

I-SPE-STD-010

Control Systems Tag Naming

Document number: SPE-00359

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This Engineering Standard was endorsed by an RPEQ on behalf of Seqwater.						

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1. Purpose

This Standard Specification provides the minimum requirements for tag names to be used in Seqwater monitoring and Control systems

2. Application of Standard Specification

This Standard Specification shall apply to all Seqwater employees, Suppliers, Contractors, and Consultants working for, or on behalf of, Seqwater unless otherwise stated. It shall apply to all new assets and to all existing assets undergoing refurbishment or modification. Deviation from the requirements in this Standard Specification shall require written agreement from Seqwater as per the deviation process noted in X-PRO-STD-008 Asset Standards Management and Application. This involves completion of an Asset Standards Deviation Request Form and submission via the Seqwater Project Representative (for external parties) or via Seqwater's Engineering and Technical Support mailbox engineering@seqwater.com.au (for internal parties).

Where noted in this Standard Specification that Seqwater approval or acceptance must/shall be obtained, written signoff must be gained through the Seqwater Asset Standard Deviation process, as identified above.

Responsibility for ensuring compliance with Seqwater Standard Specifications lies with those engaged in the management and execution of design, construction, and maintenance activities on Seqwater assets. This Standard Specification shall be used in conjunction with project specific documents to define the requirements for asset design and construction. The Contractor maintains responsibility for a fit for purpose design and compliance with all relevant Australian Legislation, Standards, Codes and Guidelines. In the case that it is identified that a specific requirement within this Standard Specification does not meet the requirements of project specific documents, another Seqwater Standard Specification or Australian Legislation, Standards, Codes or Guidelines, the conflict shall be brought to the attention of Seqwater, and written agreement shall be gained prior to application of the requirement. Advice shall be sought from the Seqwater to clarify any ambiguities regarding this Standard Specification.

Seqwater undertakes regular updates of Asset Standards. Before utilising this Standard Specification, the complete list of Seqwater Asset Standards should be reviewed by the projects to ensure currency and applicability of standards to be applied to the works.

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3. Definitions

The following definitions (Table 3-1) apply to this Standard Specification.

Table 3-1 Definitions

Term	Definitions
Contractor	The Contractor is the entity that, dependent on contracted scope, is responsible for the management and / or execution of the design, construction, commissioning and operation of the asset for the duration of a project (i.e. the “work”). Seqwater can undertake the role of the Contractor.
Manufacturer / Supplier / Vendor / Original Equipment Manufacturer (OEM)	The entity that manufacturers or supplies equipment to meet the specifications of the Contractor.
Owner / Principal / Seqwater	The entity that engages the Contractor to undertake the work and takes custody of the outcome. The Owner may delegate responsibilities to other entities to act on its behalf (e.g., a consultant).
REX	Seqwater Electronic Document and Records Management System
Seqwater Approval / Acceptance	Written sign-off gained via the deviation process, as detailed in XPRO-STD-008 Asset Standards Management and Application.
Shall / must	Indicates a mandatory requirement
Should	Indicates a recommendation

4. Abbreviations

The following abbreviations (Table 4-1) apply to this Standard Specification.

Table 4-1 Abbreviations

Abbreviations	Definitions
ANSI	American National Standards Institute
ISA	Instrumentation, Systems and Automation society
P&ID	Piping & Instrumentation Diagram
PLC	Programmable Logic Controller
SCADA	Supervisory Control and Data Acquisition
SLD	Single Line Diagram

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5. Reference Documents

The documents listed in Table 5-1, Table 5-2, and the requirements therein, are relevant to this Standard Specification. In their latest editions, these documents form a part of this Standard Specification.

Table 5-1 References

Document Number	Controlled Document Number and Title	REX ID
X-PRO-STD-001	PRO-01873 Engineering Standard X-PRO-0STD-001 Asset Standards Document Classification and Naming Structure Procedure	D21/21691
X-PRO-STD-002	PRO-01872 Engineering Standard X-PRO-STD-002 Engineering Drawing Numbers Procedure	D16/116896
X-PRO-STD-004	PRO-01874 Engineering Standard X-PRO-STD-0004 Development and Review of Asset Standards Procedure	D1365751
X-PRO-STD-006	PRO-02190 Equipment Numbering and Naming Convention Procedure	D18/185130
X-PRO-STD-007	PRO-02187 Engineering Standard X-PRO-STD-007 Drawing & Spatial Data Standards Procedure	D17/94042
X-PRO-STD-008	PRO-02205 Engineering Standard X-PRO-STD-008 Asset Standards Management & Application Procedure	D17/107342
X-PRO-STD-009	PRO-01617 Engineering Standard X-PRO-STD-009 Engineering Design, Construction, Operation and Maintenance Procedure	D14/13767
X-TMP-STD-022	TEM-00224 Engineering Standard X-TEMP-STD-022 Asset Standards Deviation Request Template	D17/51989
I-SPE-STD-006	SPE-00357 Engineering Standard I-SPE-STD-006 Alarm and Event Management	D18/104196
I-SPE-STD-009	SPE-00358 Engineering Standard I-SPE-STD-009 Control Systems Architecture	D14/127334
I-SPE-STD-011	SPE-00360 Engineering Standard I-SPE-STD-011 Control Systems Testing	D14/131637[V2]
I-SPE-STD-013	SPE-00361 Engineering Standard I-SPE-STD-013 Control Systems Design and Construction	D17/93325
I-LST-STD-001	SPE-00342 Engineering Standard I-LST-STD-001 Control Systems Prescribed Equipment	D14/12636
E-SPE-STD-001	SPE-00352 Engineering Standard E-SPE-STD-001 Electrical Design and Construction	D14/55910
I-SPE-STD-015	SPE-00353 Engineering Standard I-SPE-STD-015 Instrumentation	D14/102082

Table 5-2 Reference External Standards, Specifications and Codes

Reference	Document Title
ANSI/ISA-5.1-2009	Instrumentation Symbols and Identification

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6. Tag Naming

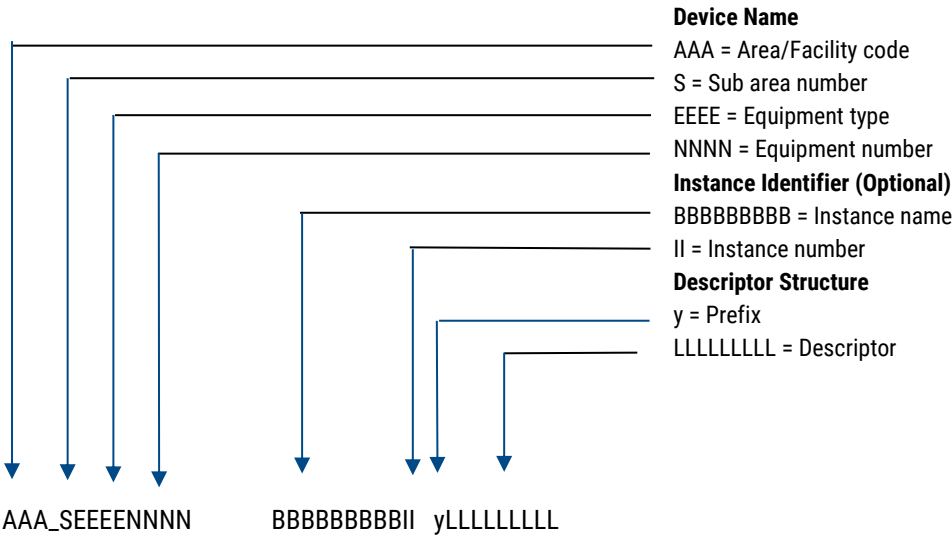
Seqwater’s control systems tag naming philosophy is to retain the equipment numbering generated using X-PRO-STD-006 Equipment Numbering throughout the control system. Changes brought to equipment numbering, via formal change management (as per X-PRO-STD-009 Engineering Design, Review and Approval) shall cascade to changes in the control systems tag naming.

To achieve integration with future and existing Seqwater equipment numbering conventions, information management systems and control system tag naming, all control system tag naming shall be developed as part of the control systems design and engineering process.

If the current site tag naming philosophy does not match with this standard, then where possible the new tag name needs to be added as per this standard, unless approved by the principal.

The following control systems tag naming format shall be adopted for tags used in Seqwater control systems. The tag name shall consist of a ‘device name’, optional ‘instance identifier’ and a ‘descriptor structure’. An underscore shall be used as the delimiter between the four alphanumeric sections of the tag name where a data structure is not implemented. In the case where the tag name is implemented using a data structure, the underscore shall be substituted for a dot. The use of underscores or dots may change for the same tag dependent on the implementation by the OEM, e.g., PLC, SCADA, or Historian.

AAA _ S E E E E N N N N _ B B B B B B B B B B I I _ y L L L L L L L L L L ¹
AAA _ S E E E E N N N N _ B B B B B B B B B B I I . y L L L L L L L L L L ²
AAA . S E E E E N N N N _ B B B B B B B B B B I I _ y L L L L L L L L L L ³
AAA . S E E E E N N N N . B B B B B B B B B B I I . y L L L L L L L L L L ⁴



¹ Should be used for non-structured tags such as PLC I/O variables and non-structured SCADA tags.
² Should be used for PLC-SCADA communication structures, e.g., data blocks in Siemens and derived data types in Schneider.
³ Potential uses include SCADA and Historian tags.
⁴ Potential uses include SCADA and Historian tags.

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6.1. Device Naming

The device name shall follow the equipment numbering generated from X-PRO-STD-006 Equipment Numbering with following changes,

1. the removal of the equipment designation field 'D',
2. the Hyphen '-' to be replaced by an Underscore '_',
3. Equipment type length is 4 characters. Use of padding 'x' is allowed for future use. Example, 'TXX_9CPRx0611_MOTOR_iFLT' or 'TXX_1XVxx0603_iOPND'.
4. Equipment number/Unique number length is 4 numbers. Use of padding, '0' is allowed for future use. Example, 'TXX_9CPRx0611_MOTOR_iFLT'.

Table 6-1 I-SPE-STD-010 & X-PRO-STD-006 tag comparison

	I-SPE-STD-010	X-PRO-STD-006
Structure	AAA_SEEEENNNN_BBBBBBBBBBII_yLLLLLLLLLL	AAA-D-SEEEENNNX
Explanation	Device Name AAA = Area/Facility code S = Sub area number EEEE = Equipment type NNNN = Equipment number Instance Identifier (Optional) BBBBBBBBBB = Instance name II = Instance number Descriptor Structure y = Prefix LLLLLLLLLL = Descriptor	Device Name AAA = Area / Facility Code D = Equipment Designation S = Sub-Area Number EEE = Equipment Type NNN = Unique Number X = Suffix (Optional)
Example without padding	TXX_9CPR611_MOTOR_iFLT	TXX-M-9CPR611
Example with padding	TXX_9CPRx0611_MOTOR_iFLT	TXX-M-9CPR611
Explanation	Compressor fault of Compressor 1 from Compressed air service for a Water Treatment Plant	Compressor 1 from Compressed air service for a Water Treatment Plant

Controlled drawings should be used as a reference for equipment numbering including Piping & Instrumentation Diagrams (P&IDs), Control System Network Diagrams and / or Single Line Diagrams. If an equipment number is not available, guidance shall be sought from the Principal.

All portions of the equipment number are mandatory, namely the area/facility code, sub area number, equipment type and equipment number.

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6.2. Instance Identifier (Optional)

The instance identifier is optional and shall be used to when required to uniquely identify a block in the PLC. A common set of instance names are provided in Table 6-2. When required, a two-digit instance number can also follow the instance name. Where the instance name is a descriptor, names shall be taken from Table 6-4 or Equipment Type Codes from X-PRO-STD-006 Equipment Numbering. The total number of characters used for the instance identifier shall not exceed nine characters.

Table 6-2 Common Instance Names

PLC Block	PLC Description	Instance Name	Notes
ALRM_ANA	Analogue Alarm	(descriptor)	Process signal descriptor, e.g., PH, LVL or FLO
ALRM_DIG	Digital Alarm	(descriptor)	Active signal name descriptor, e.g., NOFLO for no flow digital alarm block
ANA_IN	Analogue Input	(not applicable)	
ANA_OUT	Analogue Output	(descriptor)	Output signal descriptor, e.g., SPD for pump speed analog output
DOSE_CALC	Dosing Calculations	DOSECALC##	
DOSE_PUMP	Dose Pump Control	(not applicable)	
DUTY	Advanced Duty	(not applicable)	
HACCP	HACCP Alarm and Dial-Out Generation	HACCP##	
INPUT_COUNTER	Input Counter	COUNT##	
INTERLOCKS	Interlocks	PILOCK##	Process Interlocks
		SILOCK##	Start Interlocks
		TILOCK##	Trip Interlocks
		CRILOCK##	Crash Interlocks
		SHILOCK##	Shutdown Interlocks
MOTOR	Motor	(not applicable)	
MOTOR_REV_ADDON (Schneider)	Motor Reverse Addon	REV	
MOV_AVG	Moving Average	(descriptor)AVG	e.g., FLOAVG, TMPAVG
PID_CTRL	PID controller	(not applicable)	
PID_CTRL_PARAM (Schneider)	PID Controller Parameter Addon	(not applicable)	
RAMP_ANA	Analogue Ramp	RAMP##	
SELECTION_MODE	Selection Mode	SEL	

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PLC Block	PLC Description	Instance Name	Notes
SEQUENCER	Sequencer	(not applicable)	
SUP_CTRL	Supervisory Control	(not applicable)	
T_TON, T_TOF, T_ONR	Timer On Delay, Off Delay & Retentive On delay	TON##, TOF##, TONR##	
TOTALISER_ANA	Analogue Totaliser	(descriptor)	Process signal descriptor, e.g., FWD, REV, FLSH
TOTALISER_PLS	Digital Totaliser	(descriptor)	Process signal descriptor, e.g., FWD, REV, FLSH
VALVE_CONTROL	Control Valve	(not applicable)	
VALVE	Valve	(not applicable)	

6.3. Descriptor Structure

The descriptor structure consists of a prefix (y) and a descriptor (LLLLLLLLL). This gets used in PLC by its tag structure.

6.3.1. Prefix

A descriptor structure prefix character as noted in Table 6-3 shall be used.

Table 6-3 Descriptor Structure Prefix

Abbreviation	Character Type
a	Alarm from PLC to SCADA
c	Control Command from SCADA to the PLC
i	Input to PLC from field
m	Internal PLC input
q	Output from PLC to field
s	PLC Calculated status

For internal tags within a block, a descriptor structure prefix character as noted in Table 6-4 shall be used.

Table 6-4 Internal Block Tag Descriptor Structure Prefix

Abbreviation	Character Type
No prefix	Public parameters
pntr	Private pointer. Shall not be used without approval from the principal
prvt	Private parameter

6.3.2. Descriptor

The descriptor shall be one or more of those defined in Table 6-5 and a number where applicable. To create a meaningful tag name descriptor, multiple descriptors shall be concatenated. A common set of concatenated

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descriptors are noted in Table 6-6. Where there are insufficient descriptors for the specific case considered, the principal shall be consulted with proposed descriptors.

Where technically feasible, capitalisation should be maintained as per the usage set out in this Standard Specification. Upper case and lower-case letters will be considered for readability purposes in specific cases by the principal. The total number of characters used for the descriptor shall not exceed nine characters.

Table 6-5 Descriptor List

Descriptor	Function	Descriptor	Function
ACT	Action	OVL	Overload Trip
ADV	Advance	OVR	Over
AIR	Air	OVRD	Override
ALM	Alarm	OXY	Oxygen Gas
AMM	Ammonia	OZN	Ozone
AMP	Current	PB	Pushbutton
AUTO	Auto Mode	PCH	pH Chlorine
AUTX	Auto Transformer	PERC	Percent
AVG	Average	PH	pH
AVL	Available	PHA	A Phase
BAT	Battery	PHAB	A-B Phase
BIS	Bus Isolator	PHAC	A-C Phase
BRG	Bearing	PHB	B Phase
BTE	Bus Tie	PHBC	B-C Phase
BTIS	Bus Tie Isolator	PHC	C Phase
BUF	Buffer	PHP	Phosphate
BWSH	Backwash	PILOCK	Process Interlock
BYP	Bypass	PIT	Pit
CAS	Cascade	PLS	Pulse
CBH	Circuit Breaker HV	PMP	Pump
CBL	Circuit Breaker LV & ELV	PORT	Port
CDO	Carbon Dioxide	POS	Position
CHG	Charged	PRB	Probe
CHL	Chlorine Gas	PRD	Current Period
CHM	Chloramine	PREV	Previous Period
CLNT	Coolant	PRI	Primary
CLOS	Close Command	PRM	Permit
CLOSD	Closed Status	PRS	Pressure
CLW	Cooling Water	PRT	Protection

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Descriptor	Function
CND	Conductivity
CONC	Concentration
CONT	Continue
CRILOCKS	Crash Interlock
CRP	Creep
CRSH	Crash Stop
CRT	Critical
CTRL	Control
DAILY	Daily
DB	Deadband
DE	Drive End
DEN	Density
DEV	Process Group Device
DIR	Direction
DISC	Discrepancy
DLY	Delay
DO	Dissolved Oxygen
DOOR	Door Switch
DPL	Depletion Level
DPR	Differential Pressure
DRN	Drain
DSABL	Disable
DTY	Duty
DWN	Down
EN	Enable
ESW	Earth Switch
ESTOP	Emergency Stop
FBK	Feedback
FBL	Flow Balance
FCL	Free Chlorine
FDV	Flow Deviation
FILL	Fill
FIX	Fixed
FLT	Fault
FLO	Flow

Descriptor	Function
PSH	Pressure Switch High
PSHH	Pressure Switch High High
PST	Pump Station
PTY	Priority
PV	Process Variable
PWR	Power
R0	Rack 0
RAIS	Raise
RAISD	Raised
RAISG	Raising
RATE	Rate of Change
RAW	Raw
RCK	Rack
RDY	Ready
REJ	Reject
REM	Remote
REQ	Request
RES	Reservoir
RESV	Reserve
REV	Reverse
RING	Ring
RMP	Ramp
ROT	Rotate
RQD	Required
RSET	Reset
RSP	Response
RTE	Rate
RUN	Run
RxSy	Rack x Slot y
S0	Slot 0
S1	Slot 1
S10	Slot 10
S11	Slot 11
S12	Slot 12
S13	Slot 13

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Descriptor	Function
FLSH	Flush
FRCE	Force
FRQ	Frequency
FSE	Fuse
FTC	Fail To Close
FTM	Fail To Move
FTO	Fail To Open
FTP	Fail To Position
FTS	Fail To Start
FTSP	Fail To Stop
FWD	Forward
GAIN	Gain
GND	Ground
GRP	Group
GVF	Gravity Fed
HBT	Heartbeat
HEXC	Heat Exchanger
HH	High High
HI	High
HLD	Hold
HLTHY	Healthy
HRS	Hours
HS	High Speed
HTR	Heater
ILOCK	Interlock
IN	In
INC	Incomer
INH	Inhibit
INIT	Initiate
INV	Invalid
ISL	Local Isolator
KW	Kilowatts
LDY	Last Day
LEAK	Leak
LIM	Limit

Descriptor	Function
S14	Slot 14
S15	Slot 15
S2	Slot 2
S3	Slot 3
S4	Slot 4
S5	Slot 5
S6	Slot 6
S7	Slot 7
S8	Slot 8
S9	Slot 9
SAM	Sample
SAT	Site Attendance
SBL	Sludge Blanket Level
SBY	Standby
SC	Short Circuit
SDD	Surge Diverter
SEC	Secondary
SEL	Select
SEQ	Sequence
SERV	Service
SFE	Safe
SFS	Fluoride
SFT	Shaft
SHILOCK	Shutdown Interlock
SHTDOWN	Shutdown
SILOCK	Start Interlock
SIT	Site/Sites
SML	Small
SMP	Sump
SP	Setpoint
SPA	Spare
SPD	Speed
SPL	Split
SPN	Span
SPR	Spring

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Descriptor	Function
LL	Low Low
LO	Low
LOC	Local
LOCAL	Local
LOK	Lock
LOWR	Lower
LOWRD	Lowered
LOWRG	Lowering
LRG	Large
LS	Low Speed
LSH	Level Switch High
LSHH	Level Switch High High
LVL	Level
MAINT	Maintenance
MAN	Manual
MASK	Mask
MAX	Maximum
MD	Mode
MED	Medium
MEM	Memory
MIN	Minimum
MODE	Mode
MOV	Movement
MSG	Message
MSTR	Master
MTR	Motor
MUT	Mute
NDE	Non Drive End
NET	Net
NIT	Nitrate
NO	No
NORM	Normal
NTH	North
NUM	Number
OC	Open Circuit

Descriptor	Function
SRC	Source
SRF	Surge Reduction Filter
SSS	Suspended Solids
STE	Step
STH	South
STK	Stroke
STOP	Stop
STR	Start
STRT	Starting
SUB	Substitute
SUM	Sum
SUP	Supervisory Controller
SWSH	Surface Wash
SYN	Sync
TCL	Total Chlorine
TD	Derivative
TDY	Today
TH	Thrust
THD	Total Harmonic Distortion
TI	Integral
TILOCK	Trip Interlocks
TIM	Time Duration
TM	Time
TMP	Temperature
TNK	Tank
TOL	Thermal Overload
TOT	Totaliser
TPR	Tamper
TRC	Trip Coil
TRP	Trip
TRQ	Torque
TST	Test
TTL	Total
TUR	Turbidity
UACK	Unacknowledged

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Descriptor	Function	Descriptor	Function
OFF	Off	UN	Under
OFT	Offtake	UP	Up
OIL	Oil	UPD	Update
OK	Okay	USER	User
ON	On	VAL	Value
OOS	Out of Service	VIB	Vibration
OP	Output	VLD	Valid
OPEN	Open Command	VLT	Voltage
OPEND	Open Status	VLV	Valve
OPG	Opening	VOL	Volume
OPH	Ortho-Phosphate	WD	Word
OPN	Open	WGT	Weight
OPR	Operation	WND	Winding
ORP	Oxygen Reduction Potential	WST	West
OTRQ	Over torque	WTM	Winding Temperature
OUT	Out	YDY	Yesterday

Table 6-6 Common Concatenated Descriptors

Descriptor	Description	Comments
ACTHIDLY	Action High Delay	CCP Alarming
ACTLODLY	Action Low Delay	CCP Alarming
AIRTMP	Air Temperature	
ALMDB	Alarm Deadband	
ALMHLDTIM	Alarm Hold Time Duration	
ALMOFFDLY	Alarm Off Delay	
ALMONDLY	Alarm On Delay	
BATFL	Battery Fault	UPS monitoring
BATLO	Battery Low	Valve actuator (Rotork) battery low signal
BISCLOSD	Bus Isolator Closed Status	
BISOPEND	Bus Isolator Open Status	
BRGOILLO	Bearing Oil Low	
BTESCLOSD	Bus Tie Earth Switch Closed Status	
BTESOPEND	Bus Tie Earth Switch Open Status	

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Descriptor	Description	Comments
BTISCLOSD	Bus Tie Isolator Closed Status	
BTISOPEND	Bus Tie Isolator Open Status	
BUFRDY	Buffer Ready	DC UPS
BWSHFL	Backwash Fault	Filter backwash fault alarm
BWSHSEQ	Backwash Sequence	
CBCLOSPRM	Circuit Breaker Close Command Permit	VCB monitoring signal
CBCLOSD	Circuit Breaker Closed Status	
CBOPEND	Circuit Breaker Open Status	
CBRCKIN	Circuit Breaker Rack In	VCB monitoring signal
CBRCKOUT	Circuit Breaker Rack Output	VCB monitoring signal
CBSPRCHG	Circuit Breaker Spring Charged	VCB monitoring signal
CLWFLOOK	Cooling Water Flow Okay	Cooling Water flow switch active on flow
CLWTMP	Cooling Water Temperature	
CRTHIDLY	Critical High Delay	CCP Alarming
CRTL0DLY	Critical Low Delay	CCP Alarming
CTRLPWR	Control Power	
DAILYTOT	Daily Totaliser	
DOORCLOSD	Door Switch Closed Status	Switchboard or Switchroom door closed switch
DRNFL	Drain Fault	Filter drain fault alarm
DRNSEQ	Drain Sequence	
ESTOPOK	Emergency Stop Okay	Field emergency stop pushbutton
FILLFL	Fill Fault	Filter fill fault alarm
FILLSEQ	Fill Sequence	
FLOOK	Flow Okay	Flow Switch active on flow
FSEHLTHY	Fuse Healthy	
GNDFL	Ground Fault	Motor starter ground fault
GRPAUTO	Group Auto Mode	
GRPDSABL	Group Disable	
HEXCLEAK	Heat Exchanger Leak	
HHDLY	High High Delay	
HIDLY	High Delay	

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Descriptor	Description	Comments
ISLCLOSD	Local Isolator Closed Status	
LLDLY	Low Low Delay	
LODLY	Low Delay	
LVLDISC	Level Discrepancy	Level switch or transmitter discrepancy
LVLFL	Level Fault	Level transmitter fault
LVLHIOK	Level High Okay	Level high switch wired failsafe
LVLLOOK	Level Low Okay	Level low switch wired failsafe
MOTBRGTMP	Motor Bearing Temperature	
MOTHTRON	Motor Heater On	
MOTTMP	Motor Temperature	
NOFLO	No Flow	Flow Switch no flow alarm
ONBAT	On Battery	UPS monitoring
ONBYP	On Bypass	UPS monitoring
OPRNORM	Operation Normal	
PHAAMP	A Phase Current	
PHAPWR	A Phase Power	
PHABVLT	A-B Phase Voltage	
PHACVLT	A-C Phase Voltage	
PHBAMP	B Phase Current	
PHBPWR	B Phase Power	
PHBCVLT	B-C Phase Voltage	
PHCAMP	C Phase Current	
PHCPWR	C Phase Power	
PRDTOT	Current Period Totaliser	
PREVTOT	Previous Period Totaliser	
PRSHIOK	Pressure High Okay	Pressure high switch wired failsafe
PRSLOOK	Pressure Low Okay	Pressure low switch wired failsafe
PRTHLTHY	Protection Healthy	High Voltage Protection signal
PWROK	Power Okay	Phase Failure Relay signal
REMAVL	Remote Available	VSD, Valve actuator (Danfoss, Rotork) signal
REVSTRFTL	Reverse Starting Fault	

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Descriptor	Description	Comments
RSETTOT	Reset Totaliser	
RUNHS	Run High Speed	Motor run or running high speed
RUNLS	Run Low Speed	Motor run or running low speed
RUNREV	Run Reverse	Motor run or running reverse
SDHLTHY	Surge Diverter Healthy	Switchboard surge diverters wired failsafe
SFTBRGTMP	Shaft Bearing Temperature	
SPACTHI	Setpoint Action High	CCP Alarming
SPACTLO	Setpoint Action Low	CCP Alarming
SPCRTHI	Setpoint Critical High	CCP Alarming
SPCRTLO	Setpoint Critical Low	CCP Alarming
SRFFL	Surge Reduction Filter Fault	Surge reduction filtered failed status
STOPLVL	Stop Level	
STOPPB	Stop Pushbutton	Field stop pushbutton
STRPB	Start Pushbutton	Field start pushbutton
STRREV	Start Reverse	Reversing DOL
SUPAUTO	Supervisory Controller Auto Mode	
SWSHSEQ	Surface Wash Sequence	
THBRGTMP	Thrust Bearing Temperature	
TMPHI	Temperature High	Temperature high switch wired non-failsafe
TOLOK	Thermal Overload Okay	Thermal overload wired active for not tripped
TOTPLS	Totaliser Pulse	
UNPWR	Under Power	Motor starter under power status
VIBFL	Vibration Fault	Motor vibration monitor fault status
WNDTMP	Winding Temperature	

Below shown Table 6-7 showcases a few examples in sets.

- Set 1 shows an example of motor's use as a compressor with its physical input and output.
- Set 2 shows subdivision of tags within a single instrument which reads pH, ORP and Turbidity.
- Set 3 shows use of Universal controller and an instrument tag in the area, UYxx being the Supervisory/Parent controller of a section (for example Chemical dosing) and UCxx being its child (Chlorine dosing comes under

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Chemical dosing). In this set use of '3' in 1st position of 'NNNN' symbolises the Subarea. Last tag in this set shows tag nomenclature for an instrument in the subsection (a PIT for Chlorine dosing)

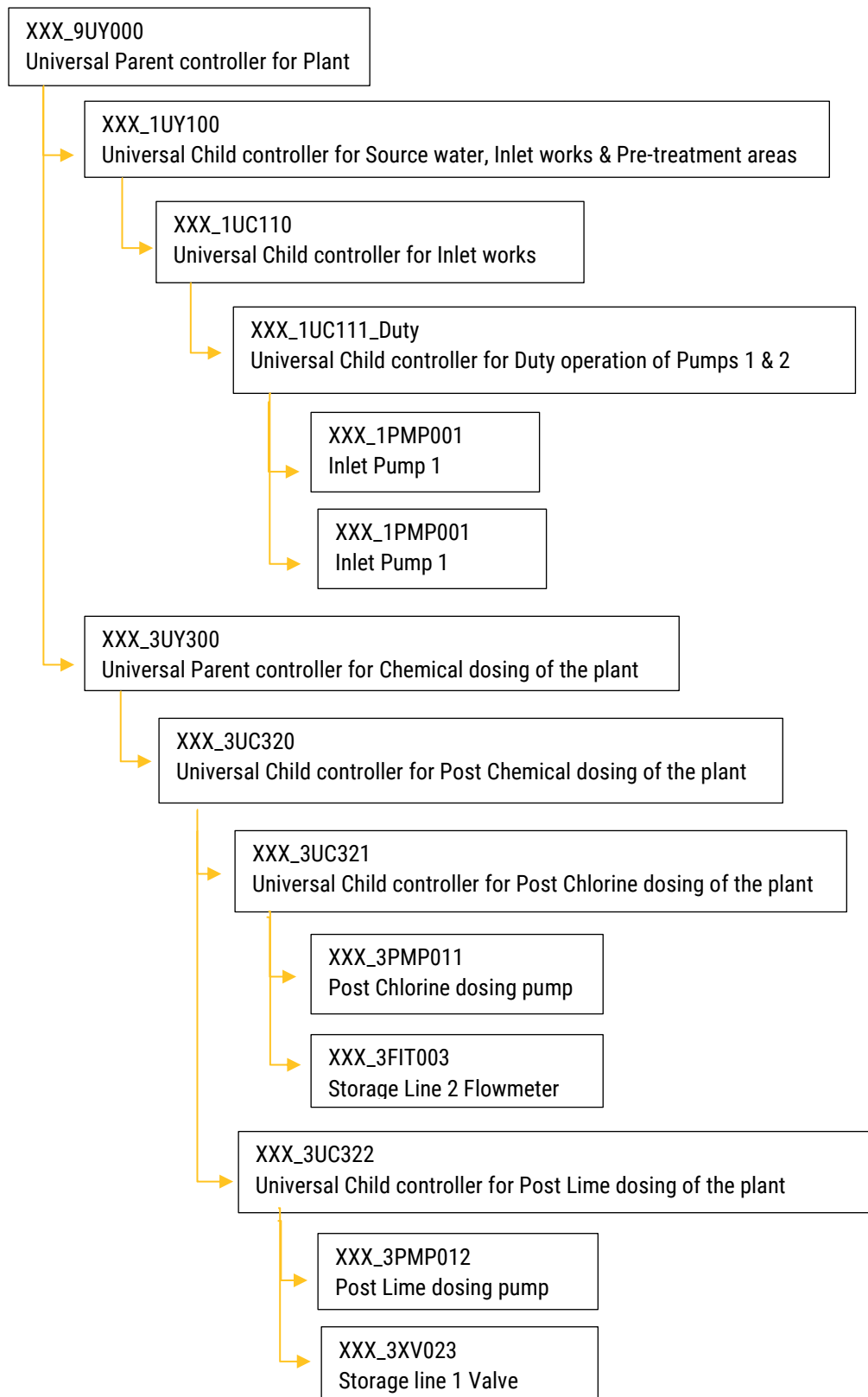
- Use of PID controller FICx0201 has been shown for flowmeter FITx0201

Table 6-7 Tag examples

Set	Tag example	Description
1	TXX_9CPR612_iRUN	WTP Destratification Compressor 2 Running
1	TXX_9CPR612_qRUN	WTP Destratification Compressor No.2 Run
2	TXX_1AIT904_iFLT	WTP Raw Water pH Analyser Fault
2	TXX_1AIT904_iPV	WTP Raw Water pH Analyser
2	TXX_1AIT901_iPV	WTP Raw Water ORP Analyser
2	TXX_1AIT903_iPV	WTP Raw Water Turbidity Analyser
3	TXX_3UY300_ctrl	WTP Universal Parent controller for a Chemical Dosing System
3	TXX_3UC301_ctrl	WTP Universal Child controller for a Chlorine Dosing System
3	TXX_3PIT002_iPV	WTP Chlorine Dosing Pressure Transmitter
	TXX_2FIC201_mSP	WTP Flow controller PID Setpoint Filter 2

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Example use of Hierarchical Universal Parent and Child controller

Note: The above figure is an example only. The hierarchical structure for Universal controllers for a site/ project shall be developed during design phase with inputs from all stakeholders.

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7. Exceptions

If any device cannot conform to the tag naming presented in this Standard, including currently installed equipment, this shall be brought to the attention of the principal. This shall include, but is not limited to, devices which are part of the scope of works but are not sufficiently shown on drawings (including P&IDs, SLD, and control system network diagrams, and other drawings).

All such occurrences shall not result in a tag not being allocated and nor shall it result in a tag being allocated based on a convention or rule other than that provided by Seqwater.

8. Guideline: Addressing & Tagging

This guideline provides details on addressing and tagging. The mandatory requirements for PLC / SCADA programming are provided in Seqwater's *I-SPE-STD-013 Control Systems Design and Construction*, Section 6.2 PLC Programming Requirements. The remaining guidance provided herein should be used but is not exhaustive.

Seqwater's philosophy of continuity for equipment numbering through the field, controlled documents, PLC, SCADA and Historian layers is provided, using the following examples, in Table 8-1 and Table 8-2.

Table 8-1 Tag Naming through Documentation & Control System Layers (Examples 1)

Layer	Motor Running	Instrument PV	Valve Fully Open
Device	XXX-M-1PMP001	XXX-I-7AIT020	XXX-V-2XV062
P&ID	XXX-M-1PMP001	XXX-I-7AIT020	XXX-V-2ZO062
Schematic Drawings	XXX-M-1PMP001 Running	XXX-I-7AIT020 / pH	XXX-V-2XV062 / Fully Open
I/O List	XXX_1PMP001_iRUN	XXX_7AIT020_iPH	XXX_2ZO062_iOPND
PLC Processed	XXX_1PMP001_sRUN	XXX_7AIT020_PH_sPV	XXX_2XV062_sOPND
SCADA	XXX_1PMP001_sRUN	XXX_7AIT020_PH_sPV	XXX_2XV062_sOPND
Historian	XXX_1PMP001_sRUN	XXX_7AIT020_PH_sPV	XXX.2XV062_sOPND

Table 8-2 Tag Naming through Documentation & Control System Layers (Examples 2)

Layer	Motor Trip Interlock 1	Digital Flow Switch
Device	XXX-M-1PMP001	XXX-I-3FSL020
P&ID	XXX-M-1PMP001	XXX-I-3FSL020
Schematic Drawings	XXX-M-1PMP001 / Emergency Stop	XXX-I-3FSL020 / Flow Switch
I/O List	XXX_1PMP001_iESTP	XXX_3FSL020_iON
PLC Processed	XXX_1PMP001_TILOCK01_aLOCK1	XXX_3FSL020_NOFLO_aALM
SCADA	XXX_1PMP001_TILOCK01_aLOCK1	XXX_3FSL020_NOFLO_aALM
Historian	XXX_1PMP001_TILOCK01_aLOCK1	XXX_3FSL020_NOFLO_aALM

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8.1. Symbolic Addressing

Symbolic addressing in control system environments is preferred over absolute addressing. Guidelines for the use of symbolic addressing are:

- Define symbol names for all elements supported by the OEM, such as physical inputs and outputs, data blocks, function blocks, functions, routines, data types and memory blocks that are used in the software.
- The tag name in PLC, SCADA and Historian are identical with the exception of delimiters.

8.2. PLC Block Instances

Each PLC block instance should be allocated a name, using the following guidelines:

- The primary instance block should not receive an instance name with the exception of the analogue alarm, analogue output and digital alarm blocks.
- Analog alarm blocks should receive an instance name which represents the analogue signal type. E.g., PH, FLO or WGT.
- Analog output blocks should receive an instance name which represents the analogue signal type. E.g., SPD or POS.
- Digital alarm block should receive an instance name which represents the active state of the block output signal. E.g., NOFLO or HH
- Always use underscores as the delimiter prior to the block instance name
 - The instance number (II) is optional, it is not necessary for cases such as an analogue output instance block for a motor, which is only used once.

The following examples (Table 8-3) lists the PLC blocks used for a pump (1PMP100) device at a facility (facility code, TXX)

Table 8-3 – Example PLC Block Instance Names

PLC Block	Tag for Block Instance	Function
Motor	XXX_1PMP100	Motor control block
Analog Input	XXX_1FIT601	Flow Transmitter Input block
Analog Output	XXX_1PMP100_SPD	Motor speed analogue output block
Interlock	XXX_1PMP100_PILOCK01	Process interlock block 1
Interlock	XXX_1PMP100_PILOCK02	Process interlock block 2
Interlock	XXX_1PMP100_TILOCK01	Trip interlock block
Interlock	XXX_1PMP100_SILOCK01	Start interlock block
Timer	XXX_1PMP100_TON01	Timer block 1
Timer	XXX_1PMP100_TON02	Timer block 2
Digital Alarm	XXX_1PMP100_VSDFL	VSD fault digital alarm block
Control Valve	XXX_1XV600	Valve Control Block

The above example shows that the interlock block for process interlock function “PILOCK” has been used twice. Hence a sequential instance number (i.e. 01 and 02) is attached to the block type “PILOCK”. Similarly, for the TON timer blocks, an instance number has been used after the instance name. In the case of the trip interlock and start

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interlock, even though only one instance block is used, future interlocks may require multiple instance blocks, hence the sequential instance number is used.

9. Revision Updates

Table 9-1 summarises the noteworthy changes undertaken as a part of each document revision. Non-material changes, such as correction of grammar or spelling are not noted within this table.

Table 9-1 Document Change History

Revision	Section	Change
2	All	Major revision
2.1	Table 5.1 REX ID added, and Q-Pulse reference moved to description	Minor revision
2.1	Table 6.1 added for STD-06 and STD-10 comparison	Minor revision
2.1	Inapplicable Blocks removed from table 6.2	Minor revision
2.1	Table 6.5 107 more descriptors added	Minor revision
3	Length of tag structure increased by 2 characters in section 6 from AAA_SEEENNN to AAA_SEEEENNNN	Equipment type and Equipment number length has changed to 4 form 3 characters.
3	Description in section 6.1 to highlight difference between X-PRO-STD-006 and I-SPE-STD-010	Added comparison within standards
3	More descriptors added to the existing Descriptor list, Table 6.5.	More descriptors added.
3	Table 6-7 a showcase of a few examples along with an example tag hierarchy.	Added examples
4	Use of optional padding for device type and number in section 6.1	Use of optional padding for device type and number is explained in section 6.1