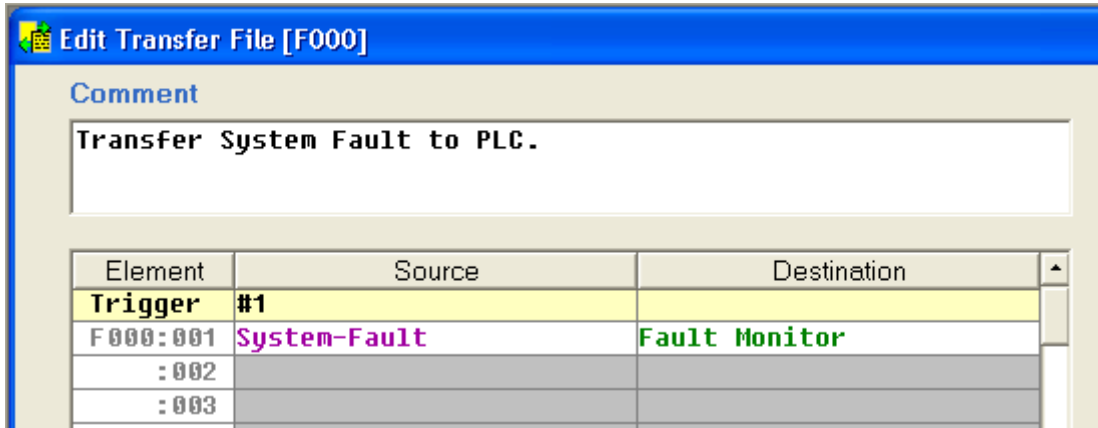


## Quartech Application Note QAN-901A09\_R2 9112 Communication Bridge with Data Transfer Project Reading the System Fault Register

The 9112 will indicate a fault condition by flashing the process LED red and writing a fault code to the system fault register. When a port on the 9112 is connected to a Programmable Logic Controller it is a simple task for the PLC to monitor the fault register and respond to a fault condition.



The System-Fault register is located in the system database and may be used as a source variable within a transfer file as shown above. The trigger source in the above transfer file is a constant value of one which will cause the System-Fault value to be transferred during each 9112 scan.

The System-Fault value is a sixteen bit word. Two fault categories exist which are simple access faults and port communication faults. Bit number 07 indicates which type of fault is present.

15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
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**Notice:** This feature requires Data Transfer application driver version 1.09 or later. To determine what version driver you are running, launch the ProjectMaker 9112 Project Selector application. Click Help on the menu bar then Install Information. The Data Transfer version is listed in the box labeled 9112 Application Drivers.

## Port Communication Fault:

If bit 07 is set then a port communication fault exists. The integer value of the least significant seven bits indicates which port is faulting.

Integer value = 49 (31 hex) Port 1 communication error  
 Integer value = 50 (32 hex) Port 2 communication error

### Example

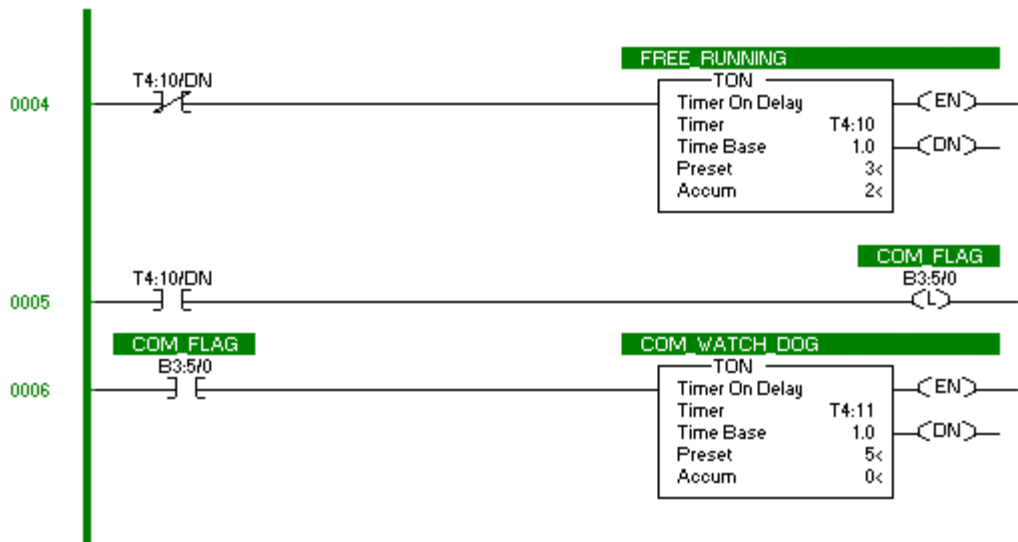
15	14	13	12	11	10	09	08	07	06	05	04	03	02	01	00
0	0	0	0	0	0	1	1	1	0	1	1	0	0	1	0

In the above example bit 07 is set indicating a port communication fault. The least significant seven bits equal 50 indicating a communication fault on port two

Generally a port communication failure is caused by faulty cables, mismatched communication parameters, or hardware failures. Obviously if the failed port is the port connected to the PLC no fault code can be transferred. Another element can be added to the transfer file that, along with some PLC logic, will indicate communications failure between the 9112 and PLC.

Element	Source	Destination
<b>Trigger</b>	<b>#1</b>	
<b>F000:001</b>	<b>#0</b>	<b>COM FLAG</b>
<b>:002</b>	<b>System-Fault</b>	<b>Fault Monitor</b>
<b>:003</b>		

### PLC ladder logic for Allen-Bradley SLC500 or MicroLogix



In the above logic the FREE\_RUNNING timer will energize the COM\_FLAG every three seconds. This will start the COM\_WATCH\_DOG timer. If the 9112 is communicating with the PLC it will de-energize the COM\_FLAG which will reset the COM\_WATCH\_DOG timer. If communication is lost the COM\_WATCH\_DOG timer will time out and can be used to generate an alarm condition..

## Simple Access Fault:

If bit 07 is clear then an access fault exists. Viewing the System-Fault register as two separate bytes will indicate the transfer file number and transfer file element where the fault exists.

15	14	13	12	11	10	09	08
Transfer File Number							

07	06	05	04	03	02	01	00
Transfer File Element							

An access fault can be generated by any of the following three conditions:

Reading a source variable that does not exist within the connected device.

Writing to a destination variable that does not exist within the connected device.

Writing an illegal value to a destination variable. For example, transferring a 32 bit value from a source device to a 16 bit variable in the destination device.

### Example

15	14	13	12	11	10	09	08
0	0	0	0	0	0	1	1
Transfer File Number							

07	06	05	04	03	02	01	00
0	0	0	0	0	1	0	1
Transfer File Element							

In the above example bit 07 is clear so this is an access fault in transfer file 3 element 5.

**Note 1:** An access fault on transfer file zero element zero will produce a fault code of zero. It is recommended that file zero be used as the fault transfer as shown in the previous graphic. With a constant value of one as the trigger an access fault of zero will never be generated.

**Note 2:** When the System-Fault register is read it will be reset to zero, however, if the fault remains the register will be reloaded with the fault code during the next scan. Multiple access faults can exist within a project. The last fault generated prior to reading the System-Fault register will be returned.