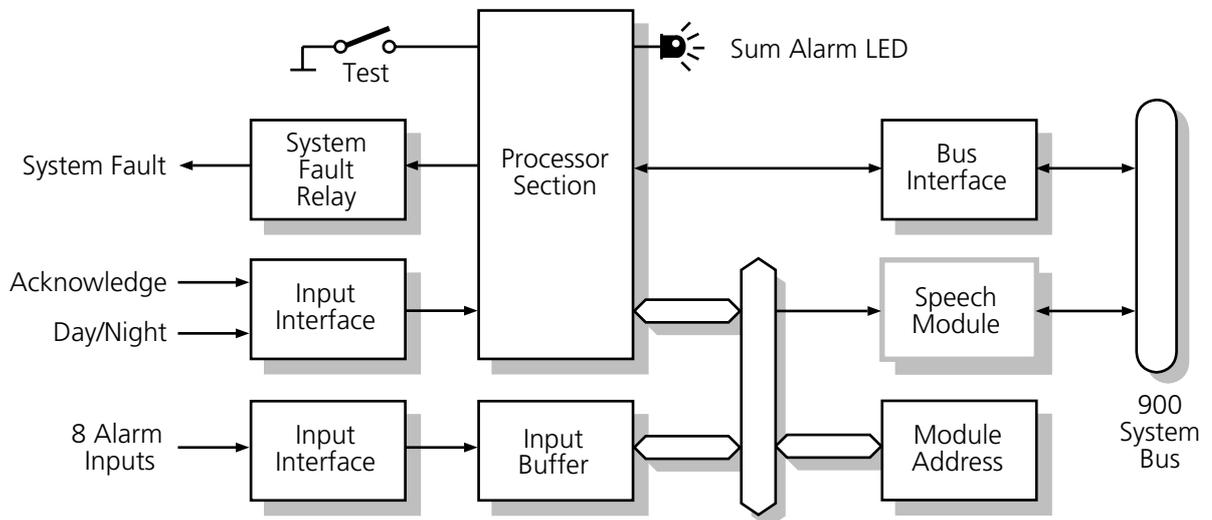


Alarm Module T941AM8 - Circuit Description



General

T941AM8 has 8 physical inputs for connection to external alarm devices. The inputs can be individually programmed for activation by make or break contacts, or by detection of a blink frequency from, e.g. a Nurse Call system.

A FLASH PROM in T941AM8 enables remote programming of the program and parameters.

Inputs are galvanically isolated and have transient protection. For galvanic isolation a separate power supply for the alarm inputs is needed.

There are an additional 56 logical inputs with no external connections. These inputs can only be activated by programmed parameters, e.g. to initiate pagings at failure to acknowledge, to build up alarm message sequences, etc. In alarm systems the inputs can be programmed for alarm calls or used for acknowledgement and reset.

In teleCOURIER 900 paging systems T941AM8 is used for automatic generation of pagings. Inputs can be also be connected to the telephone system to detect ring signals. T941AM8 can also be used to initiate pagings in a teleCOURIER system that is integrated with telePROTECT 900 and/or CTS 900. Systems with speech include speech module 941SM.

T941AM8 is also used in telePROTECT 900 personal alarm systems where inputs can be activated from fixed alarm points or by a call or alarm from a pocket

unit.

In CTS 900 cordless telephone systems T941AM8 is used as a PBX interface unit where the 8 fixed inputs are used as ring signal detectors on analog telephone extensions.

NOTE: T941AM8 is not intended for connection to public telephone networks.

The module consists of the following blocks:
(See dwg 10638)

Input Interface

Adapts inputs to alarm loops, or to telephone ring signal detection for telephone lines.

Alarm inputs are galvanically isolated via opto switches and require a separate external power supply.

Input Buffer

Connects adapted alarm inputs to the processor.

System Fault Relay

Actuates at system fault or failure to acknowledge a paging if so programmed. The relay is driven by the fault signal from the processor via a buffer, and provides both voltage-free contacts and polarized contacts for activating an alarm horn, etc.

Test Switch

Initiates test pagings for service or range testing.

Bus Interface

IC08 is a two-way buffer communication circuit controlled by the processor. It adapts level and impedance between the processor and the 900 system data bus.

Normally the buffer feeds the A bus on the 900 system bus, but it can also be connected to the B bus. The choice is made by jumpers S01 and S02 on the circuit board.

At processor error, the buffer circuit is inhibited by the *watchdog* circuit to avoid disturbances on the system bus.

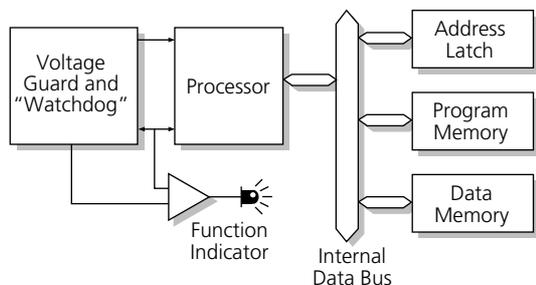
Speech Module

Adapts level and impedance for the 900 system speech bus when speech is used in the system. See document no. TD 90667GB for a circuit description of the 941SM module.

Module Address

The 941AM8 is assigned a unique address by setting 8-bit selector switch, SW01, to an unused address within the 900 system. Buffer IC04 reads the switch contacts when power is turned on or at communication interruption with the 900 system bus.

Processor Section



Processor IC01 is an 8-bit microprocessor 8032. It uses the 11,059 MHz crystal frequency and has an internal USART which communicates with the 900 system bus via buffer circuit IC08.

Address latch IC07 separates the address and data on the processor multiplex bus, and is activated every time the ALE signal goes high.

The program memory is an electrically erasable FLASH PROM, IC02, that can be reprogrammed during operation via Win900. A 128 k x 8-bit memory is normally used. The memory is activated when the PSEN signal from the processor goes low.

Data memory IC03 is a CMOS RAM. Normally an 32 k x 8-bit memory is used.

IC09 is a combined voltage guard and *watchdog*. The voltage guard monitors the 12 V supply. If the voltage drops below about 10 V it sends out a reset pulse to pin 10 of the CPU. The voltage guard also resets the processor when power is turned on.

The *watchdog* monitors the processor. At a program fault the processor cuts off the reset pulses (*refresh*) to the *watchdog*, that after 1 second sends a reset pulse to pin 10 of the CPU. If the *watchdog* detects a processor fault or the voltage guard has actuated, buffer circuit IC08 is also blocked to prevent the faulty module from disturbing communication on the system bus. After restart the processor can read the SAVE output on IC09 to determine what caused the reset.

Function Indicator

The function indicator (status LED) on the module indicates different types of errors. The indicator consists of two parts, LED01A which is green, and LED01B which is red. When both parts are lit an orange indication is obtained.

Red indicates faults such as hardware failure or *watchdog* actuation. Green indicates if the module is functioning properly or is in test mode. Orange indicates warning, eg. system fault relay is actuated.

Indicator function is summarized in the table below:

Indication	Constant	Flashing
Green	O K	Test mode
Orange	Warning	Communication fault
Red	Hardware fault	Watchdog
Red/Green	—	Program loading

Sum Alarm LED

Sum alarm indicator LED02 flashes when one of the physical or logical inputs is activated. It is controlled directly from a port on the processor.

Voltage Regulator

Voltage regulator VR01 reduces 12 V supply voltage to 5 V for supply to IC circuits. A diode on the 12 V input protects against reversed polarity at installation.

Acknowledge Input

Input for external acknowledgement from, e.g., a monitor receiver.

Appendix

1. Connectors

Connector J01, J02	Pin	Description
<i>Modular connectors: connect to 900 system buses. The connectors are identical.</i>	1	A1 data bus between modules
	2	A2 data bus between modules
	3	B1 data bus between modules
	4	B2 data bus between modules
	5	D1 data bus for terminal transmitters
	6	D2 data bus for terminal transmitters
	7	SP1 speech bus
	8	SP2 speech bus

Connector J03	Pin	Description
<i>Screw terminals: connect power and A or B bus from the 900 system.</i>	1	+12 Vdc
	2	0 Vdc
	3	+12 Vdc
	4	0 Vdc
	5	A1 or B1 data bus between modules
	6	A2 or B2 data bus between modules

Connector J04	Pin	Description
<i>Screw connector: for connection to system fault relay contacts. (Not used in CTS 900.)</i>	1	COM
	2	NO
	3	NC
	4	COM
	5	NO
	6	NC
		<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> } </div> <div>System Error 1</div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> } </div> <div>System Error 2</div> </div>

Connector J05	Pin	Description
<i>Screw connector: for connection of voltage-free contacts. (Not used in CTS 900.)</i>	1	Acknowledge
	2	Acknowledge
	3	Day/Night input
	4	Day/Night input

Connector J06	Pin	Description
<i>Strip connector: connects speech module 9415M. (Not used in CTS 900.)</i>	1	+12 Vdc
	2	0 Vdc
	3	Speech On
	4	SP2 speech bus
	5	SP1 speech bus
	6	Speech in
	7	Ref. in
	8	Alert On

Connector J07	Pin	Description
<i>Screw connector: for connection of voltage-free contacts or ring signal detection to inputs 1-4.</i>	1	Alarm input 1
	2	Alarm input 1
	3	Alarm input 2
	4	Alarm input 2
	5	Alarm input 3
	6	Alarm input 3
	7	Alarm input 4
	8	Alarm input 4

Connector J08	Pin	Description
<i>Screw connector: for connection of voltage-free contacts or ring signal detection to inputs 5-8.</i>	1	Alarm input 5
	2	Alarm input 5
	3	Alarm input 6
	4	Alarm input 6
	5	Alarm input 7
	6	Alarm input 7
	7	Alarm input 8
	8	Alarm input 8

Connector J09	Pin	Description
<i>Screw connector: for galvanic separation of supply voltage to alarm inputs..</i>	1	External +12 Vdc
	2	External 0 Vdc

2. Jumpers, Switches, and LED's

Jumpers	
S01, S02	Jumper for selection of A or B bus. (Not used in CTS 900.)
S03	Not used.
S04, S05, S14	Solder points. Must be soldered together to enable use of S940AM software.
S06-S13	Jumpers for connecting alarm inputs 1-8.

Switches	
SW01	Address selector switch.
SW02	Switch, must always be set to OFF. SW02:1 is used for test. SW02:2 is used to generate test pagings.

LED's	
LED01A	Green function indicator.
LED01B	Red function indicator.
LED02	Sum alarm indicator.
LED03	Indicator for alarm output 1
LED04	Indicator for alarm output 2
LED05	Indicator for alarm output 3
LED06	Indicator for alarm output 4
LED07	Indicator for alarm output 5
LED08	Indicator for alarm output 6
LED09	Indicator for alarm output 7
LED10	Indicator for alarm output 8