

CDC - START

Console for CT-START CTS 2313

Installation and maintenance

NOTE

CONTROL TECHNIQUES reserves the right to modify its product characteristics at any time to incorporate the latest technological developments. The information contained in this document may therefore be changed without prior warning.

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CAUTION

For the user's own safety, the CTS 2313 starter must be connected to an approved earth (B terminal).

Power electronic equipment such as speed controllers, soft starters and inverters cannot be used as circuit-breaking or isolating devices as specified in standard EN 60204 - 1 (1992), section 5.

If an accidental start of the installation represents a risk for personnel or the machinery to be driven, it is imperative to supply the equipment via an isolating device and a circuit-breaking device (power contactor) controllable by an external safety system (emergency stop, fault detector).

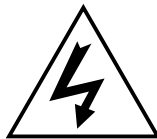
The electronic starter is fitted with safety devices which can, in the case of certain faults, stop the starter and the motor. The motor can itself be jammed by mechanical means. Finally, voltage fluctuations, and particularly power cuts, can also cause the starter to switch off.

The removal of the cause of the shutdown can lead to restarting, with consequent hazard for certain machines or installations.

In such cases, it is essential that the user takes appropriate precautions against restarting when the motor makes an unscheduled stop.

Although this equipment complies with current construction standards, it may cause interference. The user must then take any necessary steps to eliminate it.

CONTROL TECHNIQUES declines all responsibility in the event of the above recommendations not being observed.



DANGER

IMPORTANT

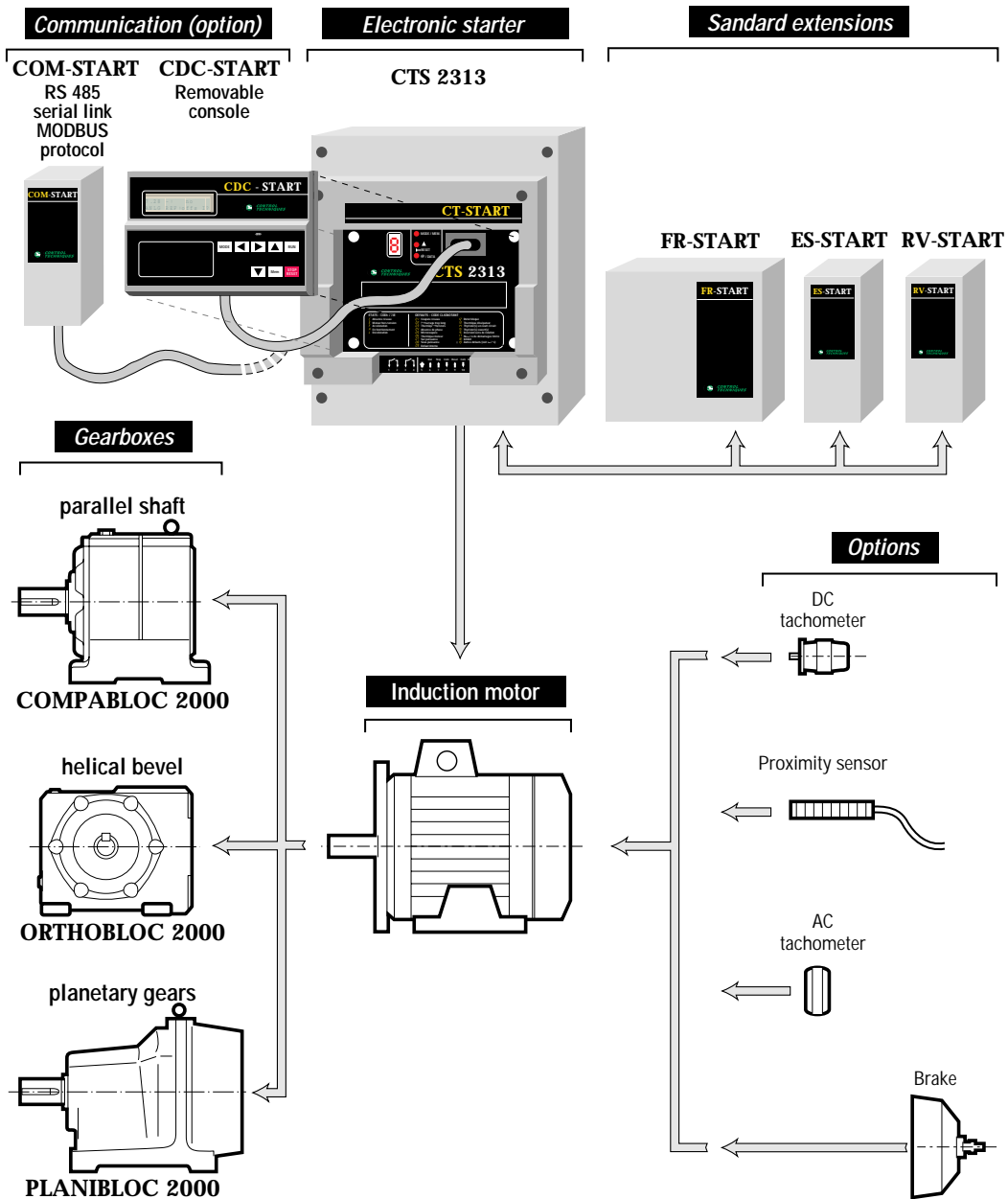
BEFORE ANY INTERVENTION, WHETHER TO DO WITH THE ELECTRICS OR THE MECHANICS OF THE INSTALLATION OR MACHINE :

- ensure that the power to the starter has been switched off (fused isolator or circuit-breaker) and locked manually,
- **wait 1 minute before any intervention.**

CDC - START console

PREFACE

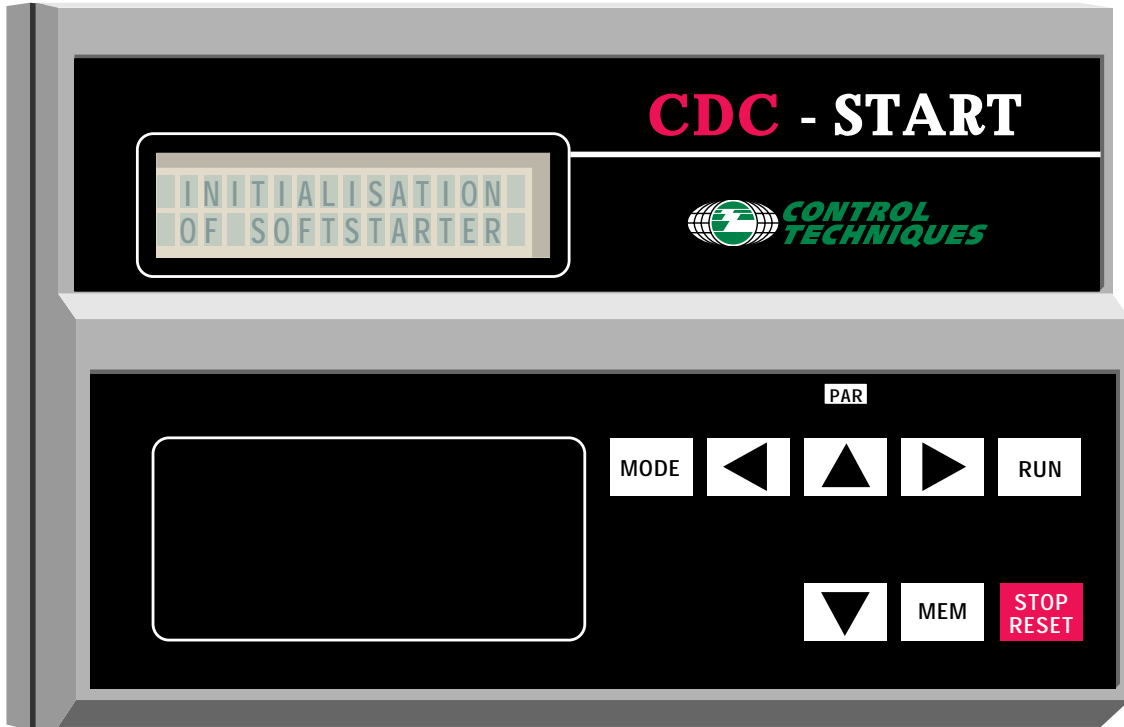
This manual describes how to commission the **CDC - START** console. It gives details of all procedures which should be adopted when programming the CT-START CTS 2313 and its extensions.



CDC - START console

3 - COMMISSIONING

3.1 - Presentation of the keypad



Keys	MODE	Used to move from READ mode to SETTINGS mode and vice versa.
	D C E	The cursors are used to move within the various menu fields and to modify the contents.
	MEM.	Used to memorize the settings. These are stored in EEPROM type memories which do not require any back-up power supply.
	RUN	Used to give the start command when the starter is in control via keypad configuration.
	STOP RESET	Used to give the stop command when the device is in control via keypad configuration, and can also be used as a fault reset button.
LED	PAR	On : used as a reminder that the CT-START CTS 2313 is in SETTING mode. Flashing : a setting has been modified but not memorised.

CDC - START console

3.2 - READ mode

3.2.1 - Power up

When the CTS is powered up, the **CDC - START** console automatically sets itself to "READ" mode.

Note : "serial link fault" may appear on the display before any operation has taken place. This is normal and corresponds to a serial link self-test. The length of this self-test depends on the number of options which are connected to the CTS 2313.

3.2.2 - Display

The upper line of the display continuously indicates the current absorbed by the motor. (In SETTINGS mode it is possible to select the unit of the current absorbed : in % In or A).

On the lower line, using the keys D or E, it is possible to display :

- **The operating phase of the motor** (Eg. : switched off, acceleration, operating, etc).

C	U	R	R	E	N	T	:			X	X	X	%	I	n			
								M	O	T	O	R	S	T	A	T	U	S

- **The power consumption**

This is expressed as a % of the motor rated power. This reading is effective approximately 2 seconds after start up.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
P	O	W	E	R	:					X	X	X	%	P	n

- **The power factor**

The reading is effective approximately 2 seconds after start up.

C	U	R	R	E	N	T	:			X	X	X	X	A
P	W	R	.	F	A	C	T	O	R	:	0	.	X	X

- **The length of the last start performed**
Expressed in seconds.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
L	A	S	T	S	T	A	R	T	:	X	X	X	s		

- **The number of motor operating hours**
The counter is active as soon as the start command is given. The hours totalled in this way cannot be deleted.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
O	P	E	R	A	T	I	N	G	:	X	X	X	X	X	H

- **The starter reference** followed by its rating.

C	U	R	R	E	N	T	:			X	X	X	%	I	n		
								C	T	S	2	3	1	3	X	X	X

- **The list of options** which are connected to the CTS control module.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
O	P	T	I	O	N	:		X	X	-	X	X	-	X	X

- **The software version** of the **CDC - START** console.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
S	O	F	T	W	A	R	E	1	:			X	X	X	

- **The software version** of the CTS control module.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
S	O	F	T	W	A	R	E	2	:			X	X	X	

- **The list of the last 5 faults**

Once 5 faults have been registered, any new fault detected will delete the first fault which occurred.

C	U	R	R	E	N	T	:			X	X	X	%	I	n
1	:														

→ 1 to 5 by pressing : E .
1 corresponds to the last fault which occurred.

CDC - START console

3.3 - SETTINGS mode

3.3.1 - Programming procedure

Setting the CTS 2313 equipped with a **CDC - START** console is performed by moving the **cursor** within the menus and several levels of sub-menus.

The position of the cursor, within a menu or sub-menu, is indicated by part of the display flashing.

To modify a setting, position the cursor in the part of the menu which you wish to modify using the following keys :

D or E or \odot or C .

Select the appropriate setting from those displayed using the D or E keys.

Do not forget to memorize using the **MEM.** key so that the settings can be taken into account.

Note : If you exit a field in which a value has just been modified without memorizing it, the following message is displayed :

MEMorization ? ?

If you do wish to memorize, press :

MEM.

If not, use the C or \odot keys to exit the field.

3.3.2 - List of the main menus

Menu	Display	Comments
1	Select.	A choice of 5 languages
2	Access code	Access is locked to menus which follow
3	Initialisation of Softstarter	Customization of CT-START to the motor
4	Option DC injection	With FR - START option
5	Option speed feedback	With RV - START option
6	Option inputs/outputs	With ES - START option
7	Starting settings	According to the application
8	Starting settings 2	With RV - START or ES - START option
9	Starting settings 3	With ES - START option
10	Starting settings 4	With ES - START option
11	Protection settings	Enable protections
12	Deceleration settings	With or without options
13	Output relay settings	Relay assignment
14	Transfer	Copies the programmed settings

Note : The shaded menus () can only be accessed with the FR - START, RV - START or ES - START options.

CDC - START console

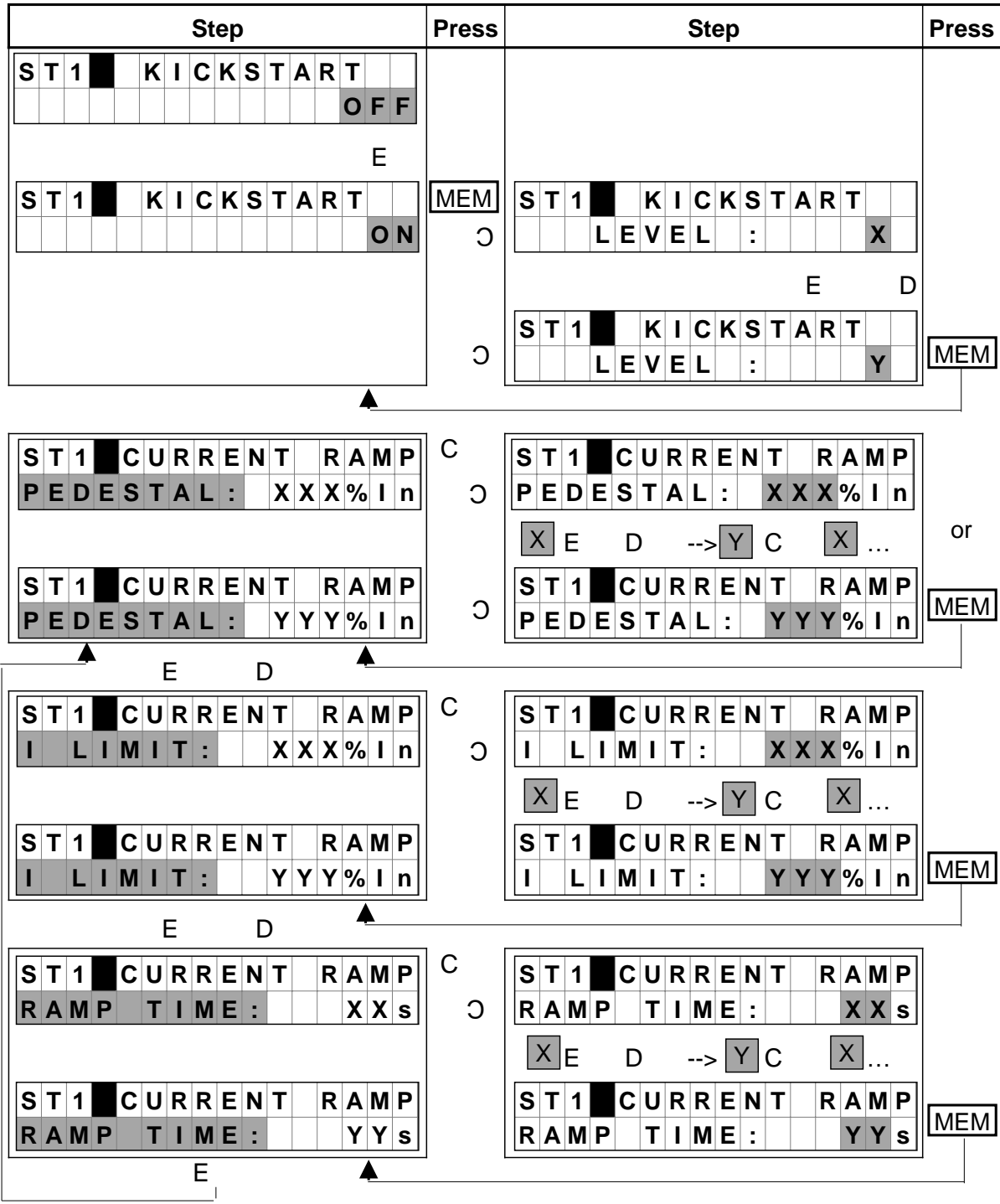
3.3.3 - Structure of settings

Example : Sequence for menu 7 (starting settings) for an CTS 2313 without options.

■ Indicates the flashing part of the display and thus the position of the cursor.

Step	Press	Step	Press
<div style="border: 1px solid black; padding: 5px; display: inline-block;"> STARTING SETTINGS </div>	C	<div style="border: 1px solid black; padding: 5px; display: inline-block;"> ST 1 ■ KICKSTART OFF </div>	C
	D		D
		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> ST 1 ■ KICKSTART ON </div>	C
			D
		<div style="border: 1px solid black; padding: 5px; display: inline-block;"> ST 1 ■ ACCELERATION CURRENT RAMP </div>	C
			D
			or
			C
			D
			D
			D
			D
			D
E		E	
to menu 8			



CDC - START console



CDC - START console

Remarks
The CTS is in Read mode. The power is switched off.
The CTS is in Settings mode. To select the dialogue language, see Section 3.4.
If no access code has been entered, move on to the next step. If a code has been memorized, enter the code, then press MEM . Movement to the next step is then automatic. (See Section 3.5 for setting up a code).
Adapts the CTS to the motor and to the control mode.
Only available if the FR - START option is connected. Access to parameters relating to the heating and braking of the motor.
Only available if the RV - START option is connected. Access to parameters relating to the speed sensor.
Only available if the ES - START option is connected. Access to parameters relating to the inputs and outputs (logic and analogue) and the PTC sensors.
Sets the parameters relating to starting the motor.
Only available with a 2-speed motor and the RV - START option or if OTHER SETTINGS is enabled on one of the 2 logic inputs of the ES - START option. Access to a second set of parameters.
Only available if the ES - START option is connected and if OTHER SETTINGS has been enabled on the 2 logic inputs. Access to two additional sets of parameters.
Enabling and adjustment of the protections which stop and trip the CTS 2313.

CDC - START console

Note : -  indicates the part of the display where the adjustment is performed,
 -  indicates those menus which are only available with another option.

Remarks
Selects the communication language. All menus will be displayed in the selected language. (See procedure in Section 3.4).

Remarks
If a code has been memorized, enter the code in order to access the parameters of menus 3 to 14. (See procedure in Section 3.5).

Remarks
Enter the mains supply nominal voltage.
Enter the rated speed of the motor given on its identification plate.
Enter the rated power of the motor given on its identification plate.
Enter the rated current of the motor given on its identification plate.
In % In : In Read mode, displays the current absorbed as a % of the motor rated current.
In Amps : In Read mode, displays the current absorbed in Amperes.
DISTANCE: Start/Stop control via terminal block contact.
LOCAL : Control via Run and Stop/Reset keys on the console.
ON : the CTS 2313 restarts after a short mains loss of up to 1s.
OFF : the CTS 2313 trips on mains loss fault.
Not to be used on applications with high resistive torque and low inertia.

CDC - START console

3.6.4 - Menu 4 : option DC injection

Can only be accessed with the FR - START option connected.

Display	Factory settings	Adjustment range																																																
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O	D	C	█			B	R	A	K	I	N	G																																						
S	E	L	F			D	E	T	E	C	T	I	O	N	.																																			

* See menu 12 (deceleration settings) for the setting level.

3.6.5 - Menu 5 : option speed feedback

Can only be accessed with the RV - START option connected.

Display	Factory settings	Adjustment range																																																
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V	O	L	T	A	G	E		V	1	:	X	X	X	V																																				
V	O	L	T	A	G	E		V	2	:	X	X	X	V																																				

* If 2 speed motor = ON.

CDC - START console

Remarks
<p>OFF : Heating not enabled.</p> <p>AUTO : Automatic start of the heating function after a time delay triggered by a stop command</p> <p>MANUAL : Control of the heating function via a Start/Stop command.</p>
<p>AUTO : Setting of the time between the stop command and the DC injection, and setting of the required level of current.</p> <p>CAUTION : The level which is set will give a current which depends on the impedance of the motor. Never exceed 0.6 In motor (measured with a current clamp).</p>
<p>MANUAL : Dries the motor by DC injection controlled by a start command. Set the level so that the current (measured on current clamp) does not exceed 0.6 In motor.</p>
<p>SELF DETECTION : In braking mode, the CTS 2313 automatically stops the DC injection as soon as the motor is stationary or at the latest when the injection period has finished (see menu 12).</p> <p>STOP AFTER DELAY: The CTS 2313 stops the DC injection after the time delay. Used for motors ≤ 15 kW when self detection is not satisfactory.</p>

Remarks
<p>In the case of a 2-speed motor, the CTS 2313 can have dual settings (LSP and HSP). Selecting ON gives access to menu 8 (starting settings 2).</p>
<p>Selects the type of sensor used. 4 - 20 mA, 4 mA = zero speed, 20 mA = rated speed. In the case of a 2-speed motor, 20 mA corresponds to high speed.</p>
<p>Enter the number of pulses per min supplied by the sensor at motor rated speed. In the case of a 2-speed motor, enter in V1 the number of pulses/min at high speed, and in V2 the number of pulses/min at low speed.</p>
<p>Enter the voltage supplied by the DC tachometer at motor rated speed. In the case of a 2-speed motor, enter in V1 the voltage supplied at high speed, and in V2 the voltage supplied at low speed.</p>

CDC - START console

3.6.6 - Menu 6 : option inputs/outputs

Can be only be accessed with the ES - START option connected.

Display	Factory settings	Adjustment range
<pre> O I O █ INPUT LOGIC N° 1 : OFF </pre>	OFF	OFF ON
<pre> O I O █ INPUT 1 OTHER SETTINGS </pre>	OTHER SETTINGS	OTHER SETTINGS EXTERNAL FAULT
<pre> O I O █ INPUT LOGIC N° 2 : OFF </pre>	OFF	OFF ON
<pre> O I O █ INPUT 2 OTHER SETTINGS </pre>	OTHER SETTINGS	OTHER SETTINGS EXTERNAL FAULT
<pre> O I O █ INPUT ANALOGUE : OFF </pre>	OFF	OFF ON
<pre> O I O █ INPUT ANALOG SIGNAL : 4 - 20 mA </pre>	4 - 20 mA	4 - 20 mA 0 - 10V
<pre> O I O █ CONTROL OF PTC SENSORS : OFF </pre>	OFF	OFF ON
<pre> O I O █ CONTROL PTC SENSORS NUMBER : X </pre>	3	1 to 6

CDC - START console

3.6.6 - Menu 6 continued

Display	Factory settings	Adjustment range																																																																																																																													
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CDC - START console

Remarks	
Selects the assignment of relay K3. GENERAL FAULT : Relay open when fault or if the electronic power circuit is de-energized.	
Note : ALARM ANALOG. I/P can only be accessed if the analogue input has been enabled.	
If K3 = OVERLOAD	: Relay K3 closes when the power consumption is greater than the closing threshold, for a period longer than or equal to the time delay. It opens as soon as the power consumption falls below the opening threshold.
If K3 = UNDERLOAD	: Relay K3 closes when the power consumption is less than the closing threshold, for a period longer than or equal to the time delay. It opens as soon as the power consumption exceeds the opening threshold.
If K3 = ALARM ANALOG. I/P	: Relay K3 closes when the analogue input level is greater than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the analogue input level falls below the opening threshold.
If K3 = MOTOR STATUS	: Select the operating phase to be monitored.
START COMPLETE	: Relay K3 closes when the start is complete (when the motor is at full voltage) and opens as soon as the stop command is given.
ENERGIZED	: Relay K3 closes as soon as the start command is given and opens when the motor is switched off.
ACCELERATING	: Relay K3 closes as soon as the start command is given and opens when the motor is at full voltage.

CDC - START console

3.6.6 - Menu 6 continued

Display	Factory settings	Adjustment range																																																																											
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">O</td><td style="width: 5%;">I</td><td style="width: 5%;">O</td><td style="width: 5%;"></td><td style="width: 5%;">O</td><td style="width: 5%;">U</td><td style="width: 5%;">T</td><td style="width: 5%;">P</td><td style="width: 5%;">U</td><td style="width: 5%;">T</td><td style="width: 5%;">K</td><td style="width: 5%;">4</td><td style="width: 5%;"></td><td style="width: 5%;"></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>	O	I	O		O	U	T	P	U	T	K	4																															UNDERLOAD	UNDERLOAD ALARM. ANALOG. I/P GENERAL FAULT MOTOR STATUS OVERLOAD																																	
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CDC - START console

Remarks	
Selects the assignment of relay K4. If K4 = GENERAL FAULT : Relay open when fault or if the electronic power circuit is de-energized. Note : ALARM ANALOG. I/P can only be accessed if the analogue input has been enabled	
If K4 = OVERLOAD	Relay K4 closes when the power consumption is greater than the closing threshold, for a period longer than or equal to the time delay. It opens as soon as the power consumption falls below the opening threshold.
If K4 = UNDERLOAD	: Relay K4 closes when the power consumption is less than the closing threshold, for a period longer than or equal to the time delay. It opens as soon as the power consumption exceeds the the opening threshold.
If K4 = ALARM ANALOG. I/P	: Relay K4 closes when the analogue input level is greater than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the analogue input level falls below the opening threshold.
If K4 = MOTOR STATUS	: Select the operating phase to be monitored. ACCELERATING : Relay K4 closes as soon as the start command is given and opens when the motor is at full voltage. START COMPLETE : Relay K4 closes when the start is complete (when the motor is at full voltage) and opens as soon as the stop command is given. ENERGIZED : Relay K4 closes as soon as the start command is given and opens when the motor is is switched off.

CDC - START console

3.6.6 - Menu 6 end

Display	Factory settings	Adjustment range																																																
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CDC - START console

3.6.7 - Menu 7 : starting settings

Display	Factory settings	Adjustment range
ST1 ■ BRAKE BEFORE ACCELERATION : OFF	OFF	OFF ON *
ST1 ■ BRAKE BEFORE ACCEL : LEVEL : XXX ACCEL : TIME : XX s	150 5	25 to 250 % In 00 to 60 s
ST1 ■ KICKSTART OFF	OFF	OFF ON *
ST1 ■ KICKSTART LEVEL : X	3	0 to 4
ST1 ■ ACCELERATION CURRENT RAMP	CURRENT	CURRENT RAMP SPEED RAMP
ST1 ■ CURRENT RAMP PEDESTAL : XXX % In I LIMIT : XXX % In RAMP TIME : XX s	200 400 20	50 to 500 % In 100 to 500 % In 00 to 60 s
ST1 ■ SPEED RAMP I LIMIT : XXX % In ACCEL . TIME : XXX s	400 20	100 to 500 % In 000 to 160 s

* It is only possible to have either one or the other : the last "ON" memorized is taken into account.

CDC - START console

Remarks
<p>With FR - START option only. ON : The acceleration phase is automatically preceded by DC injection used to immobilise the motor.</p>
<p>If braking before acceleration is enabled : set the braking level and the maximum duration of the DC injection.</p>
<p>If ON : The acceleration phase is preceded by a kickstart.</p>
<p>If kickstart is enabled : Set the duration of the kickstart pulse (the number of half-waves).</p>
<p>Selects the type of acceleration ramp.</p>
<p>Note : The speed ramp is only available with the RV - START option.</p>
<p>If CURRENT RAMP : Set the ramp parameters.</p>
<p>PEDESTAL : Minimum current required to turn the load as soon as the start command is given.</p>
<p>I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions.</p>
<p>RAMP TIME : Time taken to ramp up from the pedestal current to the current limit. Does not represent the start time but how progressive it will be.</p>
<p>If SPEED RAMP: Set the ramp parameters.</p>
<p>I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions.</p>
<p>ACCEL. TIME : Acceleration time, which will remain constant whatever the load.</p>

CDC - START console

Remarks
Set the rated current of the motor being controlled using the second set of parameters. This is expressed as a % of the rated current set in menu 3 (initialisation of Softstarter).
With FR - START option only. ON : The acceleration phase is automatically preceded by DC injection used to immobilise the motor.
If braking before acceleration is enabled. Set the braking level and the maximum duration of the DC injection.
If ON : The acceleration phase is preceded by a kickstart.
If kickstart is enabled : Set the duration of the kickstart pulse (the number of half-waves).
Selects the type of acceleration ramp. Note : The speed ramp is only available with the RV - START option.
If CURRENT RAMP : Set the ramp parameters. PEDESTAL : Minimum current required to turn the load as soon as the start command is given. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. RAMP TIME : Time taken to ramp up from the pedestal current to the current limit. Does not represent the start time but how progressive it will be.
If SPEED RAMP: Set the ramp parameters. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. ACCEL. TIME : Acceleration time, which will remain constant whatever the load.

Attention : All current values are expressed as a % of the rated current I_{n2} .

CDC - START console

3.6.9 - Menu 9 : starting settings 3

Can only be accessed using the ES - START option (if the 2 logic inputs are assigned to "OTHER SETTINGS").

Display	Factory settings	Adjustment range
ST 3 █ ADAPTATION CURRENT 3 : XXX % In	100	In 3 = 007 to 100 % In 1
ST 3 █ BRAKE BEFORE ACCELERATION : OFF	OFF	OFF ON *
ST 3 █ BRAKE BEFORE ACCEL : LEVEL : XXX ACCEL : TIME : XX s	150 5	25 to 250 % In 3 00 to 60 s
ST 3 █ KICKSTART OFF	OFF	OFF ON *
ST 3 █ KICKSTART LEVEL : X	3	0 to 4
ST 3 █ ACCELERATION CURRENT RAMP	CURRENT	CURRENT RAMP SPEED RAMP
ST 3 █ CURRENT RAMP PEDESTAL : XXX % In I LIMIT : XXX % In RAMP TIME : XX s	200 400 20	50 to 500 % In 3 100 to 500 % In 3 00 to 60 s
ST 3 █ SPEED RAMP I LIMIT : XXX % In ACCEL . TIME : XXX s	400 20	100 to 500 % In 3 000 to 160 s

* It is only possible to have either one or the other : the last "ON" memorized is taken into account.

CDC - START console

Remarks
Set the rated current of the motor being controlled using the third set of parameters. This is expressed as a % of the rated current set in menu 3 (initialisation of Softstarter).
With FR - START option only. ON : The acceleration phase is automatically preceded by DC injection used to immobilise the motor.
If braking before acceleration is enabled. Set the braking level and the maximum duration of the DC injection.
If ON : The acceleration phase is preceded by a kickstart.
If kickstart is enabled : Set the duration of the kickstart pulse (the number of half-waves).
Selects the type of acceleration ramp. Note : The speed ramp is only available with the RV - START option.
If CURRENT RAMP : Set the ramp parameters. PEDESTAL : Minimum current required to turn the load as soon as the start command is given. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. RAMP TIME : Time taken to ramp up from the pedestal current to the current limit. Does not represent the start time but how progressive it will be.
If SPEED RAMP: Set the ramp parameters. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. ACCEL. TIME : Acceleration time, which will remain constant whatever the load.

Attention : All current values are expressed as a % of the rated current I_{n3} .

CDC - START console

Remarks
Set the rated current of the motor being controlled using the fourth set of parameters. This is expressed as a % of the rated current set in menu 3 (initialisation of Softstarter).
With FR - START option only. ON : The acceleration phase is automatically preceded by DC injection used to immobilise the motor.
If braking before acceleration is enabled : Set the braking level and the maximum duration of DC injection.
If ON : The acceleration phase is preceded by a kickstart.
If the kickstart is enabled : Set the duration of the kickstart pulse (the number of half-waves).
Selects the type of acceleration ramp. The speed ramp is only available with the RV - START option.
If CURRENT RAMP : Set the ramp parameters. PEDESTAL : Minimum current required to turn the load as soon as the start command is given. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. RAMP TIME : Time taken to ramp up from the pedestal current to the current limit. Does not represent the start time but how progressive it will be.
If SPEED RAMP : Set the ramp parameters. I LIMIT : Maximum current supplied by the CTS 2313. This must be sufficient to enable starting under the most severe load conditions. ACCEL. TIME : Acceleration time, which will remain constant whatever the load.

Note : All current values are expressed as a % of the rated current I_{n4} .

CDC - START console

3.6.11 - Menu 11 : protection settings

Display	Factory settings	Adjustment range
PRO ■ EXCESSIVE START . TIME : ■ ■ ■ ON	ON	ON OFF
PRO ■ EXC . START . MAX . TIME : ■ ■ ■ X X X s	030	000 to 160s
PRO ■ MOT . THERMAL OVERLOAD : ■ ■ ■ ON	ON	ON OFF
PRO ■ MOTOR TEMP . CURRENT : ■ ■ ■ X X X %	100	50 to 150 % In
PRO ■ INSTANTENOUS OVERLOAD : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ OVERLOAD TRIPPING : ■ ■ ■ X X X % P n DELAY : ■ ■ ■ X X s	120 1	000 to 160 % Pn 00 to 60s
PRO ■ INSTANTENOUS UNDERLOAD : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ UNDERLOAD TRIPPING : ■ ■ ■ X X X % P n DELAY : ■ ■ ■ X X s	30 1	000 to 100 % Pn 00 to 60s
PRO ■ LOCKED ROTOR : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ PHASE SEQUENCE : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ DELAY BEFORE RESTART : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ REST . DELAY TIME : ■ ■ ■ X X X M n s 2 CONSECUT . : ■ ■ ■ OFF	60 OFF	000 to 120 mn OFF ON
PRO ■ FAULT ANA . INPUT : ■ ■ ■ OFF	OFF	OFF ON
PRO ■ ANALOG . I / P HIGH LEVEL : ■ ■ ■ X X X % LOW LEVEL : ■ ■ ■ X X X % HYSTERESIS : ■ ■ ■ X % DELAY : ■ ■ ■ X X s	80 20 5 1	000 to 100 % 000 to 100 % 00 to 5 % 0 to 60 s

CDC - START console

Remarks
If ON : The CTS 2313 trips if the motor has not finished starting within the maximum programmed time.
If the excessive start time protection is enabled. Set the maximum time for the most difficult start conditions.
If ON : The CTS 2313 trips if the motor thermal limit is reached. Must be enabled if the installation has no other thermal protection.
If the thermal protection is enabled : Set the thermal current threshold.
ON : The CTS 2313 trips if the power consumption is greater than the threshold set for a period greater than the time delay.
If the overload protection is enabled : Set the tripping threshold and the time delay.
If ON : The CTS 2313 trips if the power consumption is less than the threshold set for a period greater than the time delay.
If the protection is enabled : Set the tripping threshold and the time delay.
If ON : The CTS 2313 trips if the motor does not accelerate.
If ON : The CTS 2313 trips if the L1, L2, L3 phase sequence is not followed directly.
If ON : The CTS 2313 trips if it receives a start command when the time elapsed since the last stop is less than the time delay.
If protection before a restart is enabled, set the minimum desired stop time, then authorise 2 consecutive starts from cold if necessary.
If the ES - START option analogue input has been enabled : The CTS 2313 trips if the analogue input level is above the high level or below the low level for a period greater than the time delay.
When the analogue input fault is enabled, set the high and low levels, the tripping delay and the hysteresis.

CDC - START console

3.6.11 - Menu 11 End

Display	Factory settings	Adjustment range
P R O █ E X T E R N A L T R I P 1 : █ O F F	OFF	OFF ON
P R O █ E X T E R N A L T R I P 2 : █ O F F	OFF	OFF ON

3.6.12 - Menu 12 : decelerating settings

Display	Factory settings	Adjustment range
D E C █ D E C E L E R A T I O N C O A S T S T O P	COAST STOP	COAST STOP SOFT STOP WITH SPD FEEDBCK WITH DC BRAKING
D E C █ C O A S T S T O P D E L A Y : █ X X s	00	00 to 60 s
D E C █ S O F T S T O P D E L A Y : █ X X s D E C E L . T I M E : █ X X s	00 20	00 to 60 s 00 to 50 s
D E C █ S P D F E E D B C K D E L A Y : █ X X s D E C E L . T I M E : █ X X s	0 20	00 to 60 s 000 to 160 s
D E C █ D C B R A K I N G D E L A Y : █ X X s L E V E L : █ X X X I N J E C T . T I M E : █ X X s	0 150 5	00 to 60 s 025 to 250 00 to 60

CDC - START console

Remarks
<p>With ES - START option if logic input 1 = EXTERNAL TRIP. ON : The opening of logic input 1 trips the CTS 2313.</p>
<p>With ES - START option if logic input 2 = EXTERNAL TRIP. ON : The opening of logic input 2 trips the CTS 2313.</p>

Remarks
Select the required stop mode.
<p>WITH SPEED FEEDBACK : Only with the RV - START option. WITH BRAKING : Only with the FR - START option.</p>
If COAST STOP DECELERATION : Set the delay between the stop command and switching the motor voltage off.
If SOFT STOP DECELERATION : Set the delay between the stop command and the start of the deceleration, and the desired deceleration time.
If DECELERATION WITH SPEED FEEDBACK : Set the delay between the stop command and the start of the deceleration and the desired deceleration time.
If DECELERATION BY BRAKING : Set the delay between the stop command and the start of the DC injection, and the level of braking current and the maximum injection time.

CDC - START console

3.6.13 - Menu 13 : output relay settings

Display	Factory settings	Adjustment range
<pre> R L Y █ O U T P U T K 1 G E N E R A L F A U L T </pre>	GENERAL FAULT	GENERAL FAULT MOTOR STATUS OVERLOAD UNDERLOAD ALARM ANALOG. I/P
<pre> R L Y █ K 1 : M O T O R A C C E L E R A T I N G </pre>	ACCELERATING	ACCELERATING START COMPLETE ENERGIZED
<pre> R L Y █ K 1 : O V E R L O A D T H R E S H O L D : X X X % P n H Y S T E R E S . : X X X % P n D E L A Y : X X , X s </pre>	100 80 2.0	000 to 150 % Pn 000 to 150 00 to 60.0
<pre> R L Y █ K 1 : U N D E R L O A D T H R E S H O L D : X X X % P n H Y S T E R E S . : X X X % P n D E L A Y : X X , X s </pre>	50 70 2.0	000 to 100 % Pn 000 to 100 % Pn 00 to 60 s
<pre> R L Y █ K 1 : A L A R M A N A T H R E S H O L D : X X X % H Y S T E R E S . : X X X % D E L A Y : X X , X s </pre>	100 80 2.0	000 to 100 % 000 to 100 % 00.0 to 60.0 s

CDC - START console

Remarks	
Selects the assignment of relay K1. GENERAL FAULT : Relay open when fault or if the electronic power circuit is de-energized.	
Note : ALARM ANALOG. I/P can only be accessed if the analogue input has been enabled in menu 6.	
If K1 = MOTOR STATUS : Select the operating phase to be monitored.	
ACCELERATING	: Relay K1 closes as soon as the start command is given and opens when the motor is at full voltage.
START COMPLETE	: Relay K1 closes as soon as the start is complete (when the motor is at full voltage) and opens as soon as the stop command is given.
ENERGIZED	: Relay K1 closes as soon as the start command is given and opens when the motor is switched off.
If K1 = OVERLOAD	: Relay K1 closes when the power consumption is greater than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the power consumption falls below the opening threshold.
If K1 = UNDERLOAD	: Relay K1 closes when the power consumption is less than the closing threshold for a period longer or equal to the time delay. It opens as soon as the power consumption exceeds the opening threshold.
If K1 = ALARM ANALOG. I/P	: Relay K1 closes when the analogue input level is greater than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the analogue input level falls below the opening threshold.

CDC - START console

3.6.13 - Menu 13 End

Display	Factory settings	Adjustment range																																																																																							
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3.6.14 - Transfer

Display	Factory settings	Adjustment range																																		
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><td></td><td></td><td></td><td></td><td>T</td><td>R</td><td>A</td><td>N</td><td>S</td><td>F</td><td>E</td><td>R</td><td></td><td></td><td></td><td></td><td></td></tr> <tr><td></td><td></td><td></td><td></td><td>C</td><td>T</td><td>S</td><td></td><td>→</td><td></td><td>C</td><td>O</td><td>N</td><td>S</td><td>O</td><td>L</td><td>E</td></tr> </table>					T	R	A	N	S	F	E	R										C	T	S		→		C	O	N	S	O	L	E	CTS → CONSOLE	CTS → CONSOLE CONSOLE → CTS
				T	R	A	N	S	F	E	R																									
				C	T	S		→		C	O	N	S	O	L	E																				

Note : Before duplication, the console must first be "loaded" by performing an CTS --> CONSOLE transfer.

CDC - START console

Remarks	
Selects the assignment of relay K2. GENERAL FAULT : Relay open at a fault or if the electronic power circuit is off.	
Note : ALARM ANALOG. I/P can only be accessed if the analog input has been validated in menu 6.	
If K2 = MOTOR STATUS : Select the operating phase to be monitored.	
ENERGIZED	: Relay K2 closes as soon as the start command is given and opens when the motor is switched off.
ACCELERATING	: Relay K2 closes as soon as the start command is given and opens when the motor is at full voltage.
START COMPLETE	: Relay K2 closes as soon as the start is complete (when the motor is at full voltage) and opens as soon as the stop command is given.
If K2 = OVERLOAD	: Relay K2 closes when the power consumption is greater than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the power consumption falls below the opening threshold.
If K2 = UNDERLOAD	: Relay K2 closes when the power consumption is less than the closing threshold for a period longer than or equal to the time delay. It opens as soon as the power consumption is greater than the opening threshold.
If K2 = ALARM ANALOG I/P	: Relay K2 closes when the analogue input level is greater than the closing threshold for a period greater than or equal to the time delay. It opens as soon as the analogue input level falls below the opening threshold.

Remarks	
Once the parameters have been saved in the CTS 2313 memory, it is possible to transfer them to the console so that they may be copied at a later date to another CTS 2313 with the same power rating (see procedure in Section 3.7).	

CDC - START console

3.8 - Back to factory settings

Step	Press	Display																																																													
Read mode	E , D , C and ⏻	<table border="1" style="width: 100%; text-align: center;"> <tr><td>B</td><td>A</td><td>C</td><td>K</td><td>T</td><td>O</td><td>F</td><td>A</td><td>C</td><td>T</td><td>O</td><td>R</td><td>Y</td></tr> <tr><td>S</td><td>E</td><td>T</td><td>T</td><td>I</td><td>N</td><td>G</td><td>S</td><td>?</td><td>O</td><td>N</td><td>→</td><td>M</td><td>E</td><td>M</td></tr> </table>	B	A	C	K	T	O	F	A	C	T	O	R	Y	S	E	T	T	I	N	G	S	?	O	N	→	M	E	M																																	
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S	E	T	T	I	N	G	S	?	O	N	→	M	E	M																																																	
Validation	MEM	<table border="1" style="width: 100%; text-align: center;"> <tr><td>B</td><td>A</td><td>C</td><td>K</td><td>T</td><td>O</td><td>F</td><td>A</td><td>C</td><td>T</td><td>O</td><td>R</td><td>Y</td></tr> <tr><td>S</td><td>E</td><td>T</td><td>T</td><td>I</td><td>N</td><td>G</td><td>S</td><td>→</td><td>L</td><td>O</td><td>A</td><td>D</td><td>I</td><td>N</td><td>G</td></tr> <tr><td>C</td><td>O</td><td>U</td><td>R</td><td>A</td><td>N</td><td>T</td><td>:</td><td></td><td></td><td></td><td></td><td>0</td><td>%</td><td>I</td><td>n</td></tr> <tr><td>C</td><td>T</td><td>S</td><td></td><td>H</td><td>O</td><td>R</td><td>S</td><td></td><td>T</td><td>E</td><td>N</td><td>S</td><td>I</td><td>O</td><td>N</td></tr> </table>	B	A	C	K	T	O	F	A	C	T	O	R	Y	S	E	T	T	I	N	G	S	→	L	O	A	D	I	N	G	C	O	U	R	A	N	T	:					0	%	I	n	C	T	S		H	O	R	S		T	E	N	S	I	O	N
B	A	C	K	T	O	F	A	C	T	O	R	Y																																																			
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C	O	U	R	A	N	T	:					0	%	I	n																																																
C	T	S		H	O	R	S		T	E	N	S	I	O	N																																																

Note : It is only possible to return to factory settings from **Read** mode and with the motor switched off.

CDC - START console

4 - FAULTS - DIAGNOSTICS

4.1 - Operating faults

C	O	D	E		I	N	C	O	R	R	E	C	T	
---	---	---	---	--	---	---	---	---	---	---	---	---	---	--

- An access code has just been entered which does not correspond to the one which has already been memorized.
- Re-enter the access code.

M	E	M	O	R	I	Z	A	T	I	O	N		?	?
---	---	---	---	---	---	---	---	---	---	---	---	--	---	---

- A parameter has just been modified but it has not been memorized before exiting the field.
- Press **MEM.** to memorize the modification.
- If the modification does not need to be memorized, use the **↻** key.

				T	R	A	N	S	F	E	R				
				N	O	T		P	O	S	S	I	B	L	E

- A user wishes to transfer parameters from the console to the CTS 2313, but nothing has been memorized in the console, or the contents of the parameters transferred to the console are not compatible with the CTS 2313 to which it is connected. Use one of the four arrow keys to return to the preceding menu.

4.2 - "FAULT" messages

When a fault occurs, the CTS 2313 displays the "FAULT" message on the upper line, and describes the nature of the fault on the lower line.

				F	A	U	L	T								
				T	Y	P	E		O	F		F	A	U	L	T

After resetting the fault, either via the terminal block or using the STOP/RESET key on the **CDC - START** console, the

display returns to the configuration it was at before the fault occurred.

4.3 - Possible causes of faults

				F	A	U	L	T							
				S	U	P	P	L	Y		L	O	S	S	

- No voltage on the L1 - L2 - L3 terminals.

				F	A	U	L	T									
				E	X	C	.	S	T	A	R	T	.	T	I	M	E

- Start time is greater than the "Max time" set in menu 11 (protection settings).
- Load conditions are more severe than those used as a reference for the settings --> Revise the "Max time"
- Defective motor (insufficient torque).
- Incorrect motor connection.

				F	A	U	L	T								
				T	H	.	T	H	Y	R	I	S	T	O	R	S

- Start conditions greater than the thermal capacity of the CTS 2313.
- Start current is too high,
- Idle period between 2 starts is too short,
- Start time is too long,
- Capacity of equipment is insufficient.

				F	A	U	L	T						
				P	H	A	S	E		L	O	S	S	

- Upstream or downstream phase failure on the CTS 2313 :
- Open power fuses,
- Motor cable cut or connectors loose.

				F	A	U	L	T									
				S	H	O	R	T		S	U	P	.	L	O	S	S

- Mains supply loss and restart after short mains loss is not enabled in menu 3, (initialisation of Softstarter).

CDC - START console

				F	A	U	L								
			T	H	.		M	O	T	O	R				

- The operating conditions cause the motor thermal limit to be exceeded or the motor temp. current is incorrectly set. (See protection settings).

				F	A	U	L								
			O	V	E	R	L	O	A	D					

- The load on the motor has been above the threshold set for a period longer than the tripping time delay :
 - Threshold less than the maximum operating conditions,
 - Time delay is too short, and does not allow for overload surges,
 - Mechanical problem.
 (See protection settings).

				F	A	U	L								
			U	N	D	E	R	L	O	A	D				

- The load on the motor has been below the threshold set for a period longer than the tripping time delay.
 - Threshold greater than minimum operating conditions,
 - Time delay is too short, and does not allow for any possible underloads,
 - Break in transmission,
 - Loss of pump priming,
 (See protection settings).

				F	A	U	L								
			S	O	F	T	W	A	R	E					

- Significant interference causing the microcontroller to malfunction :
 - Check the shielding of the remote cables,
 - Return to the factory settings then reprogramme the CTS 2313 (see procedure in Section 3.8).

- If the fault is permanent, replace the board,
- Control board has failed.

				F	A	U	L								
			S	H	O	R	T	E	D		T	H	Y	R	.

- Short circuit of one or more thyristors :
 - Check that no external element part connected to the CTS 2313 is short circuiting the thyristors,
 - If not, check the state of the thyristors.

				F	A	U	L								
			O	P	E		T	H	Y	R	I	S	T	O	R

- Thyristor non-conduction or open circuit :
 - Check the connection of the thyristor gate wires,
 - Check the power connections,
 - Check the state of the thyristors.

				F	A	U	L								
			P	H	A	S	E		S	E	Q	U	E	N	C

- The phase sequence upstream of the CTS does not correspond directly.
 - Cross two phases upstream so that the phase sequence is direct and check the direction of the rotation of the motor.

				F	A	U	L								
			L	O	C	K	E	D		R	O	T	O	R	

- Mechanical locking of the machine making it impossible to start.

				F	A	U	L								
			T	H	.		H	E	A	T	S	I	N	K	

- Abnormal increase in temperature of the heat sink :
 - Check operation of the forced ventilation (except for power rating 37),
 - Check that there is sufficient air renewal required for cooling.

CDC - START console

				F	A	U	L	T						
		M	A	I	N	S		S	U	P	P	L	Y	

- Electronic power circuit supply voltage is less than :
 - 177V if using the 230V input,
 - 340V if using the 400V input.

				F	A	U	L	T						
	T	O		M	A	N	Y		S	T	A	R	T	S

- Restart requested before the time delay has elapsed :
 - Wait for the end of the time delay and repeat the start command. (See protection settings).

				F	A	U	L	T						
	E	M	E	R	G	E	N	C	Y		S	T	O	P

- Open circuit between terminals 10 and 11 of the CTS 2313 remote control terminal block.

				F	A	U	L	T						
		S	E	R	I	A		L	I	N	K			

- Communication between the CTS and the console is not possible.

				F	A	U	L	T						
	E	X	T	.		T	R	I	P		N	^o		1

- With the ES - START option, open contact between terminals 11 (EL1) and 12 (0V) of the ES - START module.

				F	A	U	L	T						
	E	X	T	.		T	R	I	P		N	^o		2

- With the ES - START option, open contact between terminals 13 (EL2) and 12 (0V) of the ES - START module.

				F	A	U	L	T						
		P	T	C		S	E	N	S	O	R	S		

- With the ES - START option, the tripping threshold of one of the PTC sensors connected to terminals 3 to 7 of the ES - START module is exceeded.

				F	A	U	L	T						
		A	N	A	L	O	G	.		I	N	P	U	T

- With the ES - START option, the analogue input is outside the range defined by the high and low levels. (See protection settings).

				F	A	U	L	T						
	S	P	E	E	D		F	E	E	D	B	A	C	K

- With the RV - START option, loss or absence of speed feedback.
This fault does not trip the CTS 2313.

CDC - START console

5 - SUMMARY OF THE SETTINGS

Product	Power rating	Serial N°	Commissioning	Comment
CTS 2313				
CDC - START	-			
FR - START				
ES - START	-			
RV - START	-			

Complete the last columns of the table by filling in your settings.

The shaded parts can only be accessed using the FR - START, RV - START or ES - START options.

Menu	Parameter	Factory setting	Your setting on .../.../...	Your setting on .../.../...
1	Language	French		
2	Access code	0		
3	Main supply Motor speed Motor power Rated motor current Display of current Control by Autorestart	400 1500 dep. on rating CTS rating As % In Terminal On		
4	Heating Delay Level Braking	Off 1mn 50 Self detection		
5	2 speed motor Choice of sensor Induct. V1 V2 Tacho V1 V2	Off 4 - 20 mA 6000 3000 90 45		
6	Input logic 1 Input 1 Input logic 2 Input 2 Input analogue Signal Control PTC sensors Number	Off Other settings Off Other settings Off 4 - 20 mA Off 3		



CDC - START console

Menu	Parameter	Factory setting	Your setting on .../.../...	Your setting on .../.../...
6 Cont'd	Output K3	Overload		
	Threshold	100		
	Hysterisis	80		
	Delay	2		
	Motor	Energized		
	Output K4	Underload		
	Threshold	100		
	Hysterisis	80		
	Delay	2		
	Motor	Energized		
	Output Ana. 1	Unused		
	Signal	4 - 20 mA		
	I. max	400		
	P. max	150		
	Input Ana. 1	4 - 20 mA		
	Output Ana. 2	Unused		
	Signal	4 - 20 mA		
I. max	400			
P. max	150			
Input Ana. 2	4 - 20 mA			
7	Brake	Off		
	Level	150		
	Time	5		
	Kickstart	Off		
	Level	3		
	Acceleration ramp	Current		
	Pedestal	200		
I. limit	400			
Accel time.	20			
8	Adaptation current 2	100		
	Brake	Off		
	Level	150		
	Time	5		
	Kickstart	Off		
	Level	3		
	Acceleration ramp	Current		
	Pedestal	200		
	I. Limit	400		
	Acceleration time	20		



CDC - START console

Menu	Parameter	Factory setting	Your setting on .../.../...	Your setting on .../.../...
9	Adaptation current 3	100		
	Brake	Off		
	Level	150		
	Time	5		
	Kickstart	Off		
	Level	3		
	Acceleration ramp	Current		
	Pedestal	200		
	I. Limit	400		
Acceleration time	20			
10	Adaptation current 4	100		
	Brake	Off		
	Level	150		
	Time	5		
	Kickstart	Off		
	Level	3		
	Acceleration ramp	Current		
	Pedestal	200		
	I. Limit	400		
Acceleration time	20			
11	Excessive start	On		
	Max. time	30		
	Motor temperature	Off		
	Current Th	100		
	Instantaneous overload	Off		
	Tripping	120		
	Delay	1		
	Instantaneous underload	Off		
	Tripping	30		
	Delay	1		
	Locked rotor	Off		
	Phase sequence	Off		
	Restart delay	Off		
	Time	60		
	2 consecut.	Off		
	Analogue input	Off		
High level	80			
Low level	20			
Hysteresis	5			
Delay	1			



CDC - START console

Menu	Parameter	Factory setting	Your setting on .../.../...	Your setting on .../.../...
11	External trip 1	Off		
Cont'd	External trip 2	Off		
12	Deceleration	Coast stop		
	Delay	00		
	Decel. time	20		
	Level	150		
	Inject. time	5		
13	Output K1	General fault		
	Motor	Accelerating		
	Threshold	100 or 50 *		
	Hysterisis	80 or 70 *		
	Delay	2		
	Output K2	Motor status		
	Motor	Energized		
	Threshold	100 or 50 **		
	Hysterisis	80 or 50 **		
	Delay	2		
14	Transfer	CTS - CONSOLE		

* According to the "output K1" setting.

** According to the "output K2" setting.





0485-0011

