SOCKET-less Command
Application Note

Version 1.0.0

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1   Introduction

W5100S transmits ARP and PING Request Packet through SOCKET-less Commands without SOCKET OPEN. User configures information for Request Packet through registers. If ARP and PING Reply Packet are received within time configured by SLRCR and SLRTR, ARP and PING Interrupt are occurred. If it isn't, TIMEOUT Interrupt is occurred. ARP and PING request packets can't be transmitted again until interrupt is acknowledged.

2 ARP Command

User configures ARP SOCKET-less command through SLCR register to transmit ARP Request Packet. Before configuring command, set SLRCR, SLRTR, and SLPIPR registers.

If ARP Reply Packet expected by ARP Request Packet isn't received within limited time which is configured by SLRCR or SLRTR, TIMEOUT Interrupt is occurred.

If ARP Reply Packet is received within configured time, ARP Interrupt is occurred and MAC Address obtained through ARP Response Packet is stored in SLPHAR register.

The interrupt is acknowledged through SLIR register. If you want to generate an interrupt, enable the interrupt through SLIMR.

2.1 ARP Command Implementation

Figure 1 shows operation flow of SOCKET-less Commands.

ARP Request Packet is transmitted by implementing code according to flow in Figure 1 or by using ARP library code.
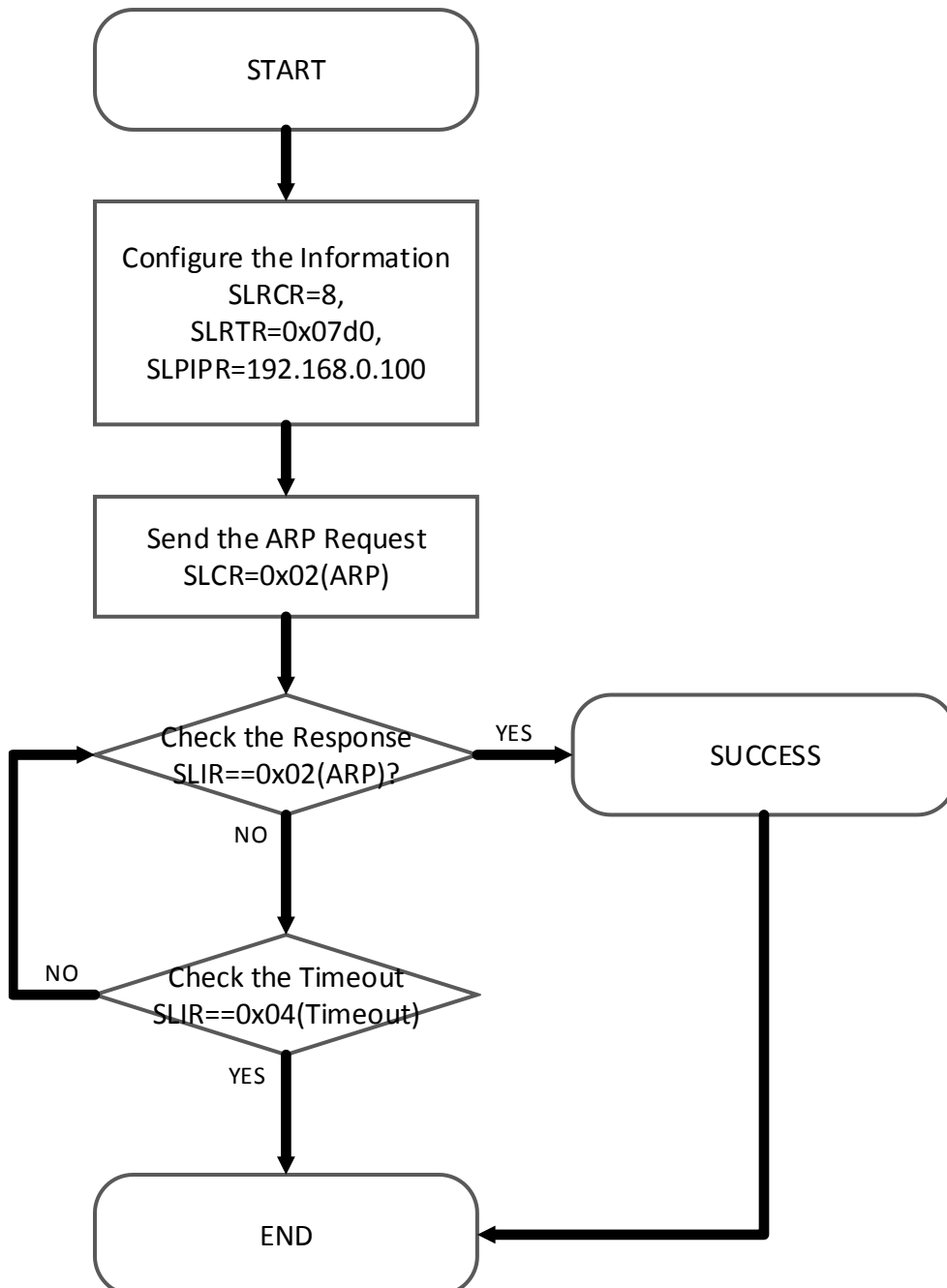

Figure 1. SOCKET-less Command ARP Operation Flow

2.1.1 Configure Information

Configure required information before sending ARP Request. Configure SOCKET-less Command Retransmission Count, SOCKET-less Command Retransmission Time, and SOCKET-less Command Peer IP Address.

2.1.2 Send ARP Request

Configure SOCKET-less ARP Command to send ARP Request Packet.

2.1.3 Check Response

Check that ARP Response Packet was received through Interrupt Register.

2.1.4 Check Timeout

Check that timeout occurred through Interrupt Register.

3 PING Command

User configures PING SOCKET-less command through SLCR register to transmit PING Request Packet. Before configuring command, set SLRCR, SLRTR, PINGSEQR, PINGIDR, and SLPIPR registers.

W5100S gets MAC Address by transmitting ARP Request Packet to transmit PING Request Packet. If ARP Reply Packet **expected by** ARP Request Packet isn't received within limited time which is configured by SLRCR or SLRTR, TIMEOUT Interrupt is occurred.
If ARP Reply Packet is received, W5100S transmits a PING Request Packet to destination which has previously obtained MAC Address.

Same as ARP, if a PING Reply Packet isn't received within configured time, a timeout interrupt is occurred.

If PING Reply Packet is received within configured time, a PING interrupt is occurred and MAC Address which is obtained through ARP Response Packet is stored in SLPHAR register. At this time, received PING Reply Packet should be equal to transmitted PING Request Packet about IP Address, Sequence Number and Identifier.

The interrupt is acknowledged through SLIR register. If you want to generate an interrupt, enable the interrupt through SLIMR.

Figure 2 shows PING Request Packet that W5100S transmitted.
PING Identifier and PING Sequence are transmitted as below.

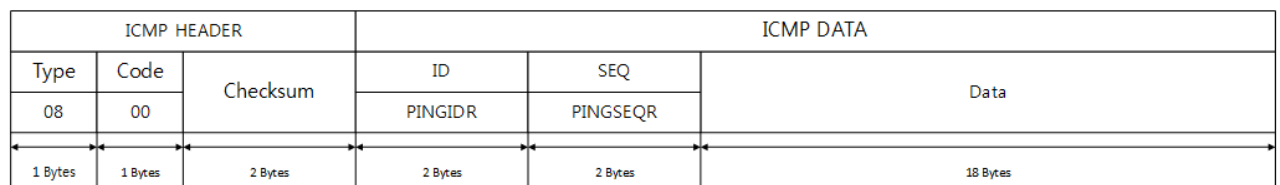| ICMP HEADER			ICMP DATA		
Type	Code	Checksum	ID	SEQ	Data
08	00		PINGIDR	PINGSEQR	
1 Bytes	1 Bytes	2 Bytes	2 Bytes	2 Bytes	18 Bytes

Figure 2. PING Data in SOCKET-less Command

3.1 PING Command Implementation

Figure 3 shows operation flow of SOCKET-less Commands.

PING Request Packet is transmitted by implementing code according to flow in Figure 3 or by using PING library code.
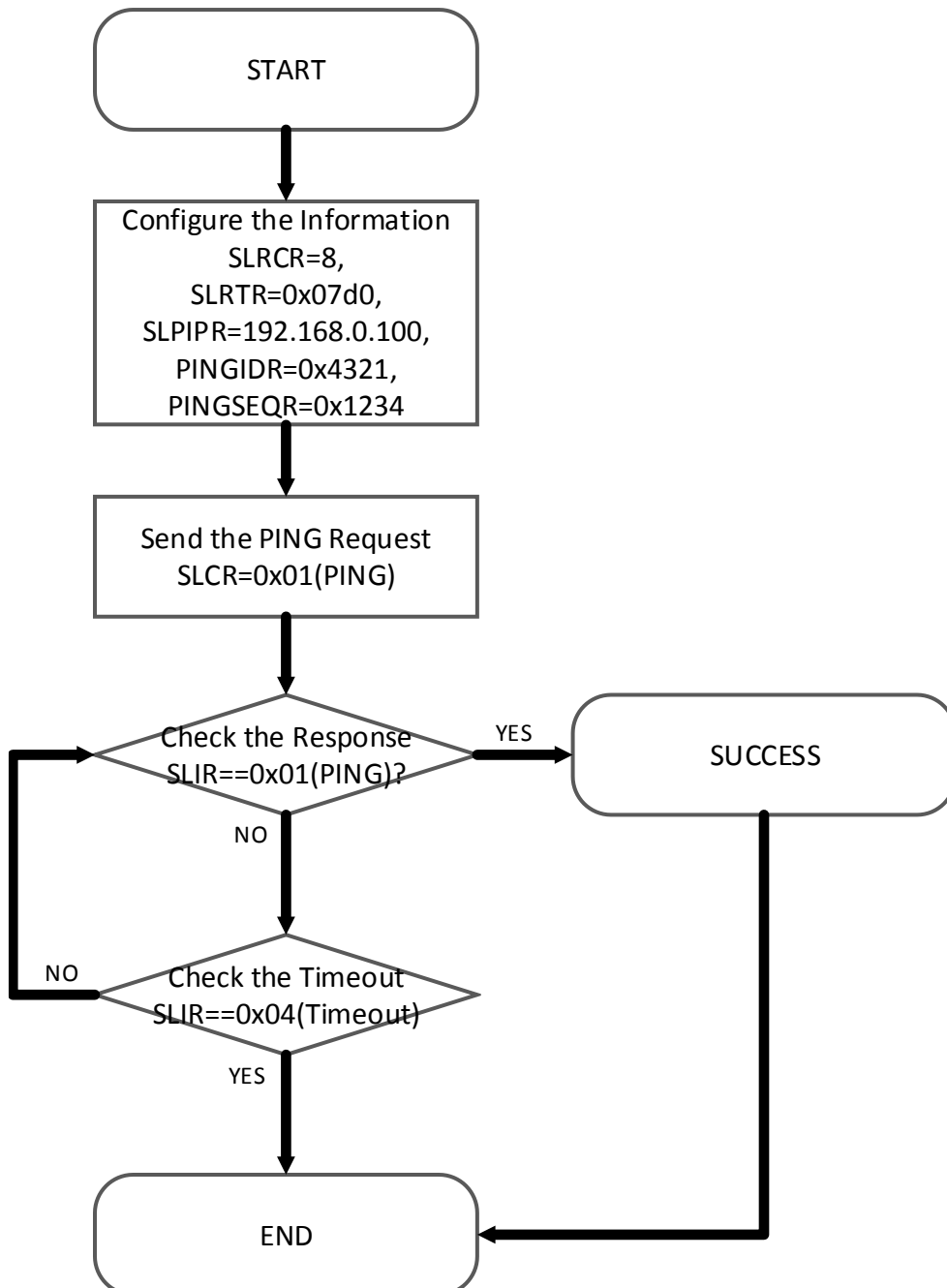

Figure 3. SOCKET-less Command PING Operation Flow

3.1.1 Configure Information

Configure required information before sending PING Request. Configure SOCKET-less Command Retransmission Count, SOCKET-less Command Retransmission Time, SOCKET-less Command Peer IP Address, PING Identifier, and PING Sequence Number.

3.1.2 Send PING Request

Configure SOCKET-less PING command to send PING request packet.

3.1.3 Check Response

Check that PING Response Packet was received through Interrupt Register.

3.1.4 Check Timeout

Check that timeout occurred through Interrupt Register.

4   Document History Information

Version	Date	Descriptions
Ver. 1.0.0	May, 2018	Release

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