

State	Condition for transition	Next state
IDLE	reset is active or FIFO is empty: Rstb = 0 fifo_empty =1 Reset is inactive and FIFO not empty : Rstb = 1 && fifo_empty = 0	IDLE SOP_S0
SOP_S0	FIFO is empty : fifo_empty =1 FIFO is not empty and Start of Packet is High: fifo_empty = 0 && sop=1 && ... - Current message length < 6 - Current message length > 8 - Current message length == 7 - Current message length == 6	SOP_S0 S1 S2 S4 S6
S1	FIFO is empty : fifo_empty =1 always	S1 S1_P
S1_P	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0 && ... - Current message length < 6 - Current message length > 8 - Current message length == 7 - Current message length == 6	S1 S1 S2 S4 S6
S2	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0 && ... - Current message length < 6 - Current message length > 8 - Current message length == 7 - Current message length == 0 - Current message length == 6	S2 S1 S2 S4 S5 S6
S3	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0 && ... - Current message length < 6 - Current message length > 8 - Current message length == 7 - Current message length == 6	S3 S1 S2 S4 S6
S4	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0	S4 S3
S5	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0 && ... - Current message length < 6 - Current message length > 8 - Current message length == 7 - Current message length == 6	S5 S1 S2 S4 S6
S6	FIFO is empty : fifo_empty =1 FIFO is not empty: fifo_empty =0 current message length = current message length – length of data in current input	S6 S2

Outputs	Description
upd_mc	update message count update message length
upd_ml[1:0]	upd_ml[1] → message_len[1], upd_ml[0] → message_len[0] update current message length Current message length := length of data payload in current input
upd_len	start and end index of message count field, updated only once
mc_st, mc_end	start and end index of message length field, updated for every new message
ml_st, ml_end	start and end index of data payload field, updated every clock
p_st, p_end	length of data payload in current input
cur_len	
read_en	FIFO read enable

			Outputs							
State	Outputs	Description								
	mc_st = 7 mc_end = 6	message count field always present in data_bytes[7:6], this field is only valid when upd_mc = 1	MC0	message count [0]						
			MC1	message count [1]						
			ML0	message length [0]						
			ML1	message length [1]						
			P	data payload						