Operation at Timeout

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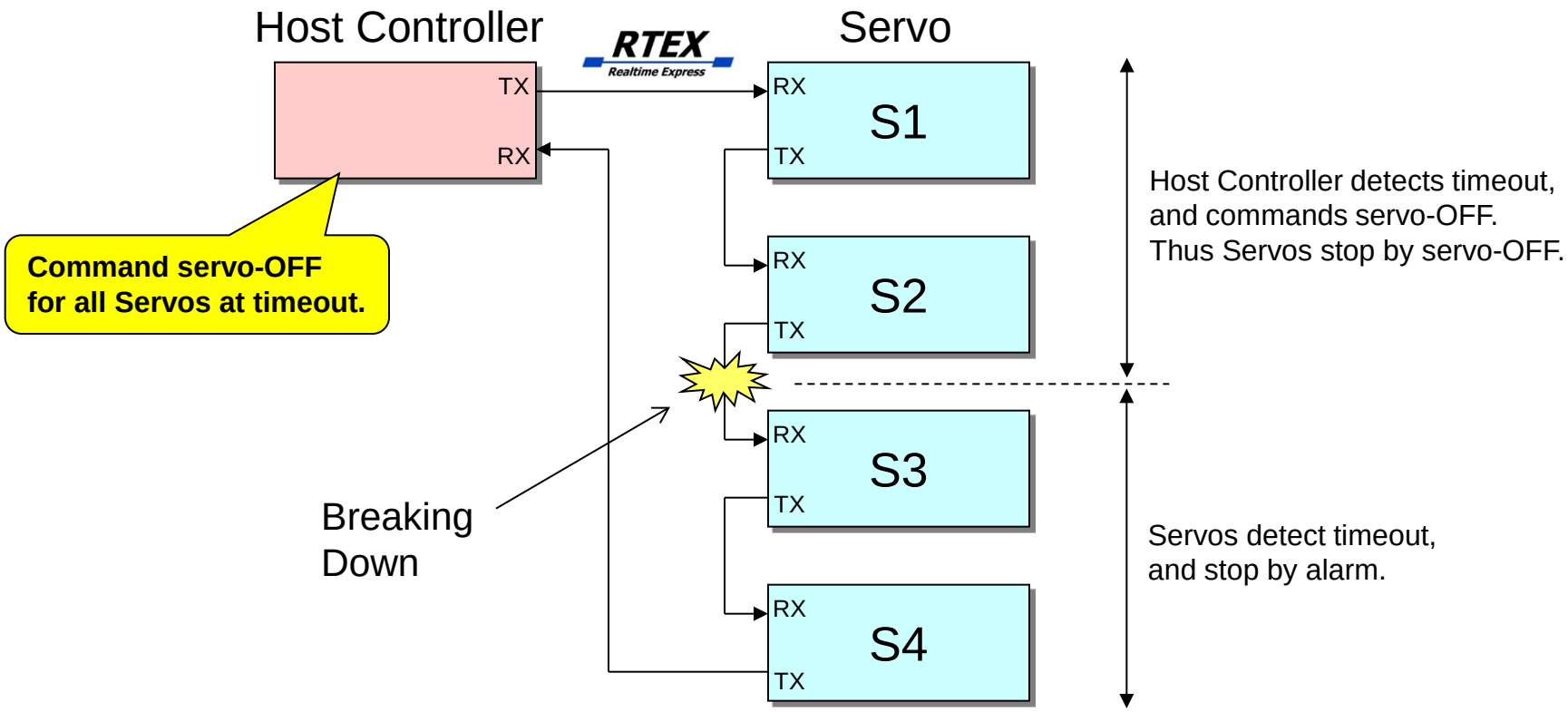
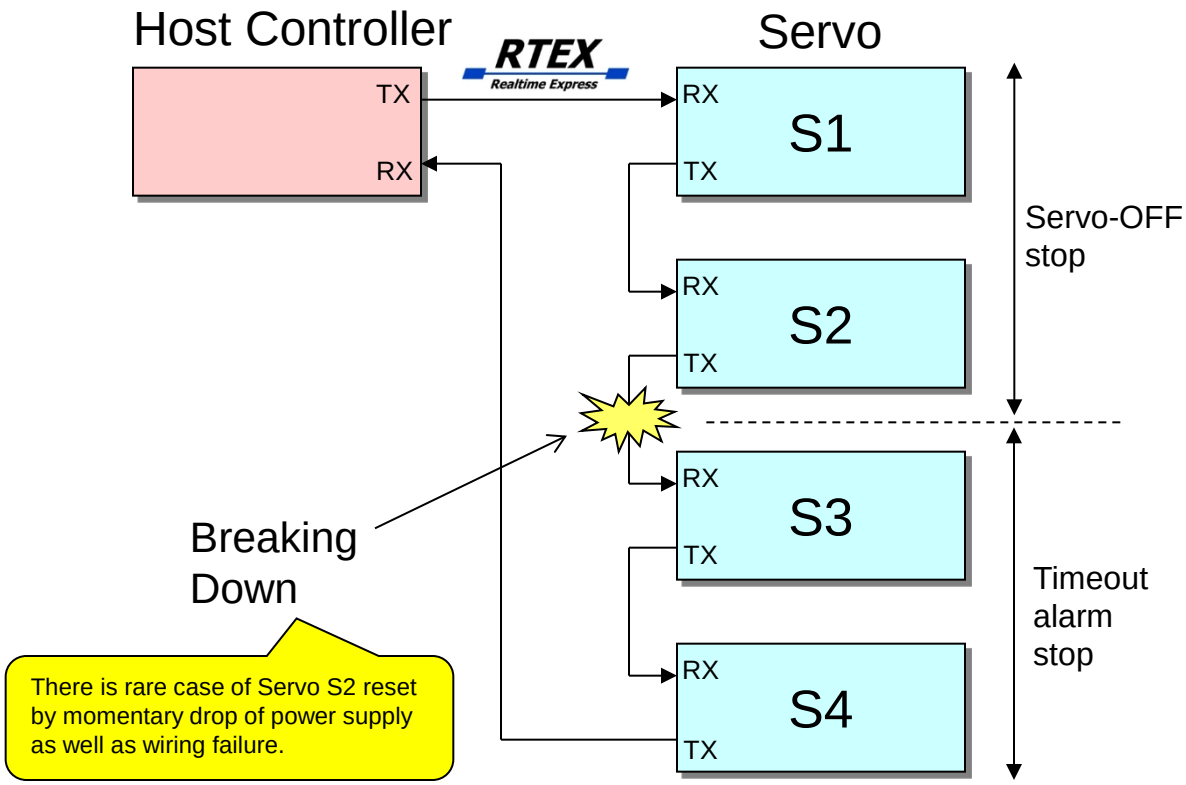
Operation at Timeout

To provide against braking down of communication cable, both Host Controller and Servo must detect timeout. If the Host Controller detects timeout that means no response continuously for a certain time, it should command servo-OFF to the all Servos for safety. Thus, as a boundary of problem portion, the front side Servos (below S1, S2) stop by servo-OFF, and the rear side Servos (below S3, S4) stop by alarm.



Detection of Problem Portion

As a boundary of problem portion, LEDs on Servos indicate different status as the following figure. Using these indicators, the problem portion can be detected. When cable is quite breaking down, LINK is not lit. If not completely, LINK may appear and cannot be used for it. Therefore, the communication should be continued for detection with other LEDs. If stopping the communication such as initializing, all Servos become timeout alarm, and it causes hardness to detect the problem portion.



LEDs on Servo

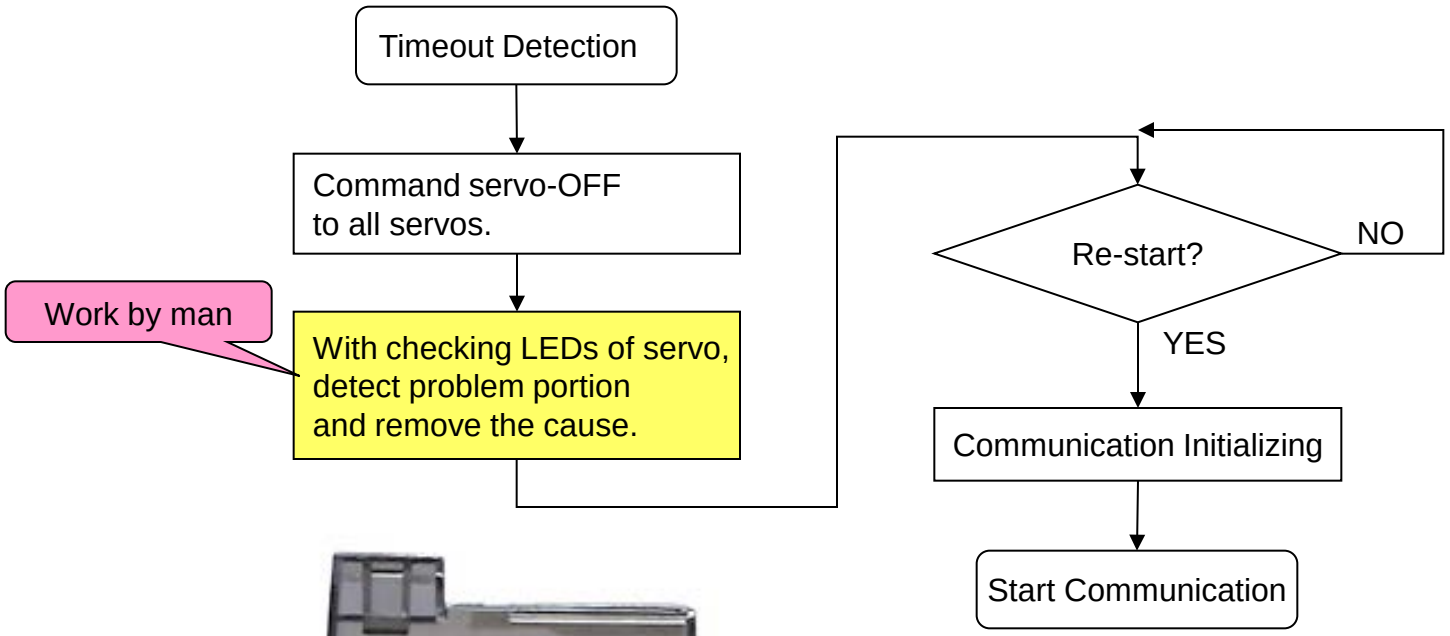
7-segment	COM	LINK
– – .	Green	Green
– – .	Green	Green
84↔.0 Blinking	Red Blinking	Off
84↔.0 Blinking	Red Blinking	Green

Green is also possible case.

Note: 84.0 is a code that means RTEX timeout error.

Re-start Flow

When re-start after removing the cause (e.g. replacement of the cable), communication should be initialized with whole power-ON reset or communication ASIC reset.
The following flowchart shows from timeout detection to re-start.



Example Codes in Running State

ctrl_mnm1221_m() in mnm1221_m.c

```
        /*--- running state (cyclic transmission) ------------------------------*/
        case PH_RUNNING:                /* MNM1221 is in RUNNING state. */

/*************************************************************************/
/* This is for test. You must replace with your application.             */
/*-----------------------------------------------------------------------*/
/*
* In actual application, the routin setting to TX buffer will be placed
* after NC calculation. i.e. The routin is not in ctrl_mnm1221_m(), but
* at the end of the timer interrupt for NC calculation.
*/
        set_txbuf_example(0x20);    /* Position command */
/************************************************** end of test ***/

        xchg_com_data();            /* exchange communication data */
        if (is_timeout()) {
            com_err.run |= B_TIMEOUT;
            /* Add error routine. */
#if 0
            phase = PH_RESET;       /* depend on your application */
#endif
        }
        break;
```

Delete after test.

Add routine that commands servo-OFF for all servos.

Do not operate this line for initializing until detecting problem portion.