



WEG SSW07 SOFT STARTER SERIAL COMMUNICATIONS QUICK-START GUIDE

NOTE: This Quick-Start guide is intended for the sole purpose of establishing communications connections between WEG SSW07 Soft Starter and AutomationDirect programmable controllers, or between the SSW07 and the USB port of a personal computer. Please refer to WEG SSW07 documents for specifications and instructions for using the WEG SSW07 Soft Starter.

TABLE OF CONTENTS

<i>Communications Parameters Summary</i>	<i>.5-2</i>
<i>Summary – Serial Communication Parameters</i>	<i>5-2</i>
<i>Summary – Available Basic Variables.</i>	<i>5-3</i>
<i>Connecting PC to SSW07 Using AutomationDirect Cable USB-485M</i>	<i>.5-4</i>
<i>Connecting Communication Cables to SSW07 Soft Starters.</i>	<i>.5-5</i>
<i>AutomationDirect PLCs as Modbus Master</i>	<i>.5-6</i>
<i>Communication Cable Connections</i>	<i>5-6</i>
<i>RS-232C to RS-485 Conversion.</i>	<i>5-7</i>
<i>AutomationDirect PLC Cable Connections</i>	<i>5-8</i>
<i>AutomationDirect PLC Example Programs for WEG SSW07 AC Soft Starter</i>	<i>.5-11</i>

COMMUNICATIONS PARAMETERS SUMMARY

A summary of the WEG SSW07 Soft Starter Communications Parameters is listed below. Refer to the Soft Starter SSW07/SSW08 Serial Communication Manual for more detailed information on parameters and programming.

SUMMARY – SERIAL COMMUNICATION PARAMETERS

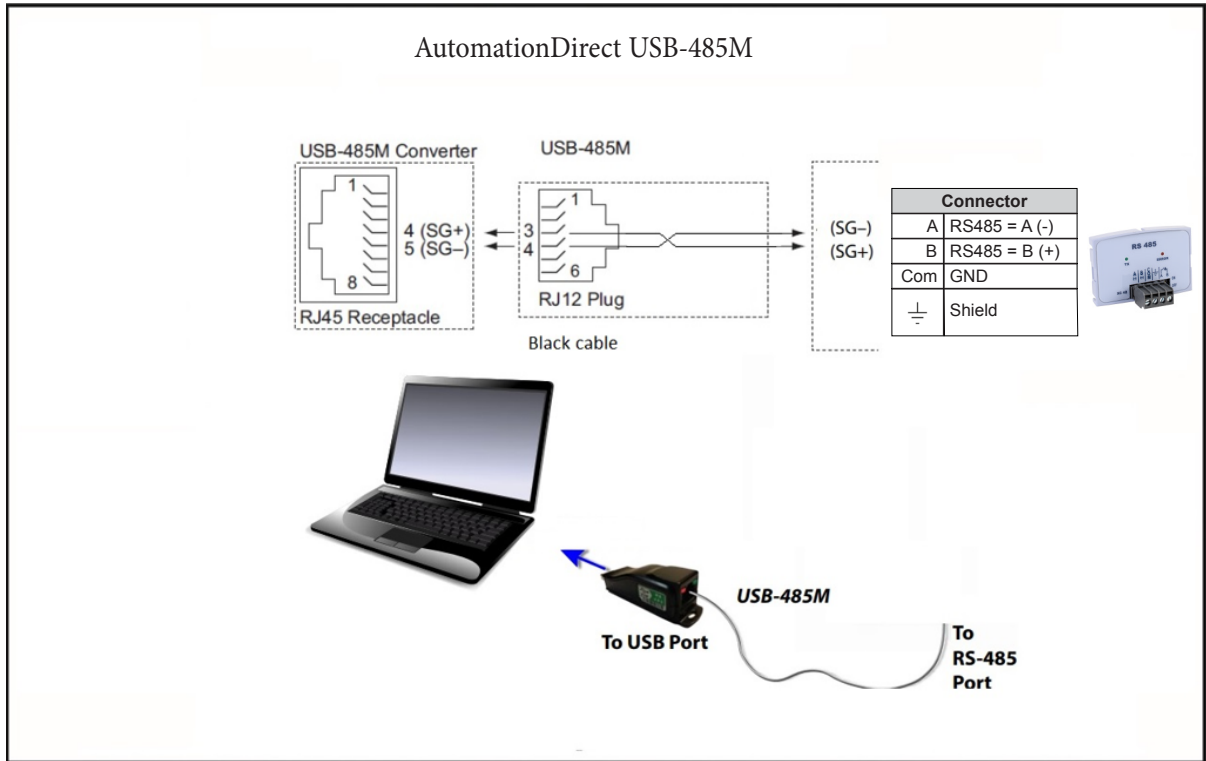
WEG SSW07 Serial Communication Parameters Summary ¹						
Parameter ²	Range	Setting		Modbus Address		
		Comm ³	Default ³	Hex	Modicon ⁴	
1) To read parameters, use Function Code 3; To write parameters, use Function Code 6 or 16						
2) ♦ indicates a parameter that can be changed only with a stopped motor						
3) RO = Read Only						
4) Modicon Modbus addressing for the SSW07 is 40001 + the Parameter Address; Example: P222 Modicon Modbus address would be 40001 + 222 = 40223						
5) Speed references and commands via Modbus RTU will always be Remote references; not Local						
6) Baud rate in the PLC must match the baud rate in the Soft Starter						
General Parameters						
P000	Access to Parameters	0 to 9999		0 (5)	0	40001
P001	Motor current %In of SSW-07/SSW-08	0.0-999.9	RO	–	1	40002
P002	Motor current %In of Motor	0.0-999.9	RO	–	2	40003
P003	Motor Current in Amps	0.0-6553	RO	–	3	40004
P005	Power supply frequency	0.0 to 99.9	RO	–	5	40006
♦ P200	The password is	0 = Inactive 1 = Active		1 = Active	C8	40201
Parameters necessary to communicate with the Soft Starter using module KRS-485 or KRS-232						
♦ P220	Local/remote supply selection	0 = Always local 1 = Always remote 2 = Keypad (local default) 3 = Keypad (remote default) 4 = D11 to D13 5 = Serial (local default) 6 = Serial (remote default) 7 = Fieldbus (default Local) 8 + Fieldbus (Default Remote)	1	3 = Keypad (default remote)	DC	40221
♦ P229	Command selection - local situation	0 = Keypad 1 = Digital Input Dlx 2 = Serial 3 = Fieldbus		0	E2	40230
♦ P230	Command selection - remote situation	0 = Keypad 1 = Digital Input Dlx 2 = Serial 3 = Fieldbus	2	1 = Digital Input Dlx	E3	40231
♦ P308	Soft-Starter address	1 to 247	1	1	134	40309
♦ P312	Type of protocol and serial communication transmission rate	1 = Modbus 9600bps, 8, no parity, 2 stop 2 = Modbus 9600bps, 8, odd parity, 1 stop 3 = Modbus 9600bps, 8, even parity, 1 stop 4 = Modbus 19200bps, 8, no parity, 2 stop 5 = Modbus 19200bps, 8, odd parity, 1 stop 6 = Modbus 19200bps, 8, even parity, 1 stop 7 = Modbus 38400bps, 8, no parity, 2 stop 8 = Modbus 38400bps, 8, odd parity, 1 stop 9 = Modbus 38400, 8, even parity, 1 stop	2	1 = Modbus 9600bps, 8, no parity, 2 stop	138	40313

WEG SSW07 Available Basic Variables Summary						
Parameter		Range	Setting		Modbus Address	
			Comm		Hex	Modicon
P313	Serial communication error action (E28)	0 = Inactive 1 = Disable 2 = General disable 3 = Change to local	1	1 = Disable	139	40314
◆P314	Serial communication verification time	0 = inactive 1 to 999	0.0	0 = Inactive	13A	40315
VB01 – Soft-Starter SSW-07/SSW-08 Status	Status Variable Bits	0 = motor stopped. 1 = motor running	Read only		00h	01
		0= disabled 1 =enabled	Read only		01h	02
		0= not jogging 1= Jogging	Read only		02h	03
		0=not accelerating 1= acclerating	Read only		03h	04
		0= not in current limit 1= in current limit	Read only		04h	05
		0= full voltage not applied to motor 1= full volgate applied to motor	Read only		05h	06
		reserved	Read only		06h	07
		0=not decelerating 1= declerating	Read only		07h	08
		0= Local 1= Remote	Read only		08h	09
		0= not in DC braking 1= DC braking on	Read only		09h	10
		0 = Not in Reverse 1 = In Reverse	Read only		0Ah	11
		0= CW 1= CCW	Read only		0Bh	12
		0= Bypass open 1= Bypass closed	Read only		0Ch	13
		reserved	Read only		0Dh	14
		0= power supply off 1= power supply on	Read only		0Eh	15
0= No error 1= Error	Read only		0Fh	16		
VB03 – Soft-Starter SSW-07/SSW-08 Command	Command Variable Bits	0 = stopping by ramp 1 = running by ramp	R/W		64h	101
		0 = general disable 1 = general enable	R/W		65h	102
		0 = no jog 1 = with jog	R/W		66h	103
		0 = CW 1 = CWW	R/W		67h	104
		0 = local. 1 = remote	R/W		68h	105
		reserved	R/W		69h	106
		reserved	R/W		6Ah	107
		0 = no command. 0 → 1 = executes reset (when in error status)	R/W		6Bh	108

CONNECTING PC TO SSW07 USING AUTOMATIONDIRECT CABLE USB-485M

An AutomationDirect cable, part number USB-485M, provides a quick and easy method of communicating to a WEG SSW07 Soft Starter from a PC which has WEG SuperDrive G2 software installed.

NOTE: Refer to the WEG SuperDrive G2 Software User Manual for information and instructions regarding configuration of SSW07 Soft Starters.



CONNECTING COMMUNICATION CABLES TO SSW07 SOFT STARTERS



The SSW07-08-KRS-485 Soft Starter communication module includes a DIP switch that will switch in a 120Ω terminating resistor for the RS-485 network.

The SSW07 serial communication port is an RS-485 input. SSW07 to SSW07 serial connections can be accomplished with standard RS-485 cable (L19827-1 or similar). RS-232 signals can be converted to RS-485 by using a separate converter (see the FA-ISOCAN drawings on [page 5-7](#)).

SSW07-08-KRS-485 SERIAL COMMUNICATIONS MODULE

SSW07-08-KRS-485

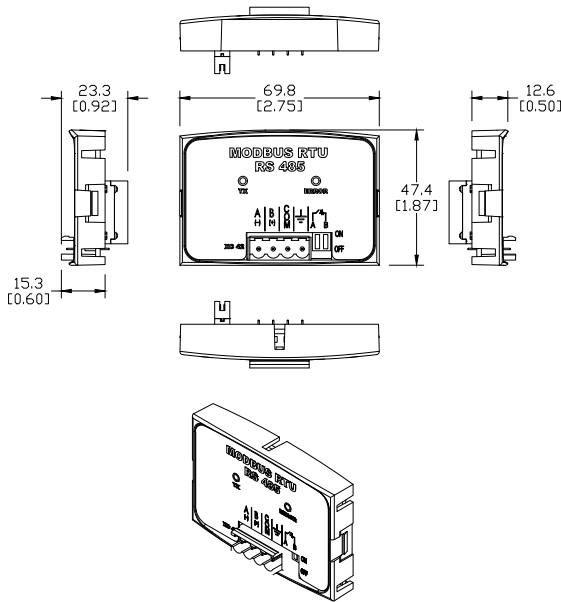
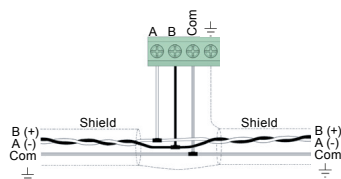


Figure A2: SSW07-08-KRS-485 dimensions in mm [in] and connectors location



Recommended RS-485 cable: Belden 9842, AutomationDirect L19954 series, or equivalent.

1 SAFETY INFORMATION

1.1 SAFETY WARNINGS



NOTE!

- Only use the KRS-485 module on WEG SSW07 series soft starters.
- It is recommended reading the SSW07 user's manual before installing or operating this accessory.
- The content of this guide provides important information for the full understanding and proper operation of this module.

1.2 PRELIMINARY RECOMMENDATIONS



ATTENTION!

- Always disconnect the general power supply before connecting or disconnecting the accessories of the SSW07 Soft Starter.
- Wait for at least 10 minutes for the full discharge of the Soft Starter.

5 CONFIGURATIONS

The RS485 interface connections must be done on the connector as per [Table 1](#)

Table 1: Connector signals of the RS485 interface

Connector	Description
A	RS485: A(-)
B	RS485: B(+)
Com	GND
⊥	Shield

The location of the DIP switch to select the RS485 network termination can be better viewed in [Figure A2](#) and it must be configured as per [Table 2](#). [Figure A3](#) shows a connection example of the SSW-7-08-KRS-485 accessory to a RS485 network.

Table 2: Configuration of the switches to configure the RS485

Communication	Switch	Switch Setting	Option
RS485	S1 ^(*)	A = OFF and B = OFF	RS485 termination off
		A = ON and B = ON	RS485 termination on ^(**)

(*) Any other combination of the switches is not allowed.
 (**) It is recommended to use this termination with cables longer than 3 m.

The SSW07-08-KRS-485 module has the necessary resources to perform setting, command and monitoring of the Soft Starter through SuperDrive G2 software. For further details, refer to the SuperDrive G2 users manual.

AUTOMATIONDIRECT PLCs AS MODBUS MASTER

COMMUNICATION CABLE CONNECTIONS

Serial Modbus-capable AutomationDirect PLCs can communicate with SSW07 Soft Starters which have an optional communication card installed.

Serial Modbus control is easier to accomplish from a PLC that supports dedicated Modbus messaging. [Older PLCs may require programming to construct the Modbus strings.] We recommend PLCs with dedicated Modbus serial commands: CLICK (with RS-485 ports), P1000, P2000, P3000, BRX/Do-more, DirectLogic (DL06 or D2-260). Other PLC-Soft Starter connectivity is possible: Please refer to the “Typical ADC PLC to SSW07 Serial Connectivity Matrix” below.

Typical ADC PLC to WEG SSW07 Serial Communications Connectivity

Typical ADC PLC to WEG SSW07 RS-232 Serial Communications Connectivity Matrix					
Recommended PLC Connectivity			Communication	Direct Cable	SSW07 Port Type
PLC	Port #	Port Type			
CLICK	2	RJ12	RS-232	ZL-RJ12-CBL-2P	SSW07 - KRS-232 Pin connections Pin 2 - RX Pin 3 - TX Pin 5 - COM (0V)
D2-260	2	HD15		D2-DSCBL-2	
DL06	2	HD15		D2-DSCBL-2	
BRX/Do-more	RS-232	3 screw terminals		L19772-1 cable	
Do-more H2-DM1	RS-232	RJ12		ZL-RJ12-CBL-2P	
P1-540	RS-232	RJ12		ZL-RJ12-CBL-2P	
P2-550	RS-232	RJ12		ZL-RJ12-CBL-2P	
P3-530	RS-232	RJ12		ZL-RJ12-CBL-2P	
P3-550	RS-232	RJ12		ZL-RJ12-CBL-2P	
P3-550E	RS-232	RJ12		ZL-RJ12-CBL-2P	
Other PLC Connectivity				-	
D2-250-1	2	HD15	RS-232	D2-DSCBL-2	
D4-450/D4-454	2	RJ12		ZL-RJ12-CBL-2P	
DL05	2	RJ12		ZL-RJ12-CBL-2P	
DL06 + DCM	2	RJ12		ZL-RJ12-CBL-2P	
Do-more H2-DM1 + H2-SERIO-4	1,2	RJ12		ZL-RJ12-CBL-2P	
Do-more T1H-DM1	RS-232	RJ12		ZL-RJ12-CBL-2P	
P2-SCM	1,2,3	RJ12		ZL-RJ12-CBL-2P	
P3-SCM	1,2,3	RJ12		ZL-RJ12-CBL-2P	

Typical ADC PLC to WEG SSW07 RS-485 Serial Communications Connectivity

Typical ADC PLC to WEG SSW07 RS-485 Serial Communications Connectivity Matrix						
Recommended PLC Connectivity			Communication	Direct Cable	SSW07 Port Type	
PLC	Port #	Port Type				
CLICK	3	3 screw terminals	RS-485	L19954 cable	SSW07-08-KRS-485 screw terminals A (-) B (+) COM (0V)	
D2-260	2	HD15	RS-485	D2-DSCBL-2		
DL06	2	HD15	RS-485	D2-DSCBL-2		
BRX/Do-more	RS-485	3 screw terminals	RS-485	L19954 cable		
Do-more H2-DM1	RS-232	RJ12	RS-232 to RS-485	FA-ISOCOCON with L19954 cable		
P2-550	RS-485	3 screw terminals	RS-485	L19954 cable		
P3-530	RS-485	3 screw terminals	RS-485	L19954 cable		
P3-550	RS-485	3 screw terminals	RS-485	L19954 cable		
P3-550E	RS-485	3 screw terminals	RS-485	L19954 cable		
Other PLC Connectivity			-	-		
D2-250-1	2	HD15	RS-485	D2-DSCBL-2		
D4-450/D4-454	1	DB25	RS-232 to RS-485	FA-ISOCOCON with L19954 cable		
DL05	2	RJ12	RS-232 to RS-485	FA-ISOCOCON with L19954 cable		
DL06 + DCM	2	HD15	RS-485	D2-DSCBL-2		
Do-more H2-DM1 + H2-SERIO-4	3	5 screw terminals	RS-485	L19954 cable		
Do-more T1H-DM1	RS-232	RJ12	RS-232 to RS-485	FA-ISOCOCON with L19954 cable		
P2-SCM	4	4 screw terminals	RS-485	L19954 cable		
P3-SCM	4	4 screw terminals	RS-485	L19954 cable		

RS-232C TO RS-485 CONVERSION

An RS-485 network cable can span up to 1000 meters (4000 feet). However, many AutomationDirect PLCs have only RS-232C communication ports, and require an FA-ISOCAN (RS-232C to RS-422/485 network adapter) in order to make an RS-485 connection.

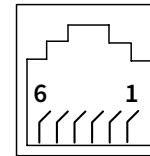


If an FA-ISOCAN module is used, set the module dipswitches as required. Refer to the FA-ISOCAN manual for more detailed information.

FA-ISOCAN Switch Settings:

- S21–S23: OFF, ON, ON (19200 baud)
- S24–S27: OFF (Automatic Network Transmit Enable)
- Terminate: ON (end of run term resistors)
- Bias (2): ON (end of run bias resistors)
- 1/2 DPX (2): ON (RS-485 TXD/RXD jumpers)

FA-ISOCAN RJ-12 Serial Comm Port A RS-232 Input Port

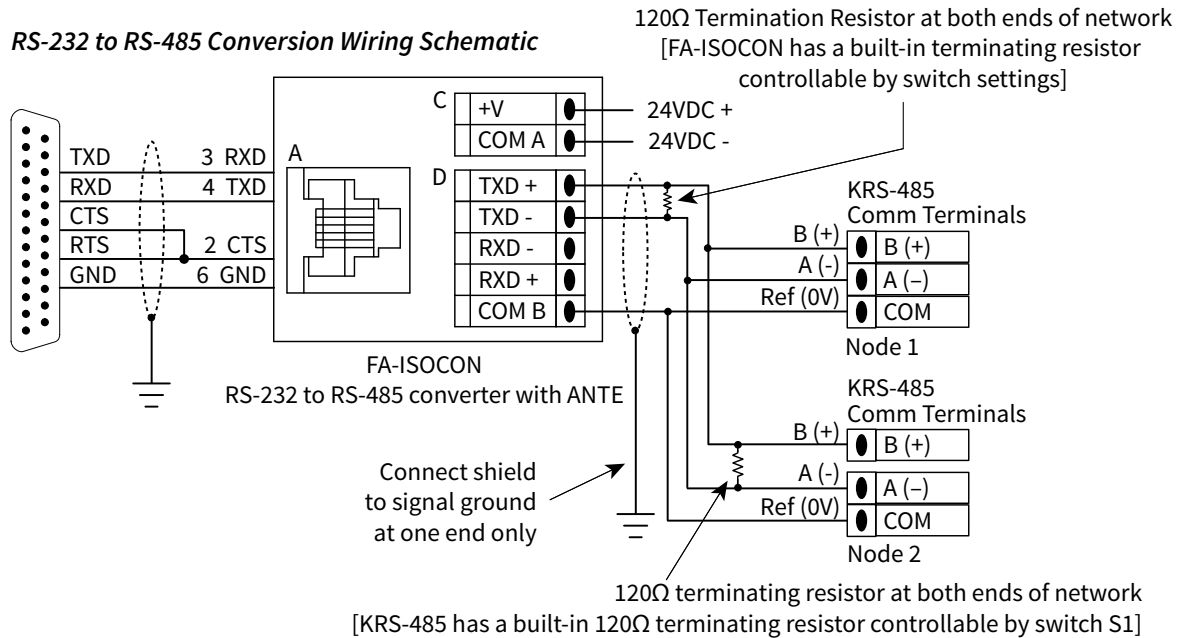


- 1: Signal Ground
- 2: CTS (input)
- 3: RXD (input)
- 4: TXD (output)
- 5: +5VDC in
- 6: Signal Ground

Helpful Hint: Some applications require that the FA-ISOCAN baud rate is set faster than the drive/network baud rate.

FA-ISOCAN Wiring

RS-232 to RS-485 Conversion Wiring Schematic



For information regarding configuration of AutomationDirect PLCs or other PLCs, please refer to the applicable PLC user manual for your application.

AUTOMATIONDIRECT PLC CABLE CONNECTIONS

CLICK SERIES PORT 2,

DO-MORE SERIES H2-DM1

PRODUCTIVITY SERIES P1-540, P2-550, P3-530/550/550E VIA RS-232

AutomationDirect PLC RJ-12, RS-232 connectors: CLICK Port 2, P1-540, P2-550, P3-550/550E/530, H2DM1

RJ12 6-pin Phone Plug (6P6C)

1 = Sig GND
2 = not used
3 = RXD
4 = TXD
5 = not used
6 = not used

Wiring Diagram

Connection	
1	NC
2	RX
3	TX
4	NC
5	COM

The connection above can be accomplished using the ZL-RJ12-CBL-2P. For longer connections, use AutomationDirect part number L19772-1 or equivalent specifications.

CLICK SERIES PORT 3 VIA RS-485

AutomationDirect CLICK PLC

CLICK Com Port 3

RS-485 Signal A +
RS-485 Signal B -
Logic Ground LG

Wiring Diagram

Connector	
A	RS485 = A (-)
B	RS485 = B (+)
COM	GND
Shield	Shield

Note: Use the above wiring diagram to make your own cable. We recommend AutomationDirect part number L19954-1 shielded cable or equivalent. Use 120 ohm termination resistor on each end. KRS-485 has built-in termination that can be enabled by DIP switches.

DIRECTLOGIC SERIES D2-250-1, D2-260, DL06 PORT 2 VIA RS-232

AutomationDirect D2-250-1, D2-260 or DL06 Port 2

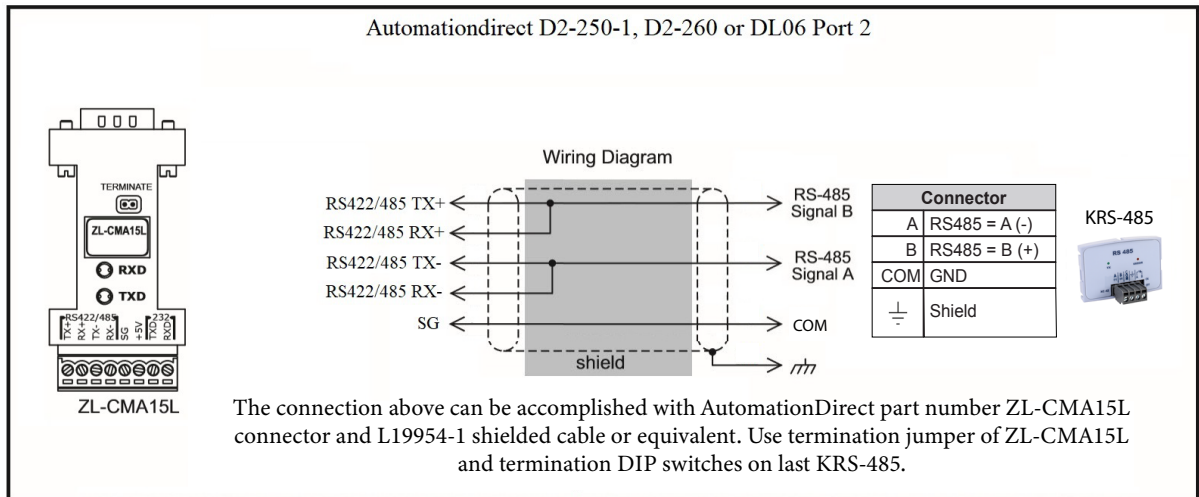
ZL-CMA15L

Wiring Diagram

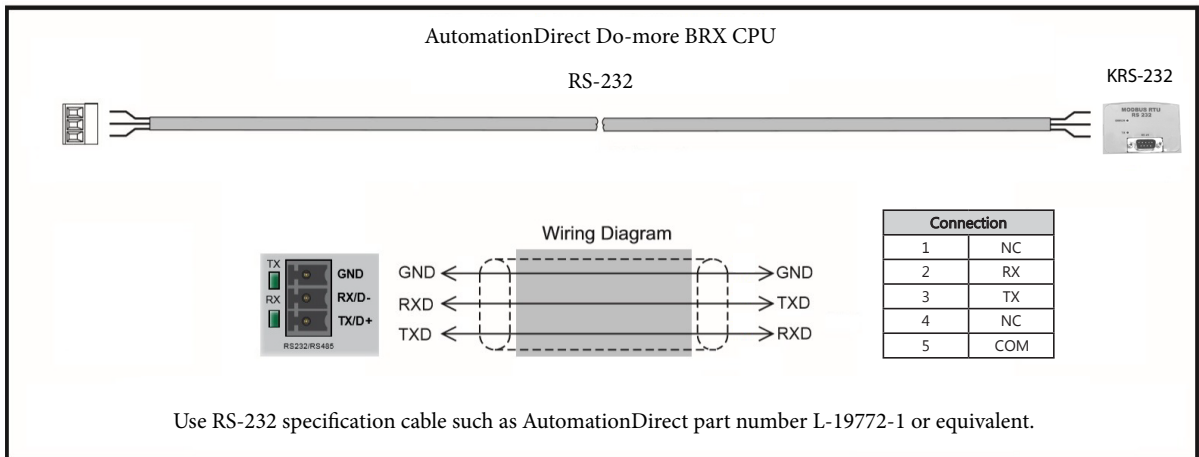
Connection	
1	NC
2	RX
3	TX
4	NC
5	COM

Use RS-232 specification cable such as AutomationDirect part number L19772-1 or equivalent.

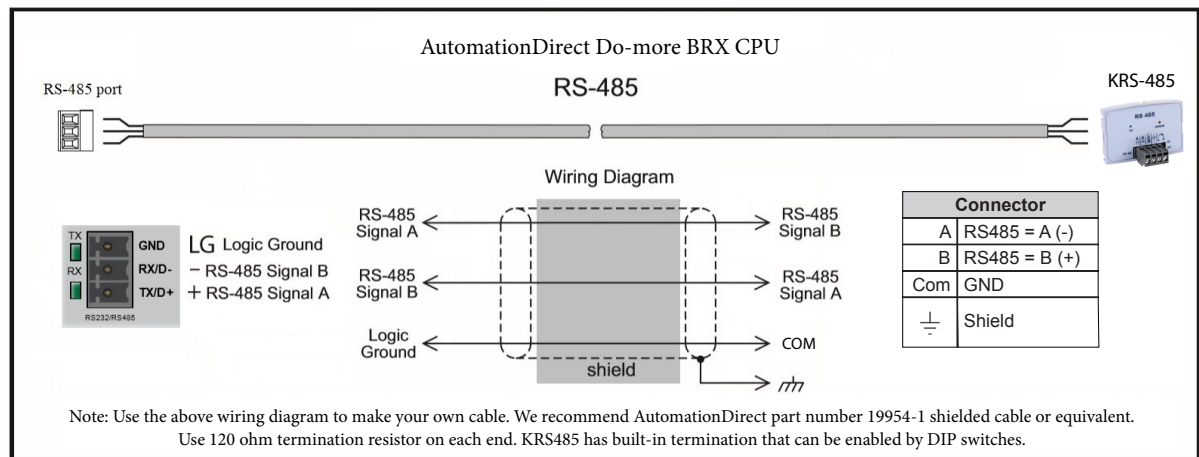
DIRECTLOGIC SERIES D2-250-1, D2-260, DL06 PORT 2 VIA RS-485



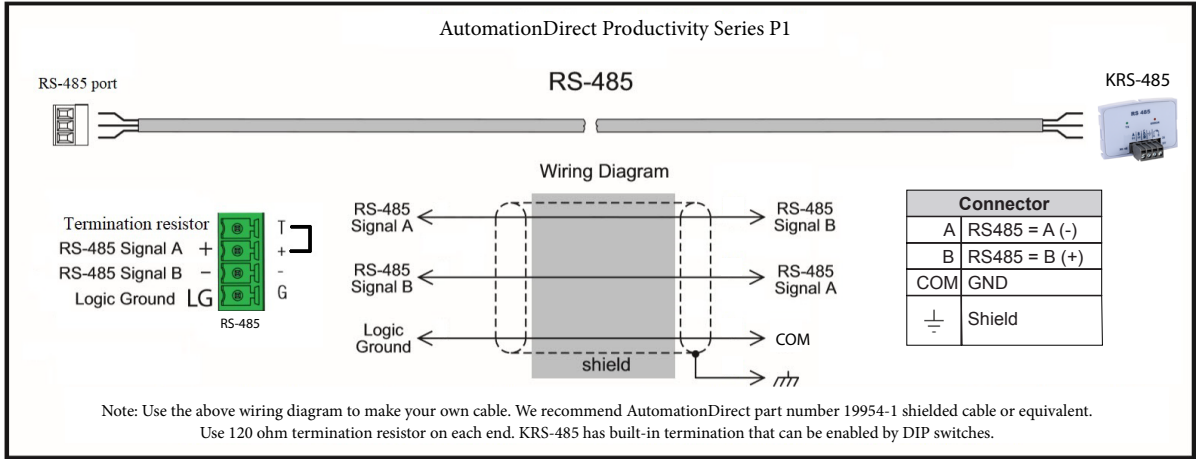
DO-MORE BRX SERIES VIA RS-232



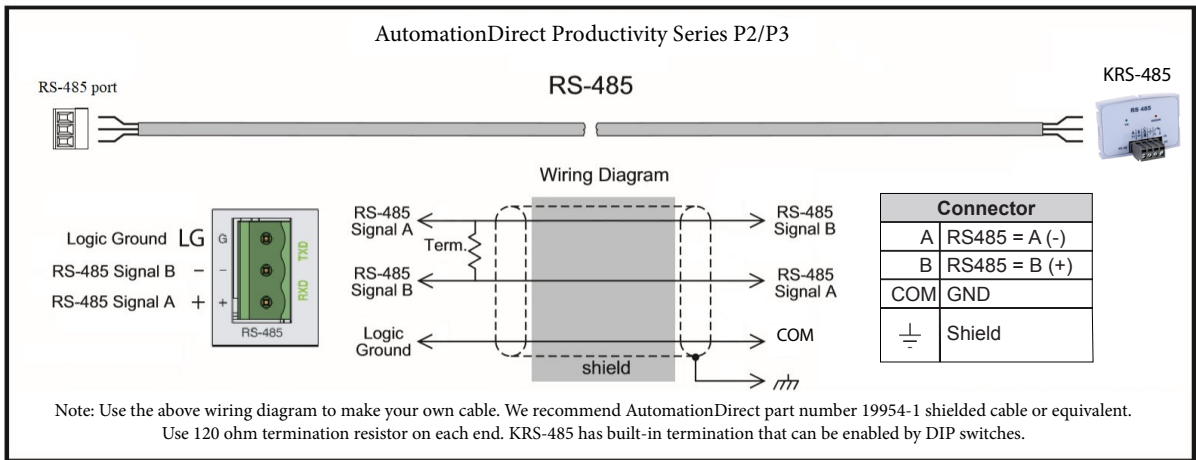
DO-MORE BRX SERIES VIA RS-485



PRODUCTIVITY SERIES P1 VIA RS-485



PRODUCTIVITY SERIES P2/P3 VIA RS-485



AUTOMATIONDIRECT PLC EXAMPLE PROGRAMS FOR WEG SSW07 SOFT STARTER

Example programs for various AutomationDirect PLCs are available for free download from AutomationDirect: <https://support.automationdirect.com/examples.html>.
 Also, an example CLICK PLC ladder diagram is show in the following section.

CLICK PLC Example Program for WEG SSW07 AC Soft Starter



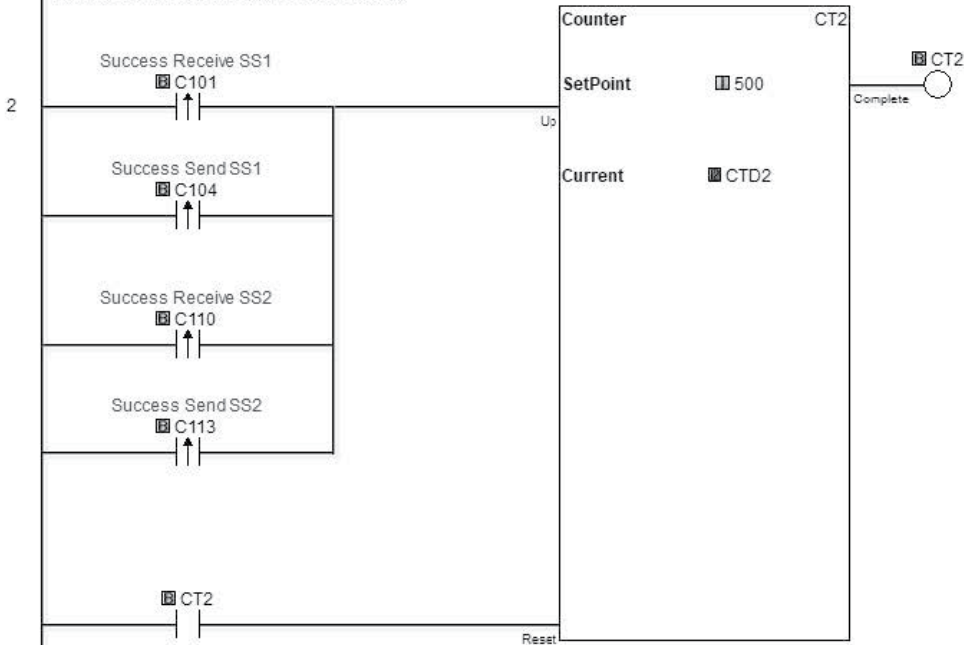
THIS INFORMATION PROVIDED BY AUTOMATIONDIRECT.COM TECHNICAL SUPPORT IS PROVIDED "AS IS" WITHOUT A GUARANTEE OF ANY KIND. These documents are provided by our technical support department to assist others. We do not guarantee that the data is suitable for your particular application, ncr do we assume any responsibility for them in your application.

1 (NOP)

This example section shows network comms using 2 WEG SSW07 with Modbus RTU.
 Eaudrate in SSW07 is 9.6Kbps 8,2,N (by default). P220=6 (Serial Remote). P230=2 (Serial).
 P308=1 (Node number) and P308=2 (Node number) for the second unit

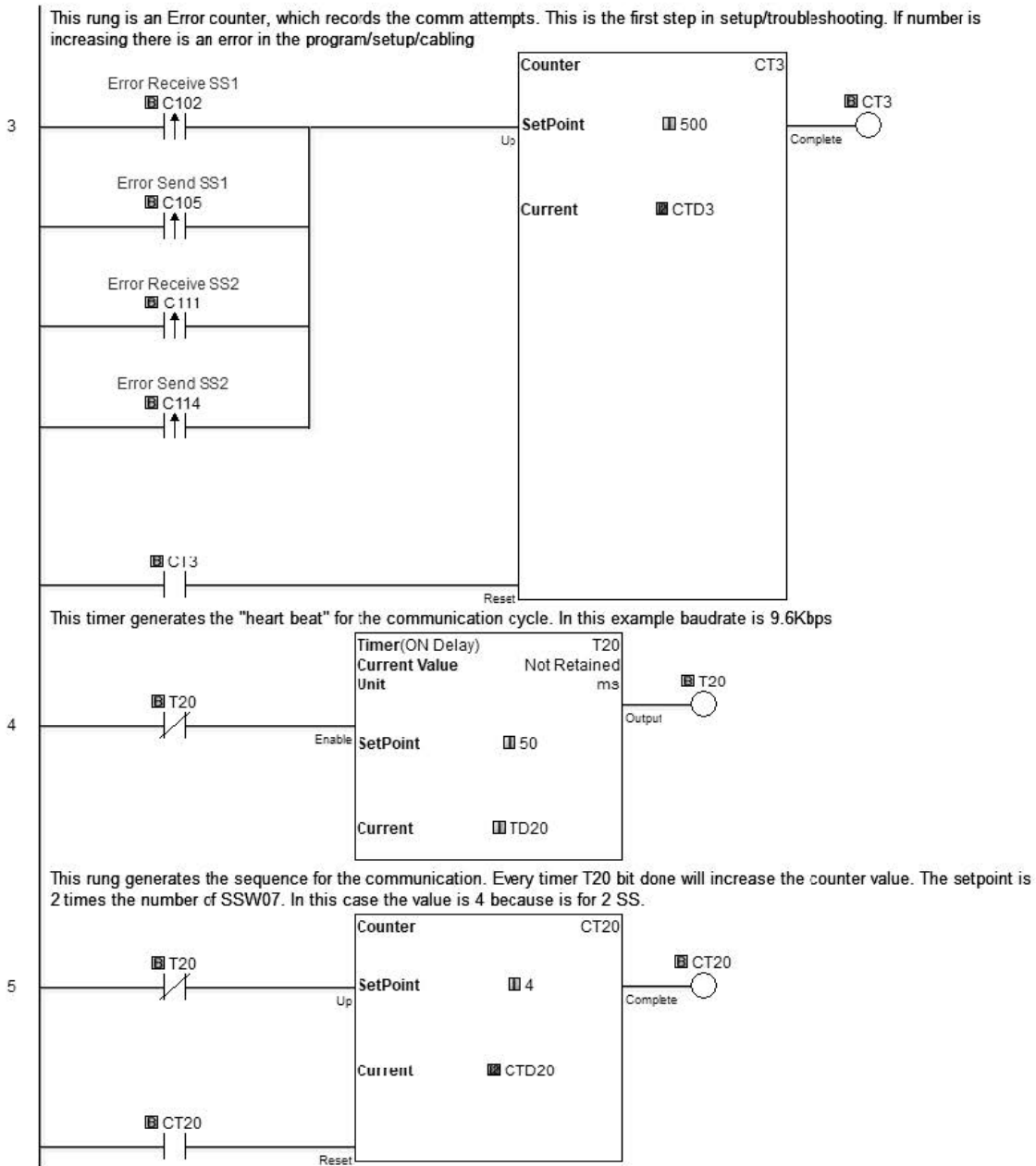
This rung is an success activity counter, which records the comm attempts. This is the first step in setup/troubleshooting. Attempts must be occuring or there is an error in the program/setup/cabling.

The counter will reset after it counts to 500.



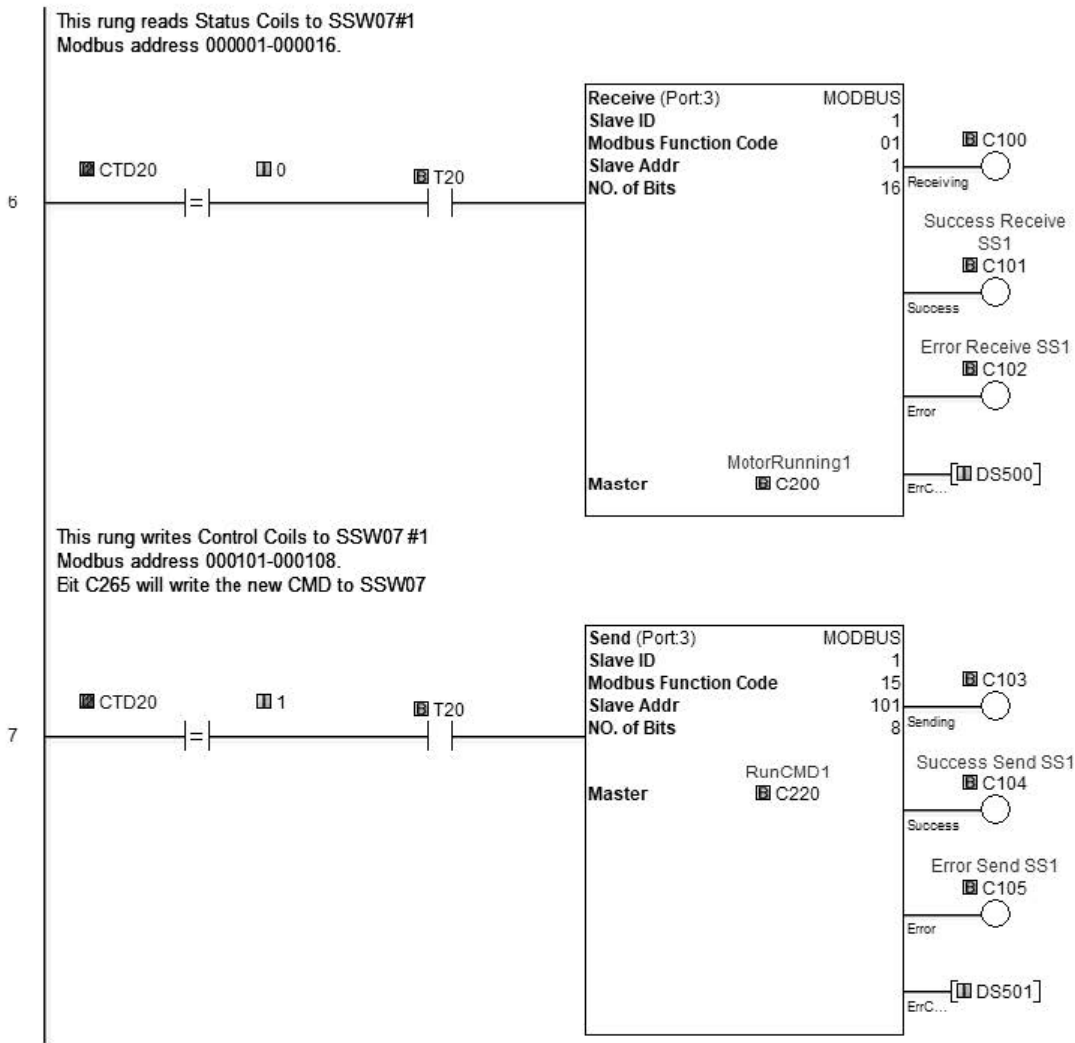
(program continued next page)

CLICK PLC Example Program for WEG SSW07 AC Soft Starter (continued)



(program continued next page)

CLICK PLC Example Program for WEG SSW07 AC Soft Starter (continued)



(program continued next page)

CLICK PLC Example Program for WEG SSW07 AC Soft Starter (continued)

