**SCADA\_DEV\_ATS**

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| **Version** | **Release Notes** |
| 1.0 | Initial Release |

**Description**: This UDT is used for implementation of Automatic Transfer Switches.

**Naming Convention**: Tags using this UDT should be named using the first four fragments as defined in the tagging standard. Typically this will be BXX\_ATS1\_SG1, where BXX is replaced with the facility and area.

**UDT Members**

| **UDT Member** | **Datatype** | **Description** | **Usage** |
| --- | --- | --- | --- |
| ADDON | ATS\_v1 | ATS state evaluation AOI | Within the Device Program of the PLC |
| DI\_JN | SCADA\_SYS\_DI\_1\_2 | Normal Power Position | Use in DI\_EVAL routine |
| DA\_JE | SCADA\_SYS\_DI\_1\_2 | Emergency Power Position | Use in DI\_EVAL routine |
| DI\_CL | SCADA\_SYS\_DI\_1\_2 | Control mode | Use in DI\_EVAL routine |
| DO\_ST | SCADA\_SYS\_DO\_1\_0 | Remote Test Enable | Use in DO\_EVAL routine |
| PB\_RM | PB\_EN\_RA\_DLR\_1\_2 | Not in Auto Alarm Enable | Used on HMI |
| PB\_JR | PB\_EN\_RA\_DLR\_1\_2 | Failed to Transfer Alarm Enable | Used on HMI |
| PB\_AE | PB\_EN\_RA\_DLR\_1\_2 | Alarm Enable | Used on HMI |
| DI\_AD | BOOL | At least One Alarm Disabled | Used on HMI |
| DA\_JR | BOOL | Failed to Transfer Alarm | Used on HMI |
| DA\_RM | BOOL | Not In Auto Alarm | Used on HMI |
| PB\_RT | BOOL | Time on Emergency Power Reset | Used on HMI |
| PB\_SM | BOOL | Alarm Simulate Enable | Used on HMI |
| PB\_PO | BOOL | Start Test Request | Used on HMI |
| PB\_PC | BOOL | Stop Test Request | Used on HMI |
| AI\_RT | REAL | Hours on Emergency Power | Used on HMI |
| AI\_TD | DINT | Number of Transfers Today | Optional HMI Use |
| AI\_MT | DINT | Number of Transfers This Month | Optional HMI Use |
| AI\_MX | DINT | Total Transfers since last Reset | Optional HMI Use |

**AOI**

The AOI will be implemented within an ATS routine within the Device Program.

| **AOI Parameter** | **Requirement** | **Default Value** | **Description** | **Implementation Guideline** |
| --- | --- | --- | --- | --- |
| ATS\_v1 | Mandatory | *Tagname.*ADDON | ATS AOI | N/A |
| Alarm\_Sim\_Enable | Mandatory | *Tagname*.PB\_SM | Alarm Simulate PB | N/A |
| Control\_Mode | Mandatory | *Tagname*.DI\_CL.eng | Control Mode Input Status | N/A |
| On\_Emergency\_Power | Mandatory | *Tagname*.DA\_JE.eng | Emergency Power Input Status | N/A |
| On\_Normal\_Power | Mandatory | *Tagname*.DI\_JN.eng | Normal Power Input Status | N/A |
| Stop\_Test\_Request | Mandatory | *Tagname.*PB\_PC | Stop ATS Test PB | N/A |
| Start\_Test\_Request | Mandatory | *Tagname.*PB\_PO | Start ATS Test PB | N/A |
| Maintained\_Run\_Output | Mandatory | *Tagname.*DO\_ST.eng | ATS Test Command | Map to ATS Test Output in PLC |
| Alarm\_Disabled | Mandatory | *Tagname.*DI\_AD | At least one alarm disabled | N/A |
| Alarms\_Enable | Mandatory | *Tagname.*PB\_AE | Global Alarm Enables | N/A |
| Fail\_To\_Xfer\_Enable | Mandatory | *Tagname.*PB\_JR | Fail to Transfer Enables | N/A |
| Fail\_To\_Xfer\_Mask | Optional | *Tagname.*ADDON.Fail\_to\_Xfer\_Mask | Fail to Transfer Alarm Mask | Program external to the AOI with conditions that should inhibit the evaluation of the fail to transfer alarm logic |
| Fail\_To\_Xfer | Mandatory | *Tagname.*DA\_JR | Fail to Transfer Alarm | N/A |
| Not\_in\_Auto\_Enable | Mandatory | *Tagname.*PB\_RM | Not in Auto Enables | N/A |
| Not\_in\_Auto\_Mask | Optional | *Tagname.*ADDON.Not\_In\_Auto\_Mask | Not In Auto Alarm Mask | Program external to the AOI with conditions that should inhibit the evaluation of the not in auto alarm logic |
| Not\_in\_Auto | Mandatory | *Tagname.*DA\_RM | Not in Auto Alarm | N/A |
| Dialer\_Trigger | Optional | *Tagname.*ADDON.Dialer\_Trigger | Alarm Dialer Trigger | Use in a dialer routine to trigger callout of any alarms associated with the ATS |
| Interlock | Optional | *Tagname.*ADDON.Interlock | External Failure Operational Interlock | Program external to the AOI to inhibit test mode operation based on state of other device tags |
| Failed\_Alarm\_Status | Optional | *Tagname.*ADDON.Failed\_Alarm\_Status | Indicates the presence of a virtual or hardwired device fault | Signal can be used as an interlock input to other devices or within ACP programming for failure handling |
| System\_Day\_Reset | Mandatory | SYS\_Day\_Reset | Reset tag for daily statistics | N/A |
| System\_Monthly\_Reset | Mandatory | SYS\_Month\_Reset | Reset tag for monthly statistics | N/A |
| Runtime\_Reset | Mandatory | *Tagname.*PB\_RT | Time on Emergency Power and Transfer Counter Reset | N/A |
| Runtime\_Hours | Mandatory | *Tagname.*AI\_RT | Hours on Emergency Power | N/A |
| Out\_TotalStarts | Optional | *Tagname.*Addon.Out\_TotalStarts | Total Transfers to Emergency Power Since Last Reset | Map outside the AOI to *tagname*.AI\_MX for SCADA use, if required |
| Out\_DailyStarts | Optional | *Tagname.*Addon.Out\_DailyStarts | Total Transfers to Emergency Power Today | Map outside the AOI to *tagname*.AI\_TD for SCADA use, if required |
| Out\_MonthlyStarts | Optional | *Tagname.*Addon.Out\_MonthlyStarts | Total Transfers to Emergency Power This Month | Map outside the AOI to *tagname*.AI\_MT for SCADA use, if required |

**AOI Operation Description**

The AOI performs the following functions:

* Executes alarm simulation logic
* Checks for disabled alarms.
* Executes Start/Stop commands for ATS test mode
* Executes Alarm Logic
* Evaluates transfer counts and time on emergency power
* Perform check of alarm enable statues for indication of any disabled alarms
* Set the dialer bit for any configured alarms
* Setting of “last scan” values and reset of any pushbutton values

**Programming Examples**

Programming of the ATS involves deployment of the AOI and mapping of the correct tags. The Interlock bit should be triggered by the Generator Not in Auto alarm to prevent the ATS from being tested if the Generator is not in a state where it can supply backup power to the facility.

**HMI Integration**

This AOI is primarily intended for use with the following pop-ups:

* Generator v1\_0

The ATS alarm group parent should be a child group of the generator alarm group so that alarms for both devices will display on the pop-up.

A standard HMI graphic object exists for the ATS on the “Symbols Library – Power I” In the InTouch Baseload. Reference tags can be updated by selecting the object and performing a Substitute Tag Operation. Note that if the backup power system only consist of a generator the pop-up script must be manually edited to map a null string (“”) to all ATS Indirect tags.

The following settings must be configured manually in the pop-up action script, if required:

ATS\_VIS1 – Set to 0 if the Backup Power System only consists of a Generator.

ATS\_VIS2 – Set to 0 to hide the Remote Test pushbuttons if remote testing of the ATS is not installed or is not to be made accessible to the operations group.

GEN\_SRV – If the device is located on a remote InTouch Server, then this indirect tag must be changed to point at that server. By default it looks at the Hot Backup Pair Configuration for the local system.