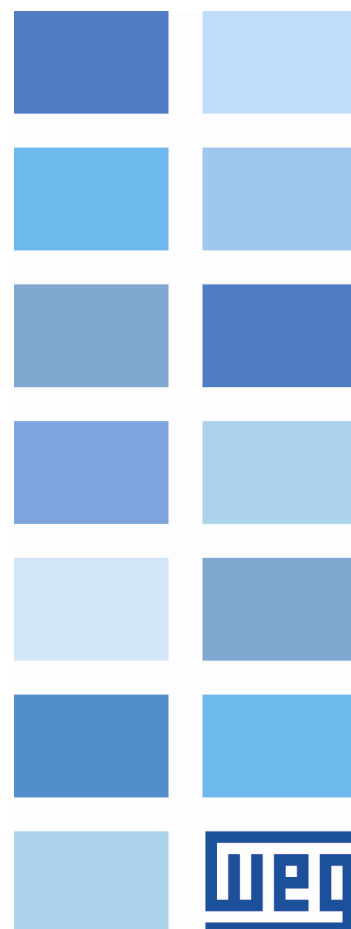


Timer Control

SSW900

Application Manual





Timer Control Application Manual

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The information below describes the revisions made to this manual.

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-	R00	First edition

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1 PARAMETER STRUCTURE

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2 FAULTS AND ALARMS

Fault/Alarm	Description	Possible Causes
F708/A708: SoftPLC Application Stopped	SoftPLC application is not running.	<ul style="list-style-type: none"> - SoftPLC application is stopped (C11.1 = Stop Applications). - SoftPLC status (S6.1.1) indicates that the application is incompatible with the SSW900 firmware version.
A750	Hour ON > Hour OFF Timer 1	- ON time set in C11.3.11 and C11.3.12 greater than the OFF time set in C11.3.14 and C11.3.15 - Timer 1.
A751	Hour ON > Hour OFF Timer 2	- ON time set in C11.3.17 and C11.3.18 greater than the OFF time set in C11.3.20 and C11.3.21 - Timer 2.
A752	Hour ON > Hour OFF Timer 3	- ON time set in C11.3.23 and C11.3.24 greater than the OFF time set in C11.3.26 and C11.3.27 - Timer 3.

3 GENERAL INFORMATION

3.1. ABOUT THE MANUAL

This manual contains the necessary information to configure the Timer Control application, developed with the SoftPLC function of the SSW900 Soft-Starter.

This application manual must be used together with the SSW900 Programming Manual, SSW900 User Manual, SoftPLC Function Manual and WPS Software Manual.

ABBREVIATIONS AND DEFINITIONS

PLC	Programmable Logic Controller
CRC	Cycling Redundancy Check
RAM	Random Access Memory
USB	Universal Serial Bus
WPS	Programming Software in Ladder Language

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3.2. ABOUT THE TIMER CONTROL APPLICATION

The Timer Control application, developed for the SoftPLC function of the SSW900 Soft-Starter, provides the user with flexibility to use and configure timers without adding any costs to the application, as it uses tools already developed for the WPS programming software.

Timers, widely used in smart irrigation systems, allow automatic control of pumps to operate according to a schedule.

They can also be used in any applications requiring automatic control for operation according to a schedule.

Electronic timers normally allow controlling the activation of a digital relay output at certain programmed periods.

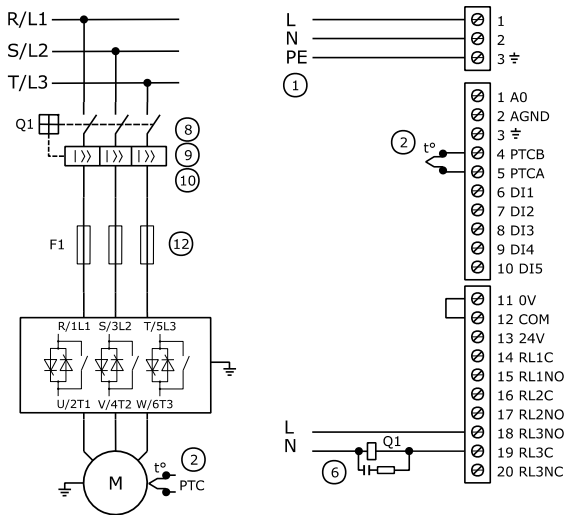
The timer implemented via the SSW900 SoftPLC allows the automatic activation of the motor at different times of the day, every day, specific day of the week or day interval.

4 RECOMMENDED SET-UP

This chapter presents a recommended set-up, which can be used in whole or in part to assemble the desired drive.

The main warning notes for this recommended set-up are listed below in the diagram by means of their respective numbers.

4.1. COMMANDS BY SOFTPLC OR HMI VIA LOC/REM KEY



HMI Commands

- C3 - LOC/REM Selection
- C3.1 = 3 (Mode = HMI LR REM Key)
- C3.2 = 0 (LOC Command = HMI keys)
- C3.3 = 3 (REM command = SoftPLC)
- C4 - I/O
- C4.2.3 = 14 (DO3 = Circuit Breaker Trip)

NOTES!

- ① Check the electronics power supply. "Control Supply" connector.
- ② Optional. It is recommended to use a PTC, thermostat connected to a digital input programmed for external fault or PT100 accessory.
- ⑥ Use a digital output programmed for "Circuit Breaker Trip" fault to open the circuit breaker when a fault occurs on the SSW power circuit.
- ⑧ In case of maintenance on the SSW or on the motor, it is necessary to disconnect the power supply input so as to ensure the full disconnection of the equipment from the supply line.
- ⑨ In case of damages on the SSW power circuit which keep the motor running by short circuit, the motor protection is obtained by using the power isolation contactor (K1) or circuit breaker (Q1) controlled by the SSW.
- ⑩ Coordination Type 1 – use a circuit breaker for short circuit protection on the input circuit. Use a shunt trip on the circuit breaker to open the circuit breaker via digital output of the SSW.
- ⑫ Optional. Coordination Type 2 – use aR high speed fuses for semiconductor protection.

5 PARAMETER DESCRIPTION

Only the user parameters of the SoftPLC Application will be described here. For more details on the other parameters of the SSW900, see the SSW900 Programming Manual.

5.1. STATUS

5.1.1. S6 SOFTPLC

Status parameters related to SoftPLC.

S6.1 SoftPLC Status

.1 Current 0 ... 4

Description:

Status in which the SoftPLC is. If no application is installed, the other parameters will not be shown on the HMI.

.1 Current Status in which the SoftPLC is.

If this parameter shows option 2 ("Incomp. Applic."), it indicates that the version that has been loaded into the memory is not compatible with the current SSW firmware.

In this case, the users need to recompile their project in the WPS, considering the new SSW version and download it again.

Indication	Description
0 = Without Application	No application recorded.
1 = Install. Applic.	Installing application.
2 = Incompat. App.	Application version loaded into the memory is not compatible with the current SSW firmware.
3 = App. Stopped	Application is not running.
4 = App. Running	Application is running.

S6.2 Scan Cycle Time

.1 Current 0 ... 65535 ms

Description:

Runtime of the application software.

.1 Current It is the runtime of the application software. The larger the application, the longer the runtime is likely to be.

S6.4 Parameters

.1 Software Version 0 ... 9.99

Description:

It indicates the software version of the SoftPLC application.

5.2. SETTINGS

5.2.1. C11 SOFTPLC

Setting parameters related to the SoftPLC.

C11 SoftPLC

C11.1 Mode

Adjustable Range:	0 ... 1	Factory Setting: 0
Properties:	Stopped	

Description:

It allows stopping or running an application installed, but the motor must be disabled in order to do that.

Indication	Description
0 = Stop Application	It stops the application
1 = Run Application	It runs the application

C11 SoftPLC

C11.2 App Not Running Action

Adjustable Range:	0 ... 2	Factory Setting: 0
Properties:		

Description:

It defines the action to be taken by the product in case the SoftPLC not running condition is detected, and it may generate alarm A708, fault F709 or neither of the previous actions, remaining inactive.

Indication	Description
0 = Disable	There is no actuation.
1 = Alarm A708	It acts as an alarm. It is only indicated.
2 = Fault F708	It acts as a fault. It disables the motor.

C11.3 Parameters

They consist of use parameters defined by the user via WLP software. The user can also configure these parameters.

C11.3 Parameters

C11.3.2 Mode

Adjustable Range:	0 ... 3	Factory Setting: 0
Properties:	Stopped	

Description:

It defines on which days the timers will work.

Indication	Description
0 = OFF	There is no actuation.
1 = Every day	The timers are enabled every day.
2 = Day Interval	According to the day interval set in (C.11.3.3)
3 = Day of the week	According to the day or days of the week set in (C.11.3.4 to C.11.3.10)

C11.3 Parameters

C11.3.3 Day Interval

Adjustable Range:	2 ... 30	Factory Setting: 2
Properties:	Stopped	

Description:

It defines the day interval in which the timers will work. Factory default: every 2 days.

It always starts the motor on the first day that the interval is set to.


NOTE!

If the SSW900 remains de-energized for two days or more, only one day will be considered when counting the day interval.

C11.3 Parameters
C11.3.4 Monday

Adjustable Range: 0 ... 1 Factory Setting: 0
 Properties: Stopped

C11.3 Parameters
C11.3.10 Sunday

Adjustable Range: 0 ... 1 Factory Setting: 0
 Properties: Stopped

Description:

It defines the day or days of the week on which the timers will work.

Indication	Description
0 = OFF	There is no actuation.
1 = ON	The timers are enabled on this day.

C11.3 Parameters
C11.3.11 Hour ON 1

Adjustable Range: 0 ... 23 Factory Setting: 0
 Properties: Stopped

C11.3 Parameters
C11.3.12 Minute ON 1

Adjustable Range: 0 ... 59 Factory Setting: 0
 Properties: Stopped

Description:

It defines the time when timer 1 will start the motor.

E.g.: Timer 1 = 13:11 (set 13 hours in C11.3.11 and 11 minutes in C11.3.12).

C11.3 Parameters
C11.3.14 Hour OFF 1

Adjustable Range: 0 ... 23 Factory Setting: 0
 Properties:

C11.3 Parameters
C11.3.15 Minute OFF 1

Adjustable Range: 0 ... 59 Factory Setting: 0
 Properties:

Description:

It defines the time when timer 1 will stop the motor.

E.g.: Timer 1 = 13:23 (set 13 h in C11.3.14 and 23 minutes in C11.3.15).

C11.3 Parameters
C11.3.17 Hour ON 2

Adjustable Range:	0 ... 23	Factory Setting:
Properties:		0

C11.3 Parameters

C11.3.18 Minute ON 2

Adjustable Range:	0 ... 59	Factory Setting:
Properties:		0

Description:

It defines the time when timer 2 will start the motor.

C11.3 Parameters

C11.3.20 Hour OFF 2

Adjustable Range:	0 ... 23	Factory Setting:
Properties:		0

C11.3 Parameters

C11.3.21 Minute OFF 2

Adjustable Range:	0 ... 59	Factory Setting:
Properties:		0

Description:

It defines the time when timer 2 will stop the motor.

C11.3 Parameters

C11.3.23 Hour ON 3

Adjustable Range:	0 ... 23	Factory Setting:
Properties:		0

C11.3 Parameters

C11.3.24 Minute ON 3

Adjustable Range:	0 ... 59	Factory Setting:
Properties:		0

Description:

It defines the time when timer 3 will start the motor.

C11.3 Parameters

C11.3.26 Hour OFF 3

Adjustable Range:	0 ... 23	Factory Setting:
Properties:		0

C11.3 Parameters

C11.3.27 Minute OFF 3

Adjustable Range:	0 ... 59	Factory Setting:
Properties:		0

Description:

It defines the time when timer 3 will stop the motor.

R


NOTES!

To enable a Timer, just set different ON and OFF times for the same Timer.

Always set the OFF time after the ON time for the desired Timer.

Do not set overlapping time intervals for different Timers, that is, do not set time intervals to one Timer within the time interval of another Timer.

All Timers must be set within a one-day interval, that is, within 24h of the same day.


NOTE!

The setting user parameters are always retentive.

C11 SoftPLC
SoftPLC Application
Adjustable Range:

0 ... 2

Factory Setting: 0

Properties:

Stopped

Description:

It allows the user to select which application to run.

Indication	Description
0 = User	It defines that the application downloaded by the user through the WPS is the one that will run on the SoftPLC.
1 = Timer Control	It defines that the Timer Control is the application that will run on the SoftPLC.
2 = Pump Cleaning	It defines that the Pump Cleaning is the application that will run on the SoftPLC.

6 OPERATION

6.1.1. Hours of the day

Up to three timers are available to control the motor operation, Timer 1 ON and OFF, Timer 2 ON and OFF, Timer 3 ON and OFF. The times set for each timer must be different and must all be within 24 hours of the same day.

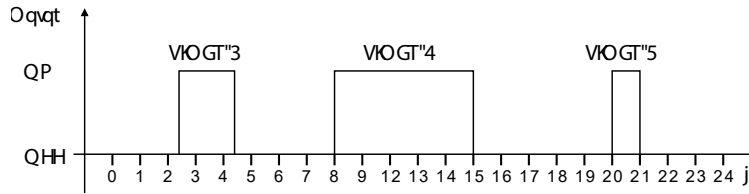


Figure 3.1: Timer setting example

If you want to set only 1 Timer per day, keep the others at 0 h and 0 min for ON and OFF.

For the timer to work: always set the OFF time greater than the ON time of the desired timer.

6.1.2. Day of the week

It allows setting individually on which day of the week Timers 1, 2 and 3 will work.

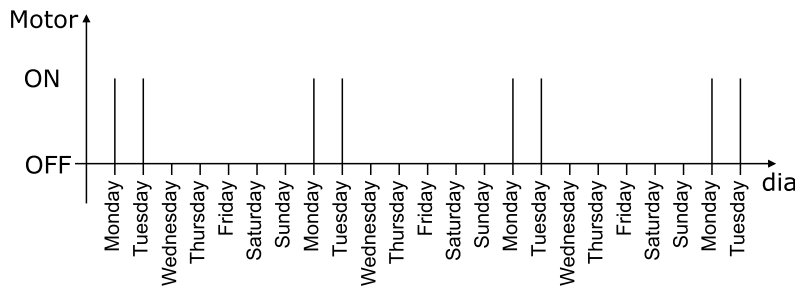


Figure 3.2: Setting example with two days of the week

6.1.3. Day interval.

It allows setting the operation of Timers 1, 2 and 3 to an interval of 2 to 30 days.

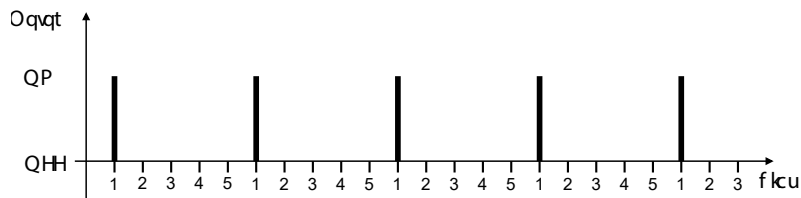


Figure 3.3: Setting example of a 5-day interval

It always starts the motor on the first day that the interval is set to.

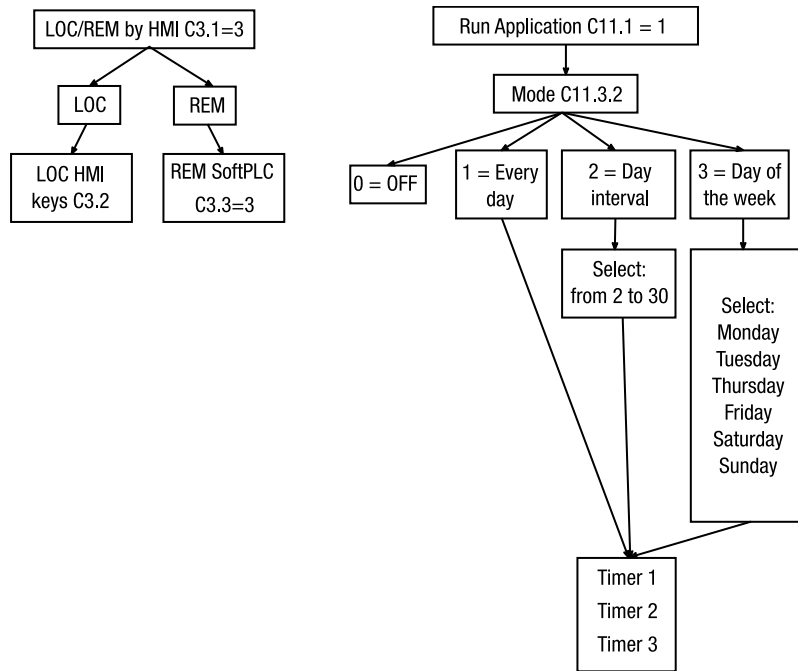


Figure 6.4: Setting flow

7 TROUBLESHOOTING

7.1. FREQUENT PROBLEMS

Table 7.1 Frequent problems

Problem	Probable Cause	Cause Description
Application will not run	S6.1.1 ≠ 4	Observed in S6.1.1 SoftPLC Status/Current ≠ 4. C11.1 SoftPLC/Mode - set to: 0 = Stop Application. Or check S6.1.1 to see the other reasons.
Motor will not start	Setting error	C11.3.2 SoftPLC/Parameters/Mode - set to: 0 = OFF or selected incorrectly according to the desired days or day interval.
		All Timers set to Zero.
		The time intervals set for different Timers are overlapping.
	LOC/REM command source	Check if the active command source is in Local or Remote. Indication in S3.1.2. Refer to the Chapter Local/Remote Configuration of the Programming Manual. The suggestion is to set: C3 - LOC/REM Selection C3.1 = 3 (Mode = HMI LR REM Key) C3.2 = 0 (LOC Command = HMI keys) C3.3 = 3 (REM command = SoftPLC) Check via HMI if it is in "Rem".