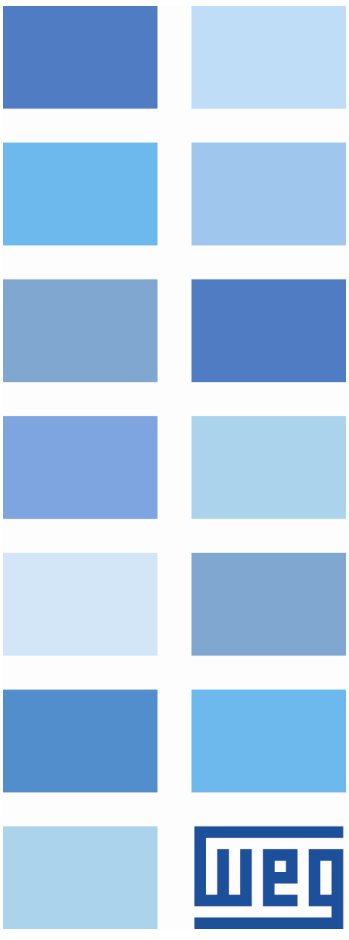
Motors | Energy | Automation | Coatings

SoftPLC

Soft-Starter SSW-06 V1.6X

SoftPLC Communication Manual

Language: English
Document: 0899.5722 / 03



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Publication Date: 09/2009

SUMMARY

INFORMATION ABOUT THE MANUAL

This manual provides the necessary description for the operation of the SSW-06 soft-starter using the user programming module denominated SoftPLC. This manual must be used together with the SSW-06 user manual and with the WLP software manual.

ABBREVIATIONS AND DEFINITIONS

PLC Programmable Logic Controller
CRC Cycling Redundancy Check
RAM Random Access Memory
WLP Ladder Language Programming Software

NUMERICAL REPRESENTATION

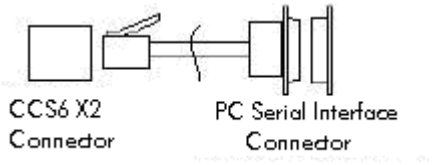
Decimal numbers are represented by means of digits without suffix. Hexadecimal numbers are represented with the letter ‘h’ after the number.

1 INTRODUCTION TO THE SOFTPLC

The SoftPLC is a feature that incorporates to the SSW-06 the functionalities of a PLC, adding flexibility to the product and allowing the user to develop applicative software (user programs).

The SoftPLC main features are:

- Ladder language programming, by using the WLP software;
- Access to all the SSW-06 parameters and I/O's;
- 18 configurable user parameters;
- PLC Mathematical and Control Blocks;
- Applicative software transfer and online monitoring via serial (RS-232).
- The cable (WEG Part Number: 10050215) shall be connected directly to the PC serial interface.



1.1 SYMBOLS AND DATA TYPES

%KW word type constants (16 bit)
%MX bit marker
%MW word marker (16 bit)
%SX system bit marker
%SW system word marker (16 bit)
%IX digital inputs
%QX digital outputs
%QW analog outputs (14 bit)
%PW system parameters
%UW user parameters

2 SOFTPLC MEMORY

The total size of the SoftPLC memory is 1024 bytes, between program memory and data memory.

2.1 DATA MEMORY

The SoftPLC data memory area (user variables) is shared with the programming memory. Therefore, the total size of an applicative may vary as function of the amount of variables applied by the user.

The bit and word markers are allocated according to the **LAST** address used in the applicative, i.e., the higher the last address the bigger the allocated area. Therefore, it is recommended to use the markers in a **SEQUENTIAL** manner.

The word constants do also use program memory space.

2.1.1 CONSTANTS

Table 2.1: *Constant Memory Map*

Sym.	Description	Bytes
%KW	Word Constants (16 bit)	It depends on the quantity of different word constants. E.g.: If there were used: - %KW: 327 = 2 bytes - %KW: 5; 67 = 4 bytes - %KW: 13; 1000; 13; 4 = 6 bytes

2.1.2 PHYSICAL INPUTS AND OUTPUTS (HARDWARE)

Table 2.2: *I/O Memory Map*

Sym.	Description	Range
%IX	Digital inputs	1to 6 or 1 to 12 with K_IOE
%QX	Digital outputs	1 ... 3 or 1 to 9 with K_IOE
%QW	Analog outputs	1 ... 2

2.1.3 VOLATILE MARKERS (VARIABLES)

They consist of variables that can be applied by the user to execute the applicative logics. They can be bit markers (1 bit) and word markers (16 bit).

Table 2.3: *Volatile Marker Memory Map*

Sym.	Description	Range	Bytes
%MX	Bit markers	5000 ... 6099	It depends on the last used marker. They are organized in byte pairs. E.g.: - last marker: %MX5000 = 2 bytes - last marker: %MX5014 = 2 bytes - last marker: %MX5016 = 4 bytes - last marker: %MX5039 = 6 bytes
%MW	Word markers	8000 ... 8199	It depends on the last used marker. E.g.: - last marker: %MX8000 = 2 bytes - last marker: %MX8001 = 4 bytes - last marker: %MX8007 = 16 bytes

NOTE!
In order to minimize the applicative size, use the markers in a sequential manner.
E.g.:
Bit markers: %MX5000, %MX5001, %MX5002...
Word markers: %MW8000, %MW8001, %MW8002...

2.1.4 SYSTEM MARKERS

They consist of special variables that allow the user to read and change SSW-06 soft-starter data that may or not be available in the parameters. They can be: system bit markers (1 bit) or system word markers (16 bit).

Table 2.4.a: *Memory Map for the Odd System Bits*

Sym.	Description	Range	Description
Type	System Bits	3000 ... 3040	
%SX	*writing/Commands (odd)*		
	3001	Run/Stop	**0**: It stops the motor. **1**: It runs the motor.
	3003	General Enabling	**0**: It disables the soft-starter, interrupting the supply to the motor. **1**: General enabling, allowing the motor operation.
	3005	JOG	**0**: It disables the JOG function. **1**: It enables the JOG function.
	3007	Speed Direction	**0**: It runs the motor in the clockwise direction. **1**: It runs the motor in the counterclockwise direction.
	3009	LOC/REM	**0**: It goes to the local mode. **1**: It goes to the remote mode.
	3015	Fault reset	**0**: No function. **1**: If in a fault condition, then it executes the SSW-06 reset.

Table 2.4.b: *Memory Map for the Even System Bits*

Sym.	Description		Range	Description
Type	System Bits		3000 ... 3040	
%SX	*Reading/State (Even)*			
	3000	Motor Running		**0**: The motor is stopped. **1**: The motor is running, or executing either the acceleration or deceleration ramp, or braking.
	3002	General Enabling		**0**: General Enabling is not active. **1**: General Enabling is active and the soft-starter is ready to run the motor.
	3004	JOG		**0**: Inactive JOG function. **1**: Active JOG function.
	3006	In Acceleration		**0:** It is not executing the acceleration ramp. **1:** It is executing the acceleration ramp.
	3008	In Current Limit		**0**: It is not in current limit. **1**: It is in current limit.
	3010	At Full Voltage		**0:** The motor is not with full voltage. **1:** The motor is with full voltage.
	3012	Alarm condition		**0**: It is not in alarm condition. **1**: It is in alarm condition. **Note:** The alarm number can be read iby means of the parameter P021 – Current Alarm.
	3014	In Deceleration		**0**: It is not executing the deceleration ramp. **1**: It is executing the deceleration ramp.
	3016	LOC/REM		**0**: It is in local mode. **1**: It is in remote mode.
	3018	Braking		**0:** It is not braking. **1:** It is braking.
	3020	Changing the speed direction		**0**: It is not executing the speed direction change. **1**: It is executing the speed direction change.
	3022	Speed direction		**0**: The motor is rotating clockwise. **1**: The motor is rotating counterclockwise.
	3024	Bypass		**0:** It is not with closed bypass. **1:** It is with closed bypass.
	3028	Supply at the power section		**0:** It is without supply at the power section. **1:** It has a supply higher than 15V at the 3 phases of the power section.
	3030	Fault condition		**0:** It is not in a fault condition. **1:** It is in fault condition.

Table 2.5: *Memory Map for the System Word Markers*

Sym.	Description	Range
%SW	System Words	3300 ... 3303
	Writing markers/Command (Odd)	
	3303	User Fault (E86 to E89)
	3305	User Alarm (A90 to A93)

2.1.5 PARAMETERS

The SSW-06 soft-starter parameter memory map is described in the table 2.6.

Table 2.6 : *Parameter Memory Map*

Sym.	Description	Range
%PW	System parameters (Refer to the SSW-06 manual)	0... 950
	P088: SoftPLC status [Read-only parameter]	**0:** Without **1:** Loading **2:** Fault **3:** Stopped **4:** Running
	P089: SoftPLC Allowed	**0:** No **1:** Yes
	P204: Load/Save parameters	**13:** Erase SoftPLC **14:** Reset user parameters (P952 to P969 = 0)
	P950: Enable SoftPLC	**0:** No **1:** Yes
	P951: Digital Inputs and Outputs Expansion Card Enable (K-IOE)	**0:** No **1:** Yes
%UW	User Parameters	952... 969

3 RESUME OF THE FUNCTION BLOCKS

A resume of the function blocks that are available for the user programming, will be presented in this chapter.

3.1 CONTACTS

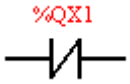
They send to the stack the content of a programmed data (0 or 1), which may be of the type:
- %MX: Bit Marker
- %IX: Digital Input
- %QX: Digital Output
- %UW: User Parameter
- %SX: System Bit Marker - Reading

NOTE!
If contacts with parameters are used (%UW), they are set when the parameter value is different from zero. In the logic examples below, the %UW952 contact is considered active if the parameter P952 is different from zero.

3.1.1 NORMALLY OPEN CONTACT – NO CONTACT

Menu: *Insert – Contacts – Normally Open Contact.*
E.g.: It sends to the stack the content of the bit marker 5000.

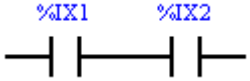
3.1.2 NORMALLY CLOSED CONTACT – NC CONTACT



Menu: *Insert – Contacts – Normally Closed Contact.*
E.g.: It sends to the stack the negated content of the digital output 1.

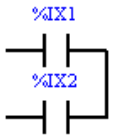
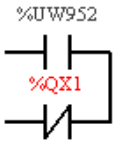
3.1.3 AND LOGIC WITH CONTACTS

When the contacts are in series, an AND logic is executed among them, storing the result in the stack. Examples:

Example	Truth Table		
 %IX1 . %IX2	%IX1	%IX2	Stack
	0	0	0
	0	1	0
	1	0	0
	1	1	1
 %UW952 . (~%QX1)	%UW952	%QX1	Stack
	0	0	0
	0	1	0
	1	0	1
	1	1	0

3.1.4 OR LOGIC WITH CONTACTS

When the contacts are in parallel, an OR logic is executed among them, storing the result in the stack. Examples:

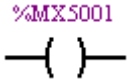
Example	Operation	Truth Table		
	%IX1 + %IX2	%IX1	%IX2	Stack
		0 0 1 1	0 1 0 1	0 1 1 1
	%UW952+ (~%QX1)	%UW952	%QX1	Stack
		0 0 1 1	0 1 0 1	1 0 1 1

3.2 COILS

They save the stack content (0 or 1) in the programmed element:
- %MX: Bit Marker
- %QX: Digital Output
- %UW: User Parameter
- %SX: System Bit Marker – Writing

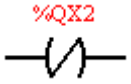
It is allowed to add coils in parallel at the last column.

3.2.1 NORMAL COIL – COIL



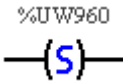
Menu: *Insert – Coils – Coil.*
E.g.: It sets the bit marker 5001 with the stack content.

3.2.2 NEGATED COIL – NEG COIL



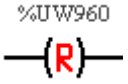
Menu: *Insert – Coils – Negated Coil.*
E.g.: It sets the digital output 2 with the negated content of the stack.

3.2.3 Set Coil – Set Coil



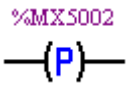
Menu: *Insert – Coils – Set Coil.*
E.g.: It sets the user parameter P960, provided that the content of the stack is not 0.

3.2.4 Reset Coil – Reset Coil



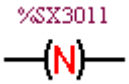
Menu: *Insert – Coils – Reset Coil.*
E.g.: It resets the user parameter P960, provided that the content of the stack is not 0.

3.2.5 Positive Transition Coil – PTS Coil



Menu: *Insert – Coils – PTS Coil.*
E.g.: It sets the bit marker 5002 during 1 scan cycle, provided that a transition from 0 to 1 in the stack is detected.

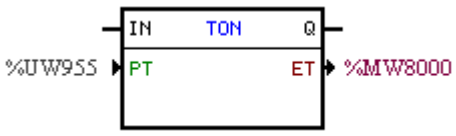
3.2.6 Negative Transition Coil – NTS Coil



Menu: *Insert – Coils – NTS Coil.*
E.g.: It sets the system bit marker 3011 during 1 scan cycle, provided that a transition from 1 to 0 in the stack is detected.

3.3 CLP BLOCKS

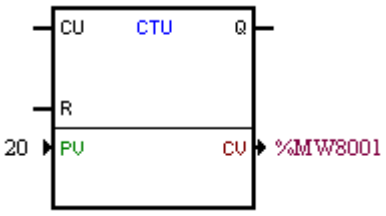
3.3.1 Timer – TON



Menu: *Insert - Function Blocks – PLC-TON.*
Input:
IN: Enables the block.
Output:
Q: Goes to 1 when IN ≠0 and ET ≥ PT.
Proprieties:
PT: Programmed Time (*Preset Time*).
ET: *Elapsed Time*.

If the IN input is active and the content of the word marker 8000 is higher or equal than the content of the user parameter P955, the output Q is set.

3.3.2 Incremental Counter– CTU

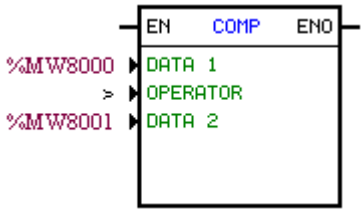


Menu: *Insert - Function Blocks – PLC-CTU.*
Inputs:
CU: Captures the transitions from 0 to 1 at this input (*Counter Up*).
R: Resets CV.
Output:
Q: Goes to 1 when CV ≥ PV.
Proprieties:
PV: Programmed Value (*Preset Value*).
CV: *Counter Value*.

If the content of the word marker 8001 is higher or equal than 20, the output Q is set.

3.4 CALCULATION BLOCKS

3.4.1 Comparator – COMP

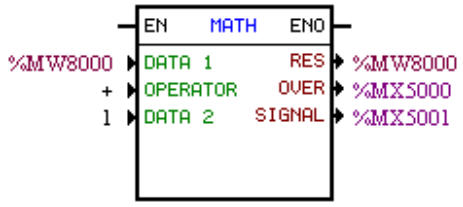


Menu: *Insert - Function Blocks – Calculation-COMP.*
Input:
EN: Enables the block.
Output:
ENO: Goes to 1 when the comparison condition is fulfilled.
Proprieties:
FORMAT: Only Integer.
DATA 1: Comparison data 1.
OPERATOR: Comparison operator.
DATA 2: Comparison data 2.

If the EN input is active and the content of the word marker 8000 is higher than the content of the word marker 8001, then the output ENO is set.

NOTE!
All the numeric data are considered words of 15 bit + sign (-32768 to 32767).

3.4.2 MATH Operation – MATH



Menu: *Insert - Function Blocks – Calculation-MATH.*

Input:

EN: Enables the block.

Output:

ENO: Indicates if the calculation has been executed.

Proprieties:

FORMAT: Integer or floating point.

DATA1: Calculation data 1. It may also appear as DATA1H and DATA1L (representing the high and low parts of the data 1).

OPERATOR: Mathematic operator (+, -, *, etc).

DATA2: Calculation data 2. It may also appear as DATA2H and DATA2L (representing the high and low parts of the data 2).

RES: Calculation result. It may also appear as RESH and RESL (representing the high and low parts of the result) and also as QUOC and REM (representing the quotient and the reminder of a division).

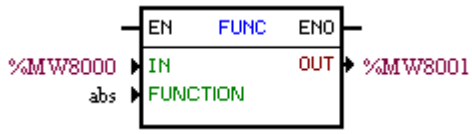
OVER: Indicates if the result exceeded its limit.

SIGNAL: Result sign.

When EN input is active, the value of the word marker is incremented to each cycle of scan. When the bit marker 5000 goes for 1, indicates that it had a overflow limit and the word marker 8000 remains in 32767.

NOTE!
All the numeric data are considered words of 15 bit + sign (-32768 to 32767).

3.4.3 MATH Function – FUNC



Menu: *Insert - Function Blocks – Calculation-FUNC.*

Input:

EN: Enables the block.

Output:

ENO: Indicates if the calculation has been executed.

Proprieties:

FORMAT: Only Integer.

IN: Data to be calculated.

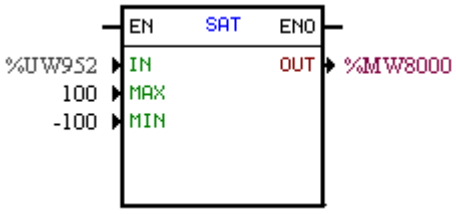
FUNCTION: Mathematic function: abs (module) and neg (negative).

OUT: Calculation result.

When the EN input is active, the word marker 8001 presents the module of the word marker 8000.

NOTE!
All the numeric data are considered words of 15 bit + sign (-32768 to 32767).

3.4.4 Saturator – SAT



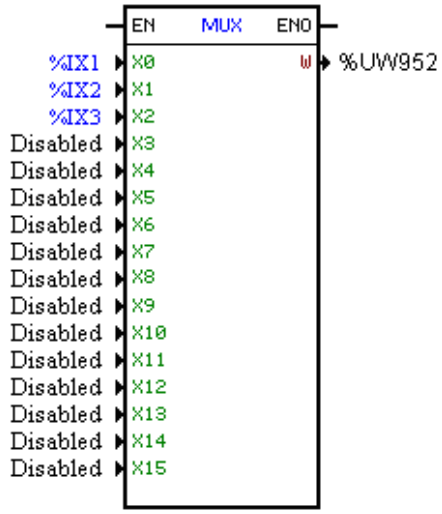
Menu: *Insert - Function Blocks – Calculation-SAT.*
Input:
EN: Enables the block.
Output:
ENO: Indicates if saturation has occurred, provided that EN ≠ 0.
Proprieties:
FORMAT: Only Integer.
IN: Input data.
MAX: Maximum allowed value.
MIN: Minimum allowed value.
OUT: Output data.

When the EN input is active, the word marker 8000 contains the user parameter P952 value, limited however between the maximum of 100 and the minimum of -100.

NOTE!
If the minimum value is higher than the maximum, the outputs OUT and ENO are reset to zero.

NOTE!
All the numeric data are considered words of 15 bit + sign (-32768 to 32767).

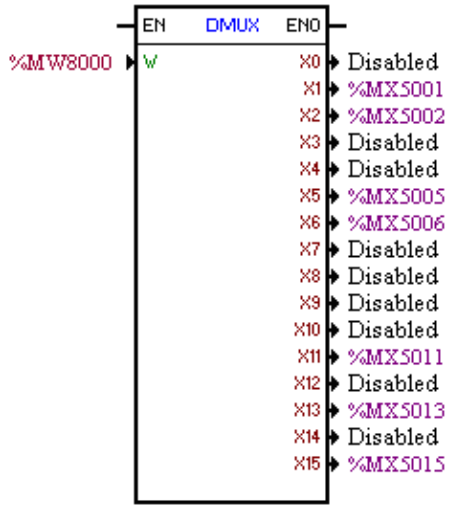
3.4.5 Multiplexer – MUX



Menu: *Insert - Function Blocks – Calculation-MUX.*
Input:
EN: Enables the mathematic operation.
Output:
ENO: Indicates that the transfer has been done.
Proprieties:
X0-X15: Binary data vector.
W: Resulting word.

When the EN input is active, the digital inputs 1, 2 and 3 transfer their content to the bits 0, 1 and 2 of the user parameter P952.

3.4.6 Demultiplexer – DMUX

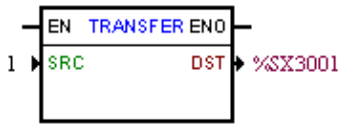


Menu: *Insert - Function Blocks – Calculation-MUX.*
Input:
EN: Enables the mathematic operation.
Output:
ENO: Indicates that the transfer has been done.
Proprieties:
W: Source word.
X0-X15: Resulting binary data vector.

When the EN input is active, the bits 1, 2, 5, 6, 11, 13 and 15 of the word marker 8000 are transferred respectively to the bit markers 5001, 5002, 5005, 5006, 5011, 5013 and 5015.

3.5 TRANSFER BLOCKS

3.5.1 Data Transfer – TRANSFER



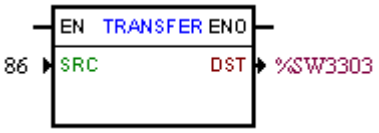
Menu: *Insert - Function Blocks- Transfer-TRANSFER.*
Input:
EN: Enables the block.
Output:
ENO: Indicates that the transfer has been done.
Proprieties:
SRC: Source data.
DST: Destine data.

In the example above, if the EN input is active, the word constant 1 is transferred to the system bit marker 3001 (Run/Stop).

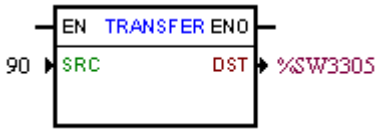
TRANSFER for the generation of user faults and alarms

In order to generate the user alarms A90 to A93 and the user faults E96 to E99, the TRANSFER block must be used according to the examples below.

The fault reset may come from the system bit marker %SX3011, or from other reset source (HMI, DIx, etc.).

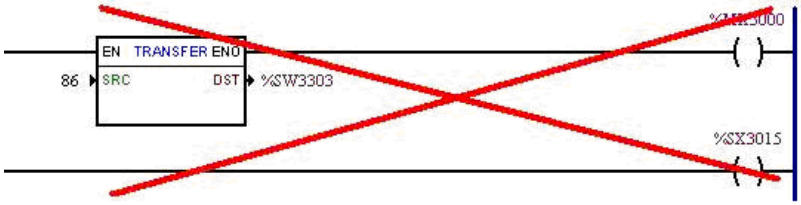


E86 fault generated with the transfer block.



A90 alarm generated with the transfer block.

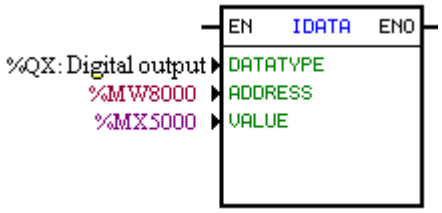
NOTE!
By using user faults, precaution must be taken in order to avoid that the transfer block EN input does not stay always active, with a reset also always active. This would cause the soft-starter SSW-06 to stay in a fault and reset loop, as showed below.



Logic for the fault and reset loop.

NOTE!
The user alarms can only be reset with the command coming through the SoftPLC, in this case the SCR of the transfer block must contain the value zero. The SSW-06 soft-starter alarms can be reset only by the source that has generated them.

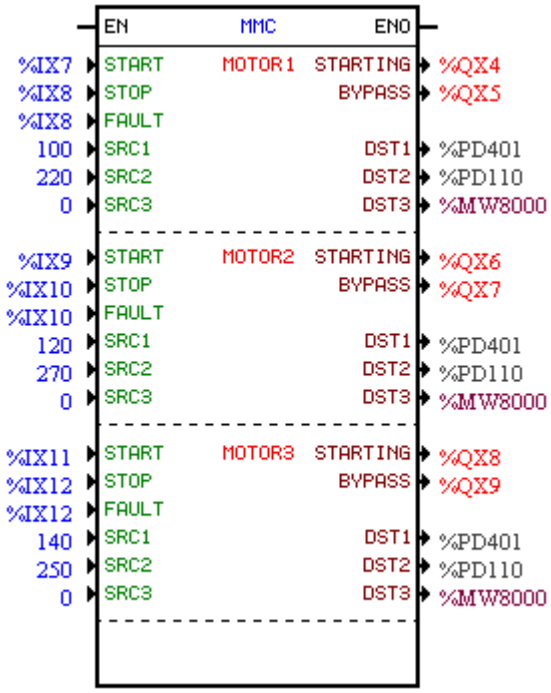
3.5.2 Indirect Data Transfer – IDATA



Menu: *Insert - Function Blocks- Transfer -IDATA.*
Input:
EN: Enables the block.
Output:
ENO: Indicates that the transfer has been done.
Proprieties:
CMD: Read/Write command
DATATYPE: Data type
ADDRESS: User address.
VALUE: Read content/Value to be written

In the example above, if the EN input is active, the content of the bit marker 5000 is written to the digital output whose address is the content of the word marker 8000.

3.6 Multimotor Control – MMC



Menu: *Insert-Function Block multimotor control-MMC*
Input:
EN: Enables the block.
Output:
ENO: Indicates that the block is active.
Proprieties:
MotorX
START: Enable the motor in 1.
STOP: Disable the motor in 0.
FAULT: Disable the motor in 0.
STARTING: Indicates motor starting or stopping.
BYPASS: Indicates by-pass on.
SRC1: Source data.
SRC2: Source data.
SRC3: Source data.
DST1: Destine data.
DST2: Destine data.
DST2: Destine data.

In the example above, through the MMC you can control the start and stop of up to three different motors only one Soft-Starter SSW-06.

4 SSW-06 PARAMETER SETTINGS

In the continuation, only the parameters of the SSW-06 soft-starter that are related to the SoftPLC will be presented, remembering that all the parameters are accessible, except for the parameters P200 and P215. Refer to the SSW-06 manual for more details.

4.1 SYMBOLS FOR THE PROPRIETIES DESCRIPTION

RO Read-only parameter.
CFG Parameter that can be changed only with a stopped motor.

4.2 CONFIGURATION PARAMETERS

P220 – LOCAL/REMOTE Source Selection

Adjustable Range:
0 = Always LOCAL
1 = Always REMOTE
2 = Keypad (L)
3 = Keypad (R)
4 = DI4 to DI6
5 = Serial (L)
6 = Serial (R)
7 = Fieldbus (L)
8 = Fieldbus (R)
9 = SoftPLC (L)
10 = SoftPLC (R)

Factory Setting: 2

Proprieties: CFG

Description:
It defines the origin of the command that will select between the LOCAL situation and the REMOTE situation.

Default situation is the one assumed when the Soft-Starter SSW-06 is powered-up (initialization).

Table 4: *OCAL / REMOTE Selection*

P220	LOCAL / REMOTE Selection
0	Always Local situation
1	Always Remote situation
2	HMI key  (Default LOCAL)
3	HMI key  (Default REMOTE)
4	Digital inputs from DI1 to DI6 (P266 to P268)
5	Serial (Default Local) – SuperDrive or incorporated Modbus
6	Serial (Default Remote) – SuperDrive or incorporated Modbus
7	Fieldbus (Default Local) – Optional interface module
8	Fieldbus (Default Remote) – Optional interface module
9	SoftPLC (Default Local)
10	SoftPLC (Default Remote)

P229 – Command Selection – LOCAL Situation

P230 – Command Selection – REMOTE Situation

Adjustable Range:
0 = HMI keys
1 = Digital input DIx
2 = Serial
3 = Fieldbus
4 = SoftPLC

Factory Setting: P230 = 1
P229 = 0

Proprieties: CFG

Description:
They define the origin of the commands for running and stopping the SSW-06 soft-starter.

Table 4.2: *LOCAL / REMOTE Command Selection*

P229/P230	LOCAL / REMOTE Command Selection
0	HMI keys
1	Digital input DIx
2	Serial communication
3	Fieldbus communication (DeviceNet or Profibus DP)
4	SoftPLC

P251 – AO1 Function (0 to 10V)

P253 – AO2 Function (0 to 20mA or 4 to 20mA)

Adjustable Range:
0 = Not used
1 = SSW current (% of the SSW In)
2 = Line Voltage (% of the SSW Un)
3 = Output voltage (% of the SSW Un)
4 = Power factor
5 = Thermal protection
6 = Power (in W)
7 = Power (in VA)
8 = Torque (% of the motor Tn)
9 = Fieldbus
10 = Serial
11 = SoftPLC

Factory Setting: P251 = 0
P253 = 0

Description:
These parameters set the functions of the analog outputs, according to the table 4.6.

The value of the analog outputs can be read at the parameters P027 (AO1) and P028 (AO2). Those values are converted to voltage and current using the full scale values as showed in the table below. Thus, if the AO1 was programmed for SoftPLC (P251 = 11) and the value 16383 is written, the analog output will present 10v.

The same criteria is valid for the analog output in current (AO2), where the value 16383 will be equal to 20mA and 0 will be either equal to 0mA or to 4mA, depending on the analog output programming (P255=0 (0 to 20mA) or P255=1 (4 to 20mA)).

Table 4.6: *Analog output functions*

Functions	P251 (AO1)	P253 (AO2)	Full scale when
Not used	0	0	
SSW current in % of the SSW In	1	1	5 x P295
Line Voltage in % of the SSW Un	2	2	1.5 x P296(max.)
Output voltage in % of the SSW Un	3	3	1.5 x P296(max.)
Power factor	4	4	P008 = 1.00
Thermal protection	5	5	P050 = 250%
Power in W	6	6	1.5 x √3 x P295 x P296(max.) x P008
Power in VA	7	7	1.5 x √3 x P295 x P296(max.)
Torque in % of the motor Tn	8	8	P009 = 100%
Fieldbus	9	9	16383 (3FFFh)
Serial	10	10	16383 (3FFFh)
SoftPLC	11	11	16383 (3FFFh)

P277 – DO1 Function (RL1)

P278 – DO2 Function (RL2)

P279 – DO3 Function (RL3)

Adjustable Range:	0 = Not used 1 = Running 2 = Full Voltage 3 = External Bypass 4 = FWD/REV-K1 (P277) / FWD/REV-K2 (P278) / Not used (P279) 5 = DC braking 6 = No Fault 7 = Fault 8 = Fieldbus 9 = Serial 10 = SoftPLC 11 = No Alarm 12 = Alarm	**Factory Setting:** P277 = 1 P278 = 2 P279 = 6

Description:
They program the functions of the digital outputs, according to the options presented previously.

When the condition declared by the function is true, the digital output will be activated.

The status of the digital outputs can be monitored via the parameter P013.

P308 – Soft-Starter address on the Serial Communication Network

Adjustable Range:	1 to 247	**Factory Setting:** 1

Description:
This parameter sets the address of the SSW-06 soft-starter in the serial communication network.

The SSW-06 soft-starter must be configured exactly as in the WLP software (refer to item 5.6), so that the user software download/upload be possible.

P312 – Protocol Type and Baud Rate of the Serial

Adjustable Range:	1 = Modbus-RTU (9600bps, no parity) 2 = Modbus-RTU (9600bps, odd) 3 = Modbus-RTU (9600bps, even) 4 = Modbus-RTU (19200bps, no parity) 5 = Modbus-RTU (19200bps, odd) 6 = Modbus-RTU (19200bps, even) 7 = Modbus-RTU (38400bps, no parity) 8 = Modbus-RTU (38400bps, odd) 9 = Modbus-RTU (38400bps, even)	**Factory Setting:** 1

Description:
This parameter sets the serial protocol and the baud rate.

The SSW-06 soft-starter must be configured exactly as in the WLP software (refer to item 5.6), so that the user software download/upload be possible.

4.3 SOFTPLC EXCLUSIVE PARAMETERS

P088 – SoftPLC Status

Adjustable Range:	0 = Without 1 = Loading 2 = Fault 3 = Stopped 4 = Running	**Factory Setting:** -

Proprieties: RO

Description:
It allows to the user to visualize the SoftPLC status. If there is no installed applicative, the parameter P088 will show the option 0 (Without).

If this parameter presents the option 2 (Fault), it indicates that the user software loaded with the WLP is incompatible with the SSW-06 firmware version, or that an error occurred during the program download.

In this case it is necessary to recompile the project in the WLP, considering the new SSW-06 version, and to download it again. If this is not possible, the upload of this applicative with the WLP can be done.

The options 3 (Stopped) and 4 (Running) are related to the parameter P950 (Enable SoftPLC).

P089 - SoftPLC Allowed

Adjustable Range:	0 = No 1 = Yes	**Factory Setting:** -

Proprieties: CFG

Description:
The SSW-06 soft-starter SoftPLC feature is available from the firmware version V1.40 on; however, it is necessary to upgrade the control board to one with more memory in order to allow the SoftPLC operation. Therefore, the parameter P089 verifies whether the hardware version is compatible (P089 = 1) or not (P089 = 0).

P204 – Load/Save Parameters

Adjustable Range:	0 = Not used 1 = Not used 2 = Not used 3 = Reset P043 to P050 4 = Reset P053 to P058 5 = Load Default 6 = Not used 7 = Load User 1 8 = Load User 2 9 = Not used 10 = Save User 1 11 = Save User 2 12 = Not used 13 = Erase SoftPLC 14 = Reset SoftPLC (P952 to P969) 15 = Reserved 16 = Reserved	**Factory Setting:** 0

Proprieties: CFG

Description:
The parameter P204 loads, saves and resets several parameters, as describe in the list above. The options related to the SoftPLC are: the option 13, which erases the user program, and the 14, which resets the user parameters P952 to P969.

P950 – Enable SoftPLC

Adjustable Range:	0 = No 1 = Yes	**Factory Setting:**	0

Proprieties: CFG

Description:
It makes it possible to run and to stop an installed applicative, but therefore the motor must be disabled.

P951 – Digital Inputs and Outputs Expansion Card Enable

Adjustable Range:	0 = No 1 = Yes	**Factory Setting:**	0

Proprieties: CFG

Description:
It makes it possible to enable digital inputs and outputs expansion card of Kit K-IOE, with: six digital inputs 24Vcc (of DI7 to DI12) and six digital relay outputs(of RL4 to RL9).

P952 to P969 – SoftPLC Parameters

Adjustable Range:	0 to 65535	**Factory Setting:**	0

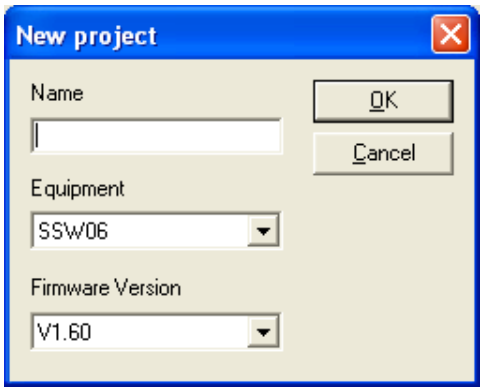
Description:
They consist of parameters with functions defined by the user by means of the WLP software.

5 RESUME OF THE WLP MAIN FUNCTIONS

This chapter brings basic information about the operations done with the WLP software for the SSW-06 soft-starter programming. More information can be obtained in the manual or in the help of the WLP software.

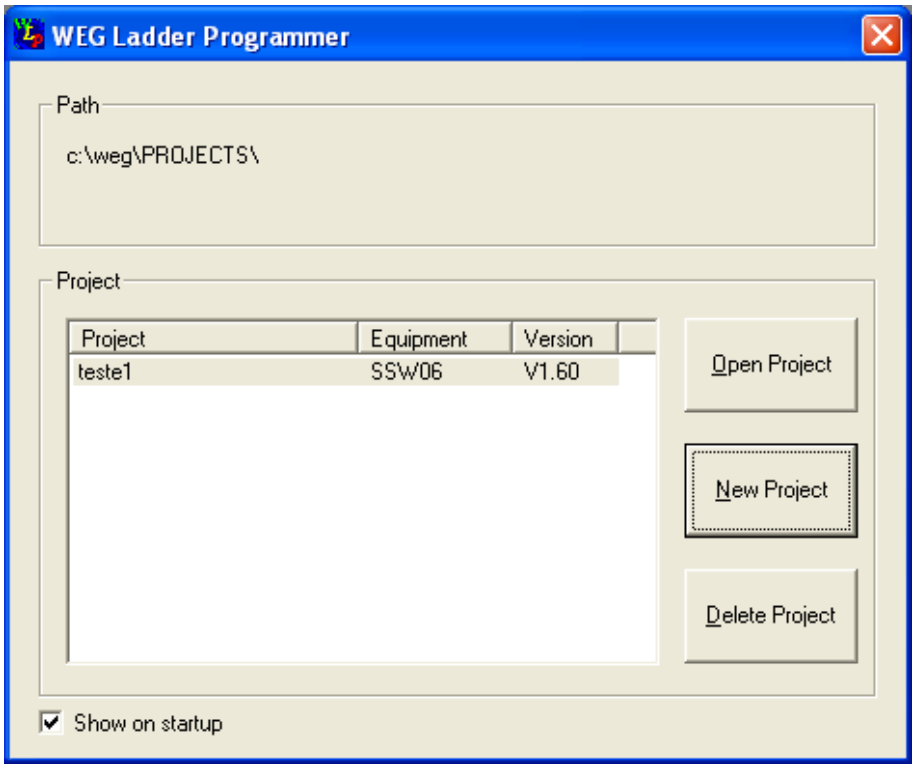
5.1 PROJECT – NEW

It creates a new project. Besides defining the project name, it is also necessary to configure the equipment and the respective firmware version.



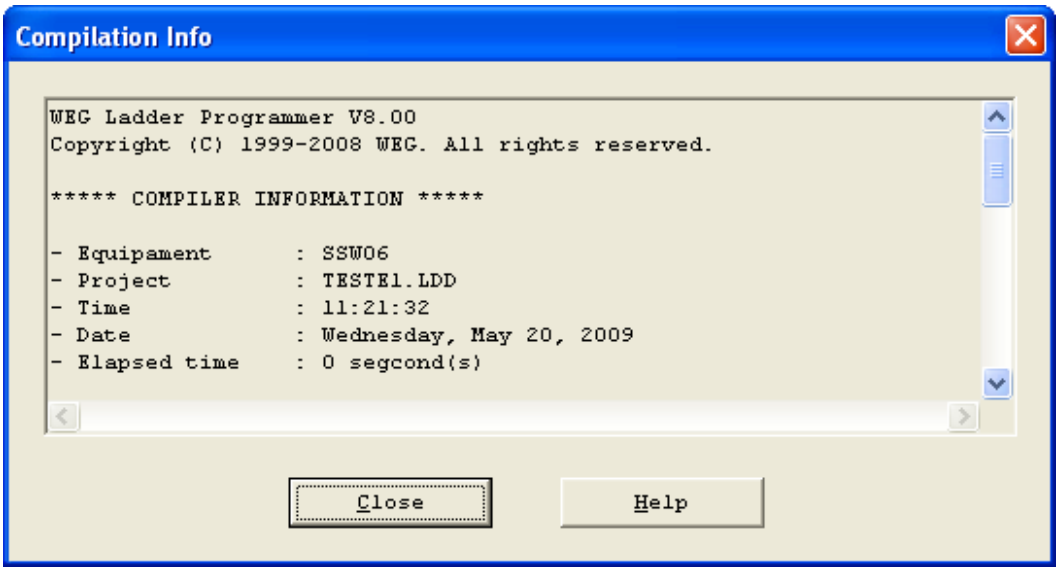
5.2 PROJECT – OPEN

It opens the selected project.



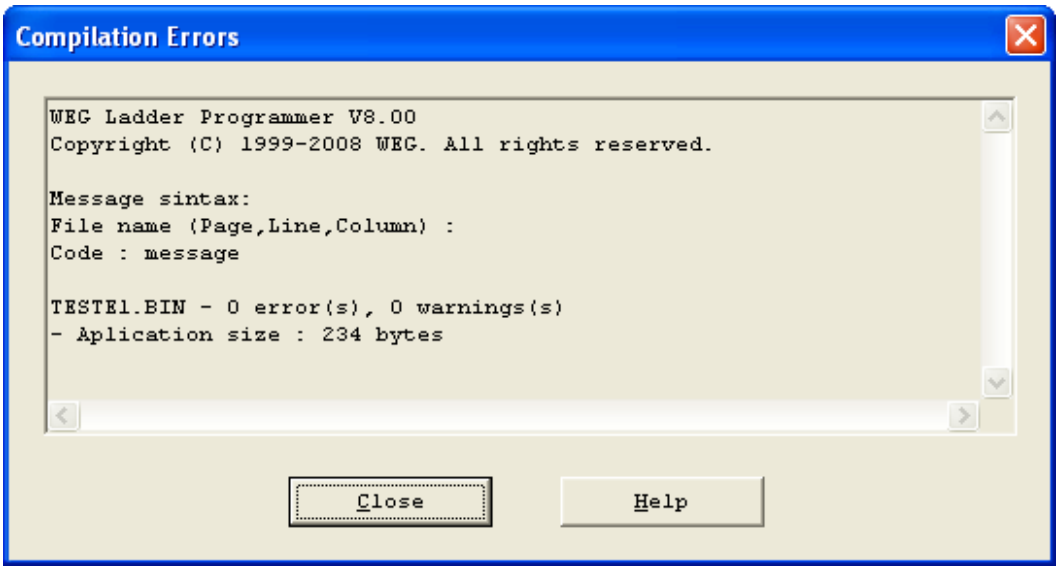
5.3 VIEW – COMPILATION INFO

It allows the user to know the compiled applicative size in bytes (<projectname>.bin) to be sent to the equipment.



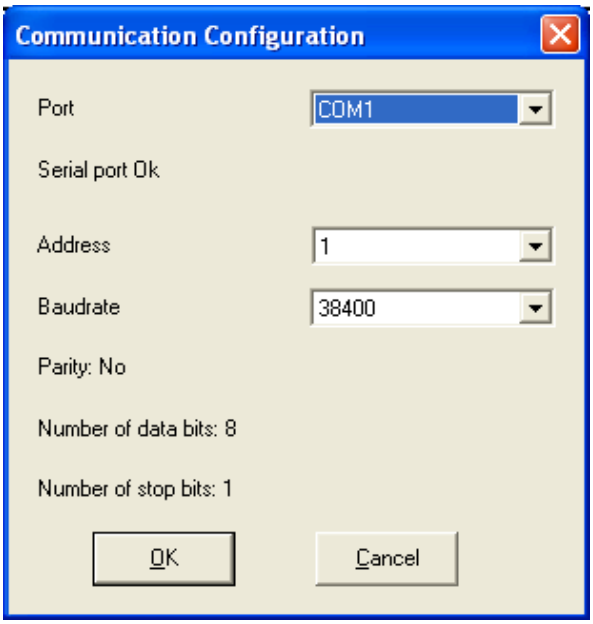
5.4 CONSTRUCT – COMPILE

It analyses the applicative and generates the code for the specified equipment.



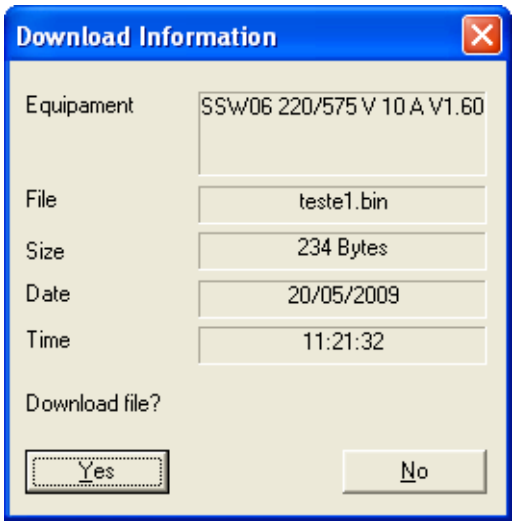
5.5 COMMUNICATION – CONFIGURATION

The serial port is used for the communication with the SSW-06. Therefore, both the SSW-06 and the WLP baud rate must be configured correctly.



5.6 COMMUNICATION – DOWNLOAD

This command allows downloading the applicative to the SSW-06.



5.7 COMMUNICATION – UPLOAD

This command makes it possible to upload the applicative installed in the SSW-06.