSSON	D6	INVON	D4	D3	GCS2	GCS1	GCS0	
Description	This cc "-" Don Bit VSS D6 INV D4 D3	't care	Description Reversed Reversed Inversion C All Pixels C	On/Off	t status of	"0" "1" = In "0" = In "0" (No	nversion inversion inversi	s On,	in the tabl	e below:			
	GCS	S1	Gamma Cu	ırve Sele	ection	"001" = "010" =	= GC1, = GC2,	00" to "	111" = No	t defined			
	Statu	S				Defaul	t Value(D	7 to D0)				
Default	Powe	er On Se	equence			0000_0	0000 (00h	n)					
Delault	S/W	Reset				0000_0	0000 (00h	1)					
	H/W	Reset				0000_0	0000 (00h	n)					
Flow Chart			Serial I/ RDDIM Send 2 parame	0Dh	de	RI	DDIM 0Dh		Host isplay		Lege Common Parama Displant Action Mood Seque trans	nand neter day	

10.1.9 RDDSM (0Eh): Read Display Signal Mode

0EH	RDDSM (0Eh): Read Display Signal Mode													
Inst / Para			WRX		D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDDSM	0		↑	1	-	0	0	0	0	1	1	1	0	(0Eh)
1 st parameter	1		1	1	-	-	-	-	-	-	-	-	-	-
2 nd parameter	1		1	↑	-	TEON	TELOM	D5	D4	D3	D2	D1	D0	
		nis com ' Don't		indicates th	e curren	t status o	f the displ	ay as de	scribed ir	the table	e below:			
		Bit		Description	า				Value					
		TEON	1	Tearing Ef	fect Line	On/Off			"1" = 0	On,				
									"0" = 0					
		TELO	M	Tearing eff	ect line r	mode				node2,				
	Н								"0" = r					
	П	D5		Not Used					"1" = 0	•				
	╟	D4		Natilaad					"0" = 0					
Description	П	D4		Not Used					"1" = 0					
	l	D3		Not Used					"1" = (
	П			1101 0000					"0" = 0					
	lŀ	D2		Not Used					"1" = 0	On,				
	П								"0" = 0	Off				
		D1		Not Used					"1" = 0	On,				
									"0" = 0	Off				
	П	D0		Not Used					"1" = 0	On,				
									"0" = 0	Off				
		Statu	ıs				Defa	ult Value	(D7~D0)					
Defeat		Powe	er On S	equence			0000	_0000 (0	00h)					
Default		S/W	Reset				0000	_0000 (0	00h)					
		H/W	Reset				0000	_0000 (0	00h)					



10.1.10 SLPIN (10h): Sleep In

10H	SLPIN ((Sleep In)											
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
SLPIN	0	1	1	-	0	0	0	1	0	0	0	0	(10h)
Parameter	No Para	ameter									-		-
Description						nter the mi			•		el scanni	ng is stop	ped.
Restriction	Commar	nd (11h). C is in Sle	ep Out or	· Display (On mode,	already in it is neces	ssary to					•	
	Status						Def	ault Value)				
D ()	Power	On Sequ	ence				Slee	ep in mod	е				
Default	S/W R	eset					Slee	ep in mod	е				
	H/W R	eset					Slee	ep in mod	е				
Flow Chart			Display screen No effe OI Com	whole blank (Automatic ect to DISP WOFF immands) Drain harge im LCD Panel			D Co	Stop C-DC nverte r Stop ternal cillator		Parame Displa Actio Mode	eter / n		

10.1.11 SLPOUT (11h): Sleep Out

11H	SLPOU	T (Sleep	Out)										
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
SLPOUT	0	↑	1	-	0	0	0	1	0	0	0	1	(11h)
Parameter	No Para	ameter											-
Description				leep mode		l Internal	diaplay	a a illatar	is started,	and nan	ol ocennin	a io otorto	d
	-111 11115 1	inode the		onverter	s enabled	ı, iiileiiiai	uispiay C	JSCIIIAIUI	is starteu,	anu pan	ei scaiiiii	y is starte	u.
Restriction	Commar -When IC	nd (10h). C is in Sle r the supp C is in Sle	eep In mo oly voltag eep Out o	de, it is ne es and clo r Display (ecessary took circuit	o wait 120 s. it is nece	Omsec be	efore sen wait 120r	Sleep Out ding next msec befo	comman	d because	of the sta	abilization
	Status						Def	ault Valu	е				
.	Power	On Sequ	ence				Sle	ep in mo	de				
Default	S/W R	eset					Sle	ep in mo	de				
	H/W R	eset					Sle	ep in mod	de				
Flow Chart			Start DC:I Conve	up DC erter		SCI (Au tr	splay wholeen for 2 to atomatic N to DISP ON Comman Display Me contents the currence the currence the currence the Currence to a setting	emory In table		Comm Param Displ Action Seque trans	eter ay on le		

10.1.12 PTLON (12h): Partial Display Mode On

12H	PTLON	l (12h): P	artial Dis	play Mode	On								
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
PTLON	0	1	1	-	0	0	0	1	0	0	1	0	(12h)
Parameter	No Par	ameter											-
Description		e Partial		Partial mode e Normal D					•		al Area o	command	d (30h)
Default	Status Power S/W R	On Sequeset	uence				Norn	ult Value nal Mode nal Mode	On				
Flow Chart	•	ırtial Are	a (30h)										7

10.1.13 NORON (13h): Normal Display Mode On

13H	NORON	l (Normal	Display N	Mode On)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
NORON	0	↑	1	-	0	0	0	1	0	0	1	1	(13h)
Parameter	No Para	meter											-
Description	-Normal	display m	ode on m	eans Part	normal mo ial mode o e On comr	ff.	2h)						
Default	Status Power S/W Re		ence				Norma	al Mode al Mode al Mode	On				
Flow Chart	See Pa	rtial Area	ı Definitio	on Descri	ptions for	details	of whe	n to use	e this co	omman	d		

10.1.14 INVOFF (20h): Display Inversion Off

20H	IVNOFI	F (Norma	al Display	Mode Off)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
INVOFF	0	1	1	-	0	0	1	0	0	0	0	0	(20h)
Parameter	No Par	ameter		· · · · · · · · · · · · · · · · · · ·									-
Description	-This co "-" Don't		Top- (0,0)	Mem Left 、	mple)	y inversion	on mode	Disp	lay				
Default	Status Power S/W R H/W R	On Sequeset	uence				Disp Disp	lay Inve	e rsion off rsion off rsion off				
Flow Chart				INV	Display rersion Of Mode OFF (20th Display rersion OF Mode			Para Dis Acc	gend mand meter splay stion ode uential nster				

10.1.15 INVON (21h): Display Inversion On

21H	IVNOFF (Display Inv	ersion On)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
INVON	0	↑	1	-	0	0	1	0	0	0	0	1	(21h)
Parameter	No Param	neter											-
Description		om Display	Inversion (on, the Disp (Examp Memory	lay Inve			Displ		uld be w	ritten.		
Default	Status Power O S/W Res H/W Res		e			1	Default ' Display Display Display	Inversio Inversio	n off				
Flow Chart				Display Inversion Mode INVON (21 Display Inversion Mode	OFF)			Leger Comma Parame Display Action Mode	nd ter /				

10.1.16 GAMSET (26h): Gamma Set

26H	GAMSE	ET (Gam	ma Set)														
Inst / Para	D/CX	WRX	RDX	D17-	·8 D7	D6	D5	5	D4	D3	D2	D1	D0	HEX			
GAMSET	0	↑	1	-	0	0	1		0	0	1	1	0	(26h)			
Parameter	1	↑	1	-	-	-	-		=	GC3	GC2	GC1	GC0				
														n be			
	GC [7:	0]	Paramet	er	Curve Se	ected											
Description					GS=1					GS=0							
Description	01h		GC0		Gamma C	Curve 1 (G	2.2)			Gamma	Curve 1	1 0 GC1 GC0 num of 4 curves coin the Table.					
	02h		GC1		Gamma C	Curve 2 (G	1.8)			Gamma	Curve 2	(G2.5)					
	04h		GC2		Gamma C	Curve 3 (G	2.5)			Gamma	Curve 3	(G2.2)					
	08h		GC3		Gamma C	Curve 4 (G	1.0)			Gamma	Curve 4	1 0 C2 GC1 GC0					
	Note: Al	l other va	alues are ι	undefin	ied.												
	Status								ılt Valu	ie			1 0 GC1 GC0 um of 4 curves can the Table. G1.0) G2.5) G2.2)				
Default		On Seq	uence					01h				1 0 C2 GC1 GC0 examinum of 4 curves can be displayed in the Table. Ve 1 (G1.0) Ve 2 (G2.5) Ve 3 (G2.2)					
	S/W R							01h 01h					1 0 GC1 GC0 um of 4 curves can in the Table. G1.0) G2.5) G2.2)				
Flow Chart				(G	1st paramete GC[7:0] New Gamma		 		Comm	and eter ay							
					Curve Loaded				Sequel transf	ntial							

10.1.17 DISPOFF (28h): Display Off

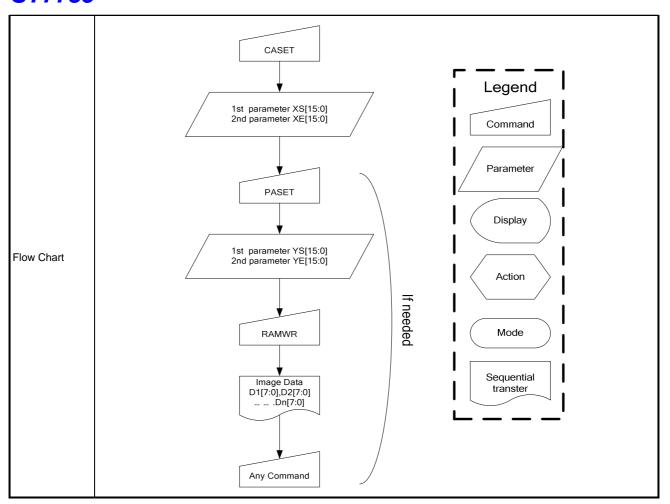
28H	DISPOFF (D	isplay Off											
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
DISPOFF	0	↑ · · · · · · · · · · · · · · · · · · ·	1	- DIT-0	0	0	1	0	1	0	0	0	(28h)
Parameter	No Paramet	er	'	<u> </u>	10	U	'	10	<u> </u>	JU	U	U	(2011)
	- This comm disabled and - This comm - This comm - There will t - Exit from th	d blank pagnand makes nand does nand does	ge inserted s no chang not chang ormal visib	d. ge of content e any other le effect on	nts of fra status. the disp	ime mer		mode, tl	he outp	out from	Frame	Memory	is
Description	Note1: Com		me display		ue 2-fall		es of V		Oh (slee	p in) to	make n	nodule ir	to display
Default	Status Power On S S/W Reset H/W Reset	Sequence				De Di Di	efault V splay o splay o splay o	alue ff					
Flow Chart			[Display Or Mode DISPOR Display Of Mode	FF	 	F	egen Comman Paramete Display Action Mode	er				

10.1.18 DISPON (29h): Display On

29H	DISPON	(Display On)										
DISPON		↑ 1	-	0	0	1	0	1	0	0	1	(29h)
Parameter	No Para	meter										-
Description	- Frame	Memory is en mmand make mmand does	abled. s no chan	ge of con	tents of fra		mory.	from the				
Default	Status Power (S/W Re H/W Re					1	Default Val Display off Display off Display off	ue				
Flow Chart				Die	splay Off Mode DISPON splay On Mode		Lege Comm Param Displ Action Mod	eter ay on e				

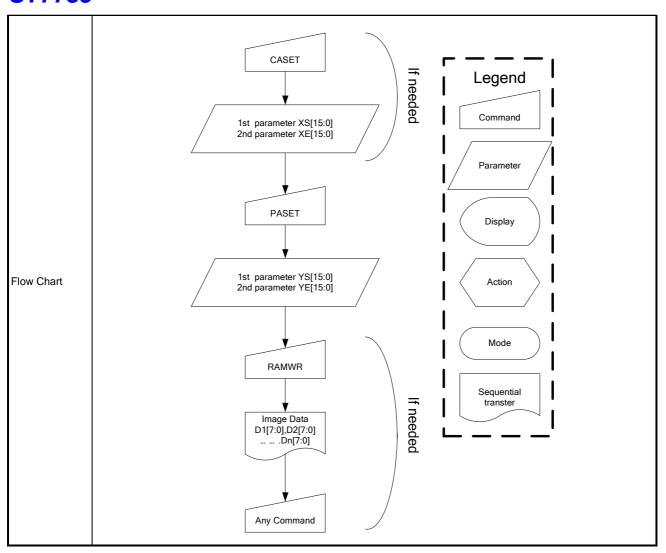
10.1.19 CASET (2Ah): Column Address Set

2AH	CASET	(Colume	Address	Set)_									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
CASET(2Ah)	0	1	1	-	0	0	1	0	1	0	1	0	(2Ah
1 st parameter	1	1	1	-	XS15	XS14	XS13	XS12	XS11	XS10	XS9	XS8	
2 nd parameter	1	1	1	-	XS7	XS6	XS5	XS4	XS3	XS2	XS1	XS0	
3 rd parameter	1	1	1	-	XE15	XE14	XE13	XE12	XE11	XE10	XE9	XE8	
4 th parameter	1	↑	1	-	XE7	XE6	XE5	XE4	XE3	XE2	XE1	XE0	
Description	-Each \			d XE [7:0] ne column 7:0]					nd comes				
Restriction	When X 1. 128X (Parame (Parame 2. 132X)	S [15:0] of the state of the st	or XE [15: ory base :: 0 < XS :: 0 < XS ory base :: 0 < XS	equal to o 0] is great (GM = '01 [15:0] < X [15:0] < X (GM = '00 [15:0] < X	ter than n 1') E [15:0] « E [15:0] « 00') E [15:0] «	naximum < 127 (00 < 159 (00 < 131 (00	address l 7Fh)): M\ 9Fh)): M\ 83h)): M\	/="0") /="1") /="0")	, data of	out of rar	nge will b	e ignored	
	GM	l Status		Status			efault Valu	ue					
				'		XS	6 [7:0]	XE [7:0] (MV=	='0 ')	XE [7	:0] (MV='1	l')
		l='011' 8x160		Power (Sequen		00	00h	007	⁻ h (127)				
Default	me	mory bas	e)	S/W Re	set	00	00h	007	Fh (127)		009Fl	า (159)	
r c iaull				H/W Re	set	00	00h	007	Fh (127)				
	GM	l='000'		Power (00	00h	0083	3h (131)				
		2x162		Sequen]
	(13	2x162 mory bas	e)	S/W Re		00	00h	0083	3h (131)		00A	1h (161)	



10.1.20 RASET (2Bh): Row Address Set

2BH	RASET	(Row Add	dress Set)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RASET (2Bh)	0	1	1	-	0	0	1	0	1	0	1	1	(2Bh
1 st parameter	1	1	1	-	YS15	YS14	YS13	YS12	YS11	YS10	YS9	YS8	
2 nd parameter	1	1	1	-	YS7	YS6	YS5	YS4	YS3	YS2	YS1	YS0	
3 rd parameter	1	1	1	-	YE15	YE14	YE13	YE12	YE11	YE10	YE9	YE8	
4 th parameter	1	1	1	-	YE7	YE6	YE5	YE4	YE3	YE2	YE1	YE0	
Description		alue repre		YE [7:0] ar				ommanu	comes.				
Restriction	1. 128X1 (Parame (Parame 2. 132X1 (Parame	60 memo ter range: ter range: 62 memo ter range:	ory base (0 < YS [0 < YS [ory base (0 < YS [o)] are grea GM = '011 15:0] < YE 15:0] < YE GM = '000 15:0] < YE	')	159 (009 127 (007 161 (00A	Fh)): MV: Fh)): MV: 1h)): MV:	="0" ="1" ="0"	oelow, da	ita of out	of range	will be ig	nored.
						Defaul	t Value						
	GM sta	atus	St	atus		YS [15		YE	[15:0] (M	IV='0 ')	YE [15:	0] (MV=	1')
	GM='0 (128x1		_ '	ower On equence		0000h)Fh (159)			- `	
Default	memor	y base)	S/	W Reset		0000h		009	Fh (159)		007Fh	(127)	
- =:=::			H/	W Reset		0000h		009	Fh (159)				
	GM='0			ower On equence		0000h		004	A1h (161)				
	(13271		—			00001		007	1h (161)		00001-		
		y base)	S/	W Reset		0000h		007	(101)		0083h ((131)	



10.1.21 RAMWR (2Ch): Memory Write

2CH	RAMW	R (Memo	ory Write)										
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RAMWR	0	1	1	-	0	0	1	0	1	1	0	0	(2Ch)
1st parameter	1	<u> </u>	1	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	(2)
·	1	↑	1									1	
Nth parameter	1	↑	1	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	
Description	1. 128X 128x16 Memory 2. 132x 132x16	(160 mer 0x18-bit y range: 162 men 2x18-bit	mory bas memory (0000h, (nory base memory	is no restrict e (GM = '01 can be writt 0000h) -> (0 e (GM = '00 can be writt 0000h) -> (0	1') ten by th 007Fh, 09 0') ten on th	is comma 9Fh) is comma	nd	ers.					
Default	Status Powe S/W F	r On Sec Reset	quence				Cont Cont	ents of n	nemory is nemory is	not clea	red		
Flow Chart				Im D1[RAMWR nage Data 7:0],D2[7Dn[7:0	(:0] ()]			Paramete Display Action Mode Sequentia				

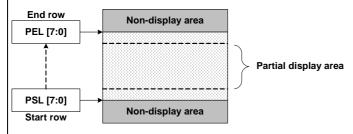
10.1.22 RAMRD (2Eh): Memory Read

10.1.22 RAWRD (1												
2EH	RAMHD (N			D47.0			l pr	T D.4	l Do	l Do	D.	Lpc	LUEV
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RAMHD 1 st parameter	0	1	1	-	0	0 -	1 -	0	1	1	1	0	(2Eh)
2 nd parameter	1	1	Ť	- D47.0	- D7		1	-	-	- D2	- D1	-	
2 parameter	1	1	<u>↑</u>	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	
(N+1)th parameter	1	1	<u> </u>	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	
(14+1)(III parameter	-This comm		d to tubus		1	1	1	1	D3	DZ	וטו	1 00	
Description	-When this of Row position -The Start Co-Then D[17: section 9.10 -Frame Reader -The data cocoding (18-In Note1: The LUT in chape - When the section should be set to b	ns. Column/Sta col is read of can be of coding bit cases), Command	art Row po back from cancelled g is fixed t when the	ositions are the frame by sending o 18-bit in r re is used 8	different memory any other eading 3, 9, 16 and 566h w	nt in acc y and the ner common function and 18- hen rea	ordance e colum mand. Pleas bit data	e with Man regis e see se	MADCTI ter and ection 9 or image	setting the row). registe	er increm	nented as
Default	Status Power On S/W Rese	et	е			(Content	s of me s of me	mory is	set ran- not clea	ared		
Flow Chart			D	Dummy Image Data 1[7:0],D2[7:0] Dn[7:0]			F	egen Command Caramete Display Action Mode Gequentia					

10.1.23 PTLAR (30h): Partial Area

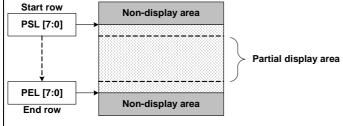
30H	PTLAR	PTLAR (Partial Area)												
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX	
PTLAR	0	↑	1	-	0	0	1	1	0	0	0	0	(30h)	
1st parameter	1	↑	1	-	PSL15	PSL14	PSL13	PSL12	PSL11	PSL10	PSL9	PSL8		
2nd parameter	1	1	1	-	PSL7	PSL6	PSL5	PSL4	PSL3	PSL2	PSL1	PSL0		
3rd parameter	1	1	1	-	PEL15	PEL14	PEL13	PEL12	PEL11	PEL10	PEL9	PEL8		
4th parameter	1	1	1	-	PEL7	PEL6	PEL5	PEL4	PEL3	PEL2	PEL1	PEL0		

- -This command defines the partial mode's display area.
- -There are 4 parameters associated with this command, the first defines the Start Row (PSL) and the second the End Row (PEL), as illustrated in the figures below. PSL and PEL refer to the Frame Memory row address counter.
- -If End Row > Start Row, when MADCTL ML='0'

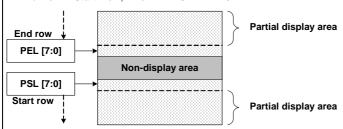


-If End Row > Start Row, when MADCTL ML='1'





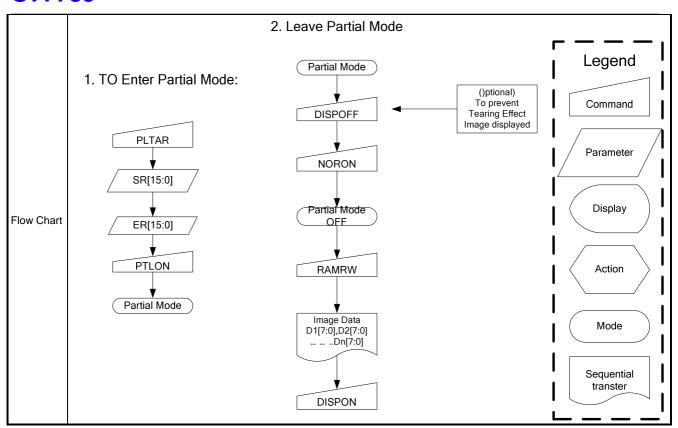
-If End Row < Start Row, when MADCTL ML='0'



-If End Row = Start Row then the Partial Area will be one row deep.

Default

Status	Default Value									
Status	PSL [15:0]	PEL [15:0]								
GM[2:0]	"xxx"	GM[2:0]="011"	GM[2:0]="000"							
Power On Sequence	0000h	009Fh	00A1h							
S/W Reset	0000h	009Fh	00A1h							
H/W Reset	0000h	009Fh	00A1h							



10.1.24 TEOFF (34h): Tearing Effect Line OFF

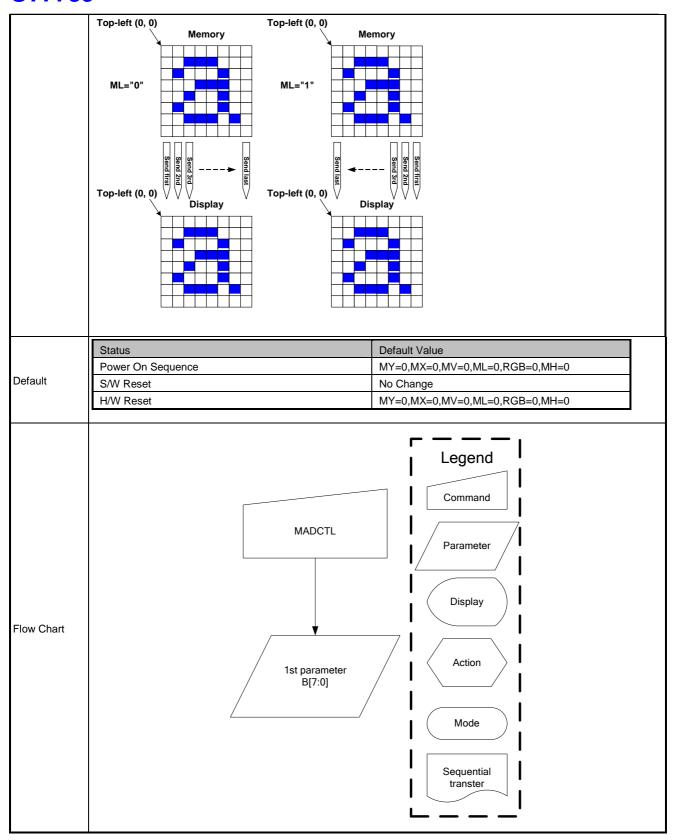
34H	TEOFF	(Tearing	Effect Li	ne OFF)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
TEOFF	0	1	1	-	0	0	1	1	0	1	0	0	(34h)
Parameter	No Par	ameter											-
Description	-This co	mmand is	s used to	turn OFF (Active Lo	ow) the T	earing E	ffect outp	ut signal	from the	e TE sign	al line.	
	Status							fault Valu	е				
Default	Power	On Sequ	ience				OF	F					
Delault	S/W R						OF						
	H/W R	leset					OF	F					
Flow Chart					TEOFI	F		Com Para Dis Ac Sequ	meter play before the control of the				

10.1.25 TEON (35h): Tearing Effect Line ON

35H	TEON	(Tearing	Effect L	ine ON)									
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
TEON	0	↑	1	-	0	0	1	1	0	1	0	1	(35h)
Parameter	1	↑	1	-	0	0	0	0	0	0	0	TELOM	
Description	-The Te -When - Vertica	aring Eff	ect Line ='0': The cale ='1': The	Tearing E	ne parar	meter, wh	ich desc	of V-Blan T_{vdl}	iking info	ormation (only	T _{vdh} g information	: :
Default	Status	r On Sec		ode with T	earing E	Effect Line		aring Effe Default V Tearing e Tearing e	alue effect off	& TELON	M=0 M=0	re Low.	
Flow Chart					TE Lin	e Output DFF EON LOM e Output)] 7		egeno command caramete Display Action Mode				

10.1.26 MADCTL (36h): Memory Data Access Control

36H	MADCT	L (Memo	ry Data A	ccess Co	ntrol)								
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
MADCTL	0	1	1	-	0	0	1	1	0	1	1	0	(36h)
Parameter	1	1	1	-	MY	MX	MV	ML	RGB	МН	-	-	
Parameter	Bit MY MX MV ML RGB	ignment (0, 0)	NAME Row A Colum Row/C Vertica	ad/ write s address Oi an Address Column Ex al Refresh and Refresh	rder s Order change Order	(0, 0) (0, 0)		DESCRIF These 3b write/reac LCD verti '0' = LCD '1' = LCD Color sele '0' =RGB '1' =BGR LCD horiz '0' = LCD '1' = LCD	ector filte contail refreshorizontal	ls MCU to the direction of the direction	to memory on control op to Botto ottom to T	om op	
				GB="0"	Send first					RGB	="1"		
										Drive			
		Driver IC R G B R SIG1 SIG2 SI						R G	В		B		G B
		Ļ	ļ			↓		\		↓		,	ļ
		G B	SIG R G		F	SIG132		SIG1	R	SIG2	R		3132 G R
	R	G B	R G	B —	F	R G B		B G	R	B G	R ———	- В (G R

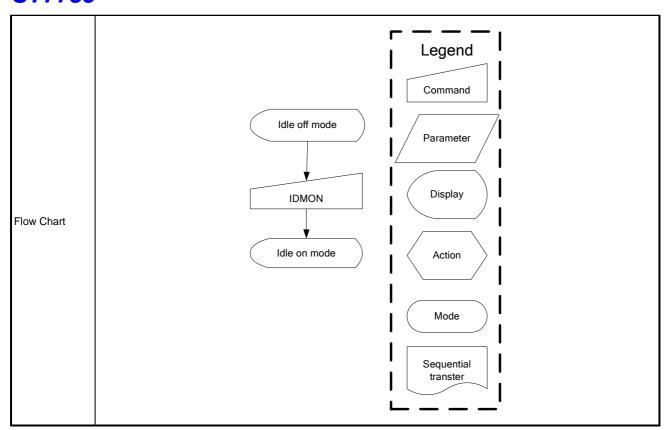


10.1.27 IDMOFF (38h): Idle Mode Off

38H	IDMOF	F (Idle Mo	ode Off)												
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D:	5	D4	D3	D2	D1	D0	HEX	
IDMOFF	0	1	1	-	0	0	1		1	1	0	0	0	(38h)	
Parameter	No Para	ameter												-	
Description	-In the id	dle off mo	de, ny 4096, 6	recover fro 5k or 262k is applied	colors.	ode on.									
	Status							Defa	ult Value	е					
.	Power	On Sequ	ence					Idle I	Mode Of	ff					
Default	S/W R	eset						Idle I	Mode Of	ff					
	H/W R	Γ													
Flow Chart					Idle on r	FF			Cor Par Di A Sec	gend mmand ameter splay ction Mode					

10.1.28 IDMON (39h): Idle Mode On

39H	IDMON	(Idle Mo	de On)											
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D	5	D4	D3	D2	D1	D0	HEX
IDMOFF	0	1	1	-	0	0	1		1	1	0	0	1	(39h)
Parameter	No Para	ameter												-
Description	-This command is used to enter into Idle mode on. -There will be no abnormal visible effect on the display mode change transition. -In the idle on mode, 1. Color expression is reduced. The primary and the secondary colors using MSB of each R,G and B in the Fran Memory, 8 color depth data is displayed. 2. 8-Color mode frame frequency is applied. 3. Exit from IDMON by Idle Mode Off (38h) command (Example) Memory Display Top-Left (0,0)													
	Color Black Blue Red Magen Green Cyan Yellow			R5 R4 R3 0xxxxx 0xxxxx 1xxxxx 1xxxxx 0xxxxx	3 R2 R1 I	R0	0x: 0x: 0x: 0x: 1x: 1x:	XXXX XXXX XXXX XXXX XXXX	G3 G2 (61 G0	0xxx 1xxx 0xxx 1xxx 0xxx	XX XX XX XX	d B in the F	
				1xxxxx				XXXX			0xxx			
	White			1xxxxx			1X	XXXX			1xxx	XX		<u></u>
Register Availability	Normal Partial I	Mode Or Mode On Mode On	n, Idle Mo	ode Off, Sle ode On, Sle de Off, Sle de On, Sle	ep Out					Availa Yes Yes No No Yes	ability			
Default	Status Power S/W R H/W R	On Sequeset	ience					ldle Idle	Mode C Mode C Mode C	Off Off				



2008-11-27

10.1.29 COLMOD (3Ah): Interface Pixel Format

3AH	COLMO	DD (3Ah):	Interface	Pixel Forr	nat									
Inst / Para	D/CX	WRX	RDX		D7	D6	D5	D4	D3	D2	D1	D0	HEX	
COLMOD	0	↑	1	_	0	0	1	1	1	0	1	0	(3Ah)	
Parameter	1	<u>†</u>	1	_	-	-	-	-	-	IFPF2	IFPF1	IFPF0	(- /	
		ommand is					cture dat	a, which	is to be t		1	to the Frame Menemory, but 3Ah shin chapter 9.17 wh		
	IFPF	[2:0]		М	CU Interfa	ace Colo	r Format							
	011		3	12	-bit/pixel									
December	101		5	16	-bit/pixel									
Description	110		6	18	-bit/pixel									
	111		7	No	used									
		re-set to memory		en reading			_		ease che	ck the LU	-			
	Status									ability				
		al Mode O							Yes					
Register		Normal Mode On, Idle Mode On, Sleep Out Yes Partial Mode On, Idle Mode Off, Sleep Out No												
Availability														
			, Idle Mod	de On, Sle	ep Out				No					
	Sleep	Sleep In Yes												
	Status Default Value													
					IFPF[2:0]			VIF	F[3:0]				
Default	Powe	er On Sequ	uence		0110(18-bit/Pi	xel)		011	0(18-bit/F	Pixel)			
	S/W	Reset			No Cl	nange			No	Change				
	H/W	Reset			0110(18-bit/Pi	xel)		011	0(18-bit/F	Pixel)			
Flow Chart					3-bit/Pixe COLM	OD /)	Co	egend ommand ommand or of the command of the comman					

10.1.30 RDID1 (DAh): Read ID1 Value

DAH		(Read ID	1 \/alue\										
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDID1	0	VVK∧	1	D17-6	1	1	0	1	1	0	1	0	(DAh)
1st parameter	1	1	1	-	-	_	-	-	-	-	-	-	(DAII)
2nd parameter	1	1	<u> </u>	-	ID17	ID16	ID15	ID14	ID13	ID12	ID11	ID10	+
zna parameter		1					1	1014	1010	IDIZ	1011	IDIO	1
Description	-The 1st	parameted parameted	er is dumi	it LCD mo my data to ID10): DID (04h),	LCD mod	lule's ma		r ID.					
	Status Normal	Mode Or	ı, Idle Mo	de Off, SI	eep Out				Availa Yes	bility			
Register	Normal	Mode Or	, Idle Mo	de On, SI	eep Out				Yes				
Availability	Partial I	Mode On,	Idle Mod	le Off, Sle	ep Out				No				
	Partial I	Mode On,	Idle Mod	le On, Sle	ep Out				No				
	Sleep Ir	n							Yes				
	Ctotus						Dof	oul t \/olus	•				
	Status	On Sequ	0000				Dei	ault Value	Э				_
Default	S/W R		ence				 -						_
	H/W R						 -						
Flow Chart			Re	end 2nd rameter	Tode	Par	Read II	ny i			egend ommand arameter Display Action Mode equential transter		

10.1.31 RDID2 (DBh): Read ID2 Value

DBH	RDID2	(Read ID											
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDID2	0	1	1	-	1	1	0	1	1	0	1	1	(DBh)
1 st parameter	1	1	↑	-	-	-	-	-	-	-	-	-	-
2 nd parameter	1	1	1	-	1	ID26	ID25	ID24	ID23	ID22	ID21	ID20	
	-The 1st	paramet d parame eter Rang	eturns 8-b er is dum ter (ID26 e: ID=80h	my data to ID20):	LCD mod	dule/drive		ID					
Description	80h 81h 82h 83h NOTE: \$		nand RDI	DID (04h).	Version Versio				Char	oges			
Register Availability	Normal Partial I	Mode Or Mode On Mode On	n, Idle Mo n, Idle Mo , Idle Moc , Idle Moc	de On, SI le Off, SIe	eep Out				Yes Yes No No Yes	bility			
Default	Status Power S/W R H/W R	On Sequ	ience				NV NV	ault Valu Value Value Value	e				
Flow Chart			Serial I/ Read I Send 2 parame	D2		F	el I/F Male de la I/F	H	ost play		Lege Comm Parame Displa Action Mod Sequentransi	eter ay on e	

10.1.32 RDID3 (DCh): Read ID3 Value

DCH	RDID3	(Read ID	2 Value)										
Inst / Para	D/CX	WRX	RDX	D17-8	D7	D6	D5	D4	D3	D2	D1	D0	HEX
RDID3	0	1	1	-	1	1	0	1	1	1	0	0	(DCh)
1 st parameter	1	1	1	-	-	-	-	-	-	-	-	-	-
2 nd parameter	1	1	1	-	ID37	ID36	ID35	ID34	ID33	ID32	ID31	ID30	
Description	-The 1st	paramet	er is dumi	it LCD mo my data to ID30): L DID (04h),	.CD mod	ule/driver	ID.						
Register Availability	Normal Partial I	Mode Or Mode On Mode On	, Idle Mo Idle Mod	de Off, Sle de On, Sle de Off, Slea de On, Slea	ep Out				Availab Yes Yes No No Yes	ility			
Default	Status Power S/W R H/W R	On Sequ	ence				NV \	ult Value /alue /alue /alue					
Flow Chart	_	S	Read IC	nd /	Z	Du R	I/F Mo	Hos Displ			Comm Param Displ Action Seque trans	and eter / ay	